



## FUGRO GEOSPATIAL, INC.

### Collection Report – USGS Lidar Acquisition

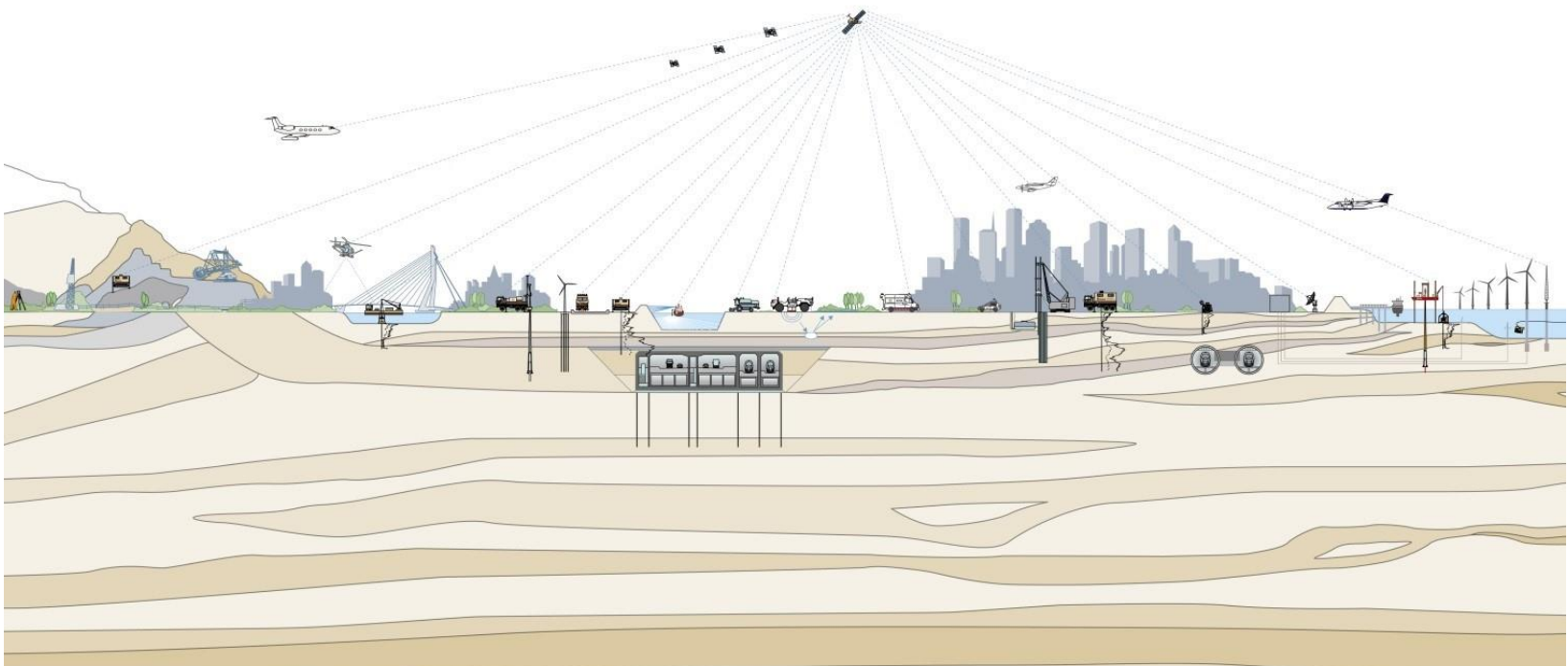
TX\_Hurricane\_2018\_D18\_Supplemental

Prepared for:

United States Geological Survey  
1400 Independence Road  
Rolla, MO 65401  
(573) 308-3689

August 28, 2019

USGS Contract: G17PC00015  
USGS Task Order: 140G0218F0391





## USGS COLLECTION REPORT

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Fugro was tasked with planning, acquiring, processing, and producing derivative products of high resolution lidar data (QL2) collected at an aggregate nominal pulse spacing (ANPS) of 0.71 meters (2ppsm), including overlap, several areas in Texas identified as TX\_Hurricane. The area of interest (AOI) covers approximately 14,512 square miles. A 100-meter buffer was added to the AOI; all products will be generated to the limit of this buffered boundary.

Lidar data, and derivative products produced in compliance with the task order will be based on the **“U.S. Geological Survey National Geospatial Program Lidar Base Specification Version 1.3”**.

The acquisition occurred during the acceptable collection windows that existed between 01/04/2019 and 02/20/2019.

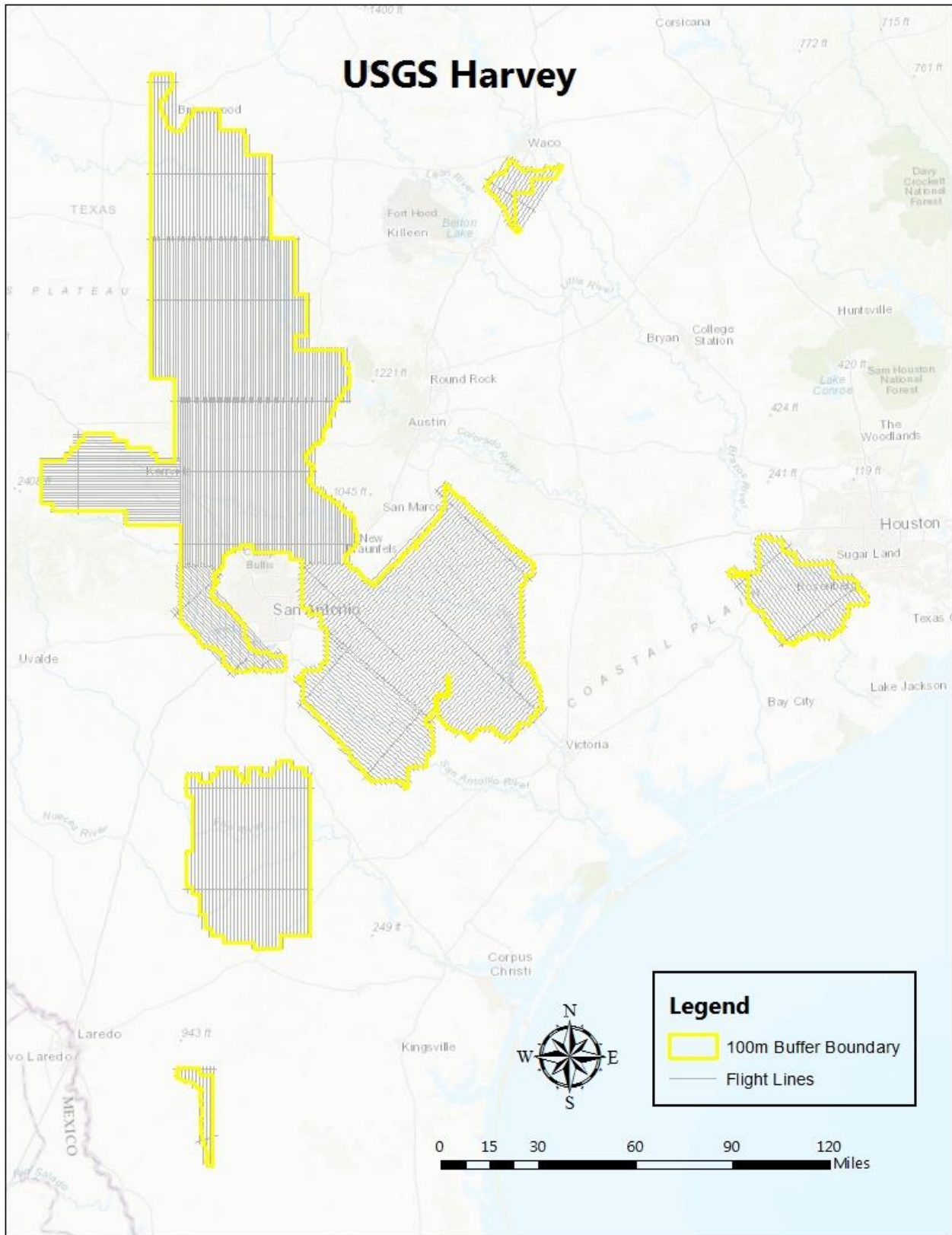


Figure 1: Flight plan



The following is detail on the lidar acquisition covering the TX\_Hurricane\_2018\_D18\_Supplemental Lidar buffered boundary.

<b>Collections:</b>	69
<b>Collection Dates:</b>	January 4 <sup>th</sup> – February 20 <sup>th</sup> , 2019
<b>Field of View (FOV):</b>	46 deg
<b>Average Point Density (planned):</b>	2 ppsm
<b>Flight Level(s) AMT:</b>	7900 ft
<b>Sensor Type(s):</b>	Leica ALS80
<b>Sensor Serial Number(s):</b>	118, 130, 133

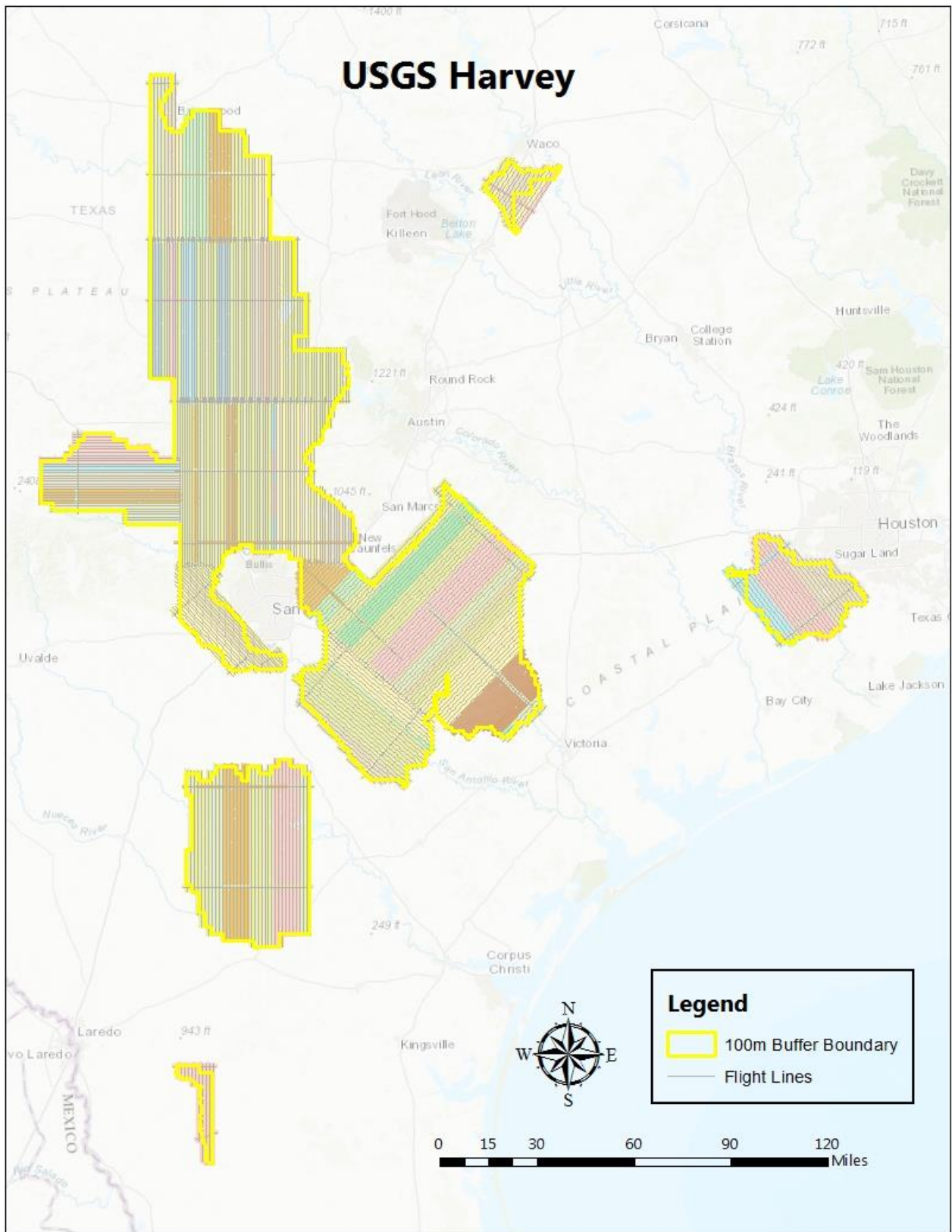


Figure 2: Executed Collection Footprints



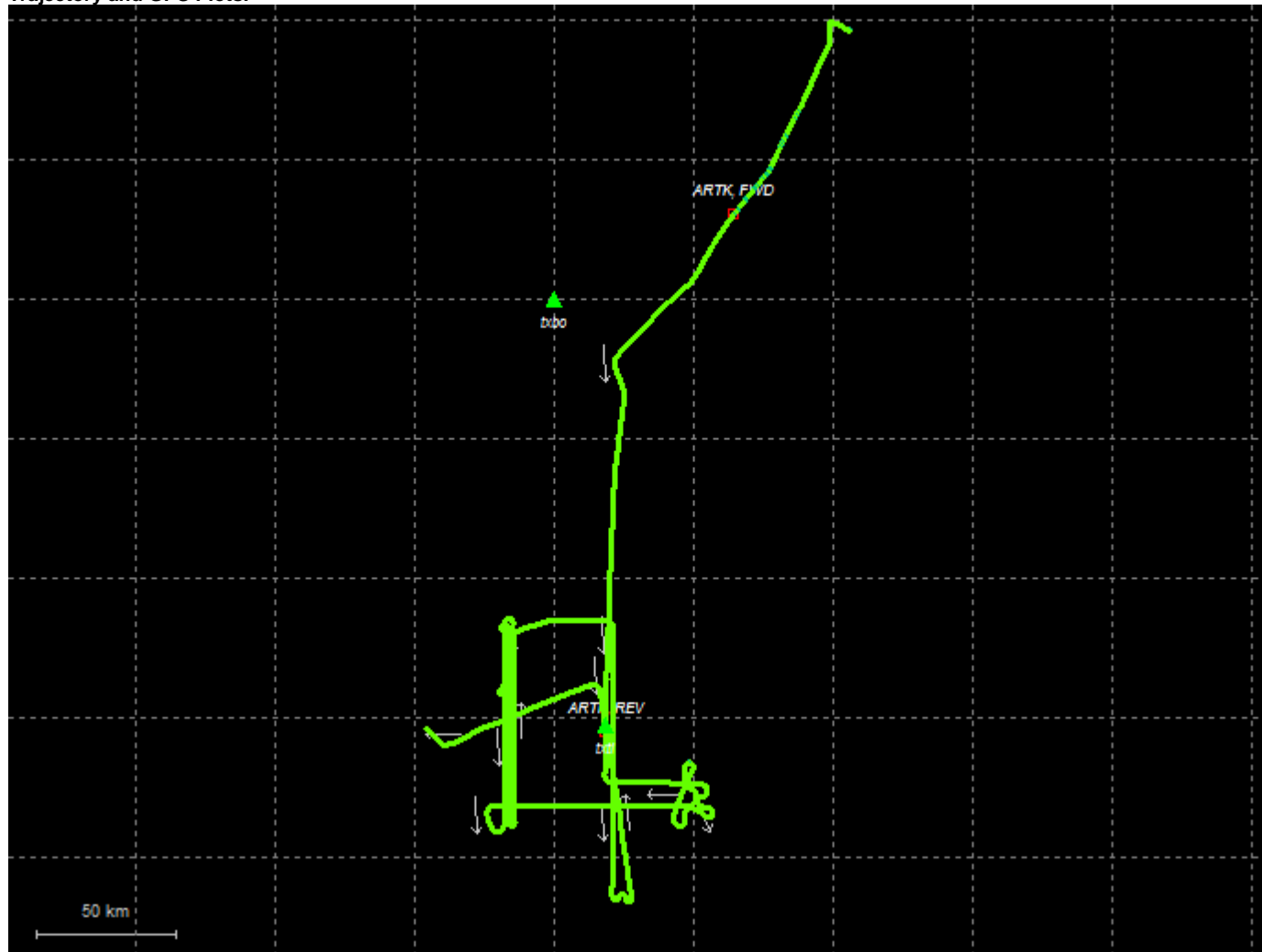
**USGS  
COLLECTION REPORT**

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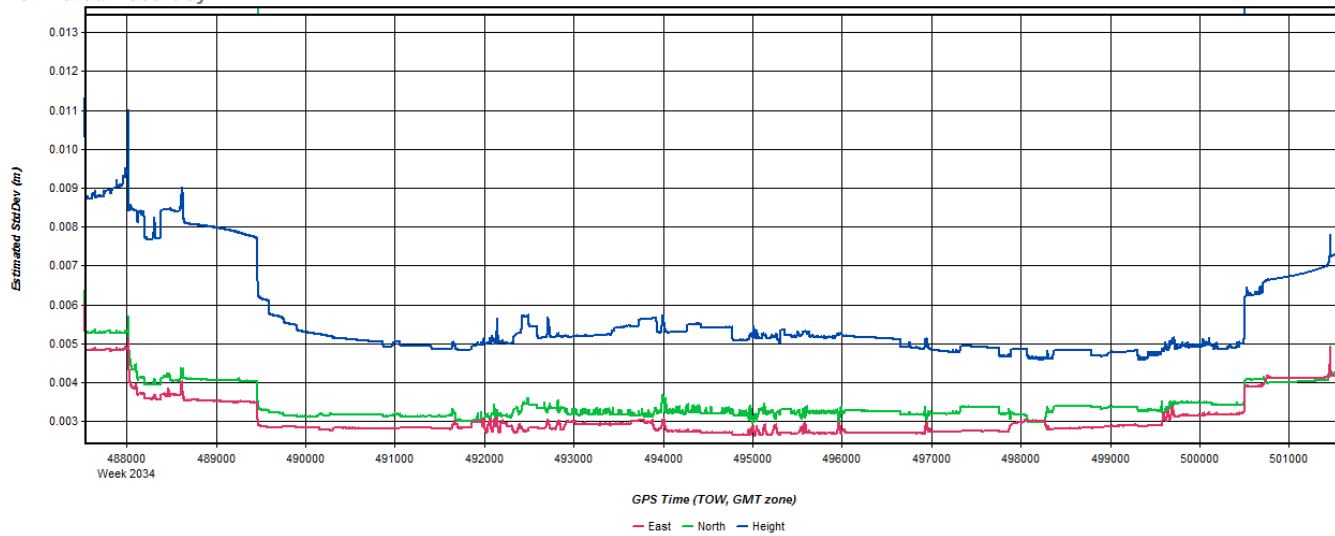
All acquired lidar data was assessed and accepted for processing. Below are the acquisition logs and GPS plots from the collections covering the TX\_Hurricane\_2018\_D18\_Supplemental Lidar buffered boundary.



Trajectory and GPS Plots:

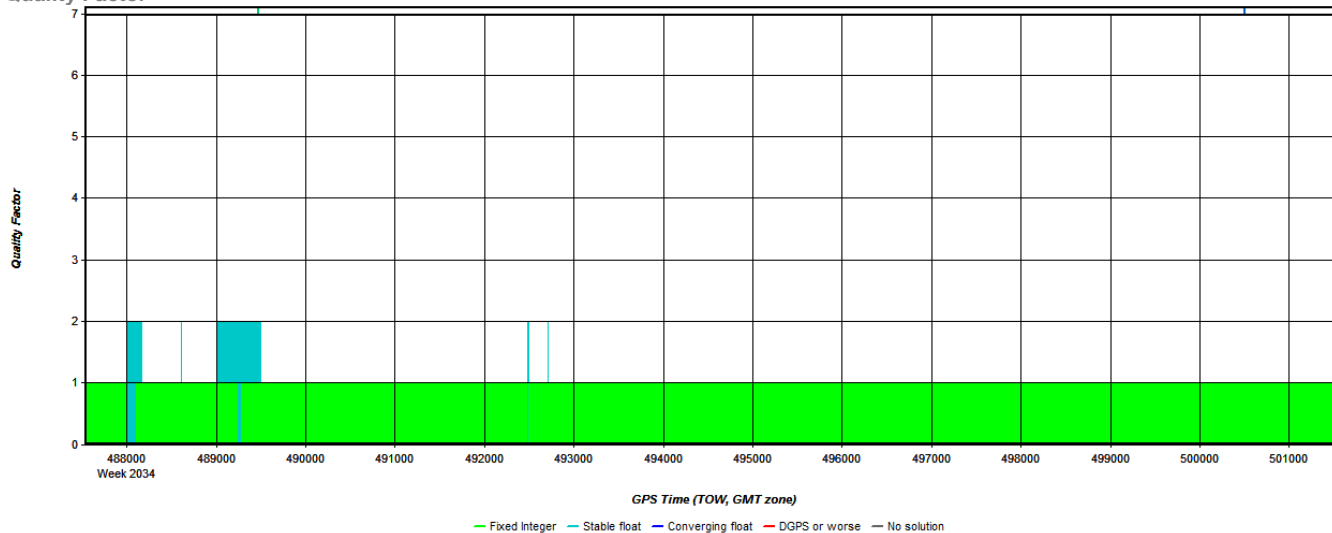


Estimated Accuracy

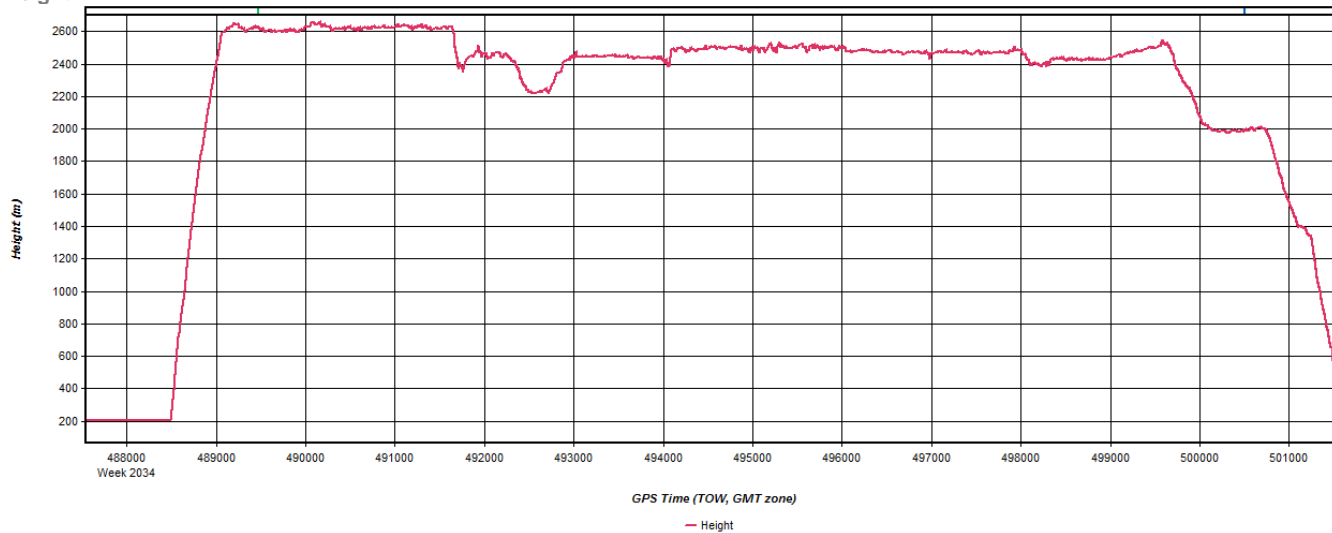




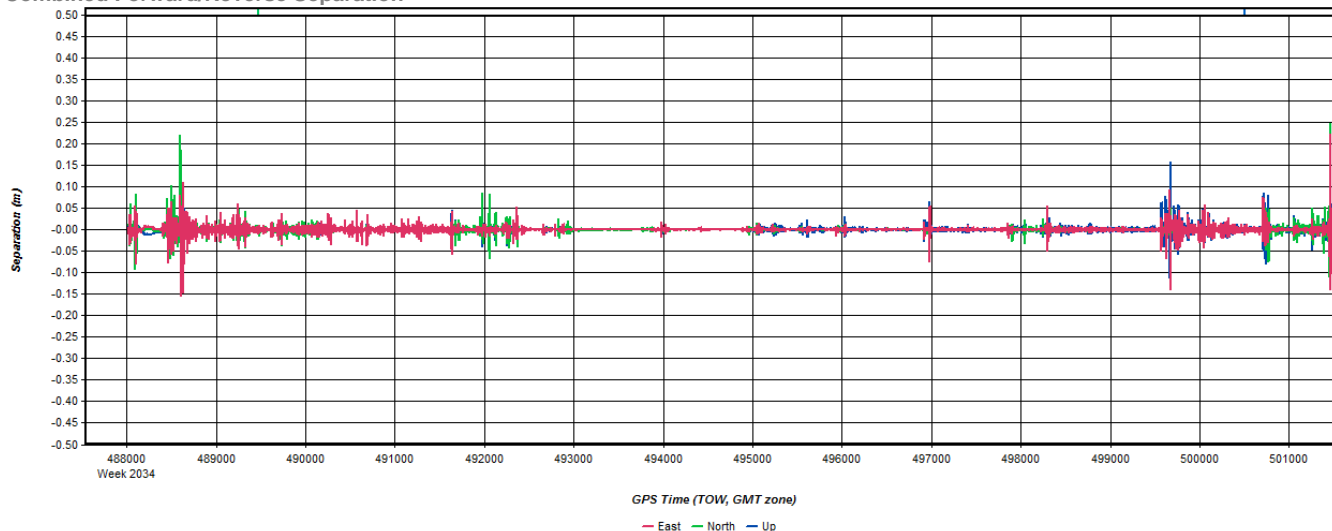
Quality Factor



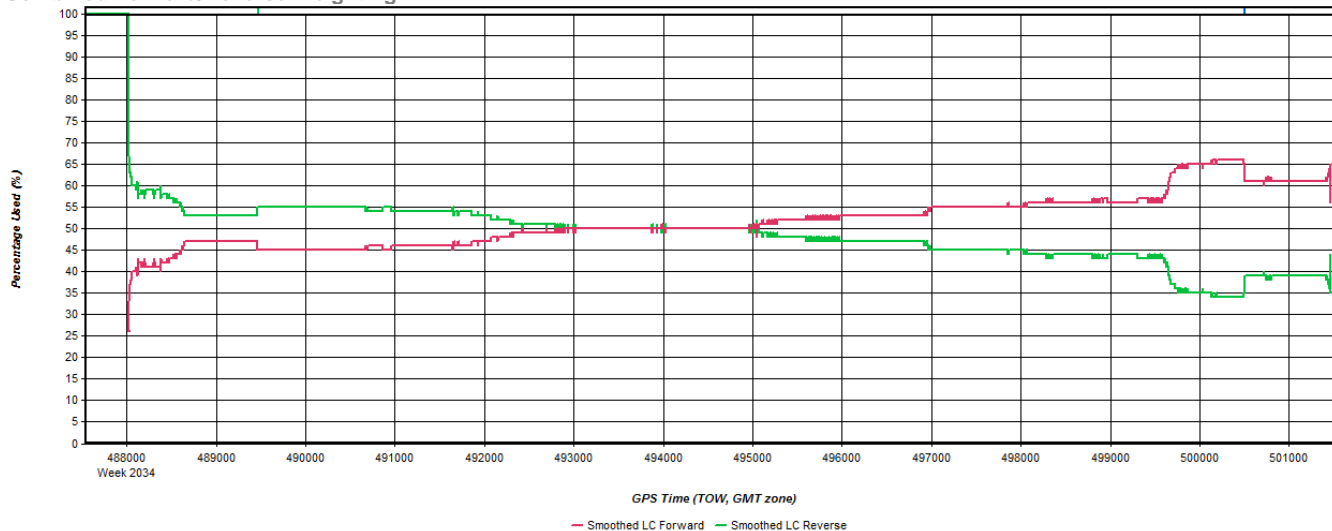
Height



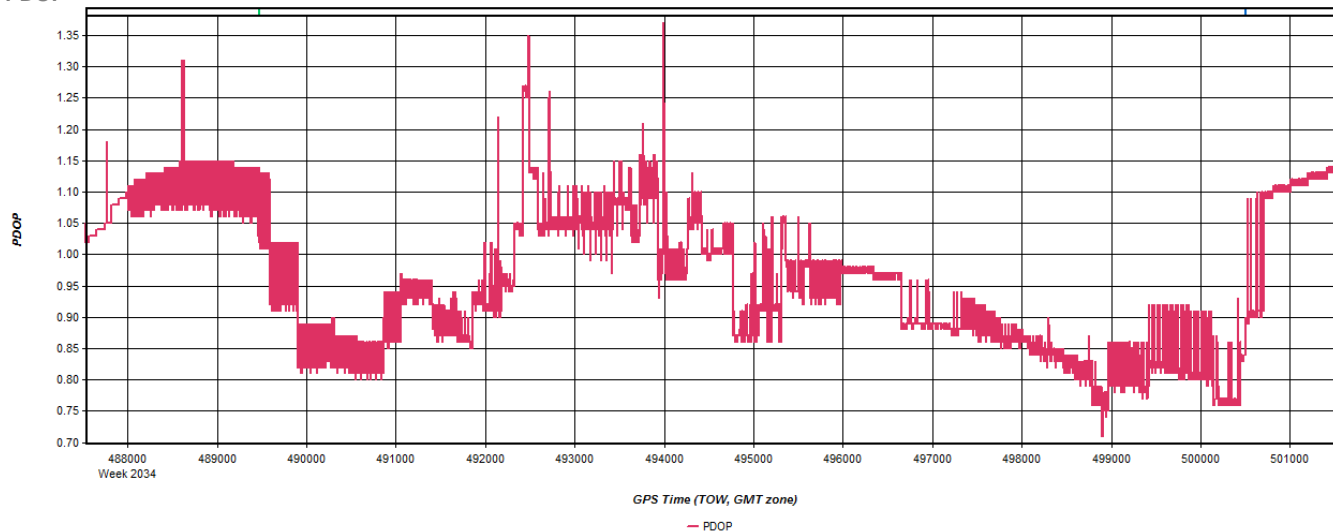
Combined Forward/Reverse Separation



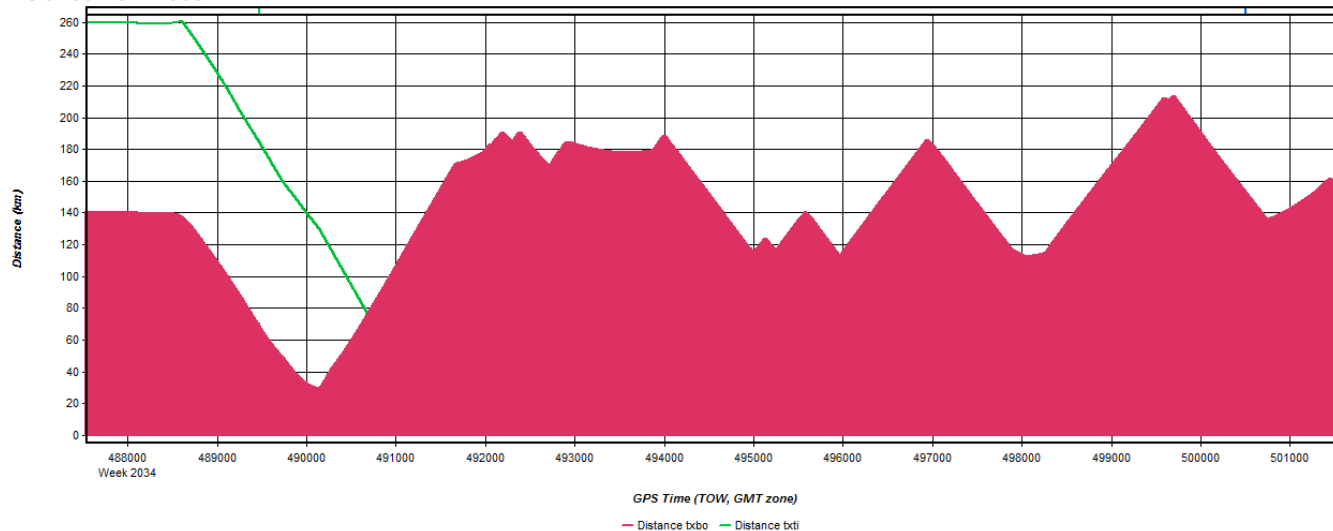
Combined Forward/Reverse Weighting



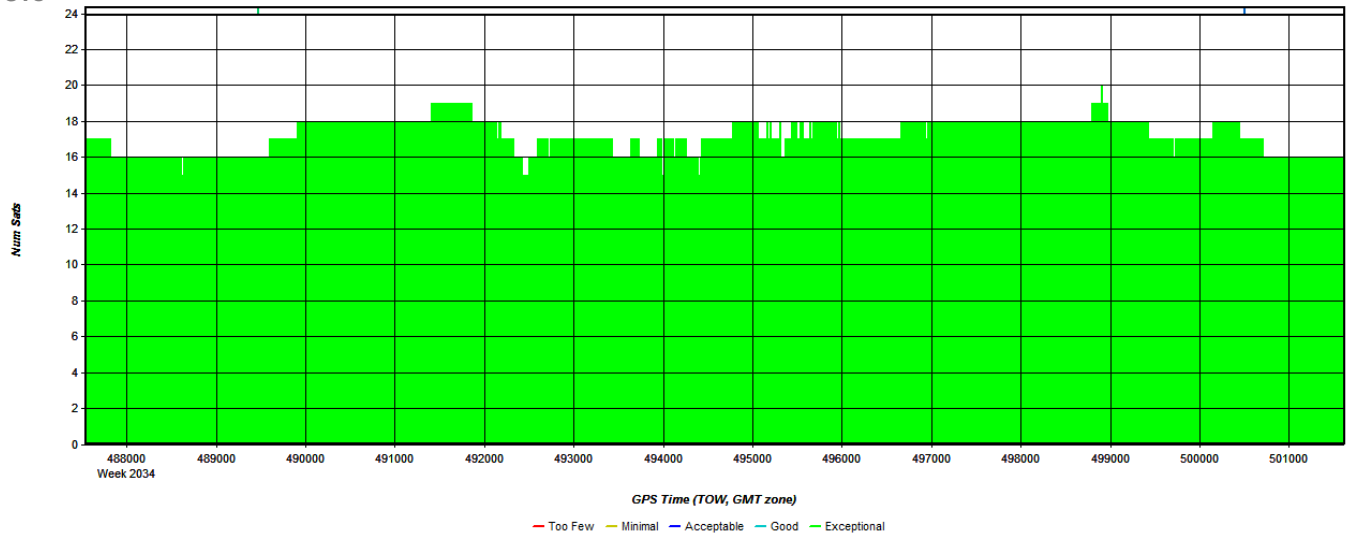
PDOP



Distance from Base



SVs



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COLLECTION REPORT



Acquisition and Processing details ----- (January 04, 2019)

Log: 190104\_118\_33780084\_02

Menu
18.165
ALS Flight Log

Lift Begin			Lift End			Fit Duration	Fit Hrs	Hobbs Hrs	Activity	
Airport	Chocks	Hobbs	Airport	Chocks	Hobbs					
1	KCOT	20:08	2929.1	KG TU	0:11	2932.8	4:03	4.00	3.7	0900-Production
2										
3										

FGI Job # <b>33780084</b>	Project Name <b>USGS Disaster Recovery Harvey Fina</b>		System <b>ALS80</b>	Unit <b>118</b>	IMU <b>uRS</b>	PIA <b>3</b>	SW1 <b>-</b>	SW2-Gain <b>-</b>	Aper <b>60°</b>	AutoScan <b>Yes</b>	Ground Temp °C <b>21.0 17.0</b>		Min Range Gate <b>6244</b>	Data Logger Drive <b>MM70-08</b>	
Flight Date <b>4-Jan-19</b>	GPS Day <b>19-004</b>	Lift <b>2</b>	Sun° <b>-</b>		Solar Times (UTC) <b>-</b>		Laser Power <b>100%</b>	Pattern <b>Triangle</b>	Flying Temp °C <b>6.0 10.0</b>		Max Range Gate <b>8323</b>	Download Drive <b>NS1TB-83</b>			
Mission ID (yymmdd_Sen_Job_Lift) <b>190104_118_33780084_02</b>		Aircraft <b>N8131</b>	Airport ID <b>KG TU</b>	FMS <b>CCNS 3</b>	UTC <b>-6</b>	AMT (ft) <b>7,550</b>	Speed <b>150</b>	Scan Hz <b>35.0</b>	Pulse Rate <b>352,000</b>	FOV <b>42°</b>	km/WPT <b>1.384</b>	AltM Setting <b>30.06 30.04</b>	Shipping Track <b>7741 2131 2541</b>		

Pilot #1 <b>Kevin Ellington</b>		Pilot #2 <b>-</b>		Operator #1 <b>Chris Acuña</b>		Operator #2 <b>-</b>								
Base 1 ID <b>FEDI 1115</b>	Location <b>KG TU</b>	Rec ID <b>GR3#5</b>	Ant ID <b>GR3#5</b>	ARP (m) <b>1.8</b>	Start Time (UTC) <b>04-Jan-19 13:42</b>	Stop Time (UTC) <b>05-Jan-19 00:28</b>	GPS Filename <b>Unit#50104n</b>	Operator <b>Chris Acuña</b>	Data <b>With AB</b>					

Area	Flight #		Wpt		Distance		UTC		Fit Dir	Altitude (GPS)	Speed (knots)	Scan Rate	Comments and Conditions	SVs	PDOP
	FGI	Client's	From	To	Begin	End	Start	End							
													Aspen GPS is "Off"		
							20:52:36	20:57:36					5 Min acquisition of CORS TXBO	18	1.3
							21:17:50	21:19:56					S-Turn in flight alignment	19	1.1
Block_G	33		31	1	41.5	0	21:22:46	21:32:18	174	9520	144	-		21	1.0
	1		1	22	0	29.1	21:37:28	21:44:08	85	8895	146	-		21	1.2
	2		22	1	29.1	0	21:46:36	21:53:16	265	8980	137	-		22	1.1
	3		1	22	0	29.1	21:59:20	22:06:00	85	9030	145	-		22	1.2
	3		22	12	29.1	15.2	22:09:09	22:13:19	265	9005	135	-	Calibration Line	21	1.2
	4		22	1	29.1	0	22:19:52	22:26:41	265	9040	137	-		22	1.2
	5		1	48	0	65	22:37:30	22:52:01	84	8980	148	-		20	1.4
	6		48	1	65	0	22:54:11	23:09:15	265	9020	143	-		21	1.3
	7		1	48	0	65	23:12:41	23:27:13	84	8910	145	-		22	1.2
							23:27:28	23:28:56					S-Turn post in flight alignment	23	1.1
							23:30:54	23:35:54					5 Min post acquisition of CORS TXBO	23	1.1
							00:06:32	00:09:32					3 Min GND static alignment at KG TU	23	1.2
													Lift terminated for low fuel		

Trajectory and GPS Plots:

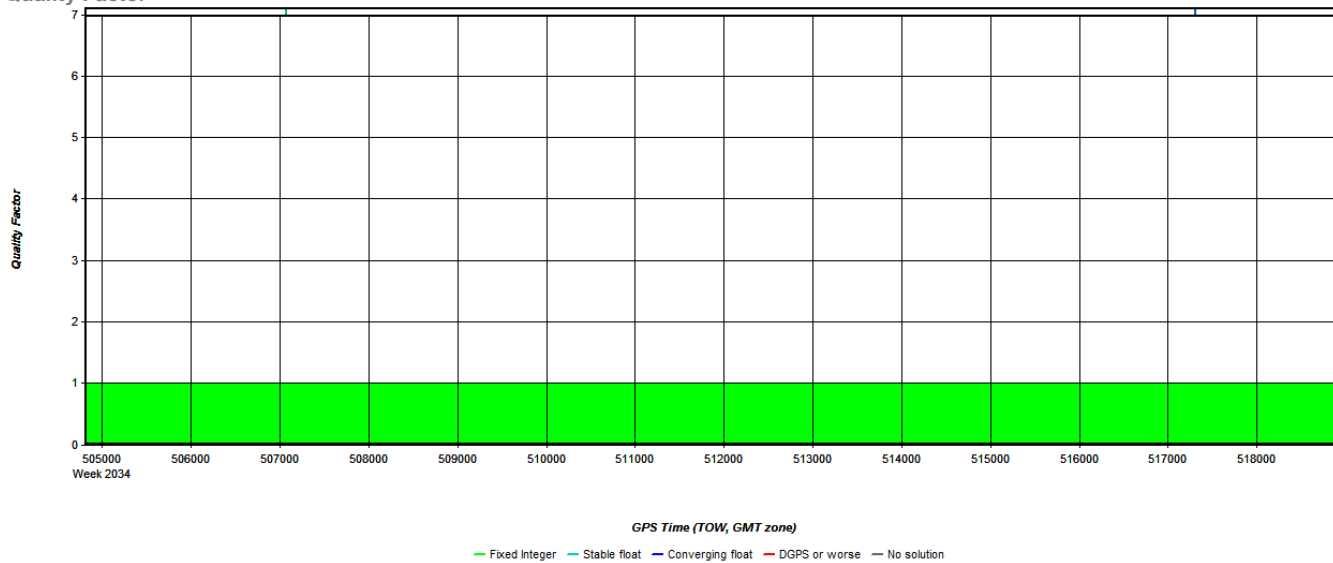


Estimated Accuracy

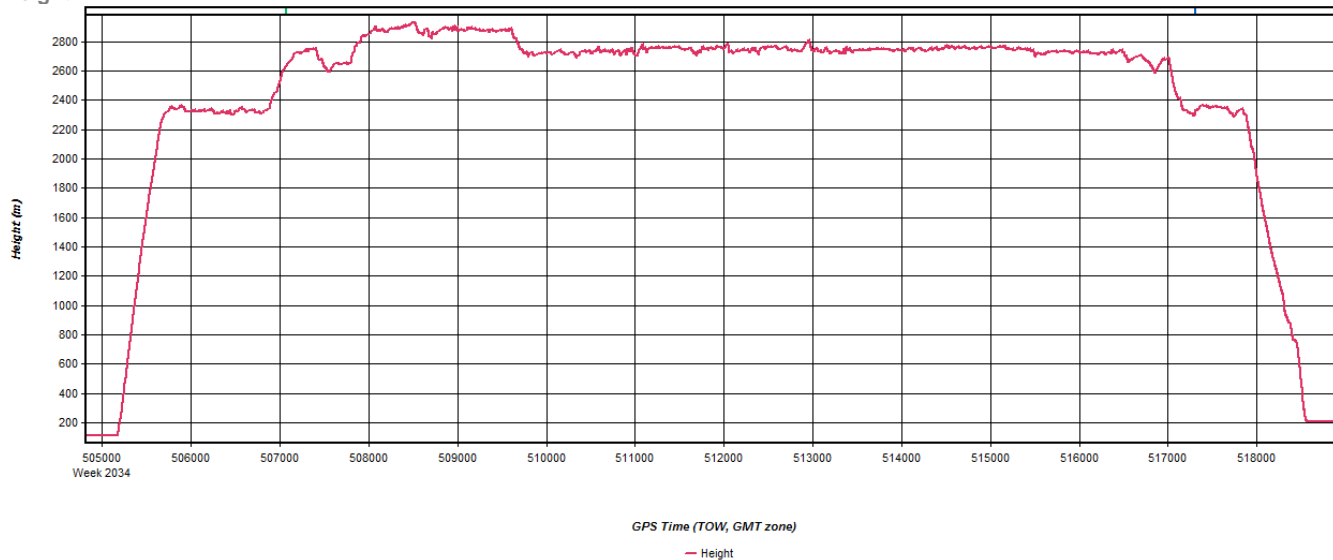




Quality Factor



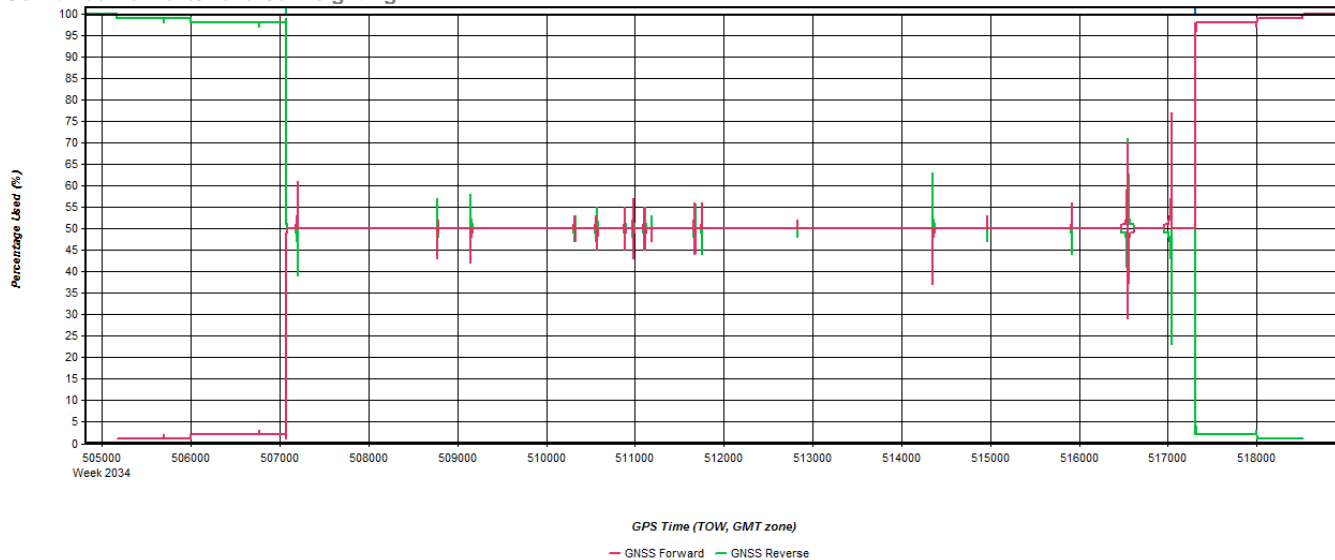
Height



Combined Forward/Reverse Separation

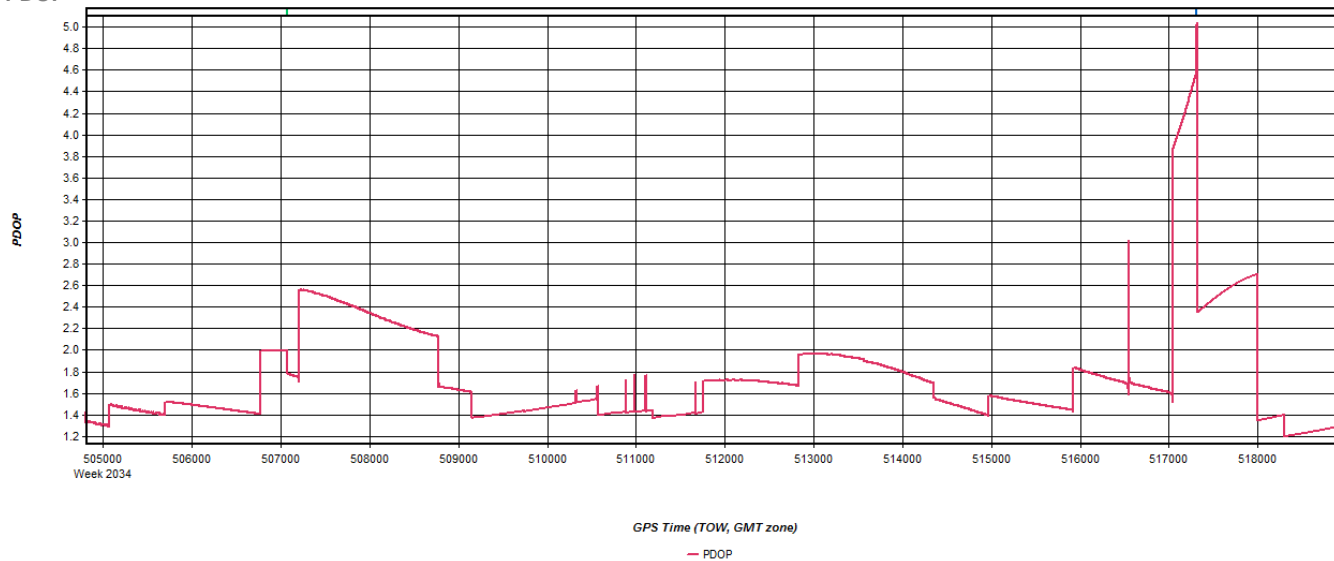


Combined Forward/Reverse Weighting

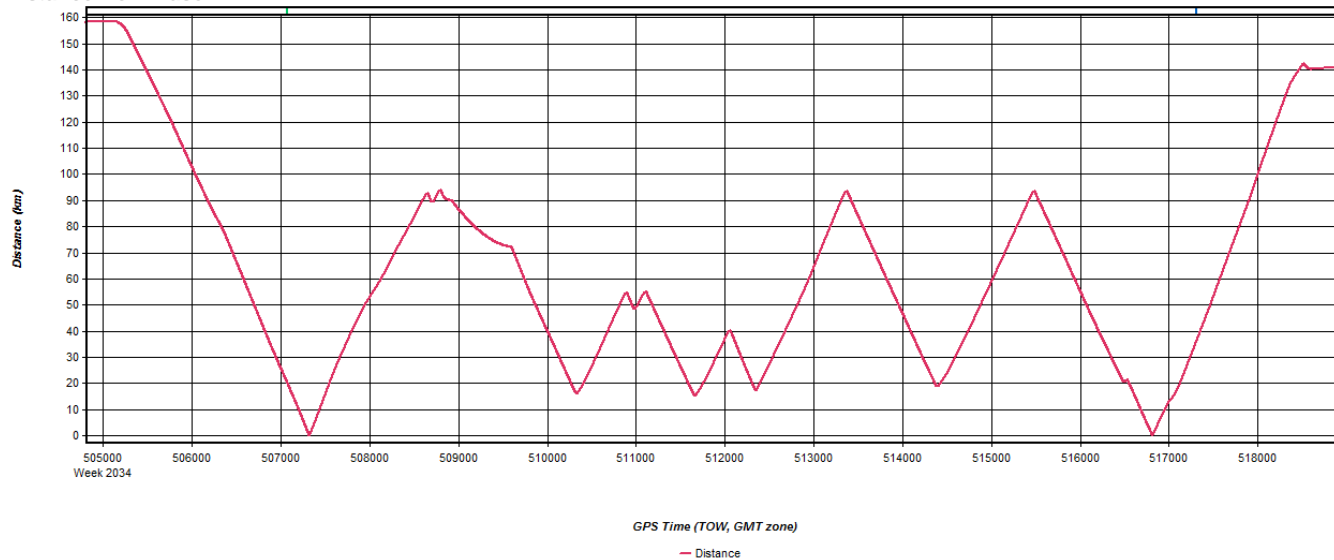




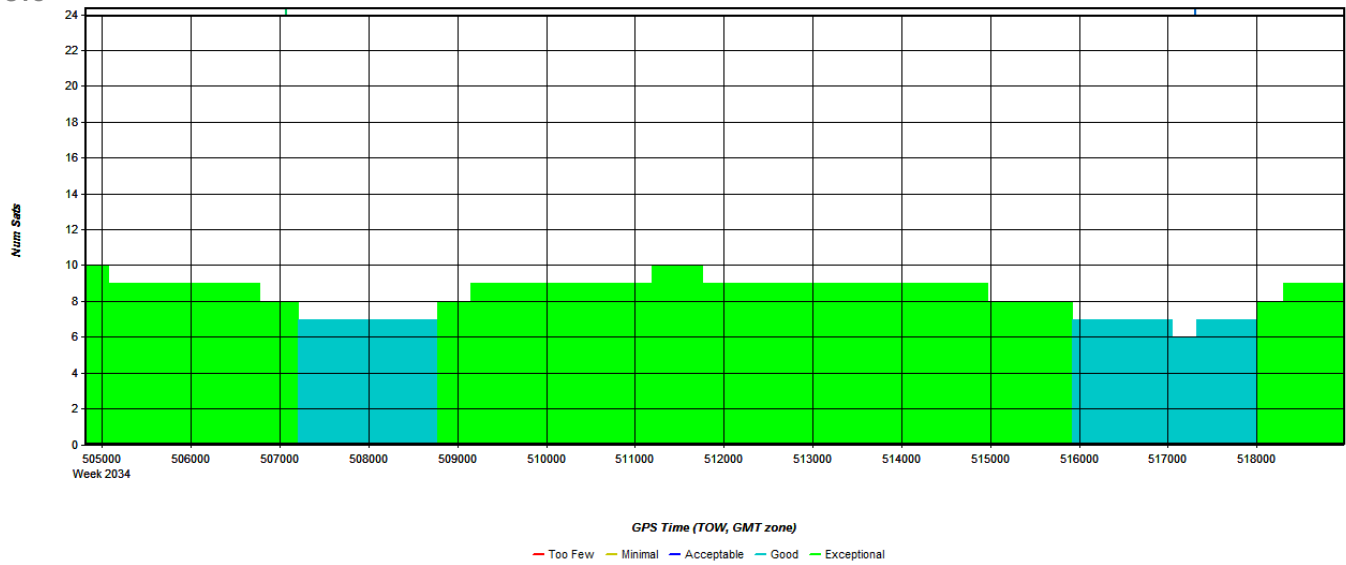
PDOP



Distance from Base



SVs





Acquisition and Processing details ----- (January 04, 2019)

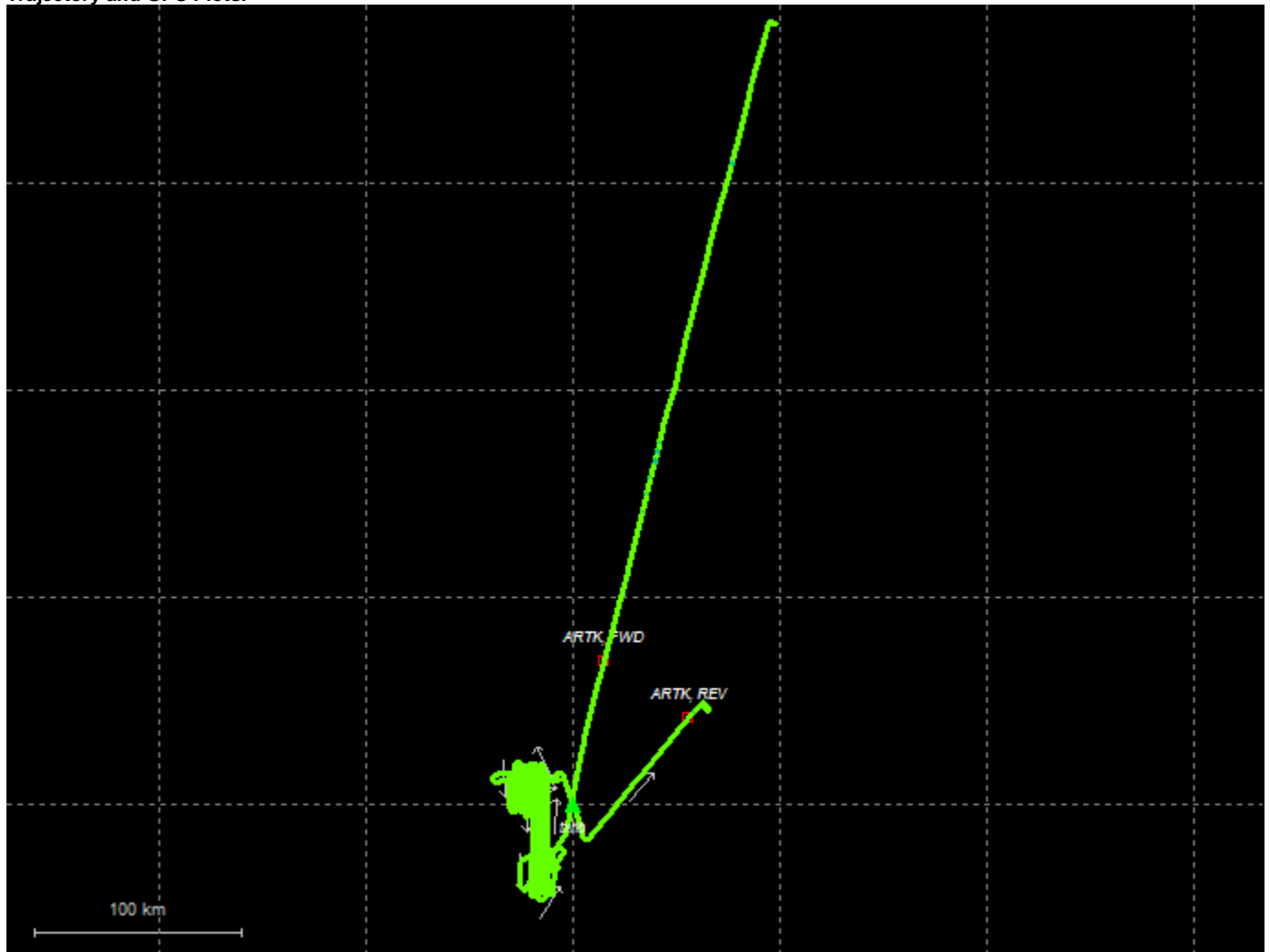
Log: 190104\_130\_33780084\_01

Menu		18.165 Lift Begin			Lift End			Flt	Flt	Hobbs	Activity
		Airport	Chocks	Hobbs	Airport	Chocks	Hobbs	Duration	Hrs	Hrs	
1		KGTU	14:19	1316.7	KALI	18:47	1320.9	4:28	4.50	4.2	0900-Production
2											
3											

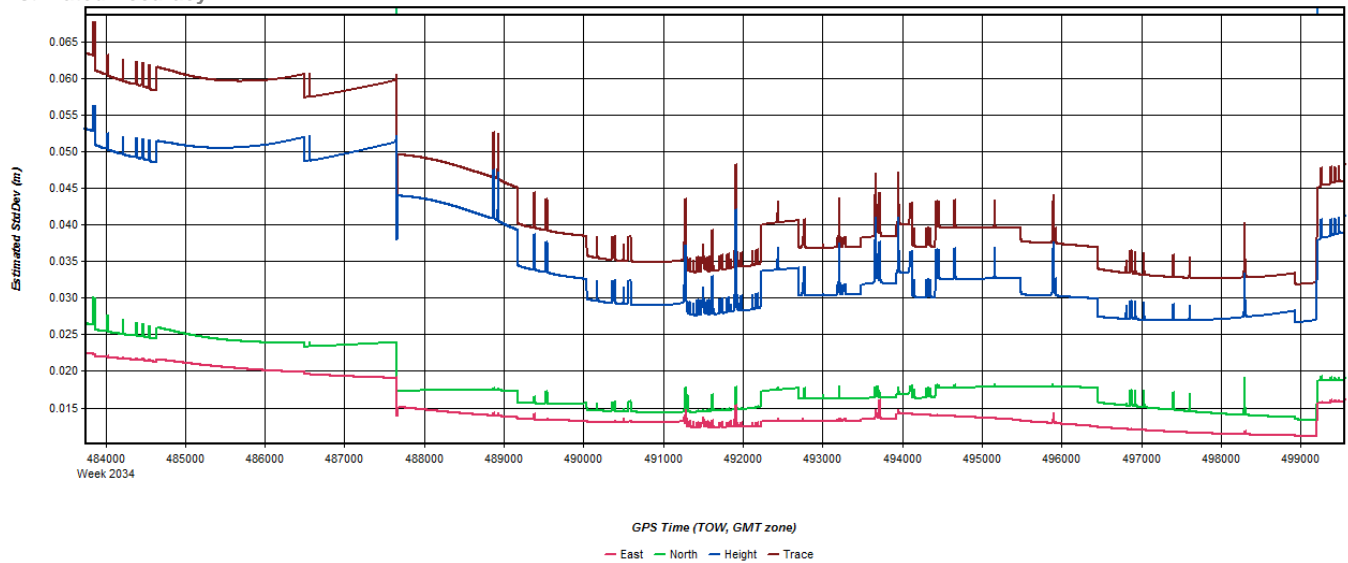
**Fugro USA Land, Inc.** **ALS** Flight Log AC80-44-00-02

FGI Job # <b>33780084</b>	Project Name <b>Hurricane Harvey ALS80</b>		System <b>ALS80</b>	Unit <b>8130</b>	IMU <b>uIRS</b>	PIA <b>4</b>	SW1	SW2-Gain	Aper	AutoScan	Ground Temp °C <b>1.0 20.0</b>	Min Range Gate <b>7322</b>	Data Logger Drive <b>LG101</b>		
Flight Date <b>4-Jan-19</b>	GPS Day <b>19-004</b>	Lift <b>1</b>	Sun° <b>-</b>	Solar Times (UTC) <b>-</b>		Laser Power <b>96%</b>	Pattern <b>Triangle</b>	Flying Temp °C <b>10.0 12.0</b>	Max Range Gate <b>8830</b>	Download Drive <b>NS1TB#13</b>					
Mission ID (ymmdd_Sen_Job_Lift) <b>190104_130_33780084_01</b>		Aircraft <b>N97HC</b>	Airport ID <b>KALI</b>	FMS <b>CCNS 8</b>	UTC <b>-6</b>	AMT (ft) <b>7,900</b>	Speed <b>150</b>	Scan Hz <b>34.0</b>	Pulse Rate <b>443</b>	FOV <b>1.448</b>	km/WPT <b>30.07</b>	Alt Setting <b>30.13</b>	Shipping Track		
Pilot #1 <b>Chuck Gross</b>		Pilot #2		Operator #1 <b>Riley Forsyth</b>		Operator #2									
Base 1 ID <b>TXHB</b>	Location <b>Hebbronville</b>		Rec ID	Ant ID	ARP (m)	Start Time (UTC)	Stop Time (UTC)	GPS Filename	Operator <b>cors</b>	Data					
Area	Flight #		Wpt		Distance		UTC		Dir	Altitude (GPS)	Speed (knots)	Scan Rate	Comments and Conditions	SVs	PDOP
	FGI	Client's	From	To	Begin	End	Start	End							
						15:36:55	15:41:57						Overfly TXHB cors	19	1.5
						15:45:54							s turn	21	1.5
Block A	12		9	1	11.6	0	15:52:20	15:55:07	W	8347	139		cross tie line	21	1.3
	7		1	28	0	39.1	16:02:16	16:11:12	N	8447	142			22	1.2
	8		35	1	49.2	0	16:14:50	16:26:20	S	8529	142			24	1.2
	8		1	10	0	13	16:30:18	16:32:59	N	8505	134		calibration line	24	1.1
	9		1	36	0	50.7	16:39:11	16:51:06	N	8502	140			24	1.1
	10		36	1	50.7	0	16:54:23	17:06:06	S	8505	143			24	1.1
	11		1	6	0	7.2	17:10:01	17:12:28	N	8450	132		off track line aborted	25	1.0
	11		1	36	0	50.7	17:17:19	17:29:31	N	8424	128		reflight	25	1.0
	6		9	1	11.6	0	17:33:35	17:36:38	S	8728	139			22	1.2
	5		1	9	0	11.6	17:39:50	17:42:45	N	8730	142			22	1.2
	4		7	1	8.7	0	17:45:43	17:48:04	S	8695	139			23	1.1
	3		1	7	0	8.7	17:51:56	17:54:07	N	8717	140			23	1.1
	2		7	1	8.7	0	17:57:55	18:00:11	S	8670	142			22	1.1
	1		1	6	0	7.2	18:04:27	18:06:22	N	8694	135			20	1.3
	13		1	16	0	21.7	18:10:52	18:16:01	E	8474	143			20	1.3
						18:16:22							s turn	20	1.2
						18:18:49	18:23:50						overfly TXHB cors	20	1.2

Trajectory and GPS Plots:

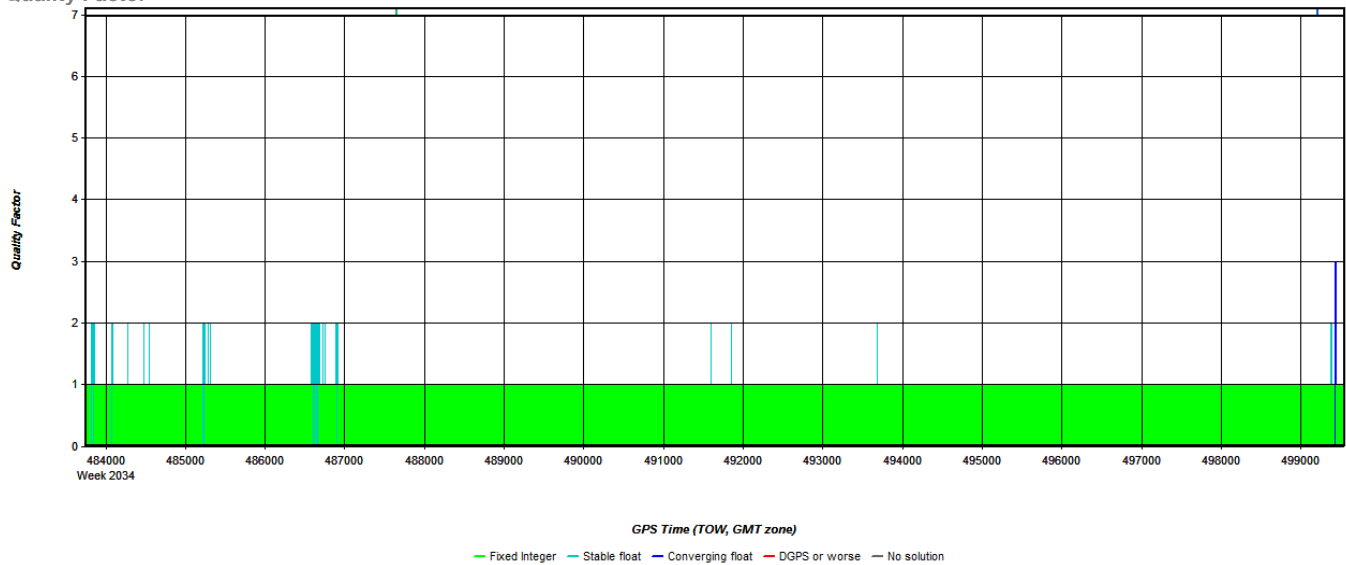


Estimated Accuracy

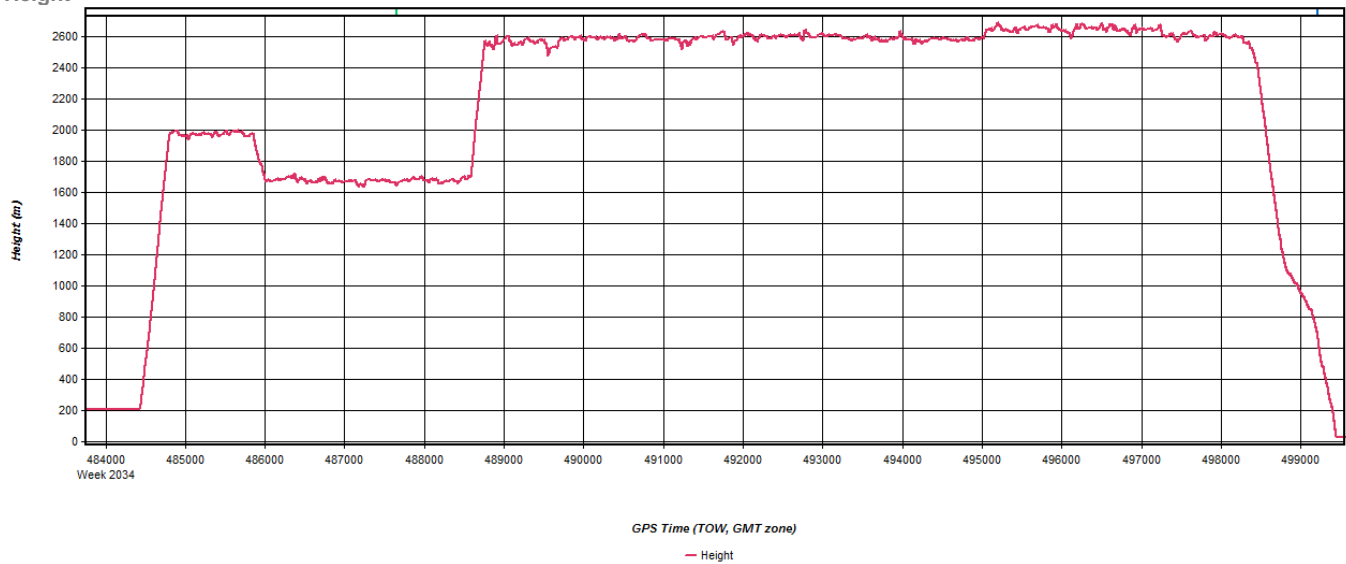


# USGS COLLECTION REPORT

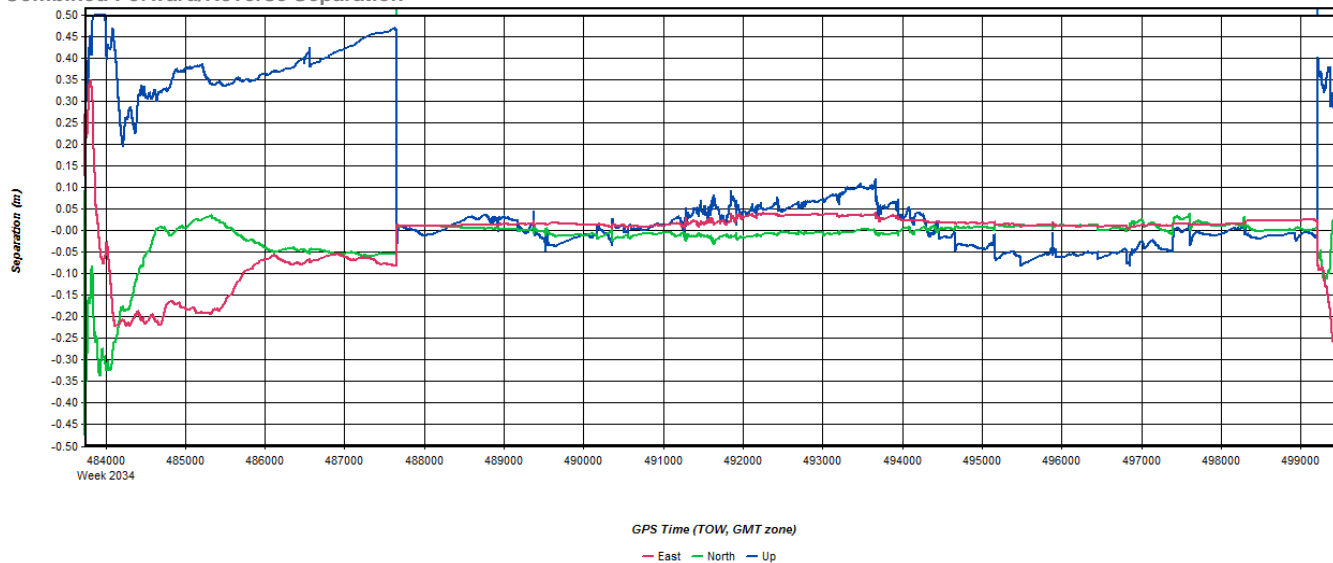
## Quality Factor



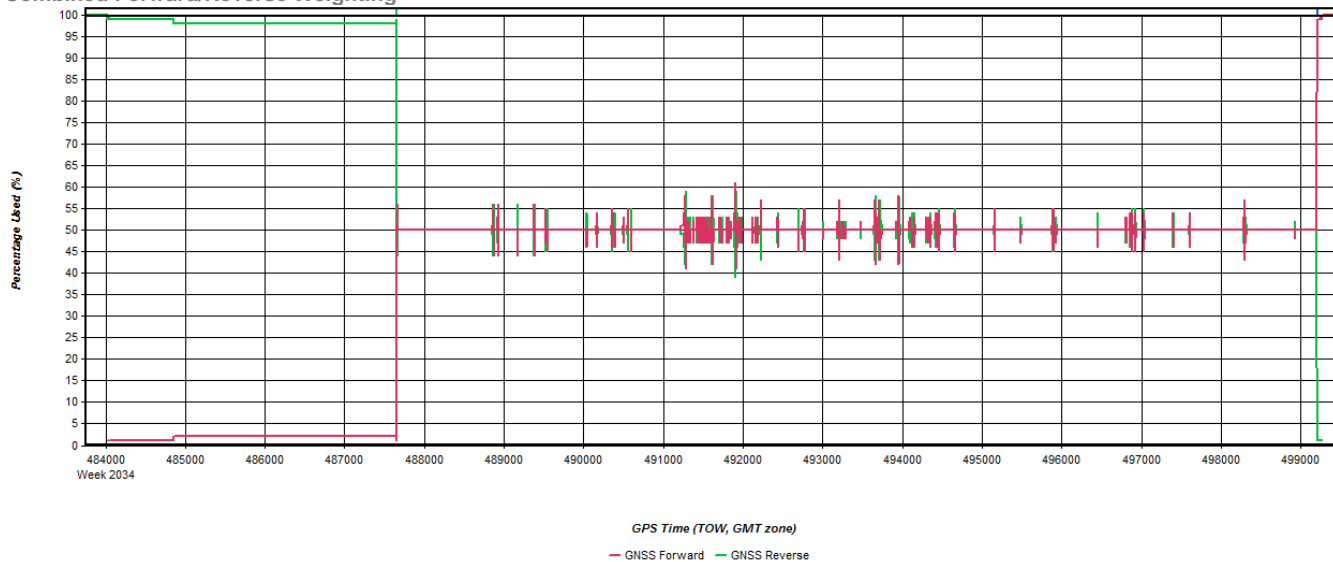
## Height



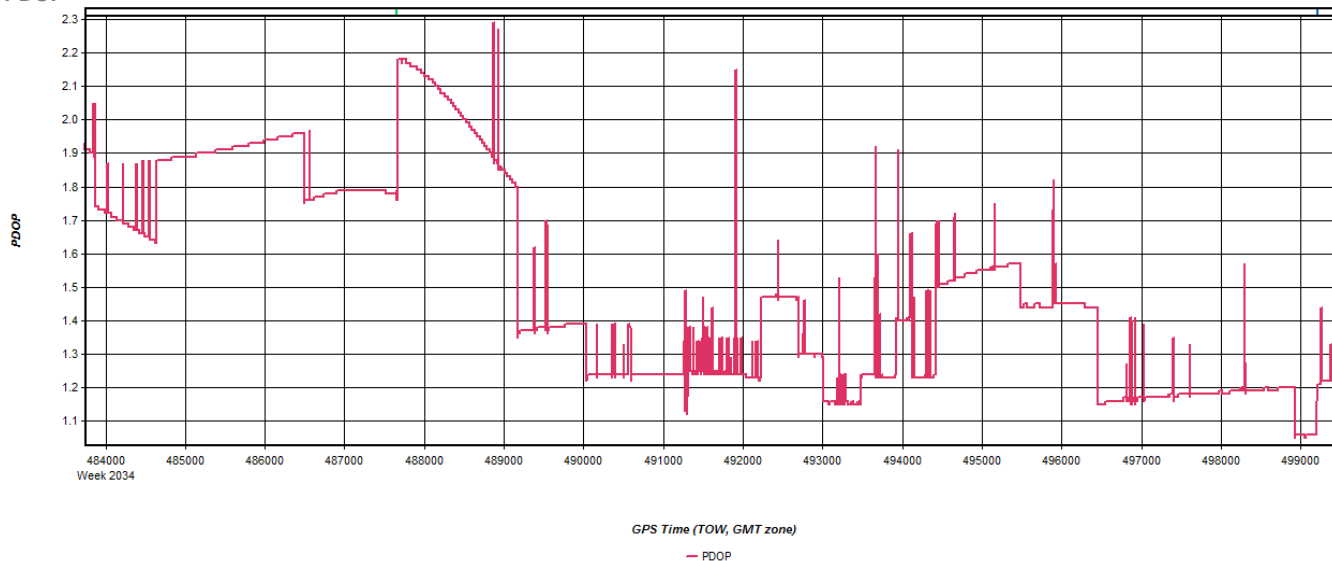
Combined Forward/Reverse Separation



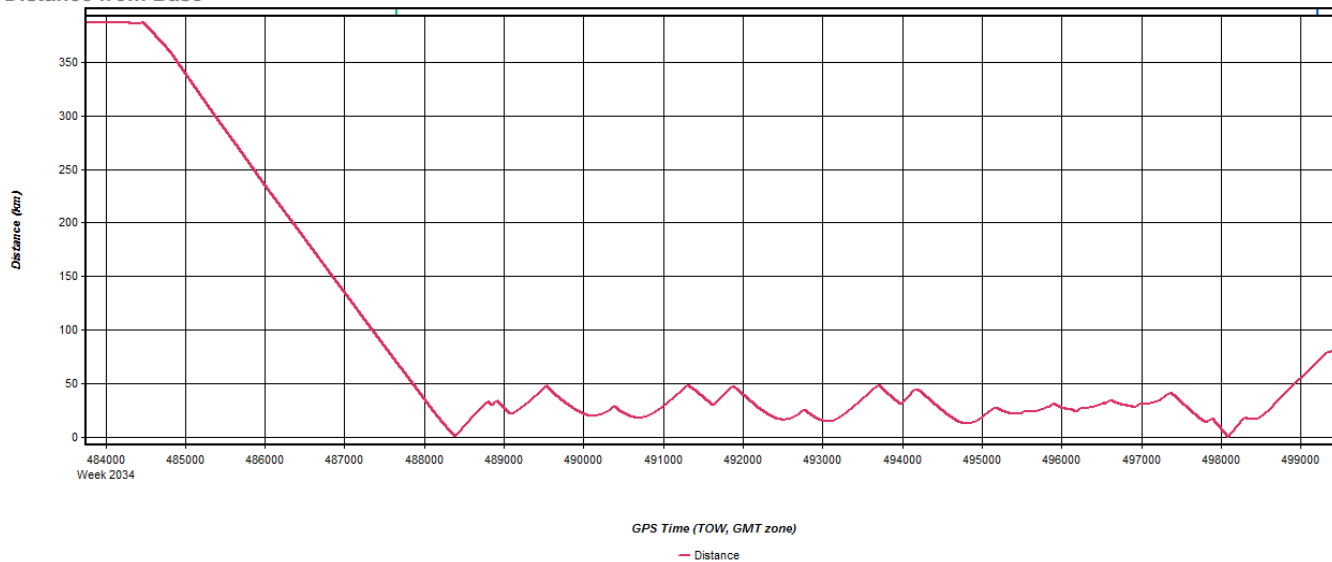
Combined Forward/Reverse Weighting



PDOP



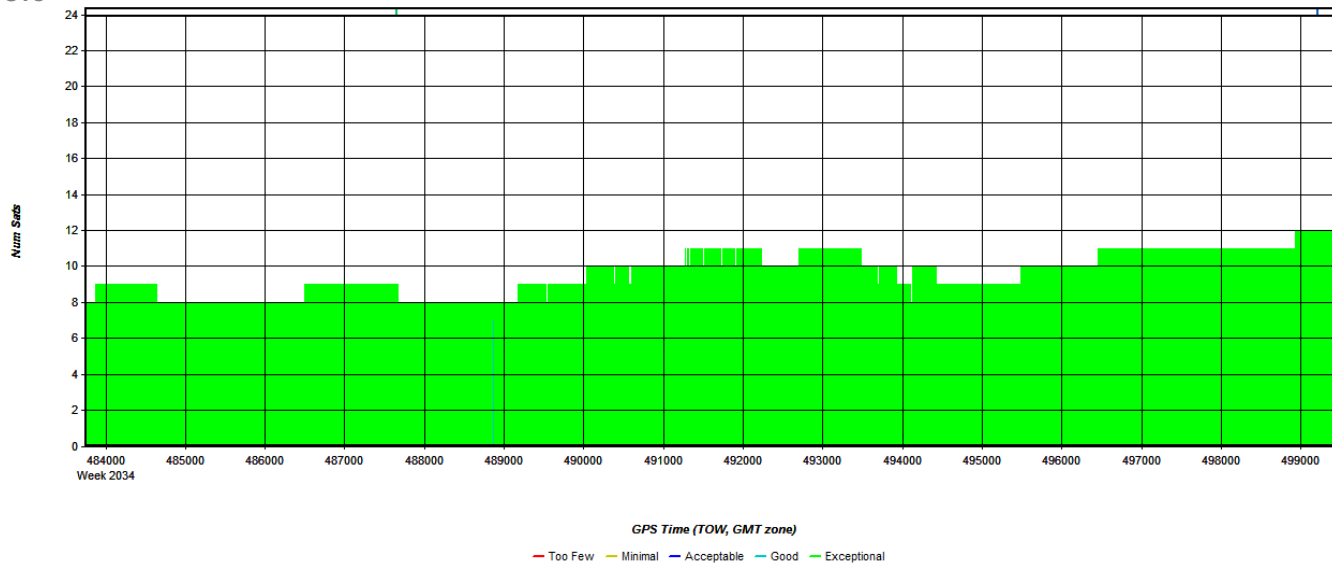
Distance from Base



USGS  
COLLECTION REPORT



SVs



Acquisition and Processing details ----- (January 04, 2019)

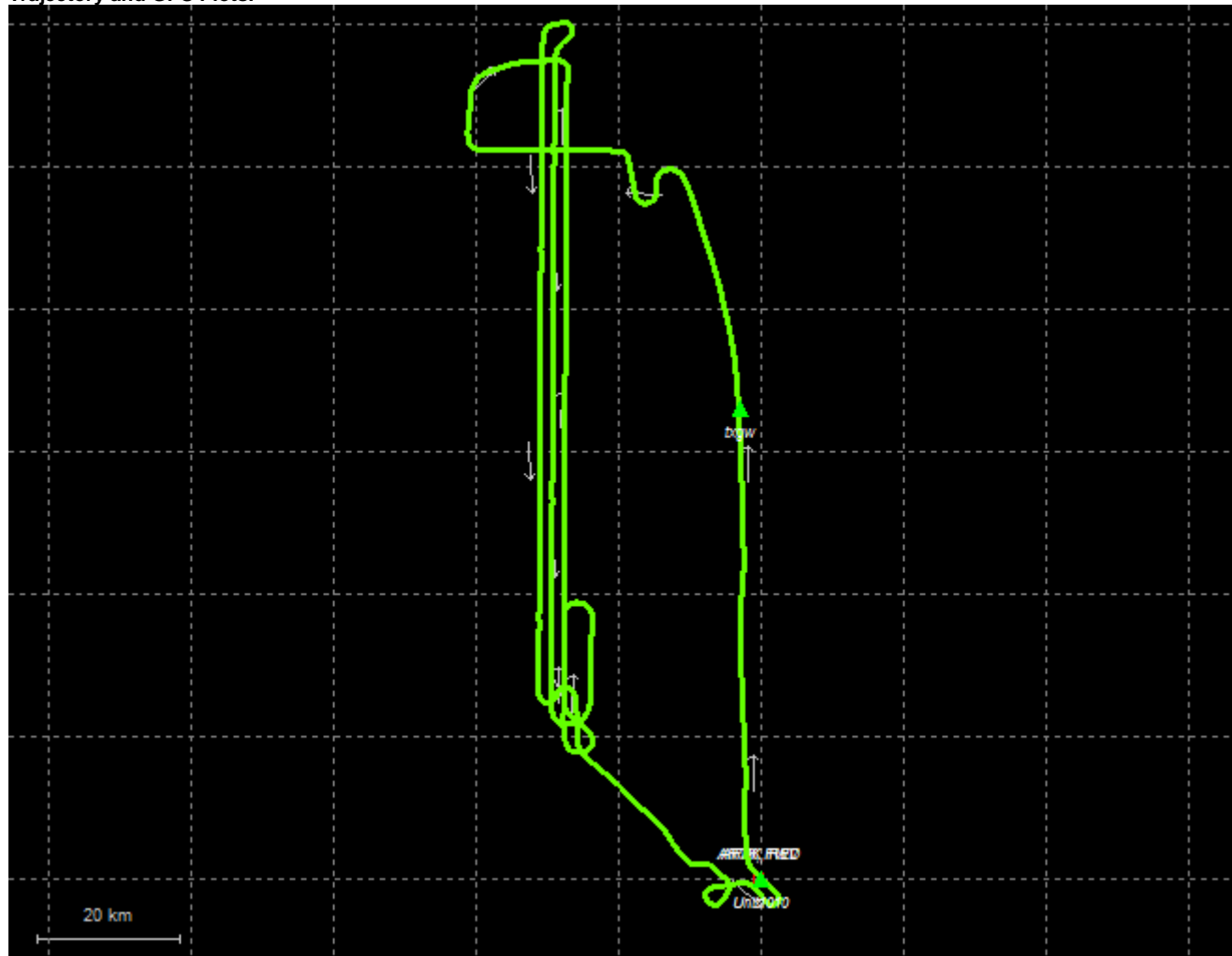
Log: 190104\_130\_33780084\_02

 <b>Fugro USA Land, Inc.</b>	Menu	18.165	Lift Begin			Lift End			Fit	Fit	Hobbs	 <b>ALS</b> Flight Log AC80-44-00-02	
			Airport	Chocks	Hobbs	Airport	Chocks	Hobbs	Duration	Hrs	Hrs		Activity
	1		KALI	20:32	1320.9	KALI	23:01	1322.9	2:28	2.50	2.0		0900-Production
	2												

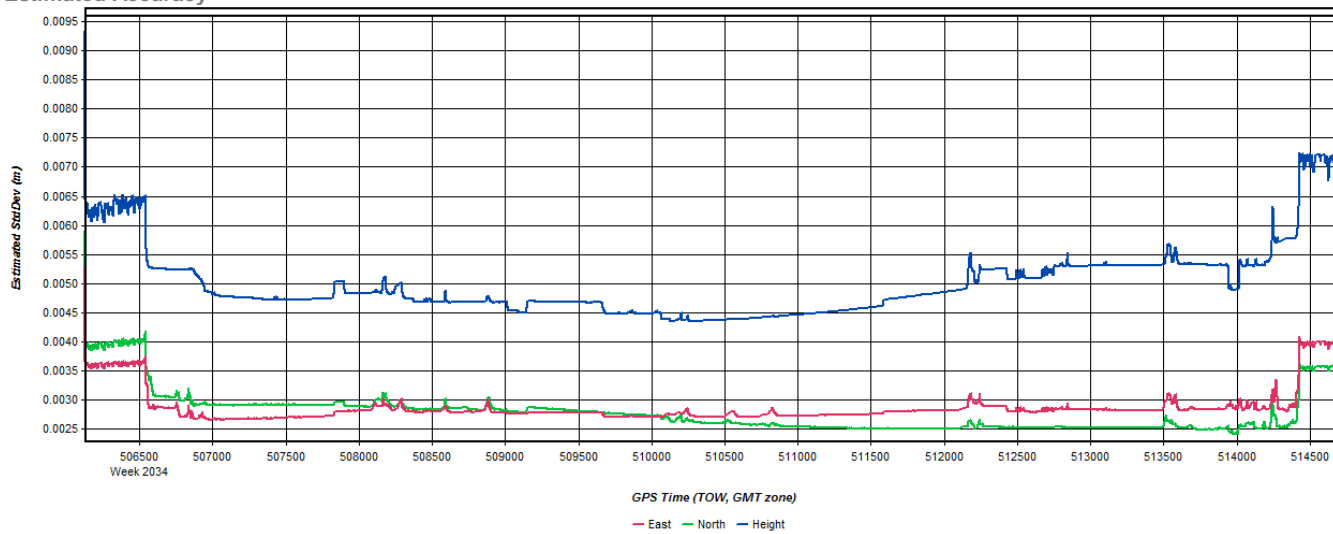
FGI Job # <b>33780084</b>	Project Name <b>Hurricane Harvey ALS80</b>		System <b>ALS80</b>	Unit <b>8130</b>	IMU <b>uIRS</b>	PIA <b>4</b>	SW1	SW2-Gain	Aper	AutoScan	Ground Temp °C <b>22.0</b>	Min Range Gate <b>7322</b>	Data Logger Drive <b>LG101</b>		
Flight Date <b>4-Jan-19</b>	GPS Day <b>19-004</b>	Lift <b>2</b>	Sun*	Solar Times (UTC)		Laser Power <b>96%</b>	Pattern <b>Triangle</b>	Flying Temp °C <b>10.0</b>	Max Range Gate <b>8830</b>	Down load Drive <b>NS1TB#13</b>		Shipping Track			
Mission ID (ymmdd_Sen_Job_Lift) <b>190104_130_33780084_02</b>		Aircraft <b>N97HC</b>	Airport ID <b>KALI</b>	FMS <b>CCNS 8</b>	UTC <b>-6</b>	AMT (ft) <b>7,900</b>	Speed <b>150</b>	Scan Hz <b>34.0</b>	Pulse Rate <b>443</b>	FOV <b>1.448</b>	km/WPT <b>30.06</b>	Alt Setting <b>30.04</b>			
Pilot #1 <b>Chuck Gross</b>		Pilot #2		Operator #1 <b>Riley Forsyth</b>		Operator #2									
Base 1 ID <b>100</b>	Location <b>Alice, TX</b>		Rec ID <b>GR3-1</b>	Ant ID <b>GR3-1</b>	ARP (m) <b>1.8</b>	Start Time (UTC)		Stop Time (UTC)		GPS Filename <b>Unit10104u</b>	Operator <b>Riley Forsyth</b>		Data <b>With AB</b>		
Area	Flight #		Wpt		Distance		UTC		Fit	Altitude	Speed	Scan	Comments and Conditions	SVs	PDOP
	FGI	Client's	From	To	Begin	End	Start	End	Dir	(GPS)	(knots)	Rate			
							20:35:48	20:41:39					Ground static at KALI	19	1.3
							20:59:18	21:04:19					overfly TXGW cors	19	1.2
							21:07:59						s turn	20	1.1
Block B	38		46	36	65.2	50.7	21:12:28	21:15:44	W	7977	140		cross tie line	20	1.1
	36		58	1	82.5	0	21:21:50	21:40:41	S	7911	144			19	1.1
	36		1	7	0	8.7	21:45:52	21:48:01	N	7956	146		calibraion line	23	1.1
	35		1	60	0	85.4	21:54:44	22:14:35	N	7938	144			21	1.2
	34		60	1	85.4	0	22:18:12	22:37:48	S	7846	138			22	1.2
							22:37:59						s turn	22	1.4
							22:53:34	22:58:34					Ground static at KALI	21	1.3



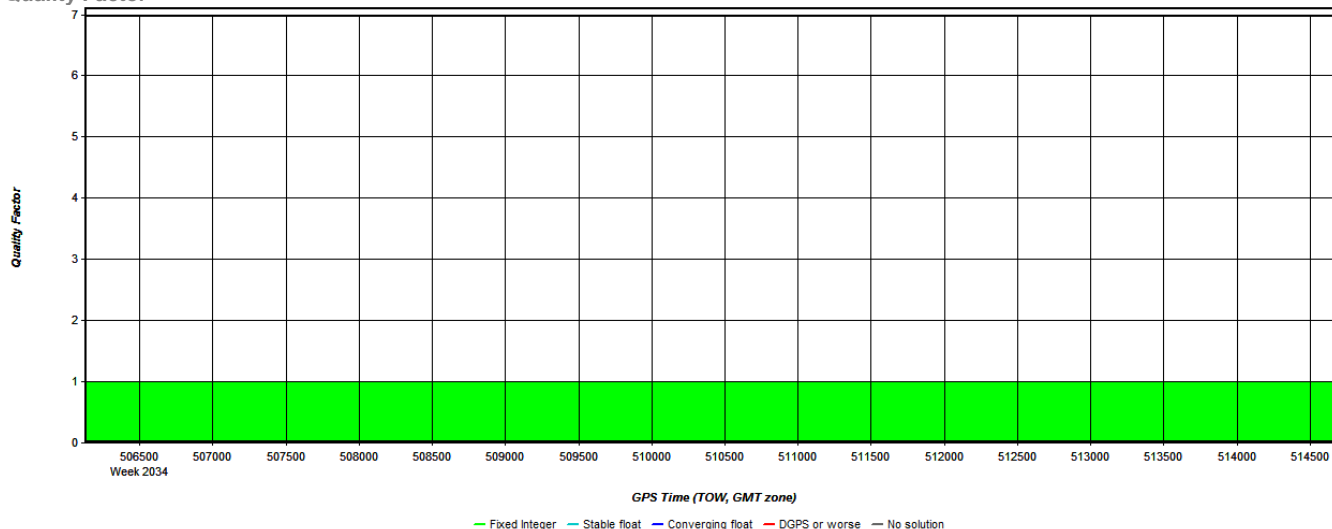
Trajectory and GPS Plots:



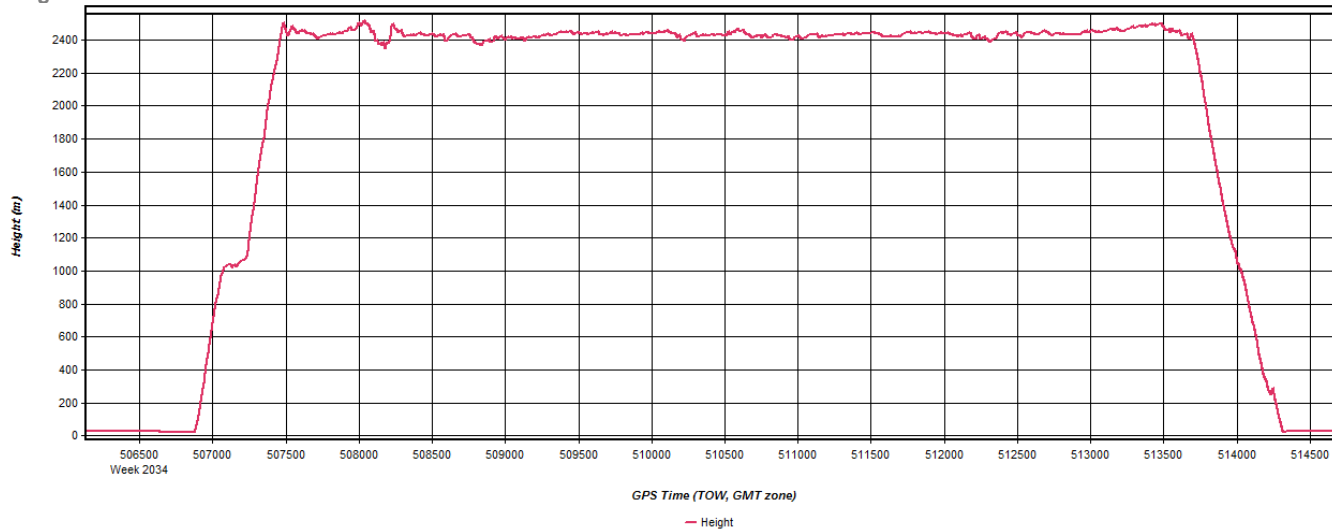
Estimated Accuracy



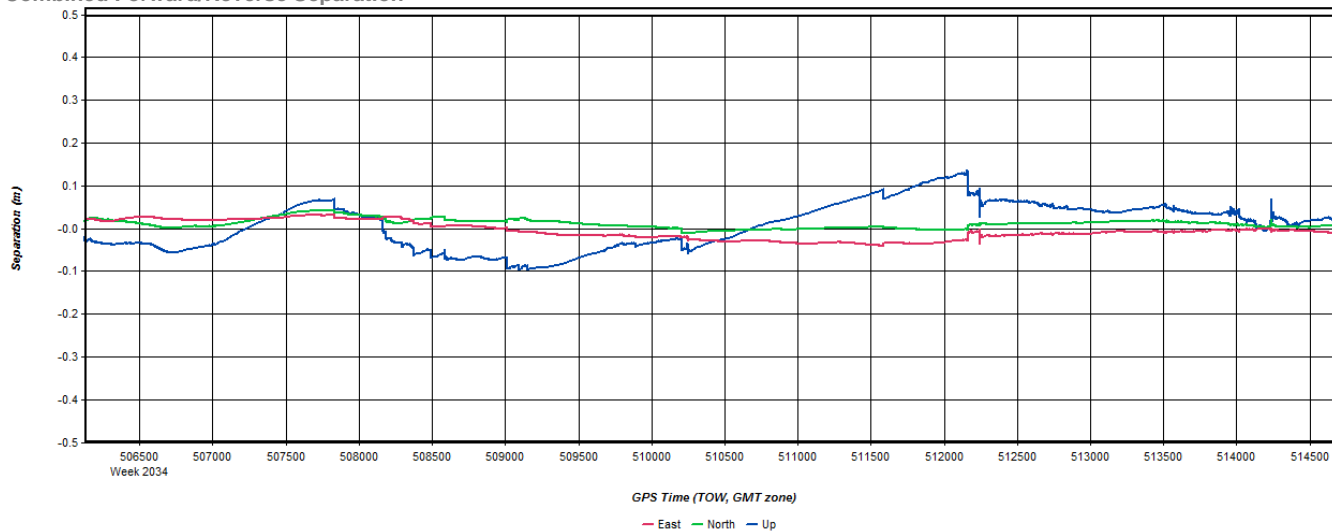
Quality Factor



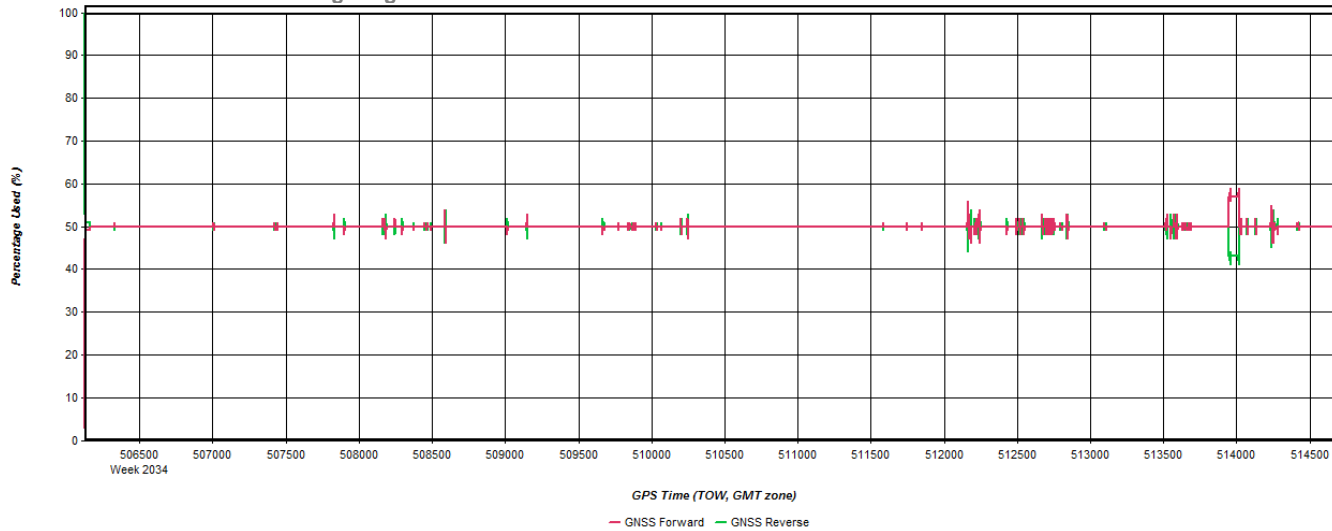
Height



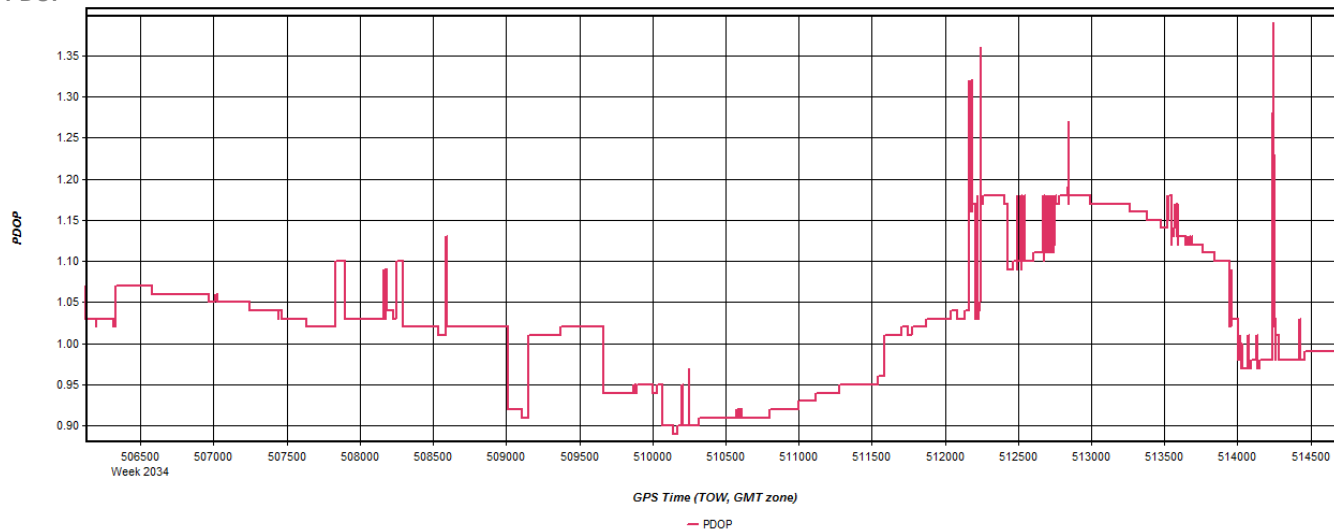
Combined Forward/Reverse Separation



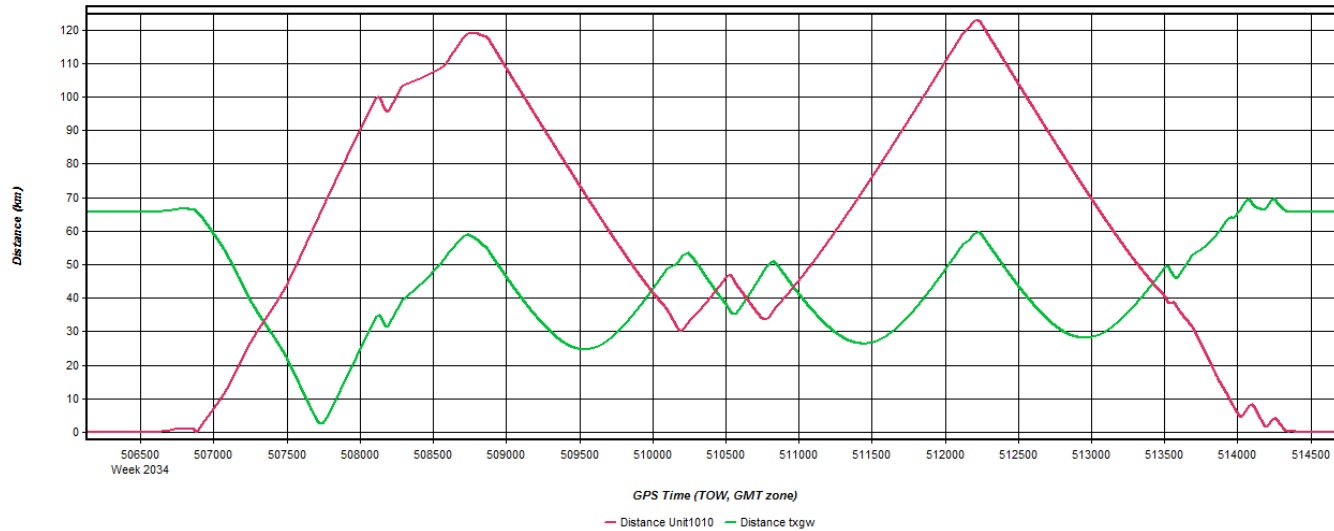
Combined Forward/Reverse Weighting



PDOP

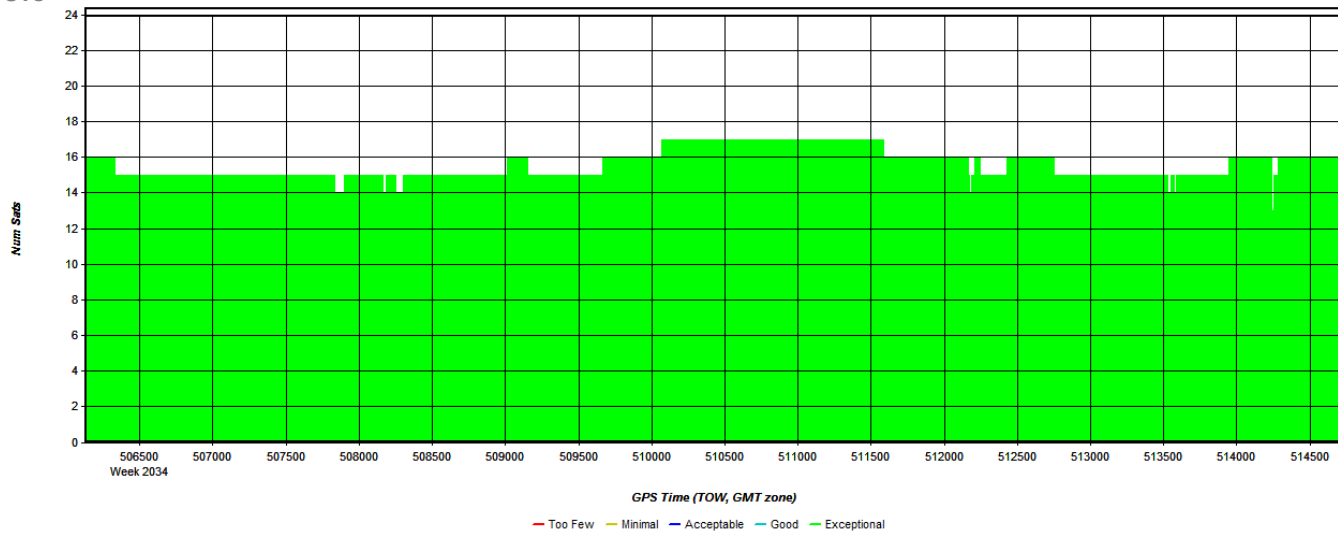


Distance from Base





SVs



**USGS  
COLLECTION REPORT**



**Acquisition and Processing details ----- (January 05, 2019)**

Log: 190105\_118\_33780084\_03

	Menu	18.165	Lift Begin			Lift End			Flt Duration	Flt Hrs	Hobbs Hrs	Activity
			Airport	Chocks	Hobbs	Airport	Chocks	Hobbs				
	1		KG TU	14:52	2932.8	KT82	18:44	2936.3	3:52	3:75	3.5	0900-Production
	2											
3												

**ALS**  
Flight Log  
AC80-44-00-02

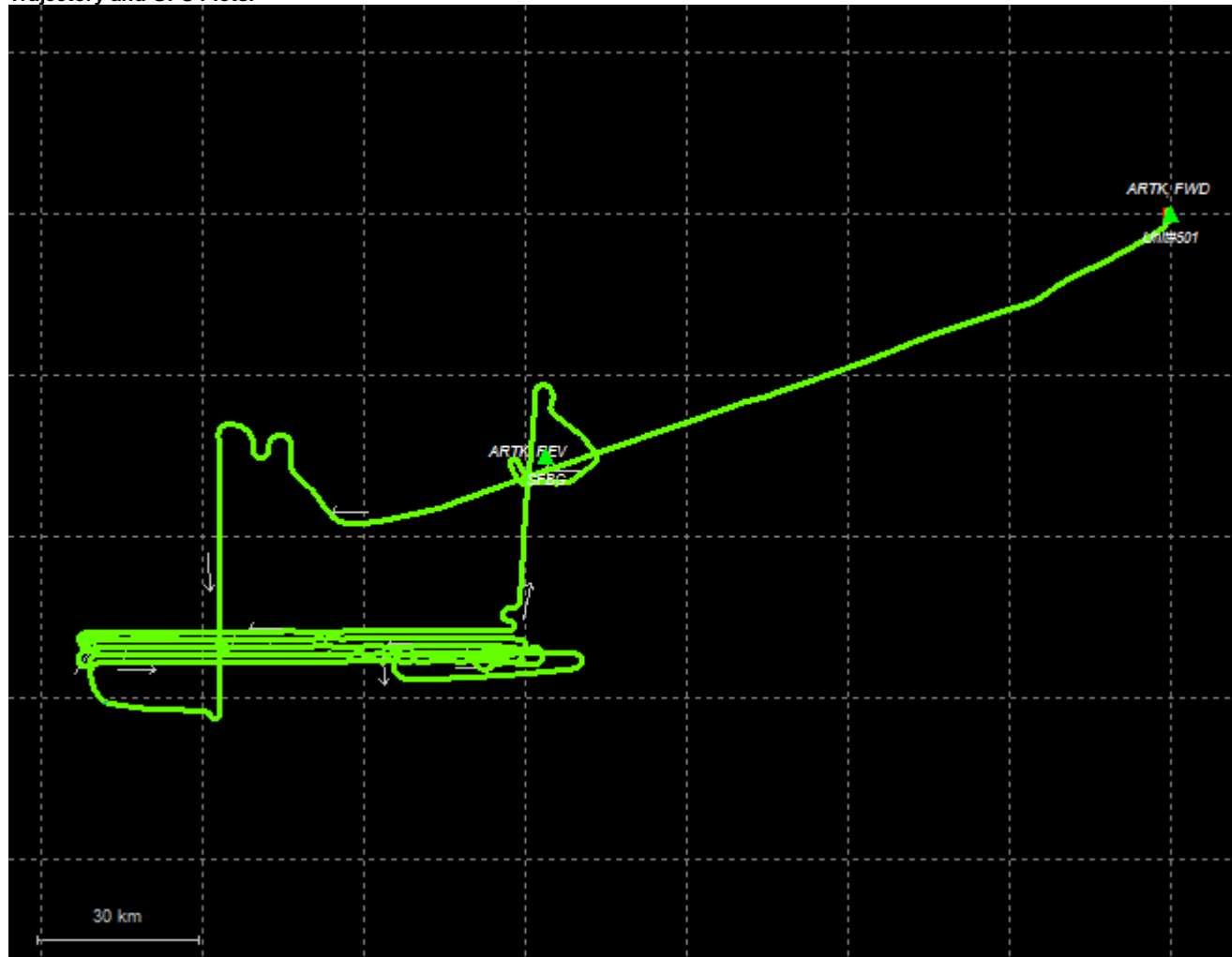
FGI Job # <b>33780084</b>	Project Name <b>JSGS Disaster Recovery Harvey Fina</b>			System <b>ALS80</b>	Unit <b>118</b>	IMU <b>uRS</b>	PIA <b>3</b>	SW1 <b>-</b>	SW2-Gain <b>-</b>	Aper <b>60°</b>	AutoScan <b>Yes</b>	Ground Temp °C <b>6.0 2.0</b>	Min Range Gate <b>6244</b>	Data Logger Drive <b>MM70-08</b>
Flight Date <b>5-Jan-19</b>	GPS Day <b>19-005</b>	Lift <b>3</b>		Sun° <b>-</b>	Solar Times (UTC) <b>-</b>	Laser Power <b>100%</b>	Pattern <b>Triangle</b>	Flying Temp °C <b>10.0</b>	Max Range Gate <b>8323</b>	Down load Drive <b>AP1.5TB#19</b>				
Mission ID (ymmdd_Sen_Job_Lift) <b>190105_118_33780084_03</b>	Aircraft <b>N8131</b>	Airport ID <b>KG TU</b>	FMS <b>CCNS 3</b>	UTC <b>-6</b>	AMT (ft) <b>7,550</b>	Speed <b>150</b>	Scan Hz <b>35.0</b>	Pulse Rate <b>352,000</b>	FOV <b>42°</b>	kmWPT <b>1.384</b>	Altm Setting <b>30.18 30.16</b>		Shipping Track <b>7741 2239 7959</b>	

Plot #1 <b>Kevin Ellington</b>	Plot #2 <b>-</b>	Operator #1 <b>Chris Acuña</b>	Operator #2 <b>-</b>
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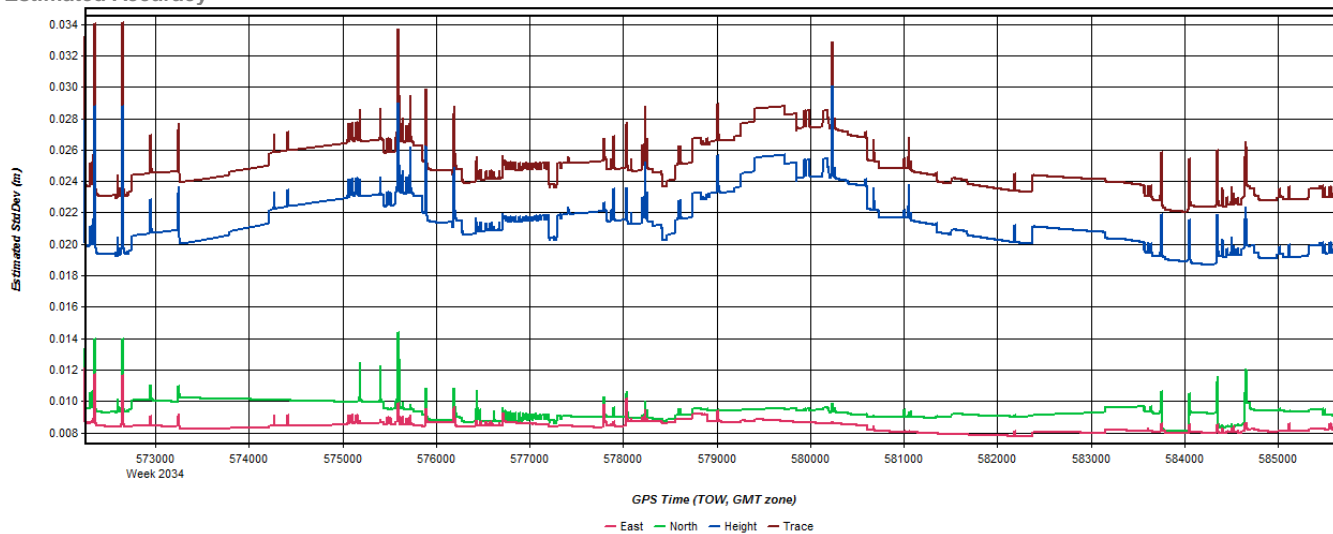
Base 1 ID <b>FEDI 1115</b>	Location <b>KG TU</b>	Rec ID <b>GR3#5</b>	Ant ID <b>GR3#5</b>	ARP (m) <b>1.8</b>	Start Time (UTC) <b>05-Jan-19 14:22</b>	Stop Time (UTC) <b>06-Jan-19 00:05</b>	GPS Filename <b>Unit#50105o</b>	Operator <b>Chris Acuña</b>	Data <b>With AB</b>
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Area	Flight #		Wpt		Distance		UTC		Flt Dir	Altitude (GPS)	Speed (knots)	Scan Rate	Comments and Conditions	SVs	PDOP
	FGI	Client's	From	To	Begin	End	Start	End							
													Aspen GPS Tracker is "Off"		
								14:57:36	15:02:36				5 Min GND static alignment at KG TU	19	1.2
								15:37:37	15:42:37				5 Min acquisition of CORS KT82	17	1.5
								15:50:55	15:53:21				S-Turn in flight alignment	20	1.1
Block_G	33		31	1	41.5	0	15:56:44	16:05:57	177	9400	143	-	Crossing line; ALS Range measurement warning	20	1.1
	8		1	52	0	70.6	16:14:11	16:30:07	86	8950	148	-		21	1.2
	9		52	1									Leican & CCNS out of sync, aborted line, reset all CCNS connections		
	9		52	1	70.6	0	16:53:00	17:09:18	266	8993	144	-		28	1.0
	9		1	15	0	19.4	17:12:56	17:17:09	86	9215	145	-	Calibration line	29	1.0
	10		1	52	0	70.6	17:25:39	17:41:29	85	9210	146	-		27	1.1
	11		52	1	70.6	0	17:44:00	18:00:05	264	8985	145	-		25	1.1
	12		1	52	0	70.6	18:03:29	18:19:14	85	9025	146	-	ALS Range measurments warning	25	1.1
								18:19:42	18:21:45				S-Turn post in flight alignment	24	1.1
								18:24:22	18:29:22				5 Min post acquisition of CORS KT82	25	2.2

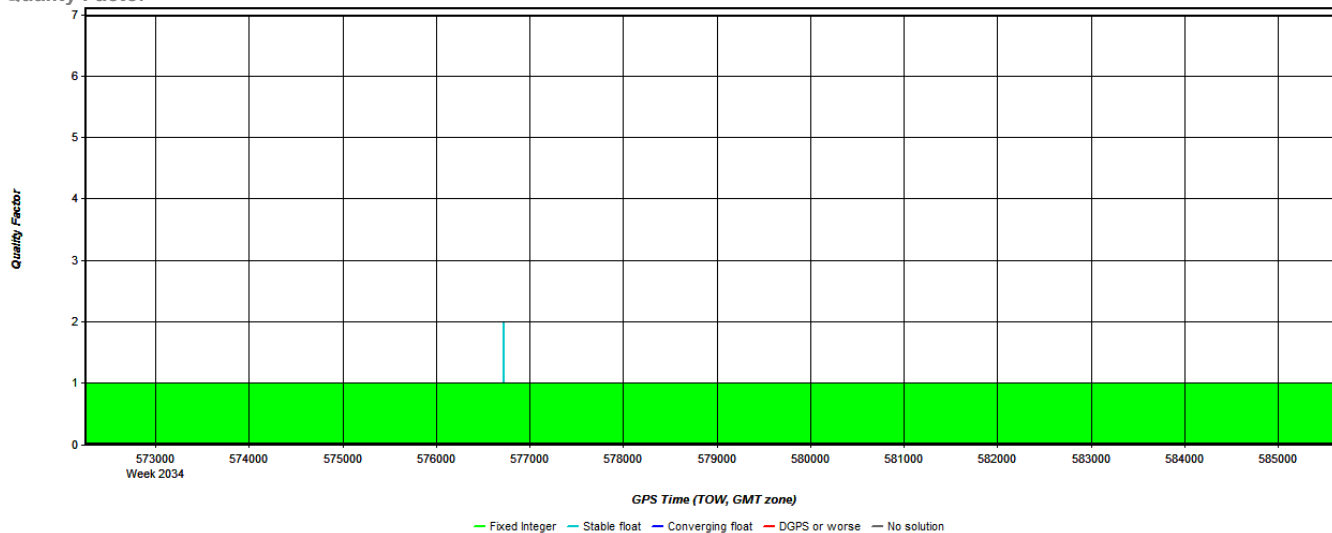
Trajectory and GPS Plots:



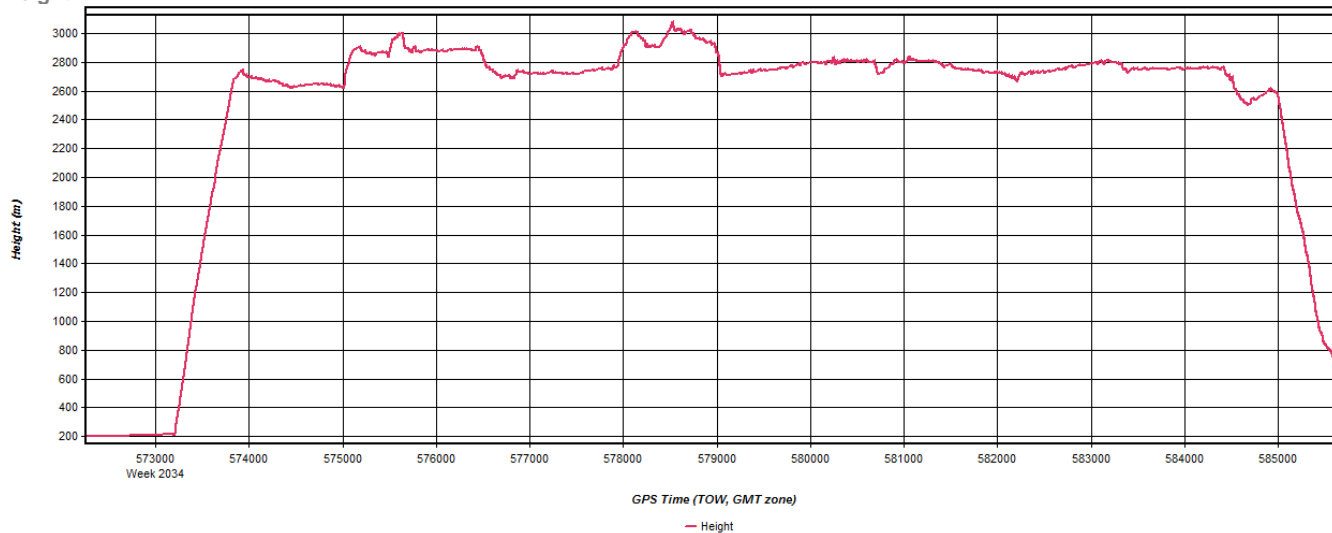
Estimated Accuracy



Quality Factor

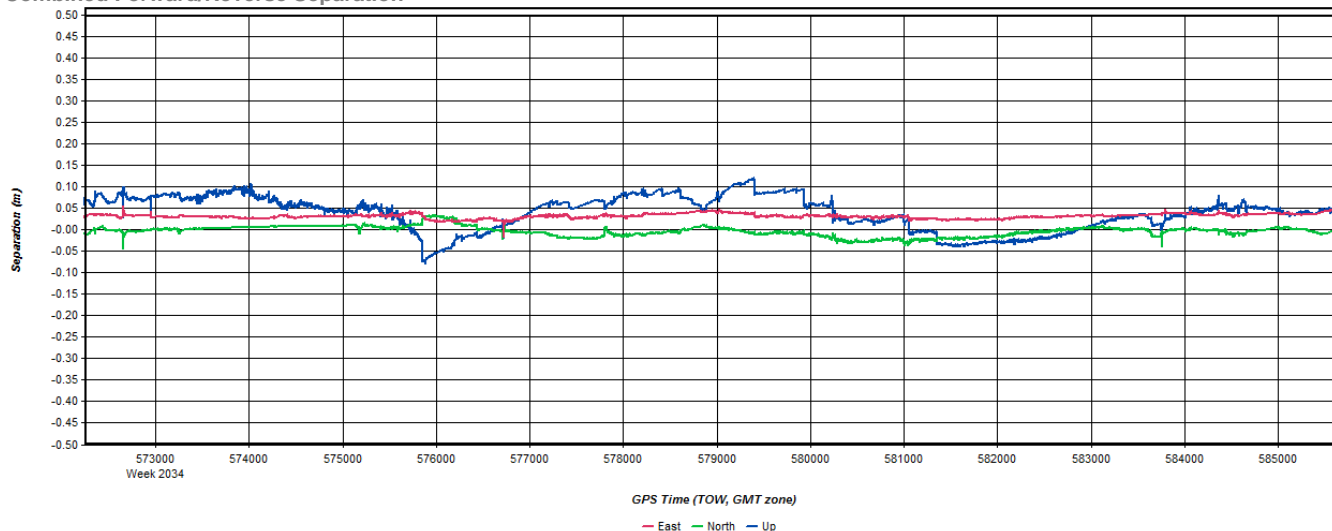


Height

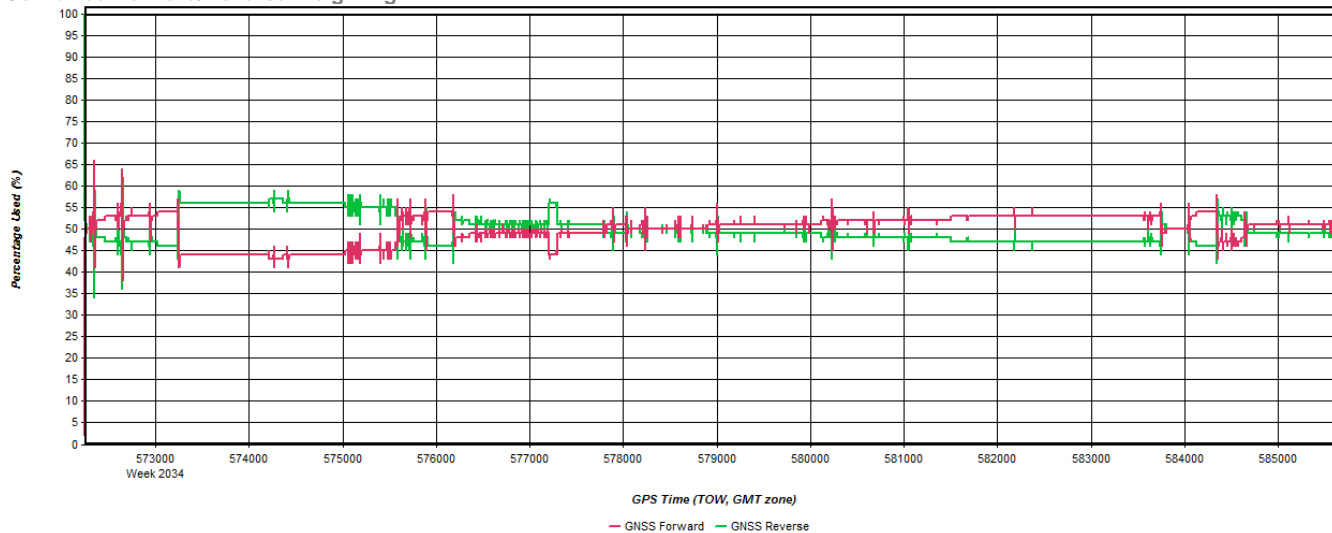




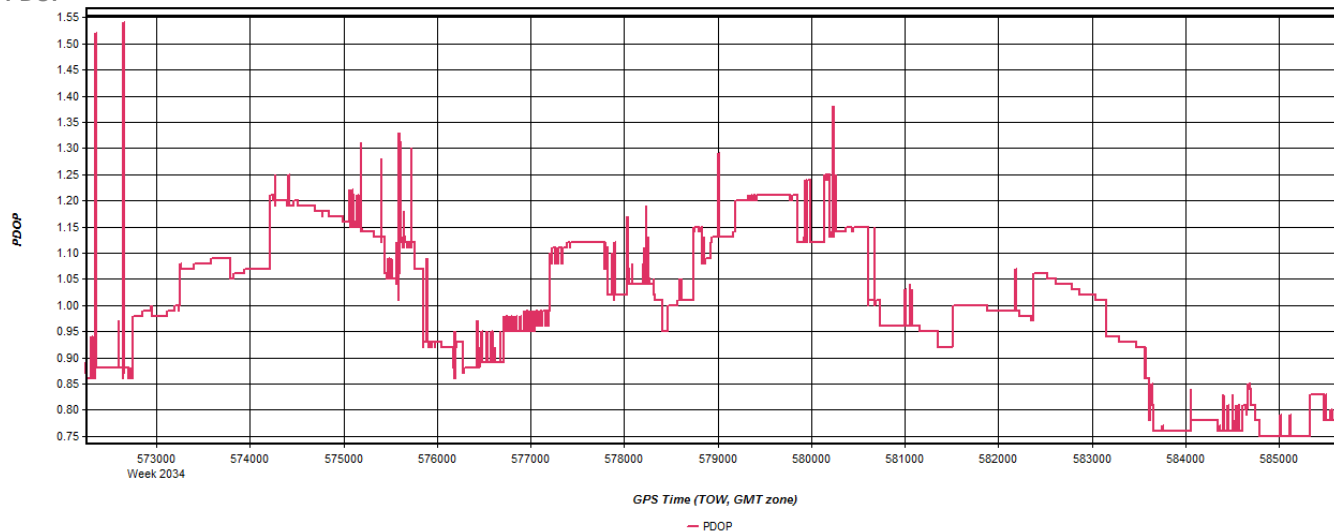
Combined Forward/Reverse Separation



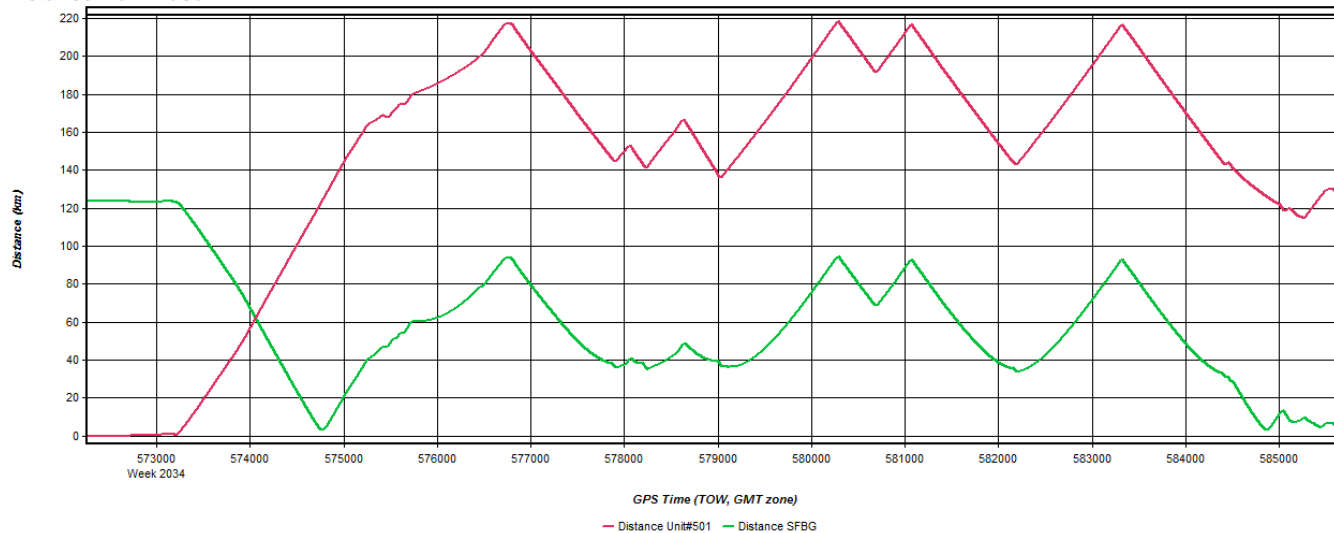
Combined Forward/Reverse Weighting



PDOP

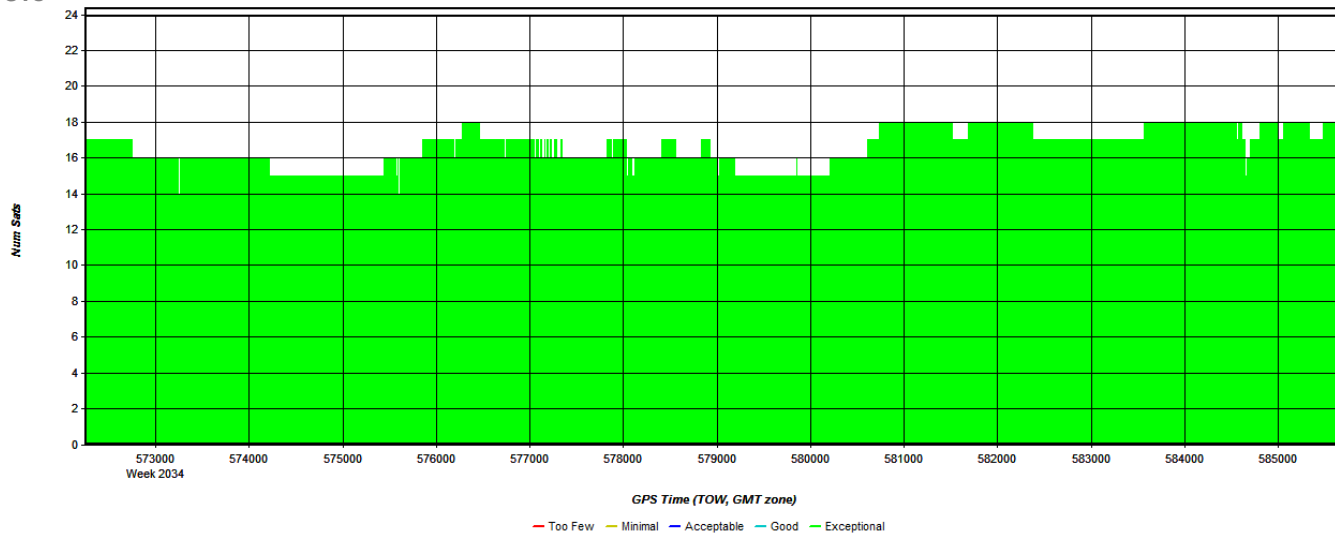


Distance from Base





SVs





Acquisition and Processing details ----- (January 05, 2019)

Log: 190105\_118\_33780084\_04

	Menu	18.165	Lift Begin			Lift End			Flt Duration	Flt Hrs	Hobbs Hrs	Activity
			Airport	Chocks	Hobbs	Airport	Chocks	Hobbs				
	1		KT82	19:53	2936.3	KG TU	23:56	2939.5	4:03	4.00	3.2	0900-Production
	2											
3												

ALS  
Flight Log  
AC80-44-00-02

FGI Job # <b>33780084</b>	Project Name <b>JSGS Disaster Recovery Harvey Fina</b>		System <b>ALS80</b>	Unit <b>118</b>	IMU <b>uIRS</b>	PIA <b>3</b>	SW1 <b>-</b>	SW2-Gain <b>-</b>	Aper <b>60°</b>	AutoScan <b>Yes</b>	Ground Temp °C <b>21.0</b>	Min Range Gate <b>6244</b>	Data Logger Drive <b>MM70-08</b>
Flight Date <b>5-Jan-19</b>	GPS Day <b>19-005</b>	Lift <b>4</b>		Sun° <b>-</b>	Solar Times (UTC) <b>-</b>		Laser Power <b>100%</b>	Pattern <b>Triangle</b>	Flying Temp °C <b>10.0</b>		Max Range Gate <b>8323</b>	Down load Drive <b>AP1.5TB#19</b>	
Mission ID (ymmdd_Sen_Job_Lift) <b>190105_118_33780084_04</b>		Aircraft <b>N8131</b>	Airport ID <b>KG TU</b>	FMS <b>CCNS 3</b>	UTC <b>-6</b>	AMT (ft) <b>7,550</b>	Speed <b>150</b>	Scan Hz <b>35.0</b>	Pulse Rate <b>352,000</b>	FOV <b>42°</b>	km/WPT <b>1.384</b>	Altm Setting <b>30.11</b>	Shipping Track <b>7741 2239 7959</b>

Plot #1 <b>Kevin Ellington</b>	Plot #2 <b>-</b>	Operator #1 <b>Chris Acuña</b>	Operator #2 <b>-</b>
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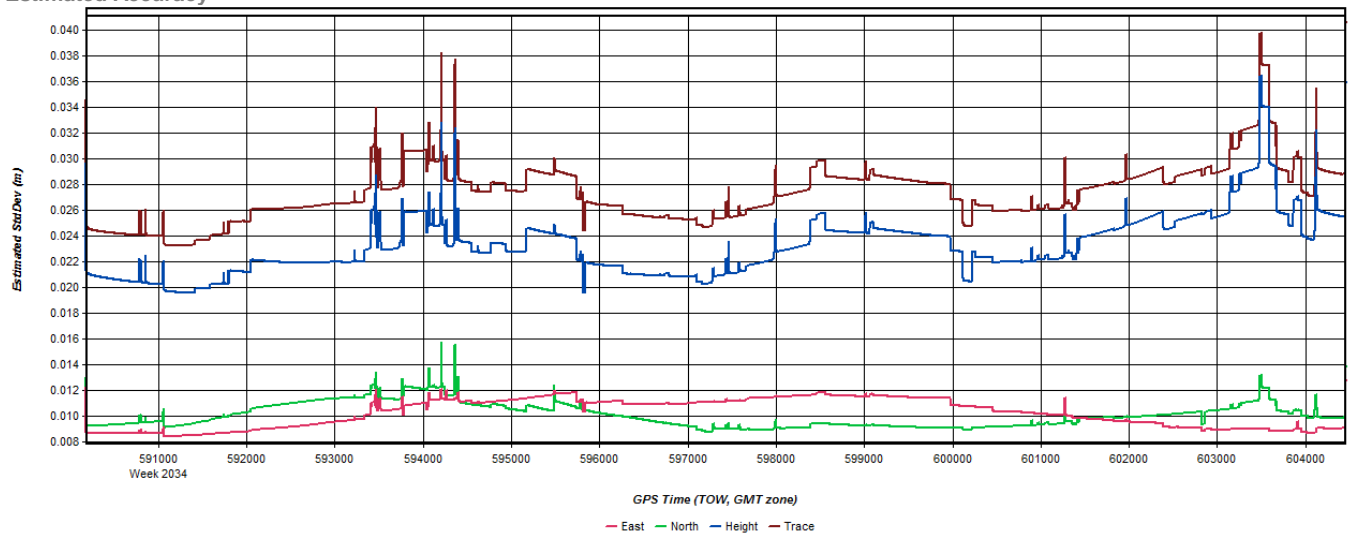
Base 1 ID <b>FEDI 1115</b>	Location <b>KG TU</b>	Rec ID <b>GR3#5</b>	Ant ID <b>GR3#5</b>	ARP (m) <b>1.8</b>	Start Time (UTC) <b>05-Jan-19 14:22</b>	Stop Time (UTC) <b>07-Jan-19 00:05</b>	GPS Filename <b>Unit#50105o</b>	Operator <b>Chris Acuña</b>	Data <b>With AB</b>
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Area	Flight #	Wpt	Distance		UTC		Dir	Altitude (GPS)	Speed (knots)	Scan Rate	Comments and Conditions	SVs	PDOP
			From	To	Begin	End							
											Aspen GPS Tracker is "Off"		
											19:56:47 20:01:47 5 Min GND static alignment at KT82 CORS	20	1.3
											20:22:05 20:23:54 S-Turn in flight alignment	20	1.2
Block_G	33	31 5	41.5	5.5	20:27:52	20:36:47	175	9420	144	-	Crossing Line	19	1.3
	13	1 52	-	-	20:44:09	-	84	9000	147	-	False start	17	1.4
	-	- -	-	-	-	-	-	-	-	-		20	1.1
	14	52 1	70.6	0	21:08:04	21:23:41	265	8990	143	-		19	1.1
	14	1 15	0	19.4	21:27:10	21:31:19	84	9010	144	-	Calibration Line	20	1.3
	15	1 52	0	70.6	21:40:08	21:56:02	83	8995	147	-		21	1.2
	16	52 1	70.6	0	21:58:30	22:14:39	265	8975	145	-		20	1.3
	17	1 52	0	70.6	22:17:55	22:34:02	84	9120	148	-		20	1.4
	18	52 1	70.6	0	22:36:38	22:52:31	265	9050	138	-		19	1.3
	13	1 52	0	70.6	22:55:11	23:11:21	84	9015	141	-	Re-Fit of line 13	19	1.4
											23:12:17 23:13:48 S-Turn post in flight alignment	20	1.2
											23:16:37 23:21:37 5 Min post acquisition of CORS KT82	20	1.2
											23:48:39 23:53:39 5 Min GND static alignment at KG TU	21	1.3

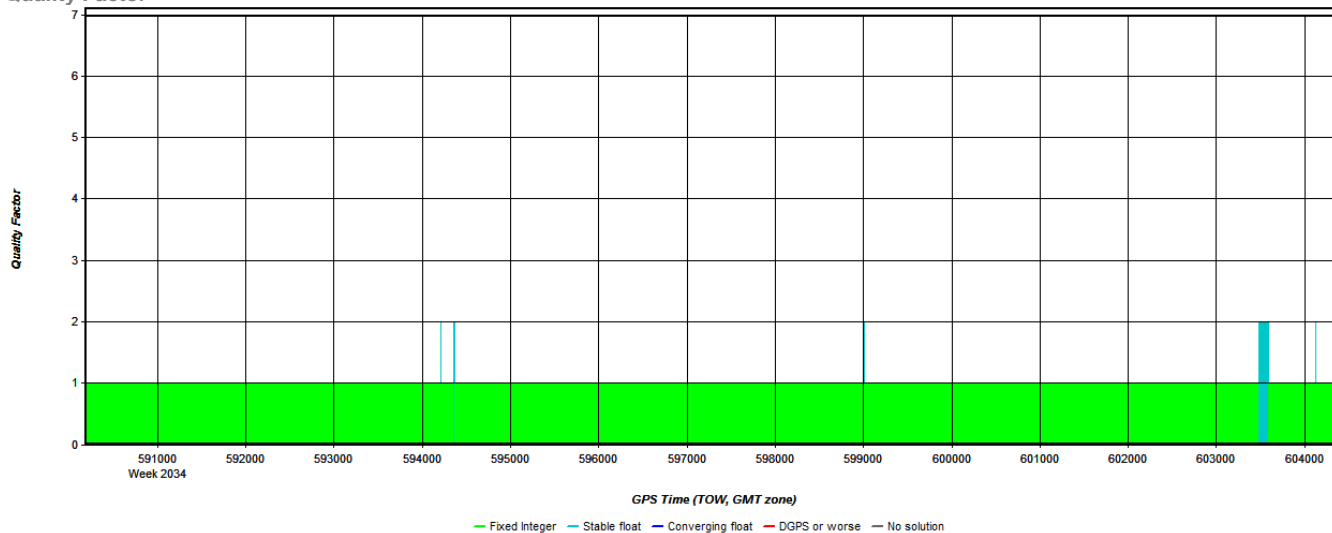
Trajectory and GPS Plots:



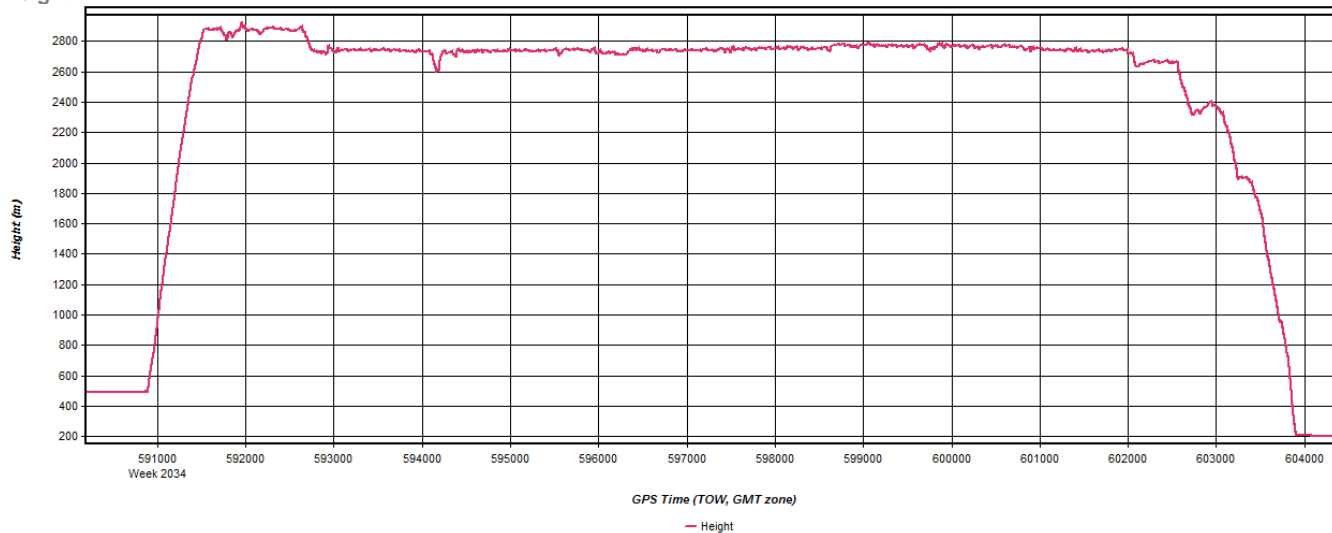
Estimated Accuracy



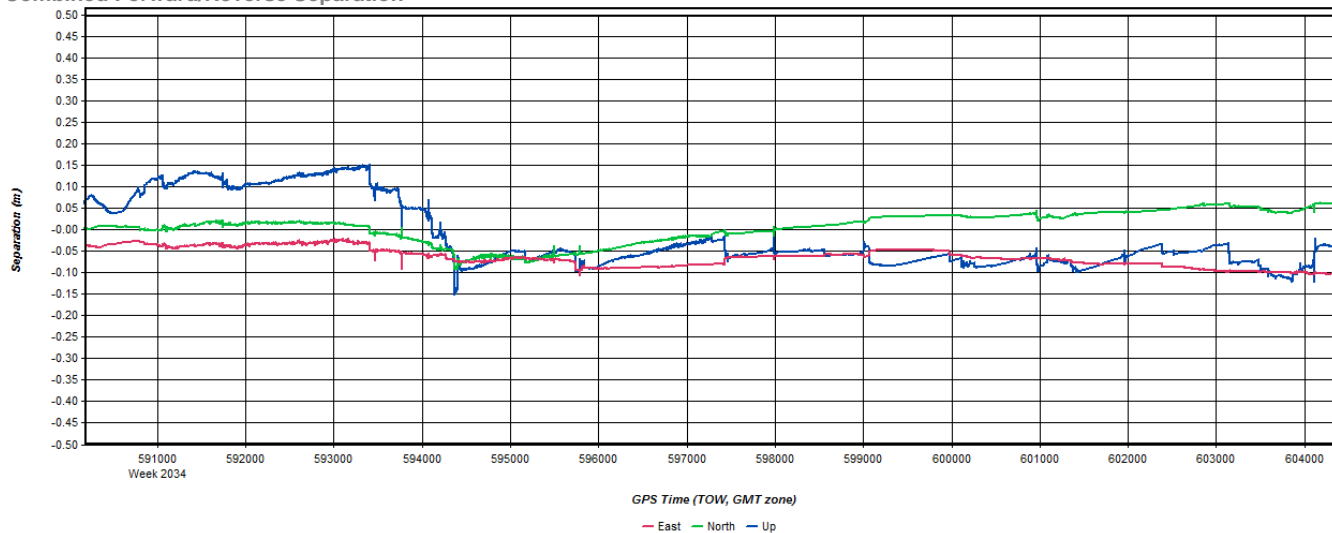
Quality Factor



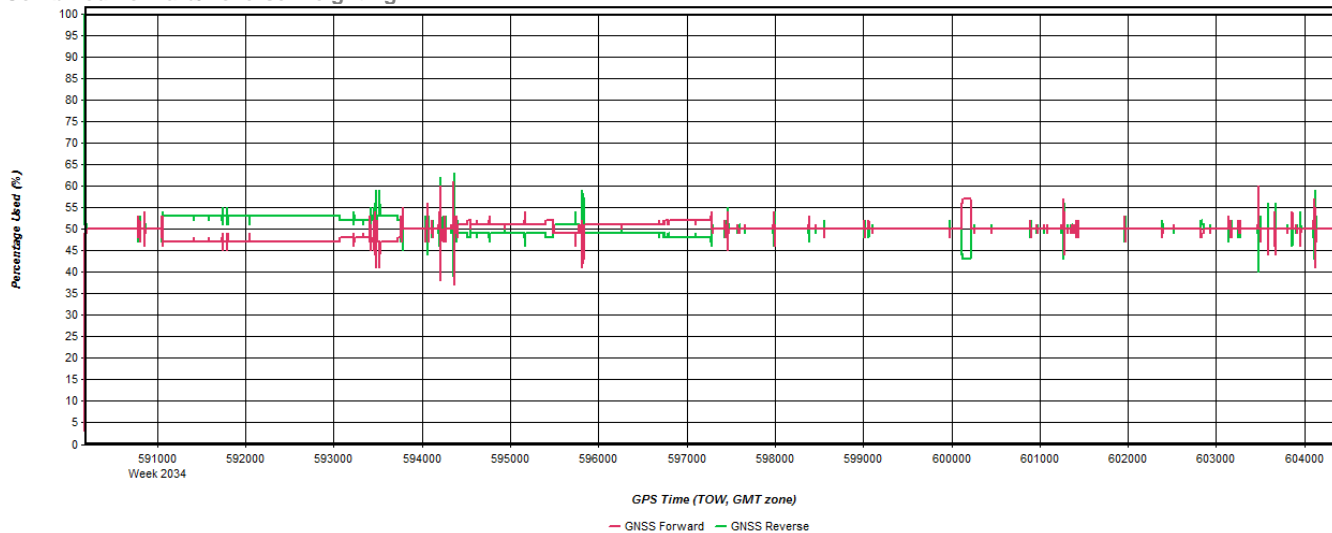
Height



Combined Forward/Reverse Separation

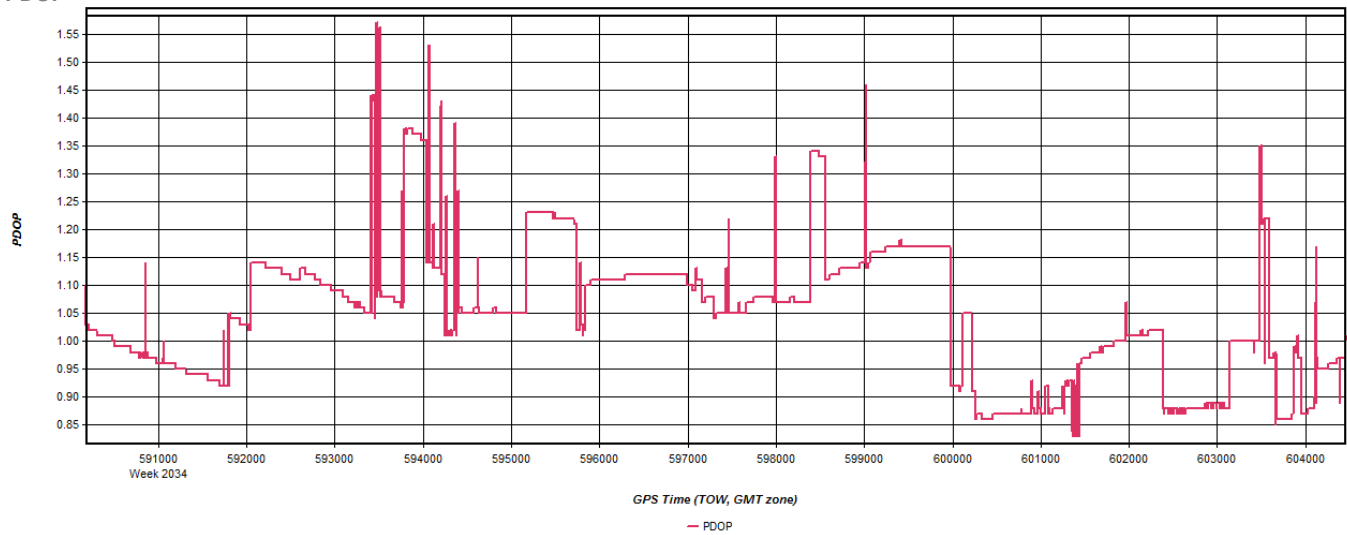


Combined Forward/Reverse Weighting

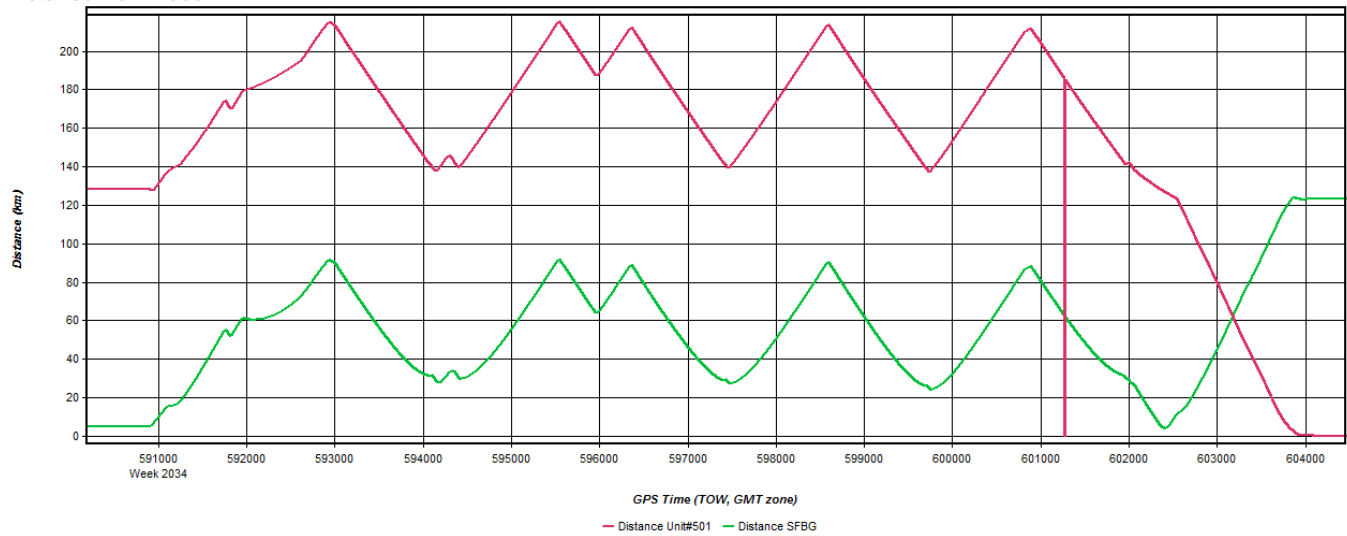


# USGS COLLECTION REPORT

## PDOP



## Distance from Base

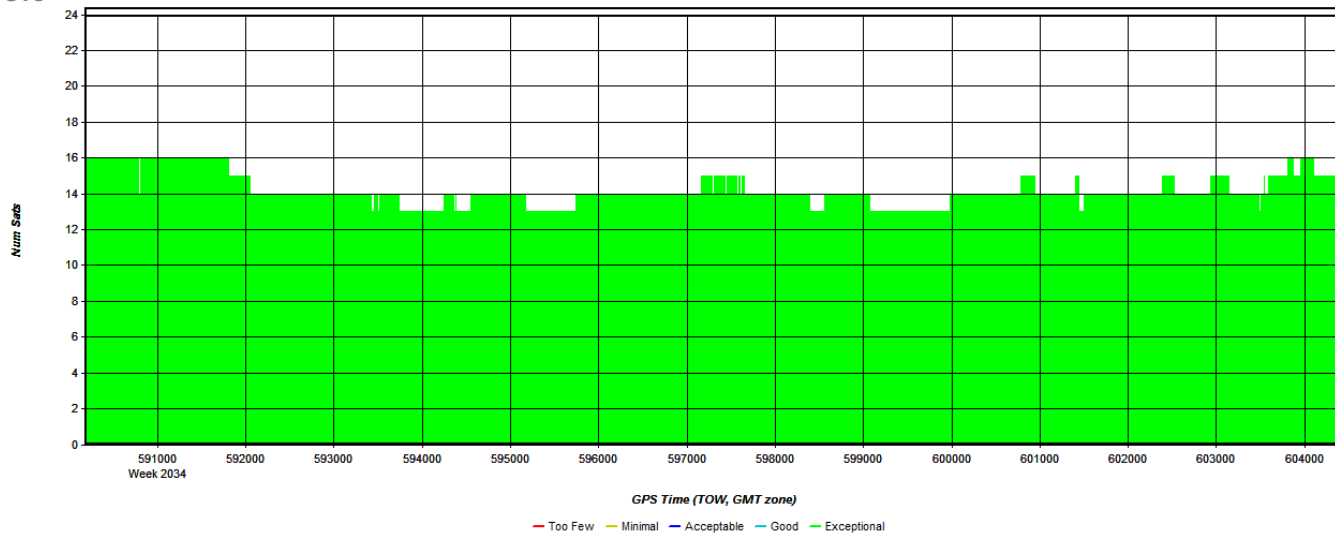




# USGS COLLECTION REPORT



SVs





Acquisition and Processing details ----- (January 08, 2019)

Log: 190108\_118\_33780084\_05

	Menu	18.165	Lift Begin			Lift End			Flt Duration	Flt Hrs	Hobbs Hrs	Activity
			Airport	Chocks	Hobbs	Airport	Chocks	Hobbs				
	1		KG TU	14:31	2939.5	KG TU	18:42	2943.5	4:11	4.25	4.0	0900-Production
	2											
		3										

ALS  
Flight Log  
AC80-44-00-02

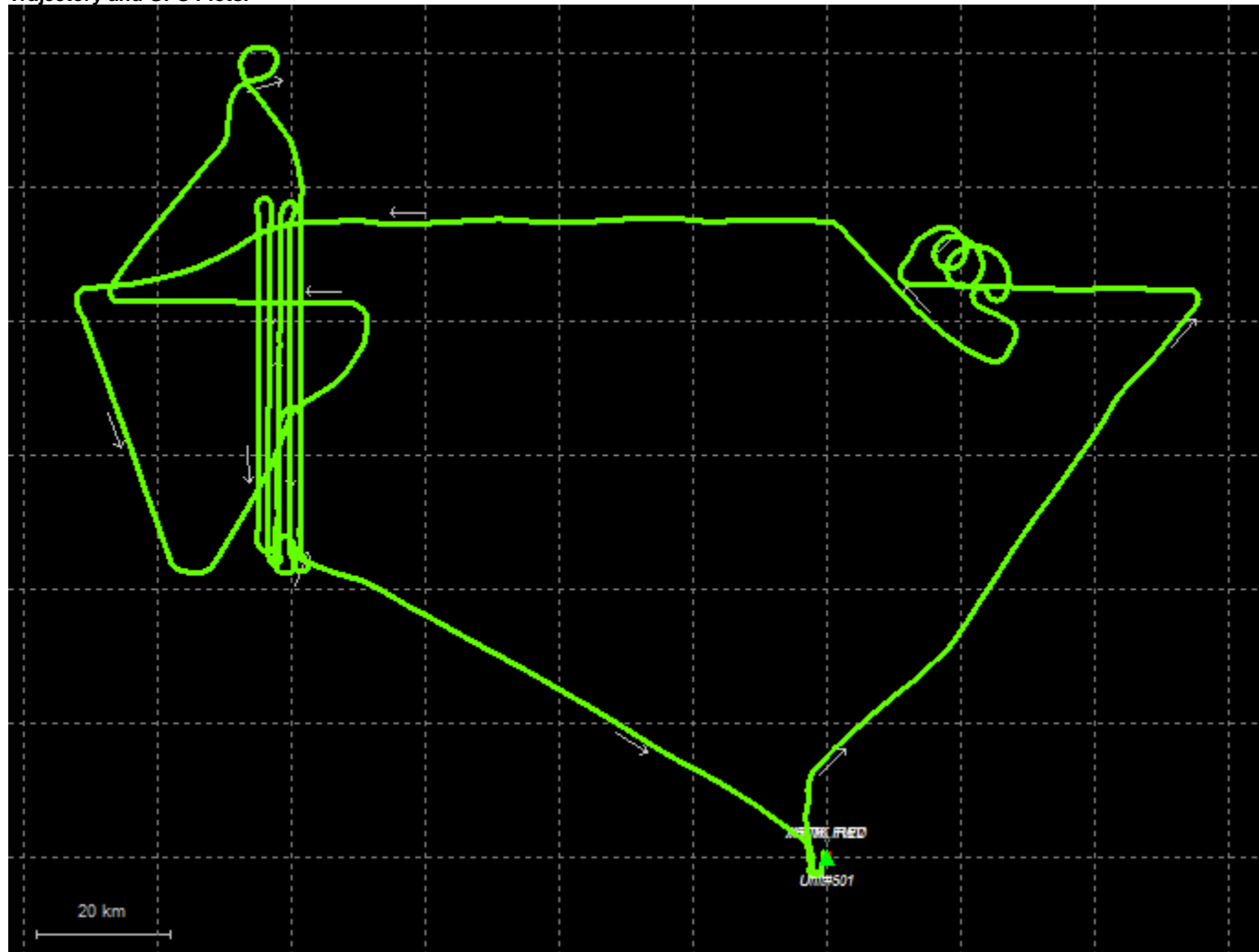
FGI Job # <b>33780084</b>	Project Name <b>JSGS Disaster Recovery Harvey Fina</b>		System <b>ALS80</b>	Unit <b>118</b>	IMU <b>uIRS</b>	PIA <b>4</b>	SW1 <b>-</b>	SW2-Gain <b>-</b>	Aper <b>60°</b>	AutoScan <b>Yes</b>	Ground Temp °C <b>9.0</b>	Min Range Gate <b>7322</b>	Data Logger Drive <b>MM70-01</b>
Flight Date <b>8-Jan-19</b>	GPS Day <b>19-008</b>	Lift <b>5</b>	Sun° <b>-</b>	Solar Times (UTC) <b>-</b>	Laser Power <b>96%</b>	Pattern <b>Triangle</b>	Flying Temp °C <b>11.0</b>	Max Range Gate <b>8830</b>	Download Drive <b>AP1TB#08</b>				
Mission ID (ymmdd_Sen_Job_Lift) <b>190108_118_33780084_05</b>		Aircraft <b>N8131</b>	Airport ID <b>KG TU</b>	FMS <b>CCNS 3</b>	UTC <b>-6</b>	AMT (ft) <b>7,900</b>	Speed <b>150</b>	Scan Hz <b>34.0</b>	Pulse Rate <b>442,600</b>	FOV <b>46</b>	km/WPT <b>1.448</b>	Altm Setting <b>30.20</b>	Shipping Track <b>7741 4611 3145</b>

Plot #1 <b>Kevin Ellington</b>	Plot #2 <b>-</b>	Operator #1 <b>Chris Acuña</b>	Operator #2 <b>-</b>
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Base 1 ID <b>FEDI 1115</b>	Location <b>KG TU</b>	Rec ID <b>GR3#5</b>	Ant ID <b>GR3#5</b>	ARP (m) <b>1.8</b>	Start Time (UTC) <b>08-Jan-19 13:53</b>	Stop Time (UTC) <b>08-Jan-13 23:14</b>	GPS Filename <b>Unit#50108n</b>	Operator <b>Chris Acuña</b>	Data <b>With AB</b>
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Area	Flight #		Wpt		Distance		UTC		Flt Dir	Altitude (GPS)	Speed (knots)	Scan Rate	Comments and Conditions	SVs	PDOP	
	FGI	Client's	From	To	Begin	End	Start	End								
													Aspen GPS Tracker is "Off"			
							14:36:09	14:41:09					5 Min GND static alignment at KG TU	18	1.2	
							15:21:37	15:26:37					5 Min acquisition of CORS TXMR	18	1.3	
							-	-					S-Turn in flight alignment			
BLOCK_J	17		22	1									Aborted BLOCK_J for standing water in project area			
							16:18:35	16:23:35					5 Min acquisition of CORS TXSB	22	1.1	
							-	-					S-Turn in flight alignment			
BLOCK_I	37		45	25	63.7	34.8	16:35:31	16:41:49	265	9350	147	-	Partial crossing line	25	1.0	
			36	1	43.4	0	16:58:30	17:08:26	175	9325	146	-		23	1.1	
			36	1	13	0	17:11:20	17:15:03	356	8905	150	-	Calibration Line	22	1.2	
			35	1	31	0	17:22:28	17:32:23	356	8900	147	-		22	1.2	
			34	31	1	43.4	0	17:35:05	17:45:16	175	9395	147	-		21	1.4
			33	1	31	0	17:47:32	17:57:24	355	8855	149	-		22	1.2	
			32	31	1	43.4	0	18:00:14	18:10:16	175	9285	143	-		22	1.2
							18:10:33	18:12:11					S-Turn post inflight alignment	21	1.2	
							18:34:22	18:39:22					5 Min post GND static alignment at KG TU	19	1.3	

Trajectory and GPS Plots:

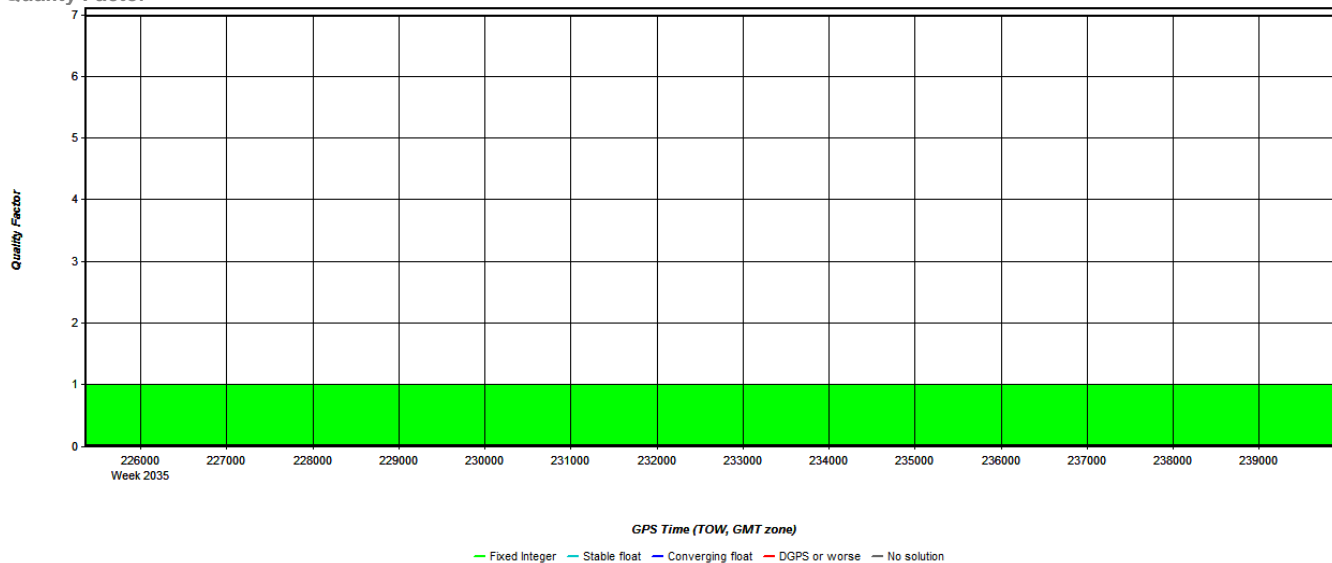


Estimated Accuracy

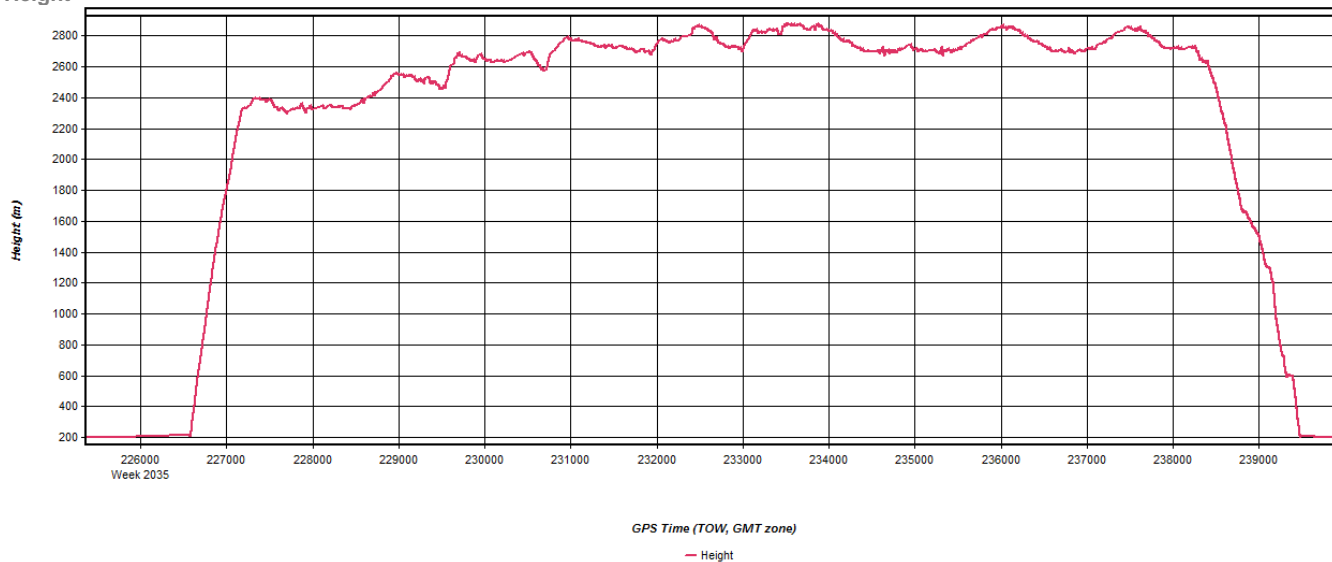




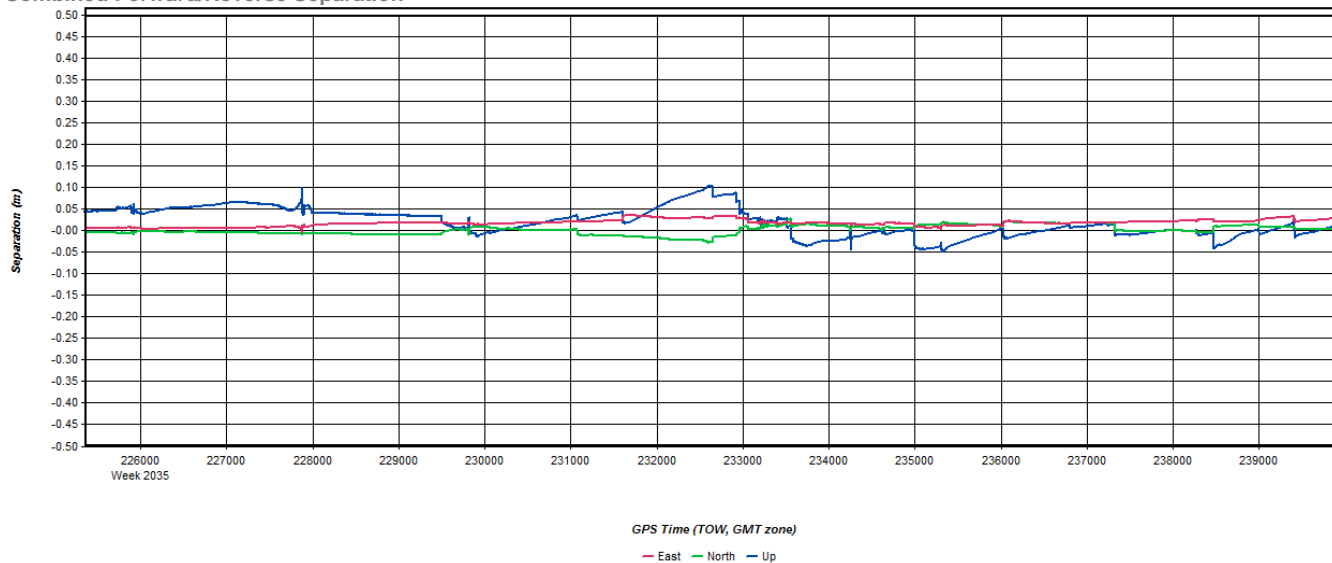
Quality Factor



Height



### Combined Forward/Reverse Separation



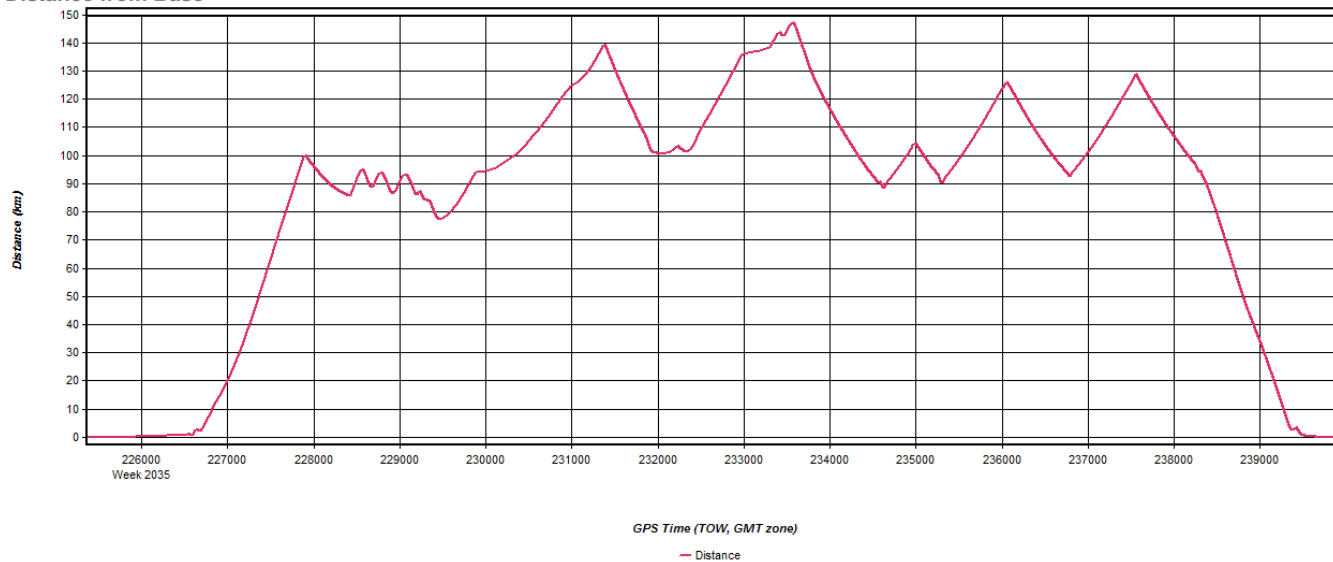
### Combined Forward/Reverse Weighting



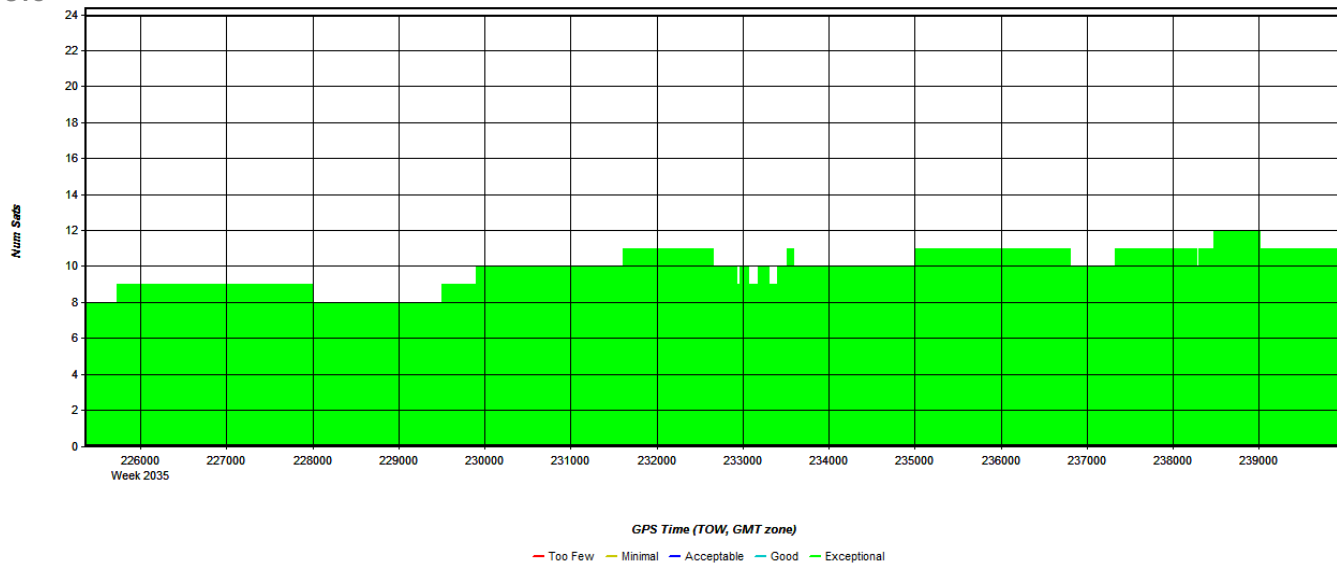
PDOP



Distance from Base



SVs



USGS  
COLLECTION REPORT



Acquisition and Processing details ----- (January 08, 2019)

Log: 190108\_118\_33780084\_06

	Menu	18.165	Lift Begin			Lift End			Flt Duration	Flt Hrs	Hobbs Hrs	Activity
			Airport	Chocks	Hobbs	Airport	Chocks	Hobbs				
	1		KG TU	19:17	2943.5	KG TU	23:10	2946.9	3:53	4:00	3.4	0900-Production
	2											

ALS  
Flight Log  
AC80-44-00-02

FGI Job # <b>33780084</b>	Project Name <b>JSGS Disaster Recovery Harvey Fina</b>		System <b>ALS80</b>	Unit <b>118</b>	IMU <b>uRS</b>	PIA <b>4</b>	SW1 <b>-</b>	SW2-Gain <b>-</b>	Aper <b>60°</b>	AutoScan <b>Yes</b>	Ground Temp °C <b>22.0</b>	Min Range Gate <b>7322</b>	Data Logger Drive <b>MM70-01</b>
Flight Date <b>8-Jan-19</b>	GPS Day <b>19-008</b>	Lift <b>6</b>	Sun° <b>-</b>		Solar Times (UTC) <b>-</b>		Laser Power <b>96%</b>		Pattern <b>Triangle</b>	Flying Temp °C <b>9.0</b>	Max Range Gate <b>8830</b>	Down load Drive <b>AP1TB#08</b>	
Mission ID (ymmdd_Sen_Job_Lift) <b>190108_118_33780084_06</b>		Aircraft <b>N8131</b>	Airport ID <b>KG TU</b>	FMS <b>CCNS 3</b>	UTC <b>-6</b>	AMT (ft) <b>7,900</b>	Speed <b>150</b>	Scan Hz <b>34.0</b>	Pulse Rate <b>442,600</b>	FOV <b>46</b>	kmWPT <b>1.448</b>	Altm Setting <b>30.22</b>	Shipping Track <b>7741 4611 3145</b>

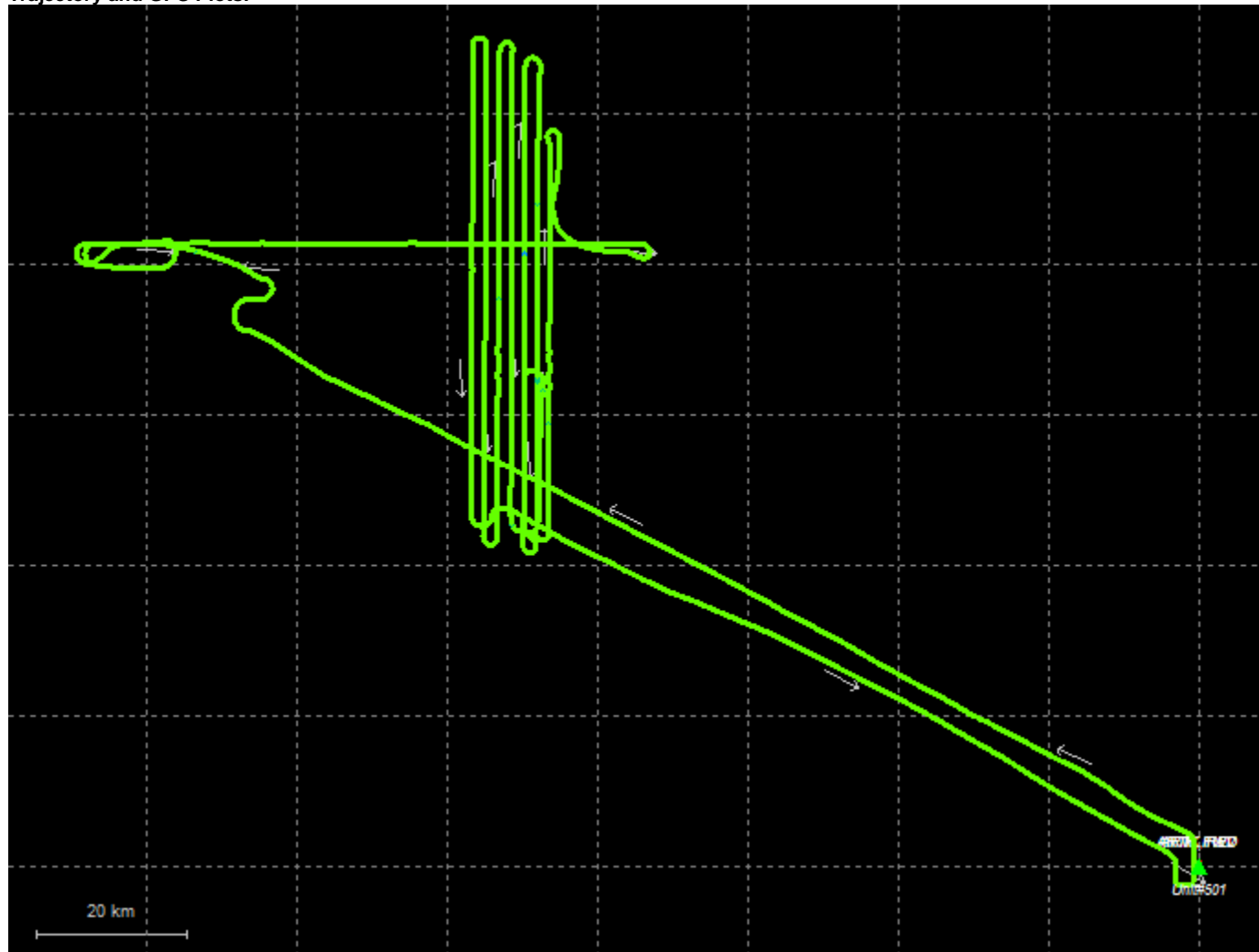
Plot #1 <b>Kevin Ellington</b>		Plot #2 <b>-</b>		Operator #1 <b>Chris Acuña</b>		Operator #2 <b>-</b>	
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Base 1 ID <b>FEDI 1115</b>	Location <b>KG TU</b>		Rec ID <b>GR3#5</b>	Ant ID <b>GR3#5</b>	ARP (m) <b>1.8</b>	Start Time (UTC) <b>08-Jan-19 13:53</b>		Stop Time (UTC) <b>08-Jan-19 23:14</b>		GPS Filename <b>Unit#50108n</b>	Operator <b>Chris Acuña</b>	Data <b>With AB</b>
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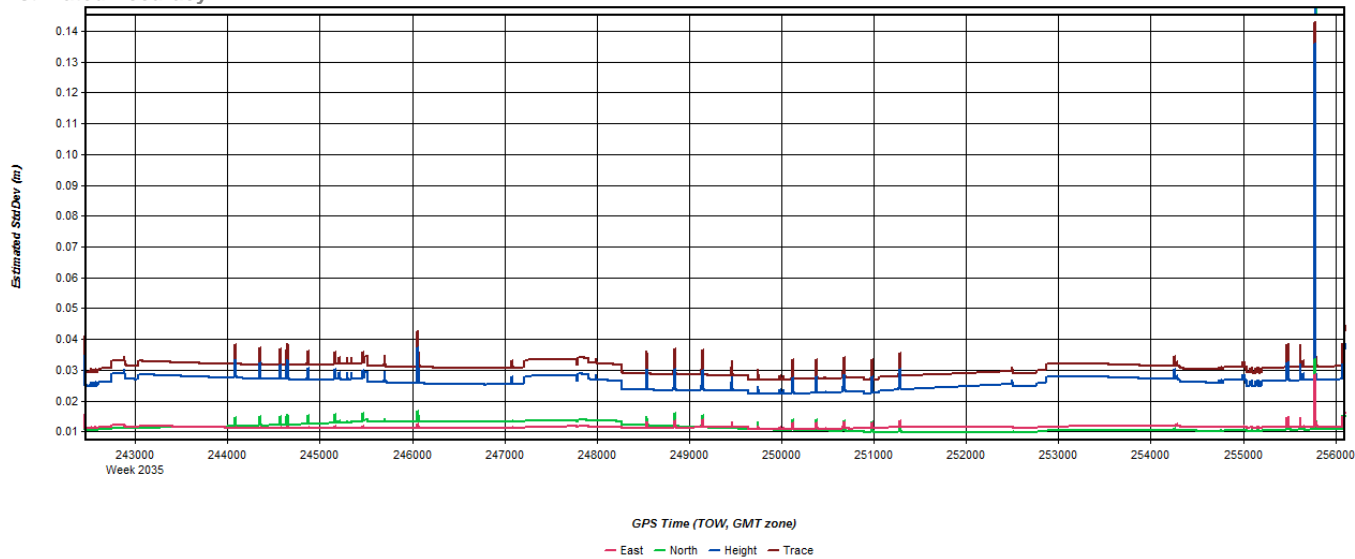
Area	Flight #		Wpt		Distance		UTC		Flt Dir	Altitude (GPS)	Speed (knots)	Scan Rate	Comments and Conditions	SVs	PDOP
	FGI	Client's	From	To	Begin	End	Start	End							
													Aspen GPS Tracker is "Off"		
							19:21:22	19:26:22					5 Min GND static alignment at KG TU	21	1.3
							19:58:05	20:03:05					5 Min acquisition of CORS TXMR	17	1.5
							20:06:27	20:08:47					S-Turn in flight alignment	18	1.3
BLOCK_I	37		1	45	0	63.7	20:22:24	20:36:48	85	9010	143	-		18	1.3
	31		31	1	43.4	0	20:45:53	20:55:51	175	9255	146	-		20	1.1
	30		1	31	0	43.4	20:58:14	21:08:05	356	8945	142	-		21	1.1
	29		38	1	53.6	0	21:12:32	21:24:45	175	9140	149	-		20	1.2
	29		1	12	0	15.9	21:27:53	21:31:13	356	8930	146	-	Calibration Line	20	1.1
	28		1	40	0	56.5	21:38:01	21:51:04	356	9125	148	-		20	1.2
	27		40	1	56.5	0	21:53:02	22:06:07	175	9215	146	-		21	1.3
	26		1	40	0	56.5	22:08:44	22:21:24	356	9150	144	-		22	1.3
	25		40	1	56.5	0	22:23:41	22:36:34	175	9235	146	-		20	1.4
							22:36:53	22:38:47					S-Turn post inflight alignment	20	1.5
							23:02:46	23:07:46					5 Min post GND static at KG TU	21	1.1



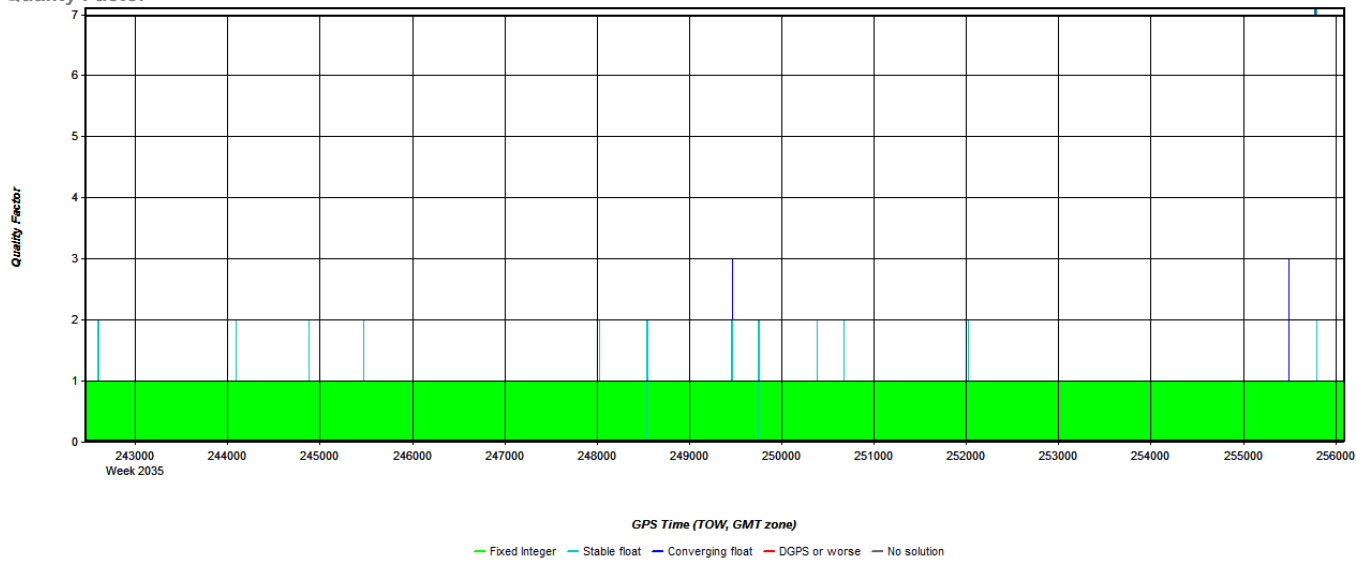
Trajectory and GPS Plots:



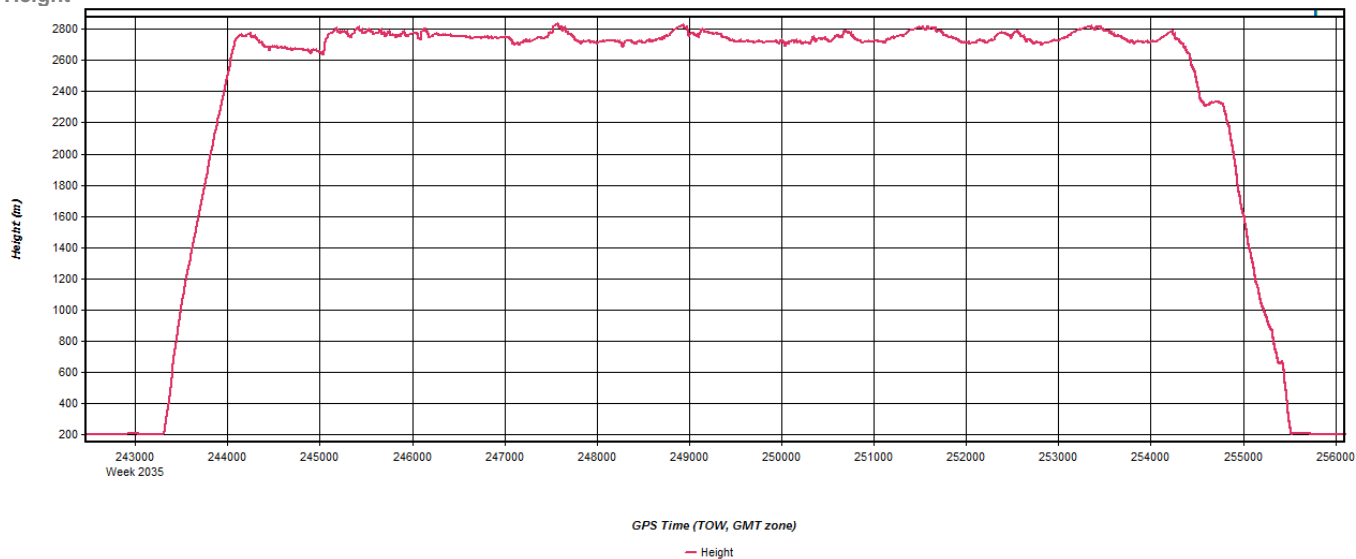
Estimated Accuracy



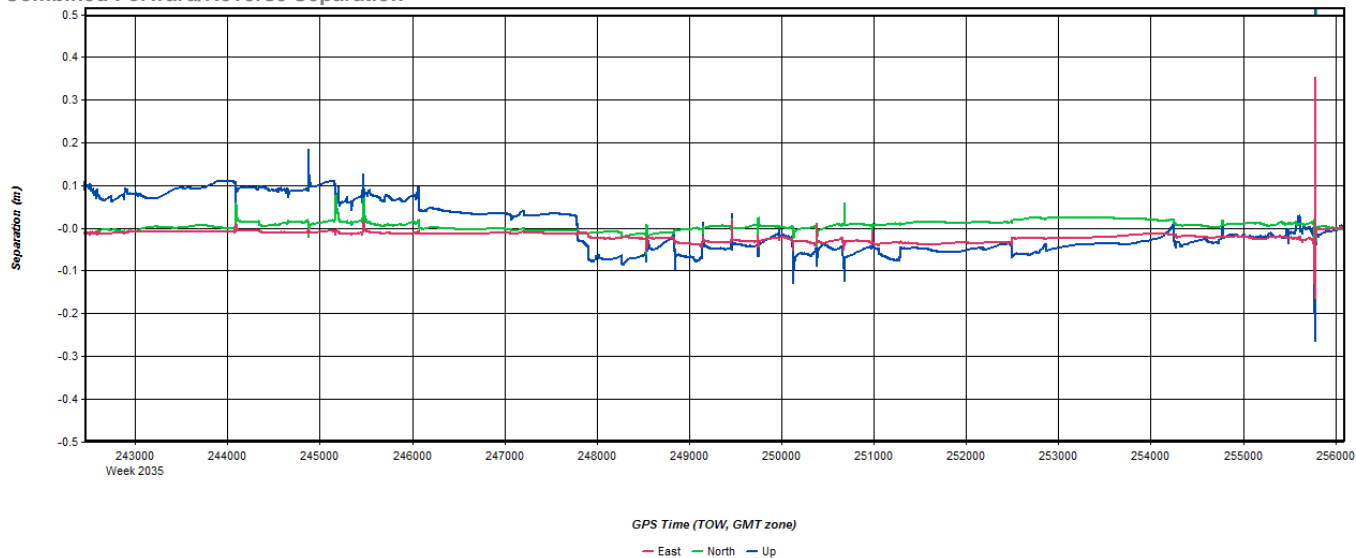
Quality Factor



Height



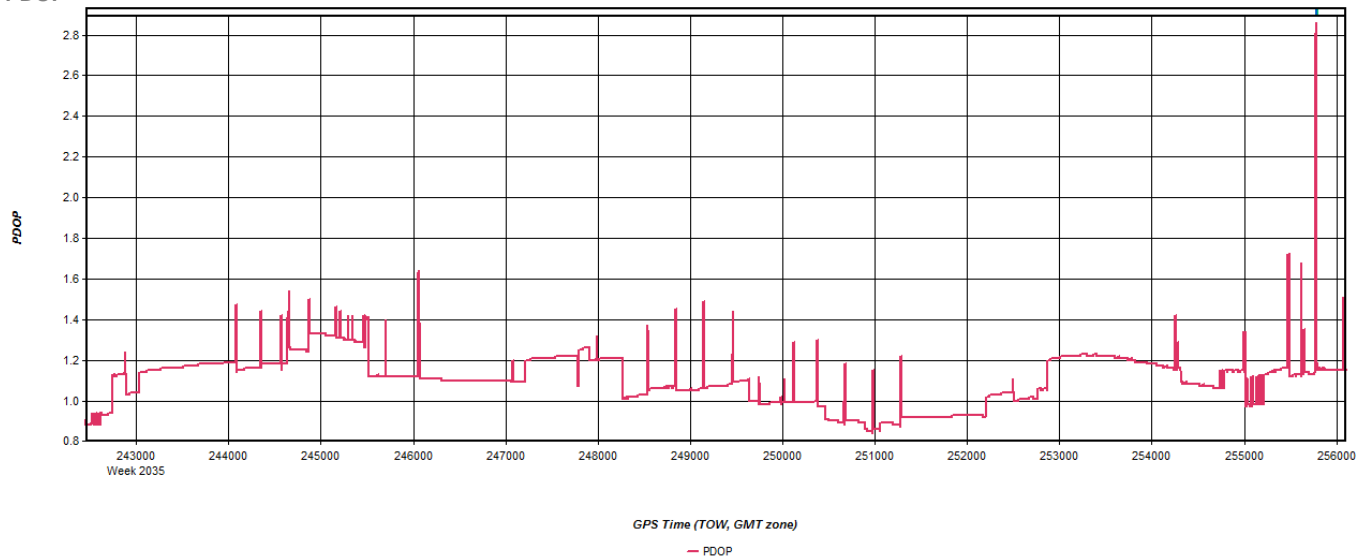
Combined Forward/Reverse Separation



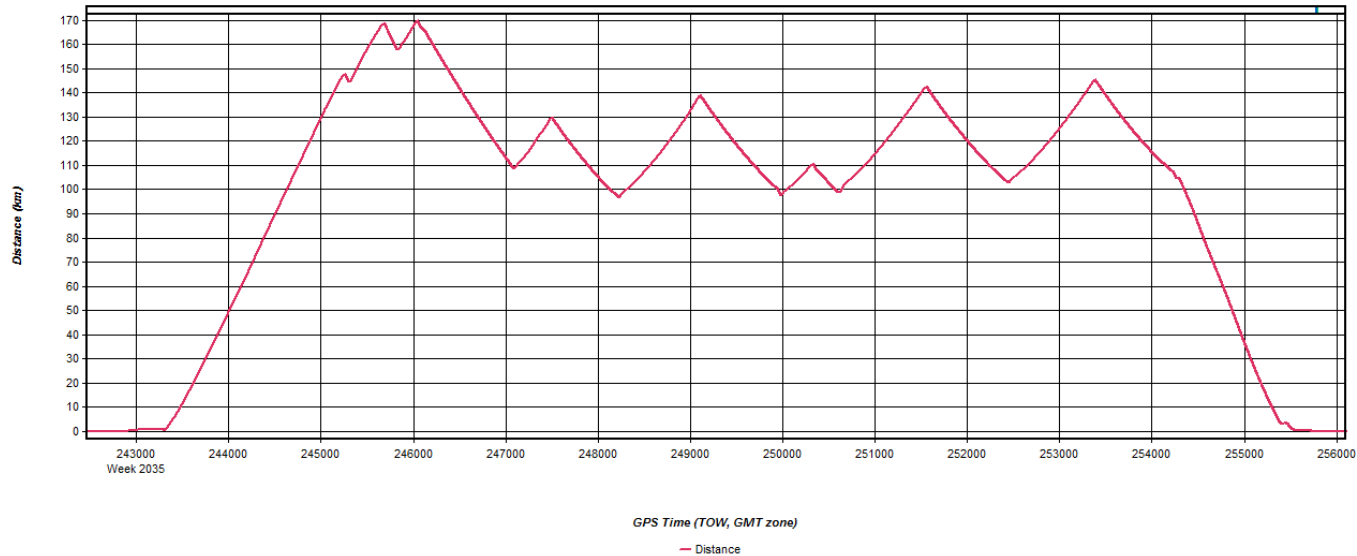
Combined Forward/Reverse Weighting



PDOP

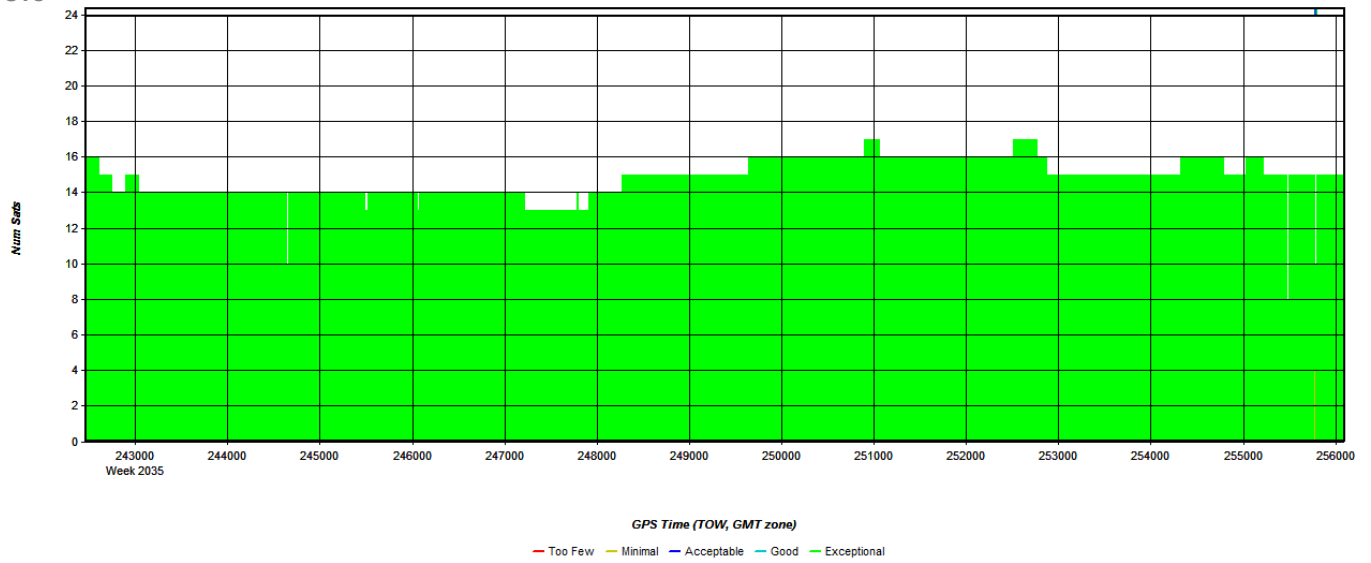


Distance from Base





SVs





Acquisition and Processing details ----- (January 09, 2019)

Log: 190109\_118\_33780084\_07

	Menu	18.165	Lift Begin			Lift End			Flt Duration	Flt Hrs	Hobbs Hrs	Activity
			Airport	Chocks	Hobbs	Airport	Chocks	Hobbs				
	1		KG TU	14:20	2943.5	KG TU	18:51	2950.9	4:31	4.50	7.4	0900-Production
	2											
		3										

ALS  
Flight Log  
AC80-44-00-02

FGI Job # <b>33780084</b>	Project Name <b>Hurricane Harvey ALS80</b>		System <b>ALS80</b>	Unit <b>118</b>	IMU <b>uRS</b>	PIA <b>4</b>	SW1 <b>-</b>	SW2-Gain <b>-</b>	Aper <b>60°</b>	AutoScan <b>Yes</b>	Ground Temp °C <b>9.0 14.0</b>	Min Range Gate <b>7322</b>	Data Logger Drive <b>MM70-07</b>
Flight Date <b>9-Jan-19</b>	GPS Day <b>19-009</b>	Lift <b>7</b>		Sun° <b>-</b>	Solar Times (UTC) <b>-</b>		Laser Power <b>96%</b>	Pattern <b>Triangle</b>	Flying Temp °C <b>8.0 8.0</b>	Max Range Gate <b>8830</b>		Download Drive <b>AP1TB#07</b>	
Mission ID (ymmdd_Sen_Job_Lift) <b>190109_118_33780084_07</b>		Aircraft <b>N8131</b>	Airport ID <b>KG TU</b>	FMS <b>CCNS 3</b>	UTC <b>-6</b>	AMT (ft) <b>7,900</b>	Speed <b>150</b>	Scan Hz <b>34.0</b>	Pulse Rate <b>442,600</b>	FOV <b>46</b>	kmWPT <b>1.448</b>	Alt Setting <b>30.52 30.56</b>	Shipping Track <b>7741 5626 7789</b>

Plot #1 <b>Kevin Ellington</b>	Plot #2 <b>-</b>	Operator #1 <b>Chris Acuña</b>	Operator #2 <b>-</b>
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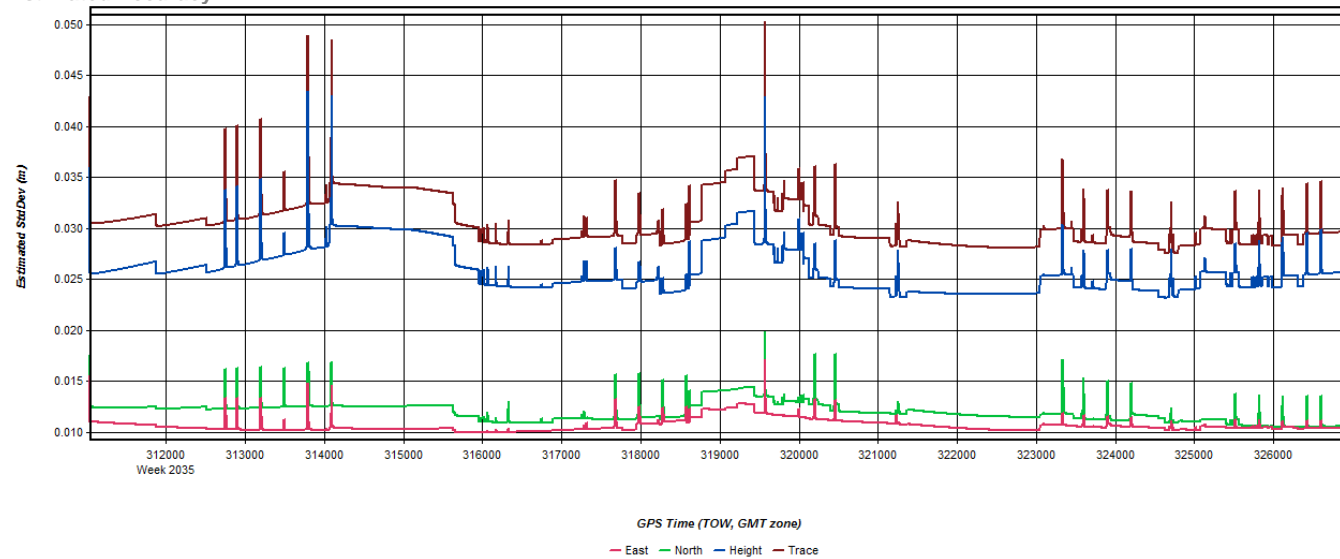
Base 1 ID <b>FEDI 1115</b>	Location <b>KG TU</b>	Rec ID <b>GR3#5</b>	Ant ID <b>GR3#5</b>	ARP (m) <b>1.8</b>	Start Time (UTC) <b>09-Jan-19 13:33</b>	Stop Time (UTC) <b>09-Jan-19 22:12</b>	GPS Filename <b>Unit#50109n</b>	Operator <b>Chris Acuña</b>	Data <b>With AB</b>
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Area	Flight #		Wpt		Distance		UTC		Flt Dir	Altitude (GPS)	Speed (knots)	Scan Rate	Comments and Conditions	SVs	PDOP
	Client's	From	To	Begin	End	Start	End								
													Aspen GPS Tracker is "Off"		
								14:23:57	14:28:57				5 Min GND static alignment at KG TU	18	1.3
								15:00:18	15:05:18				5 Min acquisition of CORS TXMR	19	1.5
								15:08:00	15:10:01				S-Turn in flight alignment	19	1.5
			12	31	15.9	43.4									
BLOCK_I	37		12	31	15.9	43.4		15:17:46	15:24:10	85	9070	147		19	1.5
	24		40	1	56.5	0		15:33:13	15:46:07	175	9035	145		21	1.4
	23		1	40	0	56.5		15:53:30	16:06:26	355	9005	143		22	1.2
	22		40	1	56.5	0		16:09:42	16:22:13	175	9025	146		22	1.1
	22		1	13	0	17.4		16:25:28	16:29:13	356	8995	144	Calibration Line	24	1.0
	21		1	47				16:36:36		356	9055	147	CCNS NAV Off, got off center, reflight	25	1.0
	21		1	47	0	66.6		16:57:13	17:12:26	355	9040	143	21 re-flt	23	1.0
	20		47	1	66.6	0		17:15:10	17:30:05	176	8990	148		22	1.2
	19		1	47	0	66.6		17:33:38	17:48:25	354	9045	147		21	1.3
	18		47	1									Aborted for ATC		
	18		47	1	66.6	0		17:55:36	18:10:48	175	9035	147		22	1.1
								18:11:04	18:12:44				S-Turn in post flight alignment	20	1.2
								18:43:59	18:48:59				5 Min post GND static alignment at KG TU	21	1.3

Trajectory and GPS Plots:

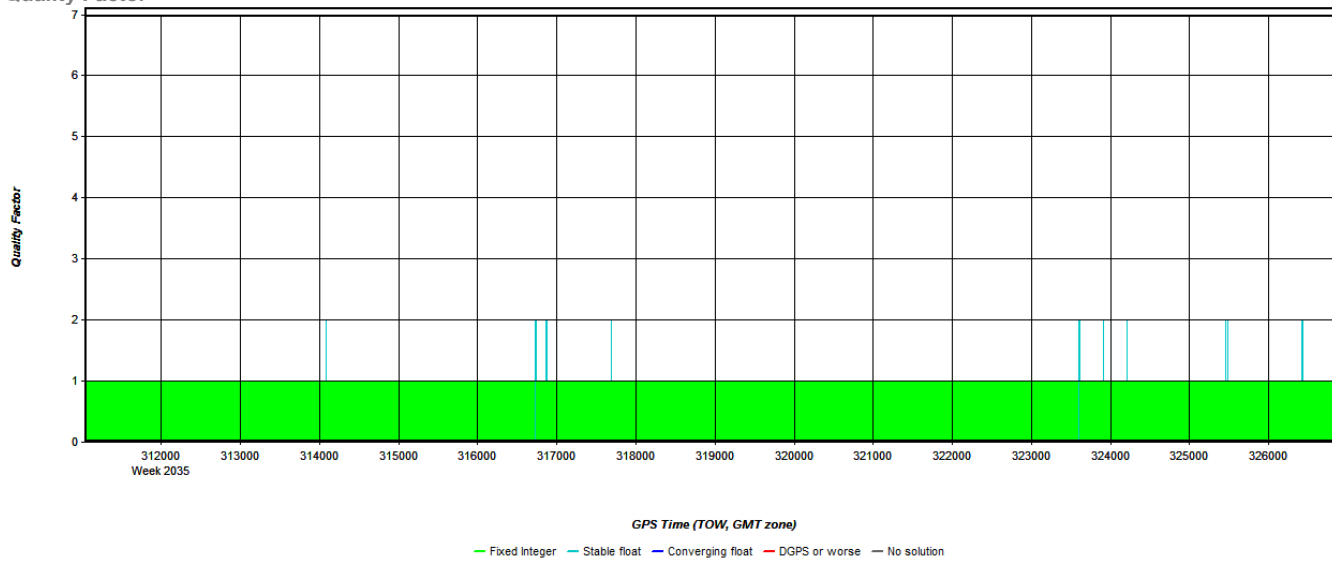


Estimated Accuracy

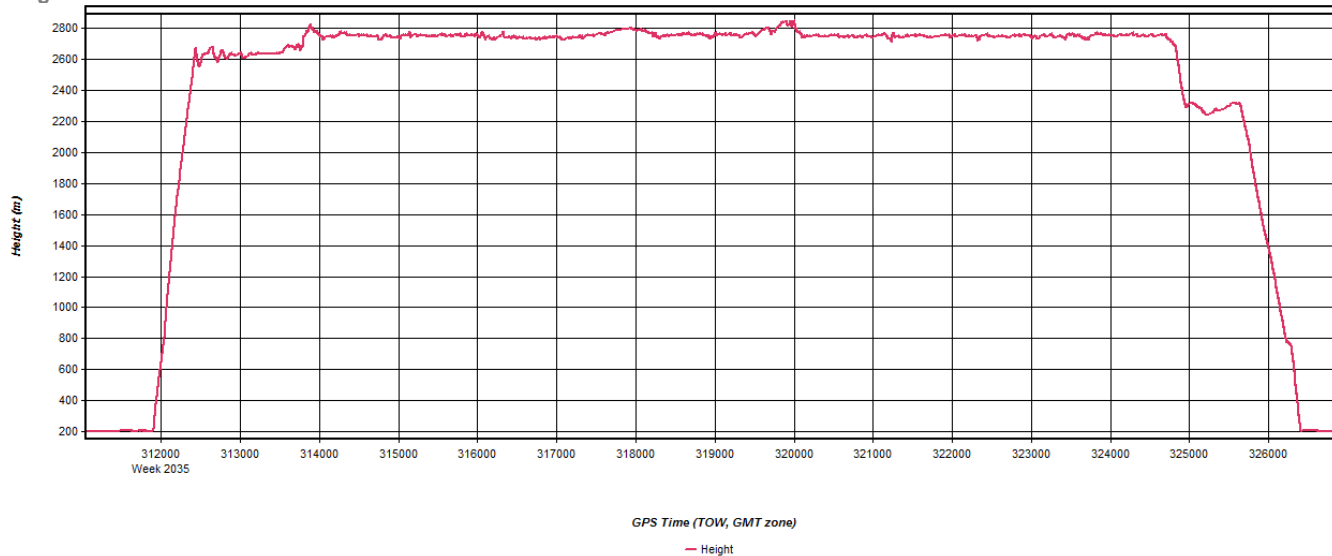




Quality Factor

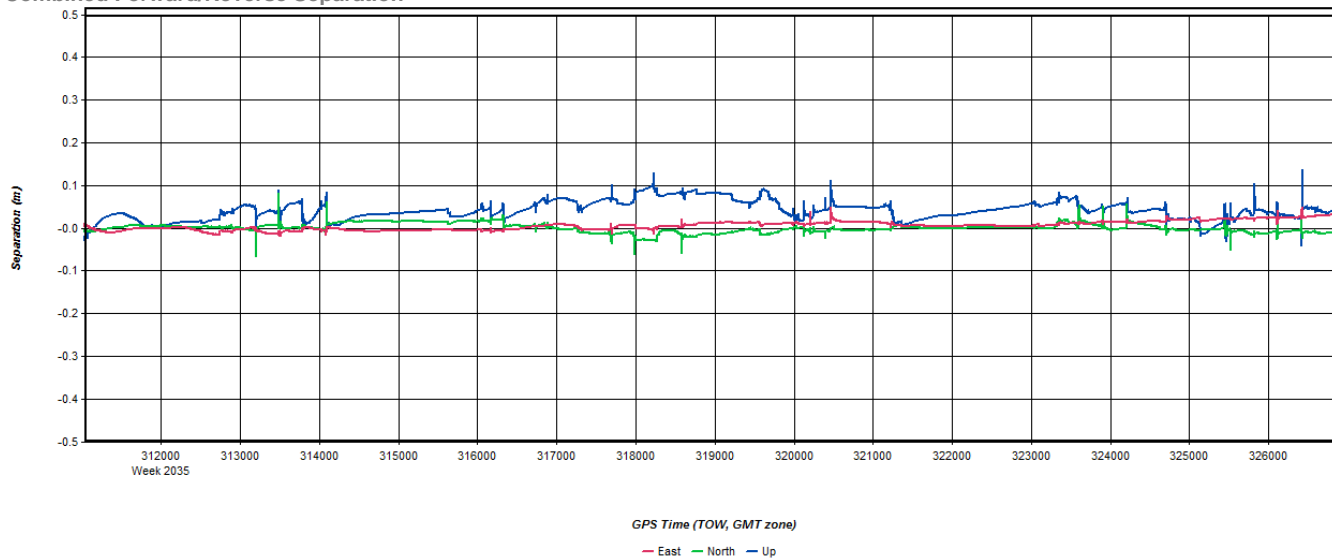


Height

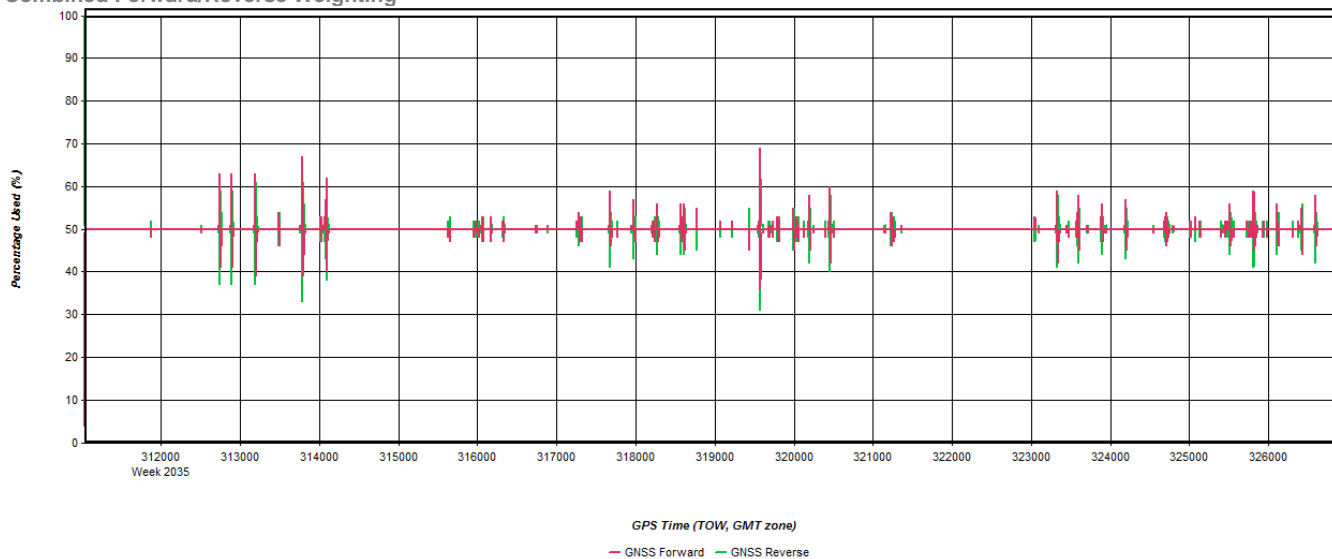




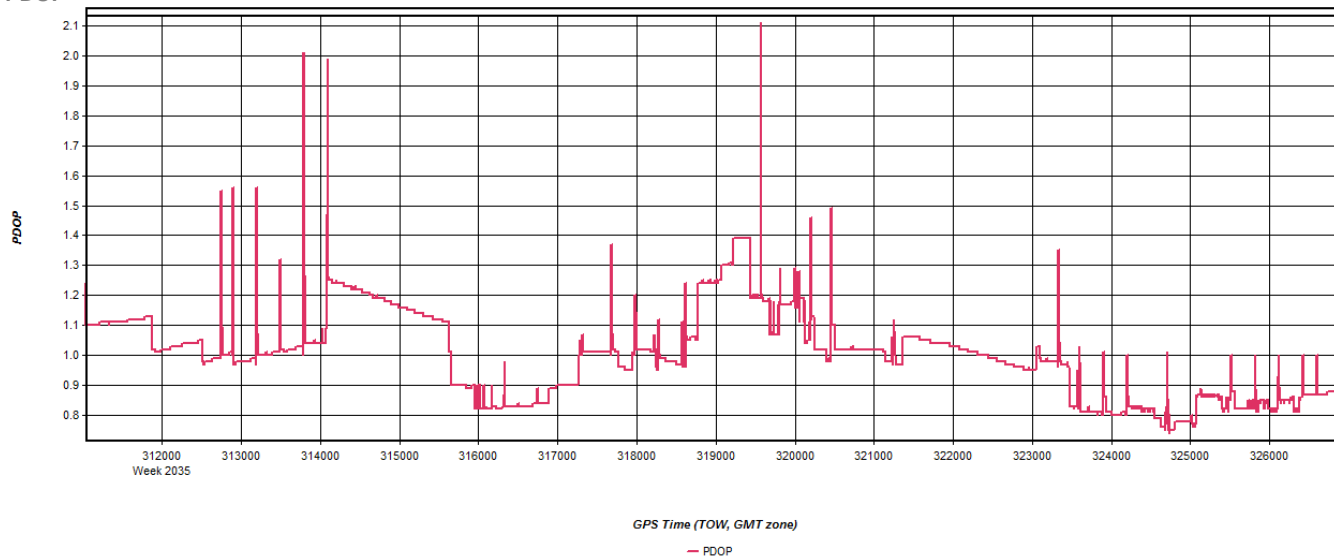
Combined Forward/Reverse Separation



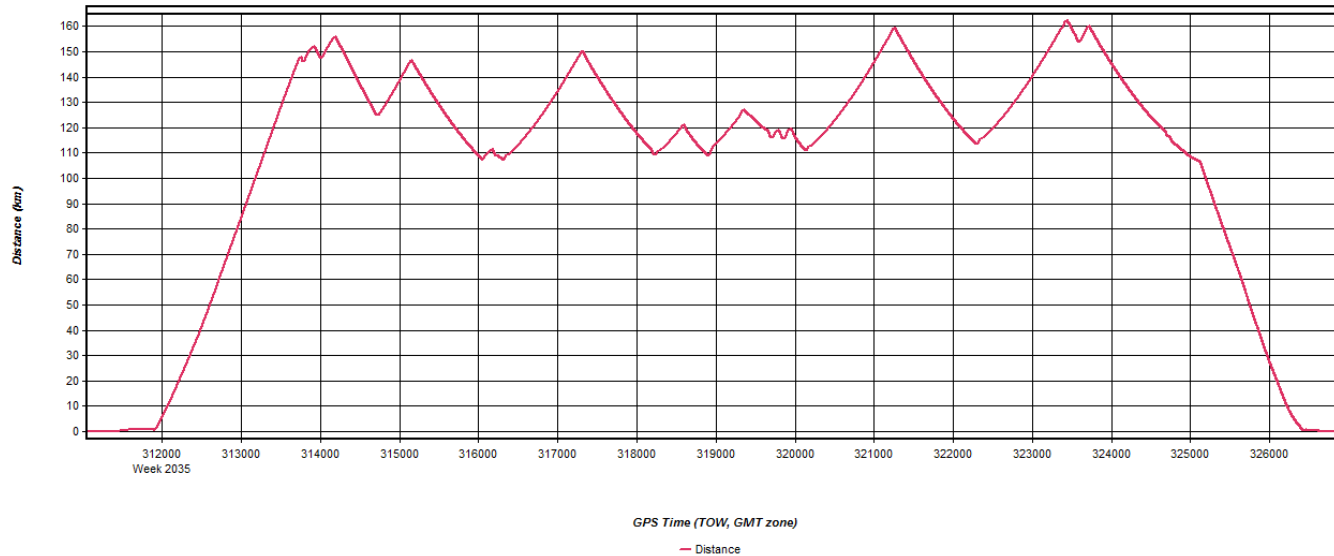
Combined Forward/Reverse Weighting



PDOP

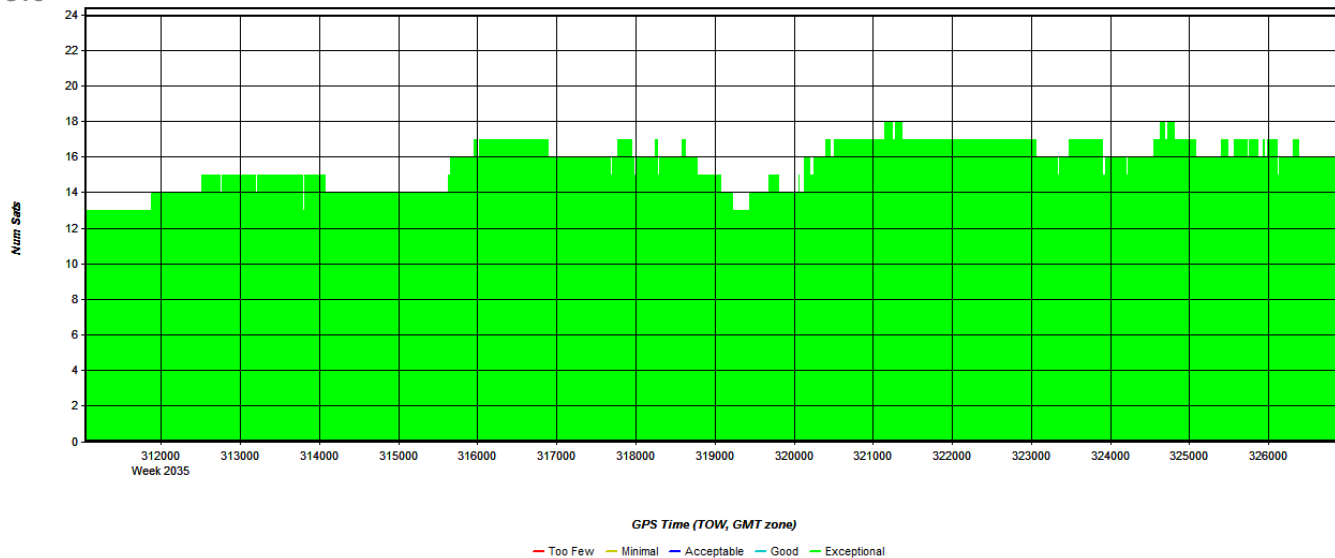


Distance from Base





SVs





Acquisition and Processing details ----- (January 12, 2019)

Log: 190112\_130\_33780084\_03

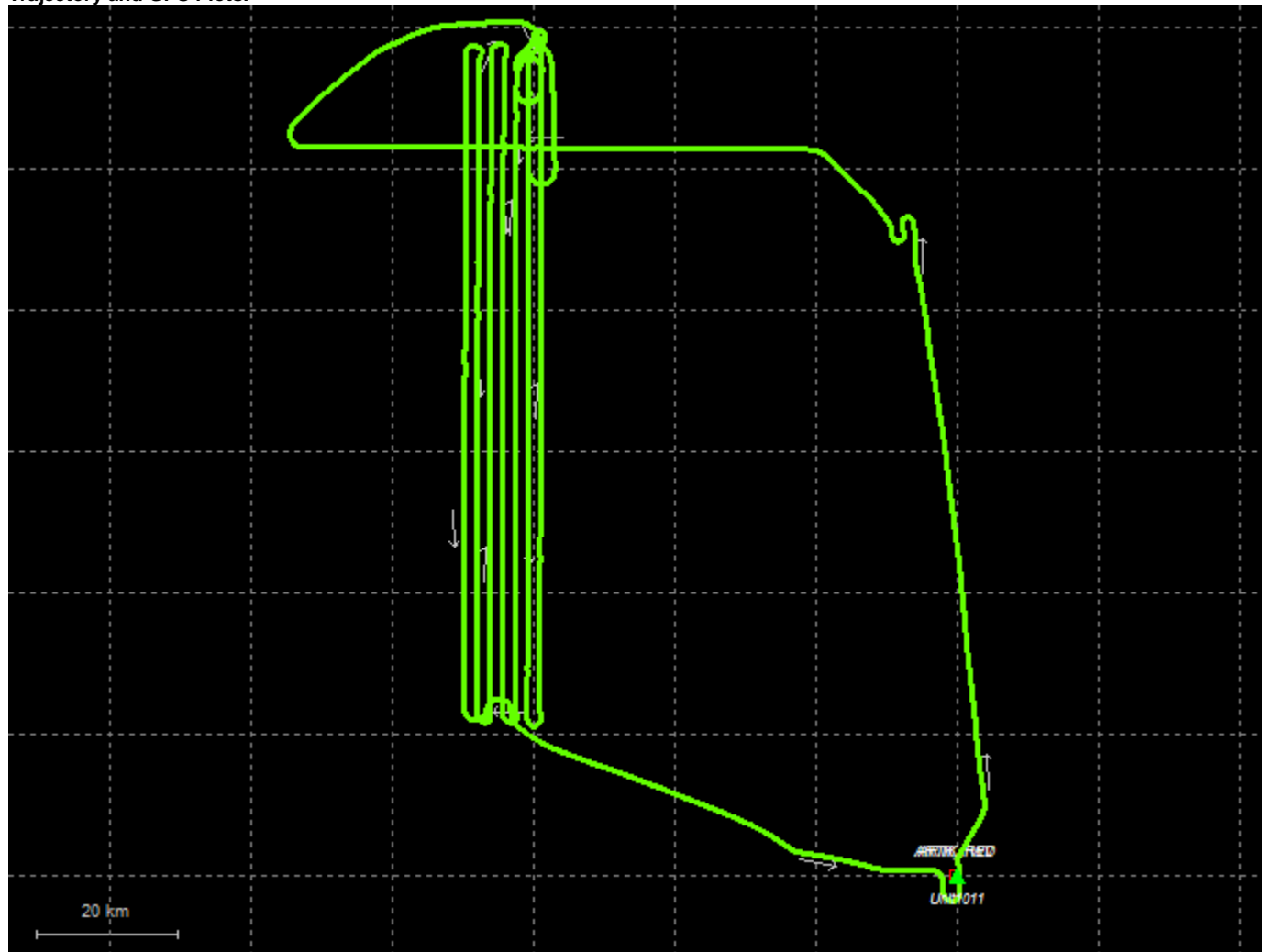
**Fugro USA Land, Inc.**

18.165	Lift Begin			Lift End			Flt Duration	Flt Hrs	Hobbs Hrs	Activity
	Airport	Chocks	Hobbs	Airport	Chocks	Hobbs				
1	KALI	18:02	1324.5	KALI	22:30	1328.5	4:28	4.50	4.0	
2										
3										

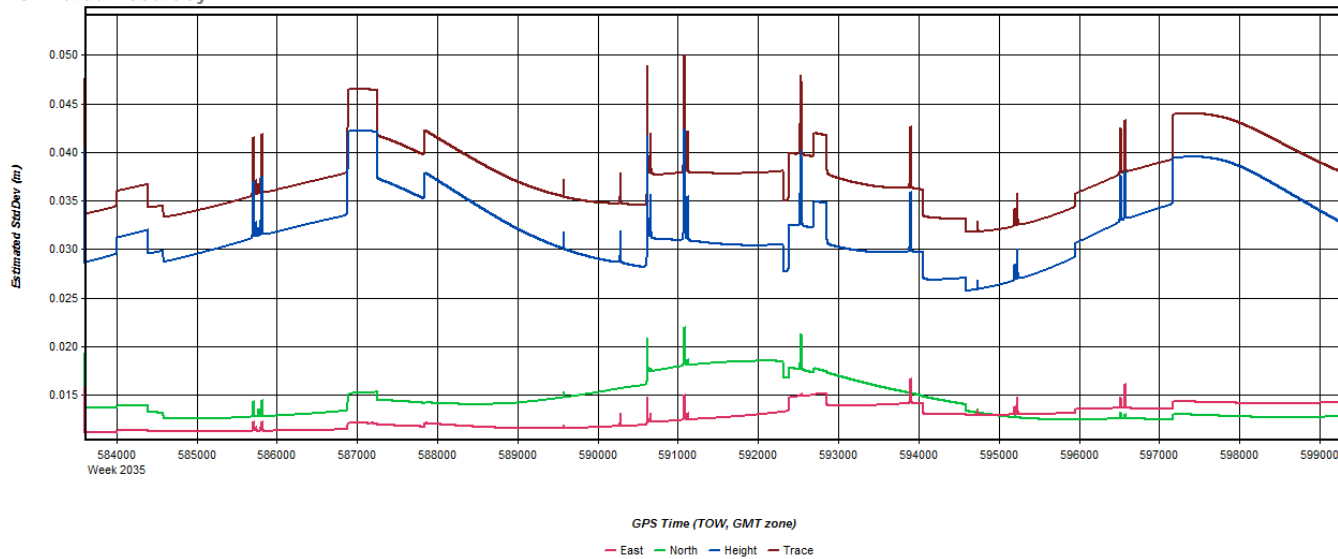
**ALS**  
 Flight Log  
 AC80-44-00-02

FGI Job #	Project Name			System	Unit	IMU	PIA	SW1	SW2-Gain	Aper	AutoScan	Ground Temp °C	Min Range Gate	Data Logger Drive	
<b>33780084</b>	<b>Hurricane Harvey</b>			<b>ALS80</b>	<b>130</b>	<b>uIRS</b>	<b>4</b>					<b>19.0 23.0</b>	<b>2232</b>	<b>LG101</b>	
Flight Date	GPS Day	Lift	Sun°		Solar Times (UTC)		Laser Power	Pattern	Flying Temp °C	Max Range Gate	Download Drive				
<b>12-Jan-19</b>	<b>19-012</b>	<b>3</b>					<b>96%</b>	<b>Triangle</b>	<b>4.0 5.0</b>	<b>2691</b>	<b>NS1TB-70</b>				
Mission ID (ymmdd_Sen_Job_Lift)	Aircraft	Airport ID	FMS	UTC	AMT (ft)	Speed	Scan Hz	Pulse Rate	FOV	km/WPT	Altm Setting	Shipping Track			
<b>190112_130_33780084_03</b>	<b>N97HC</b>	<b>KALI</b>	<b>CCNS 8</b>	<b>-6</b>	<b>7,900</b>	<b>150</b>	<b>34.0</b>	<b>443</b>		<b>1.448</b>	<b>30.11 30.08</b>				
Pilot #1		Pilot #2		Operator #1		Operator #2									
<b>Grant Cassell</b>				<b>Riley Forsyth</b>											
Base 1 ID	Location		Rec ID	Ant ID	ARP (m)	Start Time (UTC)		Stop Time (UTC)		GPS Filename	Operator	Data			
<b>FUSAL 100</b>	<b>KALI</b>		<b>GR3-1</b>	<b>GR3-1</b>	<b>1.8</b>					<b>Unit10112r</b>	<b>Riley Forsyth</b>	<b>With AB</b>			
Area	Flight #		Wpt		Distance		UTC		Flt Dir	Altitude (GPS)	Speed (knots)	Scan Rate	Comments and Conditions	SVs	PDOP
	FGI	Client's	From	To	Begin	End	Start	End							
													Ground static at KALI	26	1.2
													overfly TXGW cors	22	1.1
													s turn	23	1.2
Block B	38		46	1	65.2	0	18:48:16	19:04:57	W	8059	125		cross tie line	21	1.4
	18		62	1	88.3	0	19:14:52	19:34:31	S	8053	138		cloud wpt 34	23	1.3
	17		1	62	0	88.3	19:36:19	19:56:53	N	8012	147			21	1.3
	17		62	52	88.3	73.8	19:59:37	20:02:51	S	8025	133		calibration line	20	1.3
	16		60	1	85.4	0	20:14:44	20:34:39	S	8053	124			20	1.2
	15		1	62	0	88.3	20:36:21	20:56:42	N	8010	138			21	1.1
	14		62	1	88.3	0	20:58:37	21:19:14	S	8042	139			20	1.0
	13		1	62	0	88.3	21:20:40	21:41:09	N	8046	143			20	1.2
	12		62	1	88.3	0	21:42:56	22:03:35	S	8006	146			21	1.2
							22:03:44						s turn	20	1.3
							22:23:09	22:28:11					Ground static at KALI	18	1.3

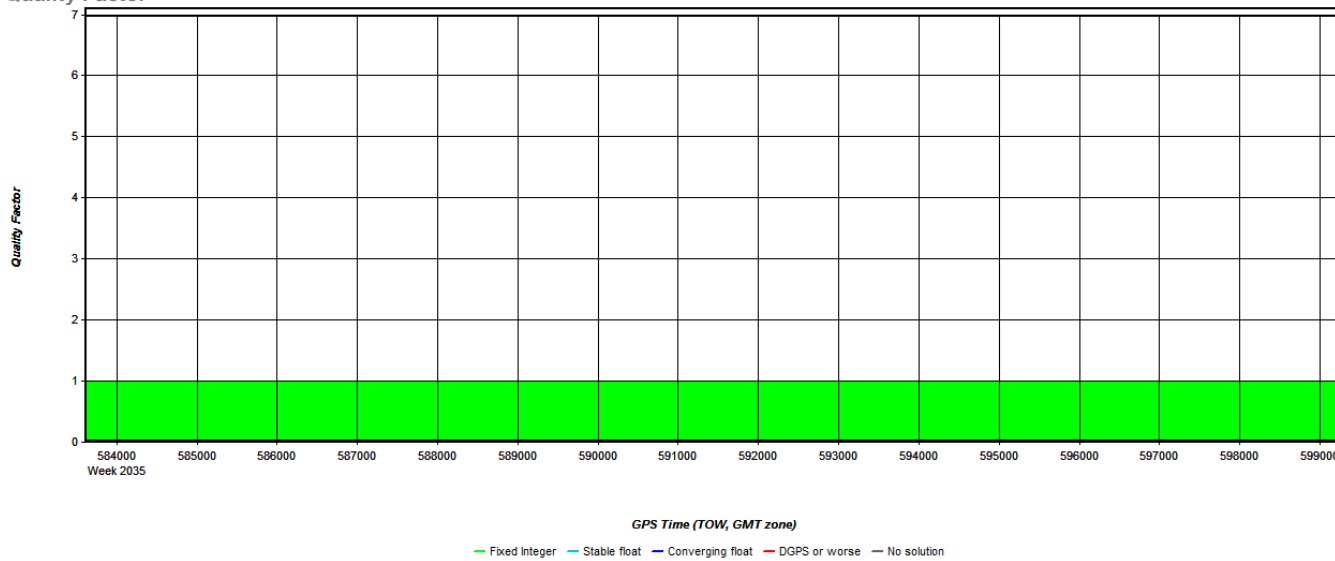
Trajectory and GPS Plots:



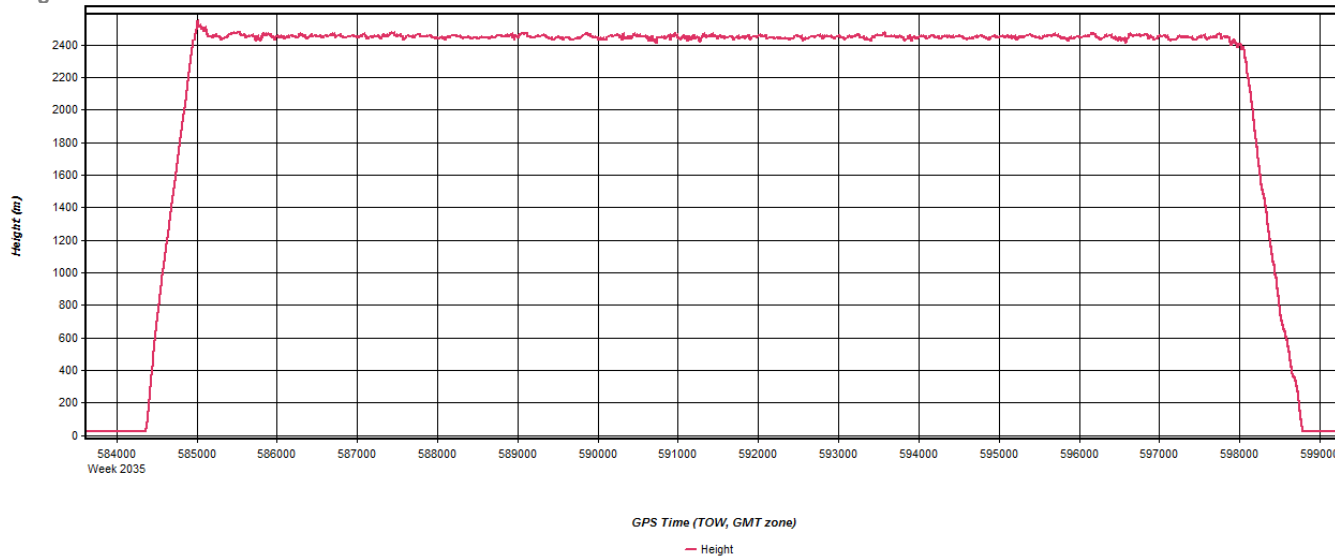
Estimated Accuracy



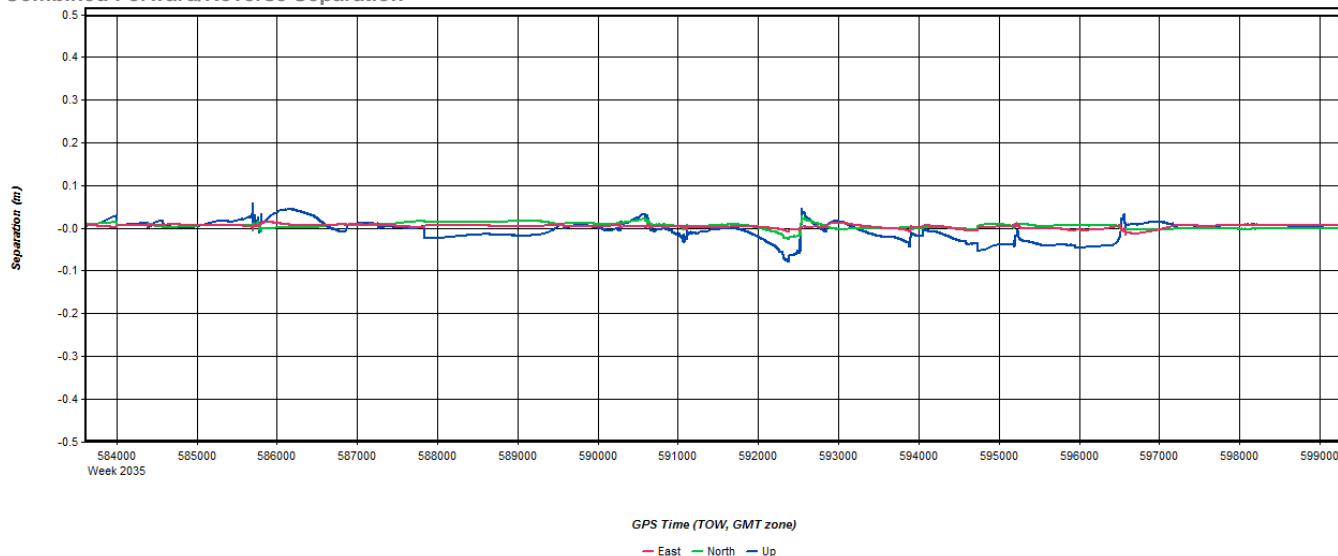
Quality Factor



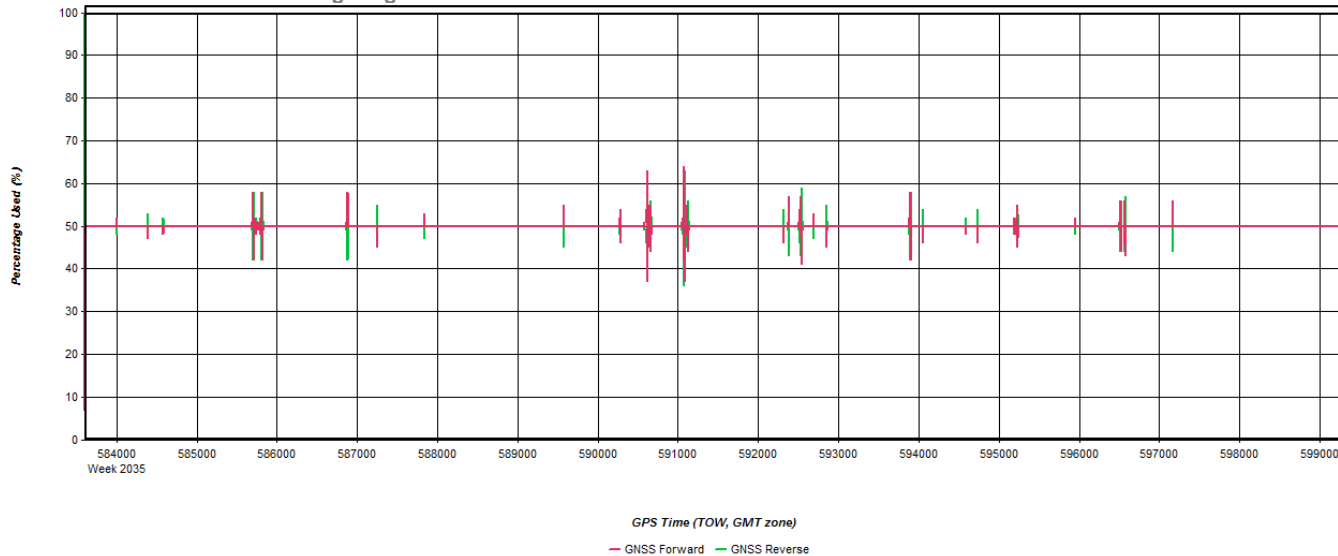
Height



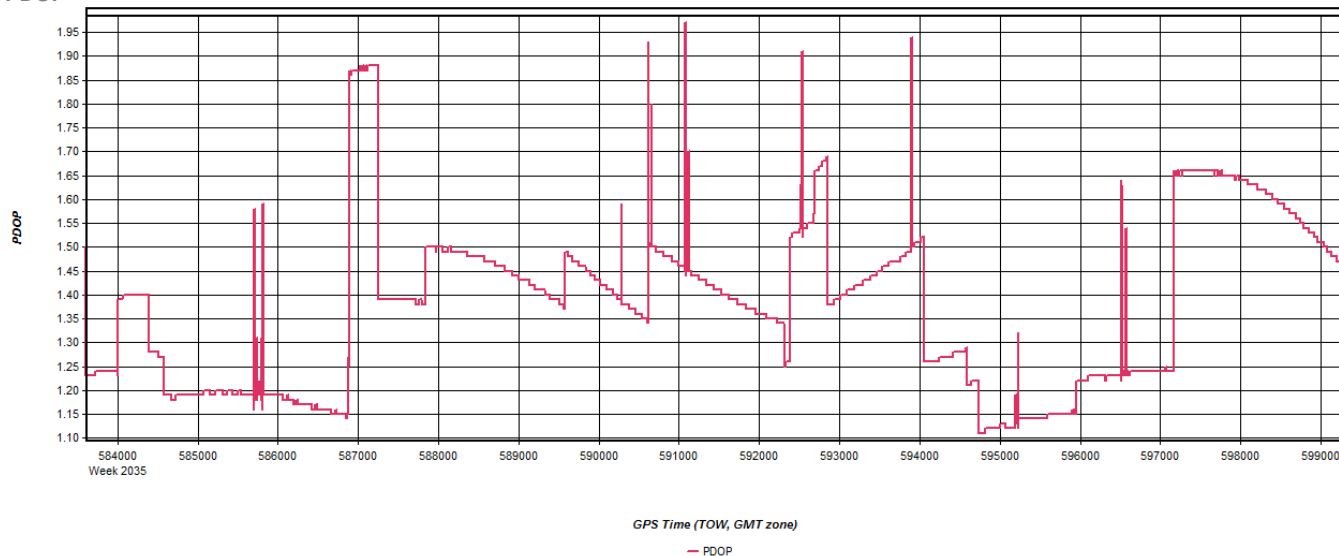
Combined Forward/Reverse Separation



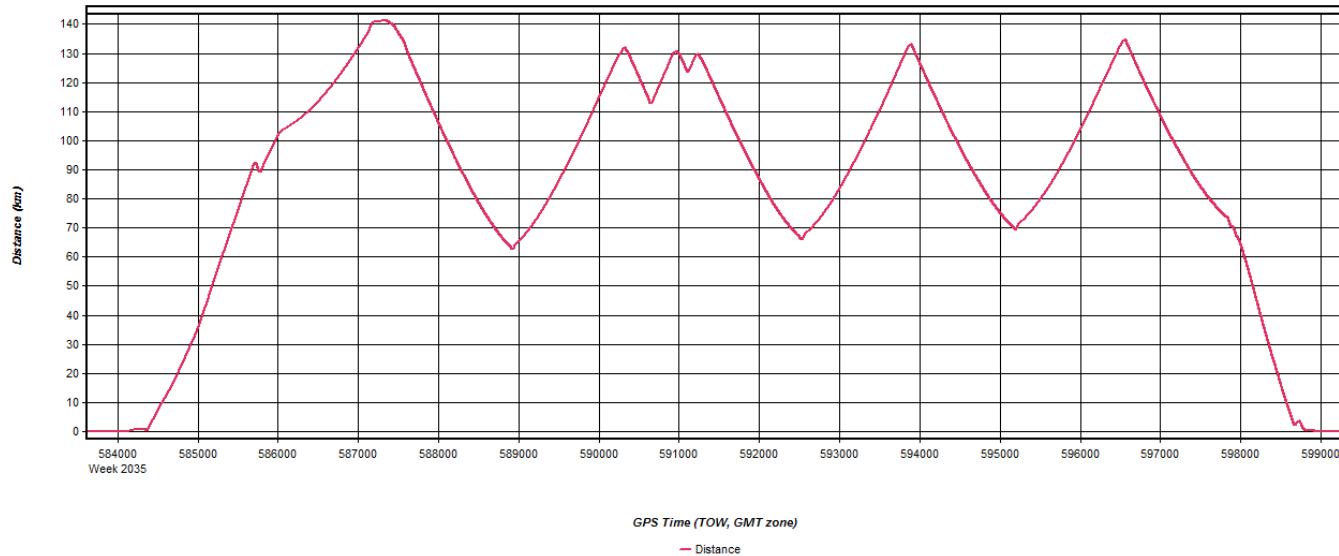
Combined Forward/Reverse Weighting



PDOP



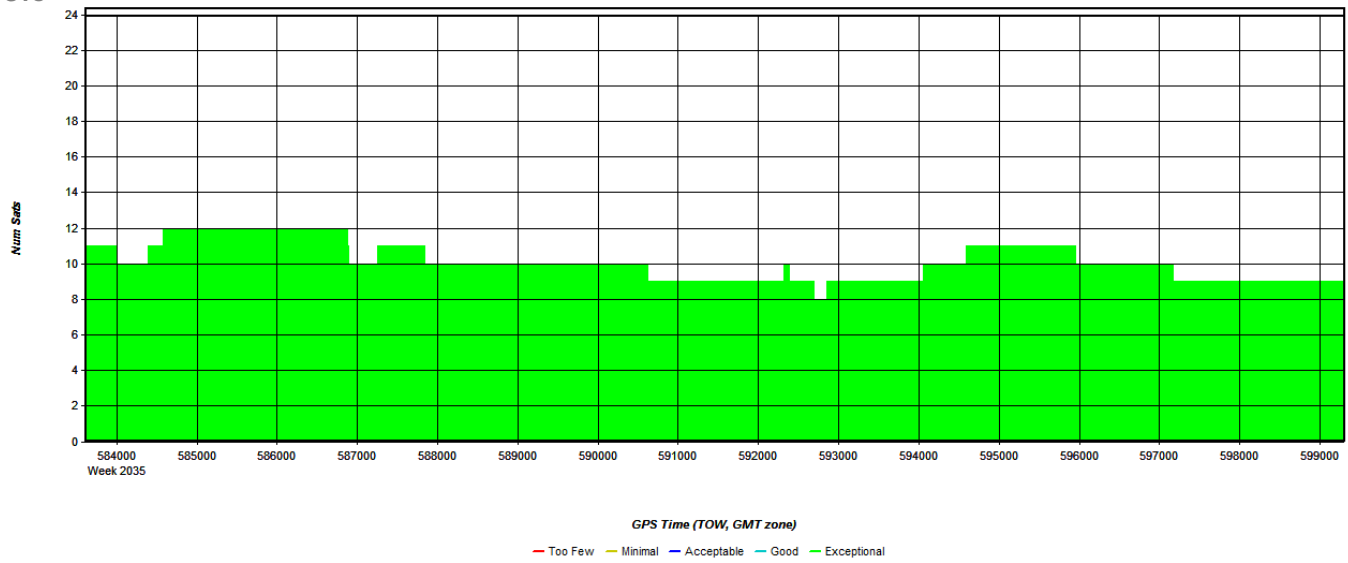
Distance from Base








SVs





Acquisition and Processing details ----- (January 12, 2019)

Log: 190112\_133\_33780084\_01

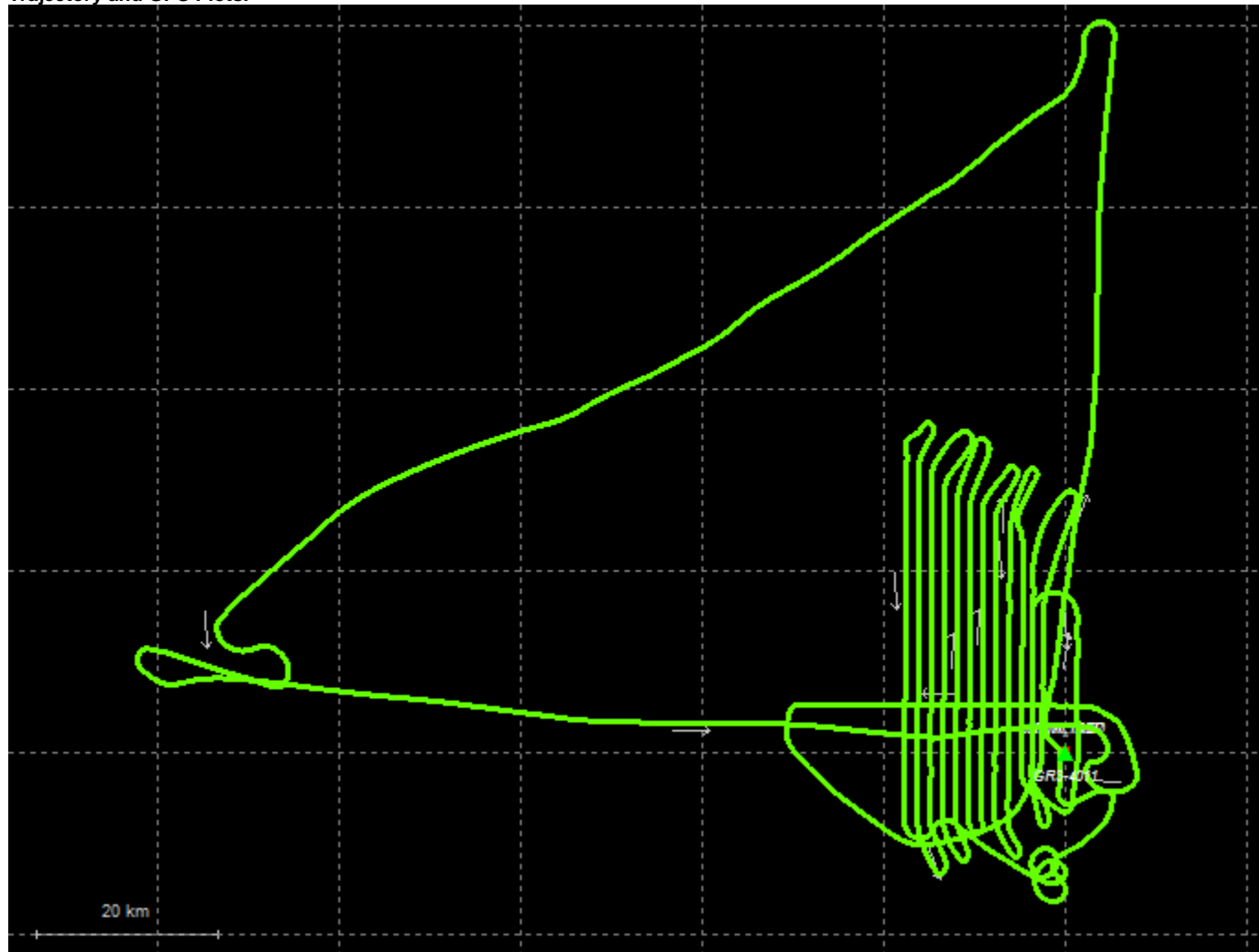

Menu
18.165

Lift Begin			Lift End			Flt Duration	Flt Hrs	Hobbs Hrs	Activity	
Airport	Chocks	Hobbs	Airport	Chocks	Hobbs					
1	KBAZ	16:21	8113.0	KBAZ	21:15	8117.9	4:54	5:00	4.9	0900-Production
2										
3										

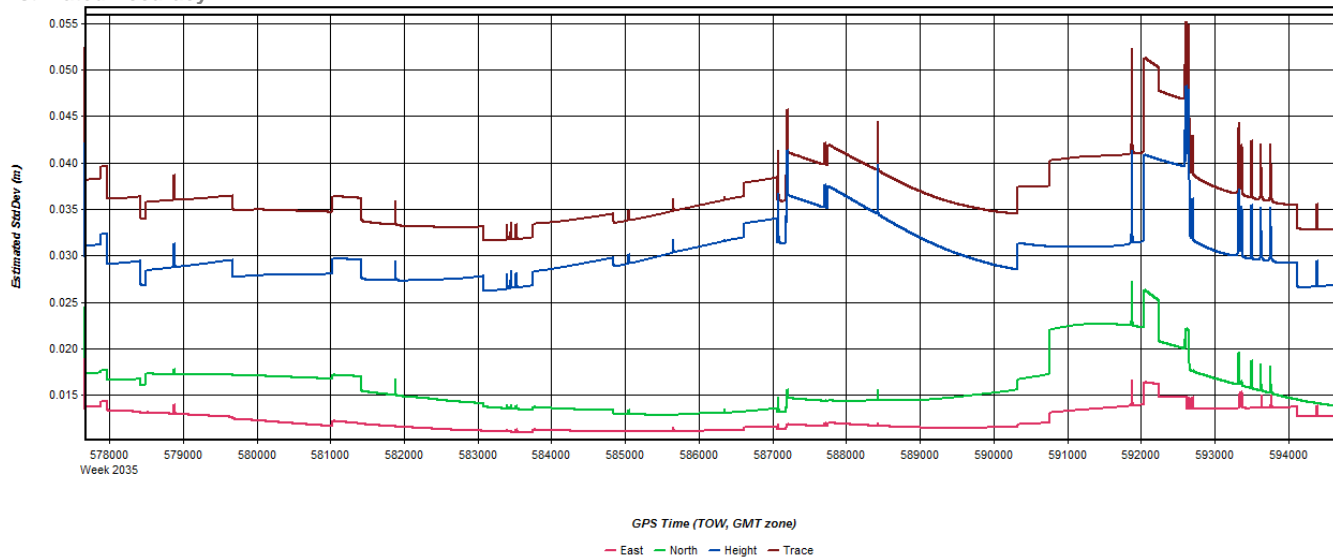
ALS  
Flight Log  
AC80-44-00-02

FGI Job #	Project Name			System	Unit	IMU	PIA	SW1	SW2-Gain	Aper	AutoScan	Ground Temp °C	Min Range Gate	Data Logger Drive	
<b>33780084</b>	<b>Hurricane Harvey ALS80</b>			<b>ALS80</b>	<b>133</b>	<b>uRS</b>	<b>3</b>		<b>255</b>	<b>60°</b>	<b>Yes</b>	<b>13.9 18.3</b>	<b>6244</b>	<b>MM70-04</b>	
Flight Date	GPS Day	Lift		Sun°	Solar Times (UTC)		Laser Power	Pattern	Flying Temp °C	Max Range Gate	Dow nload Drive				
<b>12-Jan-18</b>	<b>18-012</b>	<b>1</b>		<b>NA</b>	<b>NA</b>		<b>100%</b>	<b>Triangle</b>	<b>3.0 3.0</b>	<b>8323</b>	<b>NS1TB-95</b>				
Mission ID (ymmdd_Sen_Job_Lift)	Aircraft	Airport ID	FMS	UTC	AMT (ft)	Speed	Scan Hz	Pulse Rate	FOV	km/WPT	Altm Setting	Shipping Track			
<b>180112_133_33780084_01</b>	<b>N76JN</b>	<b>KBAZ</b>	<b>FCMS</b>		<b>7,550</b>	<b>150</b>	<b>35.0</b>	<b>352,000</b>	<b>43</b>	<b>1.384</b>	<b>30.13 30.08</b>				
Pilot #1		Pilot #2		Operator #1		Operator #2									
<b>Randy Green</b>		<b>Jeff Faulkner</b>		<b>Adam Mueller</b>											
Base 1 ID	Location	Rec ID	Ant ID	ARP (m)	Start Time (UTC)	Stop Time (UTC)	GPS Filename	Operator	Data						
<b>FGI 8003</b>	<b>KBAZ</b>	<b>Unit 4</b>	<b>U4</b>	<b>1.8</b>	<b>12-Jan-19 14:06</b>	<b>12-Jan-19 21:27</b>	<b>GR3-40112o</b>	<b>Adam Mueller</b>	<b>With AB</b>						
Base 2 ID	Location	Rec ID	Ant ID	ARP (m)	Start Time (UTC)	Stop Time (UTC)	GPS Filename	Operator	Data						
Area	Flight #		Wpt		Distance		UTC		Dir	Altitude (GPS)	Speed (knots)	Scan Rate	Comments and Conditions	SVs	PDOP
	FGI	Client's	From	To	Begin	End	Start	End							
													Ground Static at KBAZ	25	1.1
													S Turn	25	1.1
Block_F	74		68	50	92.7	67.8	18:08:49	18:16:25	E	8284	105	35.0	Cross Line	25	1.1
			1	7	0	8.3	18:25:16	18:27:29	N	8120	148	35.0		24	1.1
			14	1	18	0	18:33:52	18:38:11	S	8172	135	35.0		23	1.1
			1	10	0	12.5	18:43:08	18:46:26	N	8172	130	35.0	Calibration Line	21	1.4
			1	14	0	18	18:55:59	19:01:40	N	8120	130	35.0		23	1.1
			20	1	26.3	0	19:07:23	19:13:36	S	8153	150	35.0		23	1.1
			1	22	0	29.1	19:17:04	19:24:56	N	8071	130	35.0	km 16-17 roll	20	1.3
			23	1	30.4	0	19:28:46	19:36:16	S	8162	140	35.0		20	1.5
			1	24	0	31.8	19:38:03	19:46:22	N	8071	130	35.0		19	1.4
			24	1	31.8	0	19:50:22	19:57:57	S	8071	140	35.0		19	1.3
			1	25	0	33.2	20:01:41	20:10:08	N	8071	120	35.0		19	1.3
			26	1	34.6	0	20:14:04	20:22:25	S	8120	140	35.0	km 25-24 cloud; km 4-2 drift off line	16	1.3
			1	26	0	34.6	20:26:33	20:35:24	N	8120	135	35.0		17	1.3
			28	1	37.4	0	20:38:30	20:47:33	S	8120	135	35.0		21	1.1
							20:47:59	20:49:34					S Turn	19	1.1
							21:07:00	21:12:00					Ground Static	20	1.1

Trajectory and GPS Plots:

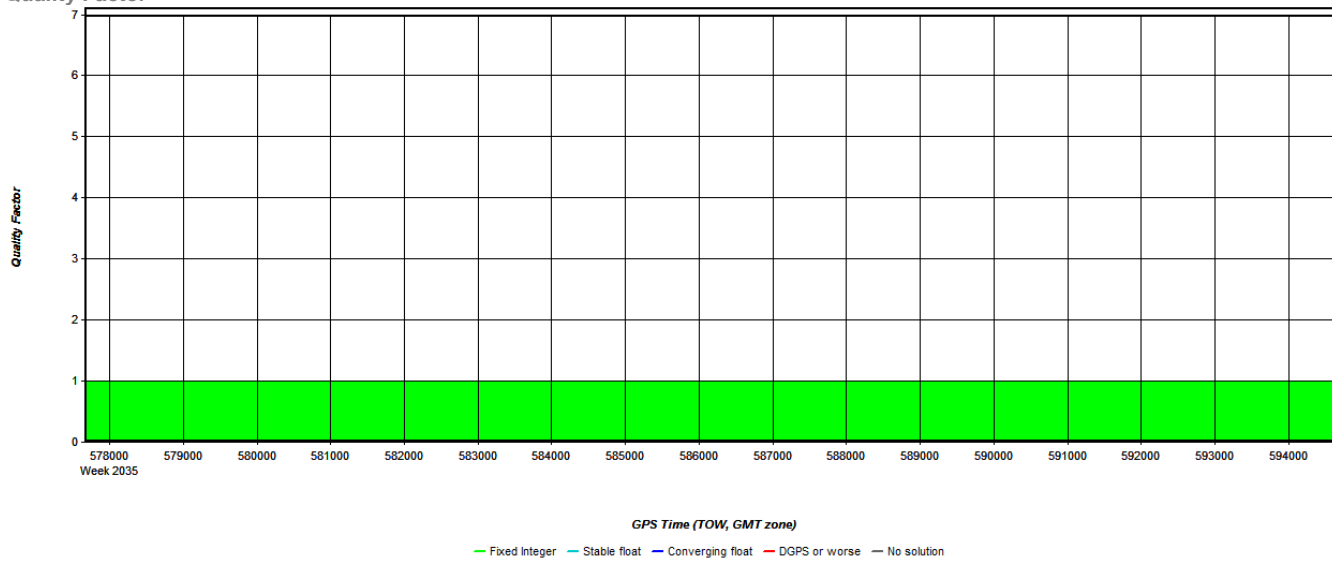


Estimated Accuracy

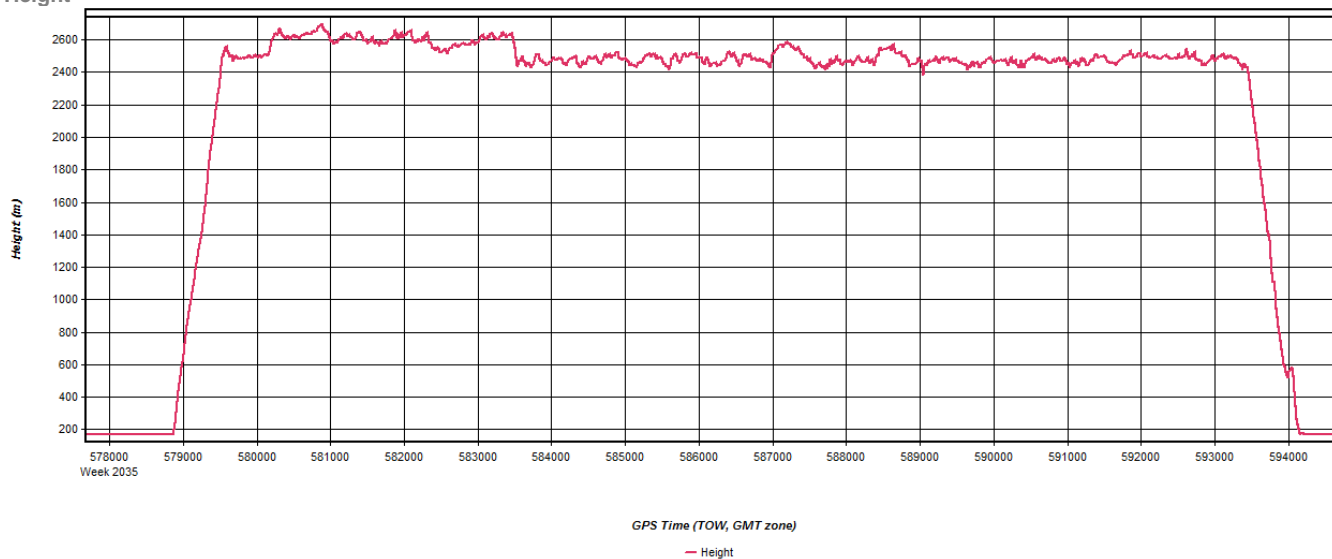




Quality Factor

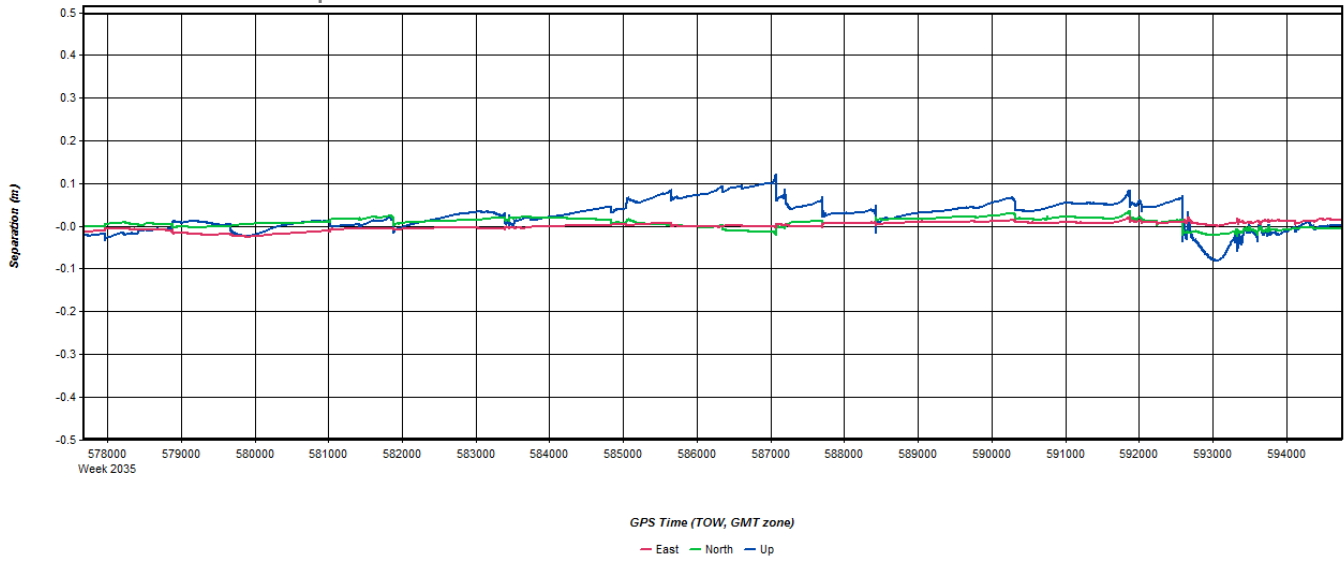


Height

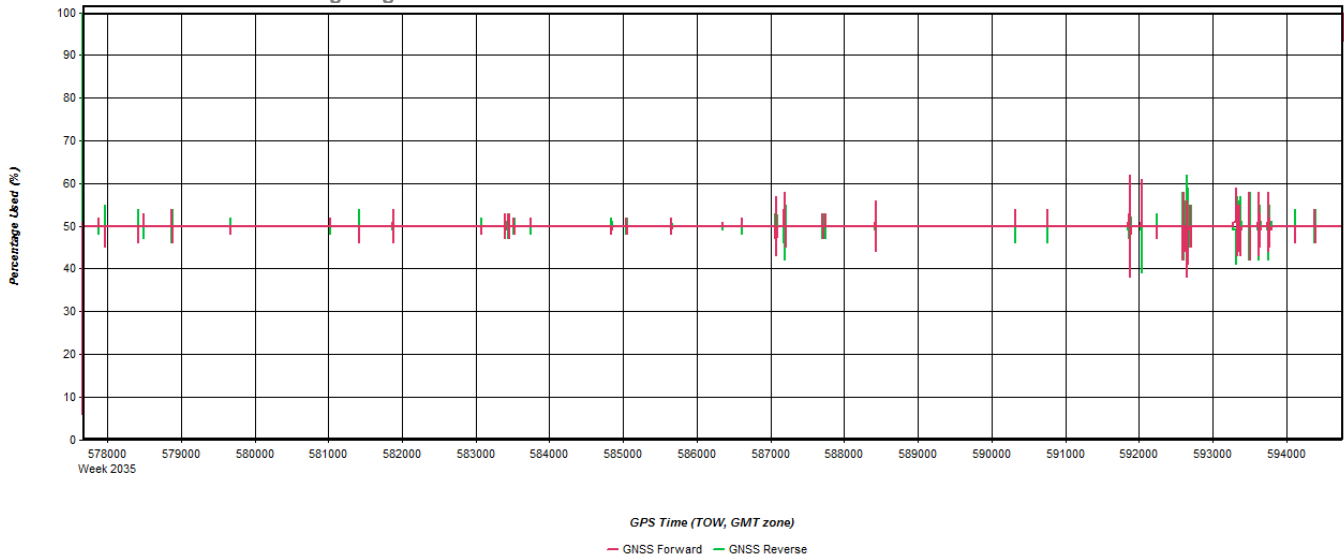


**USGS  
COLLECTION REPORT**

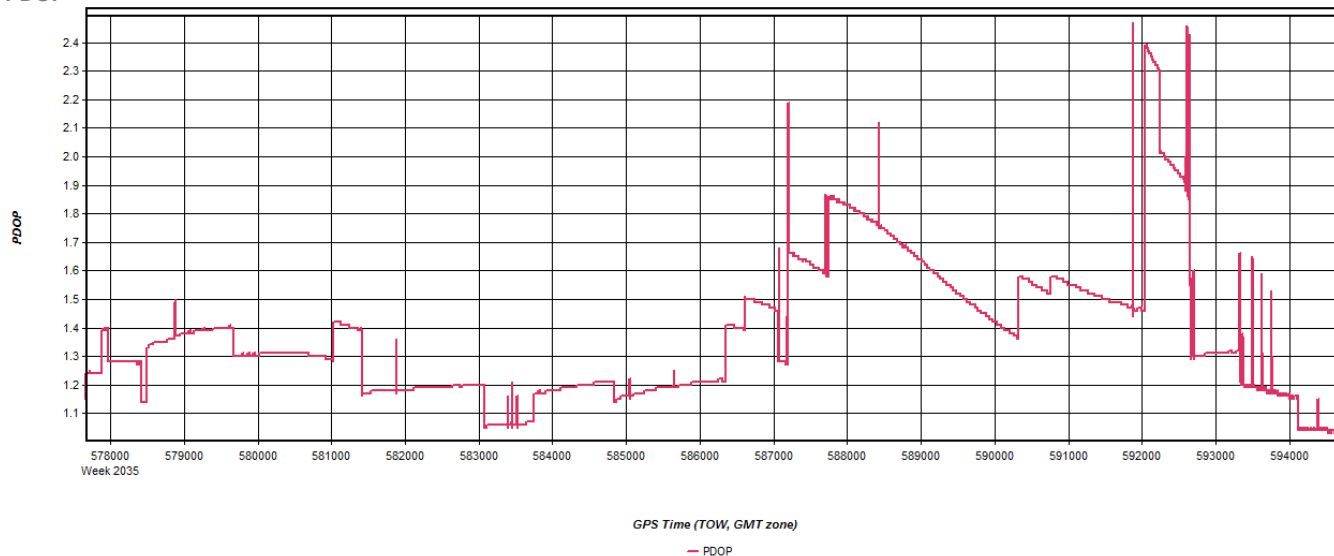
**Combined Forward/Reverse Separation**



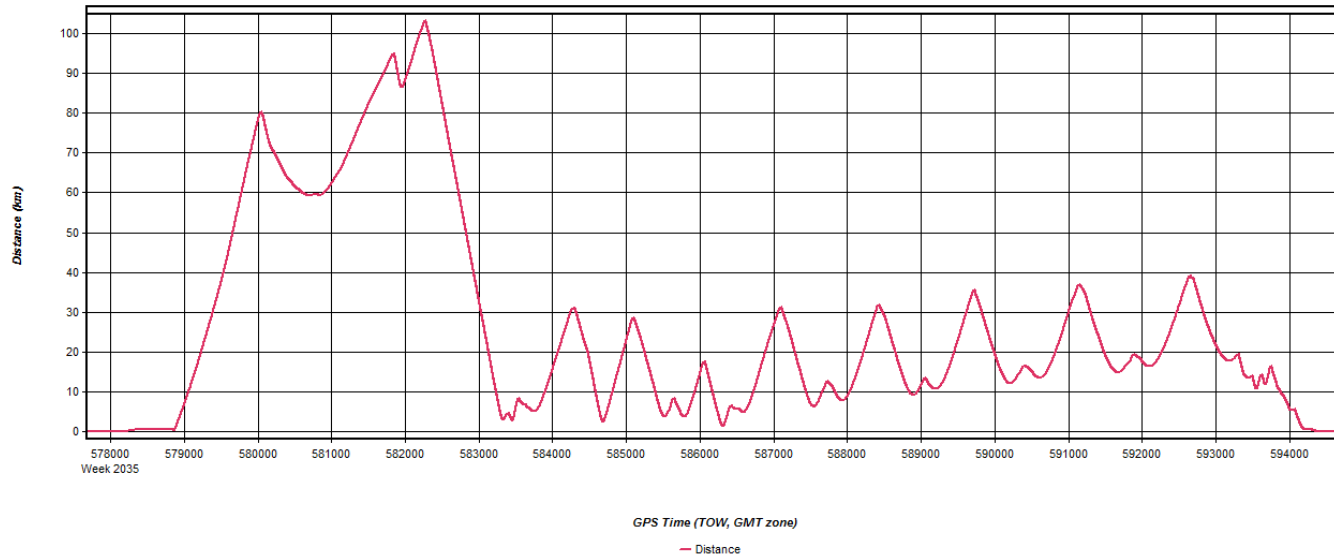
**Combined Forward/Reverse Weighting**



PDOP

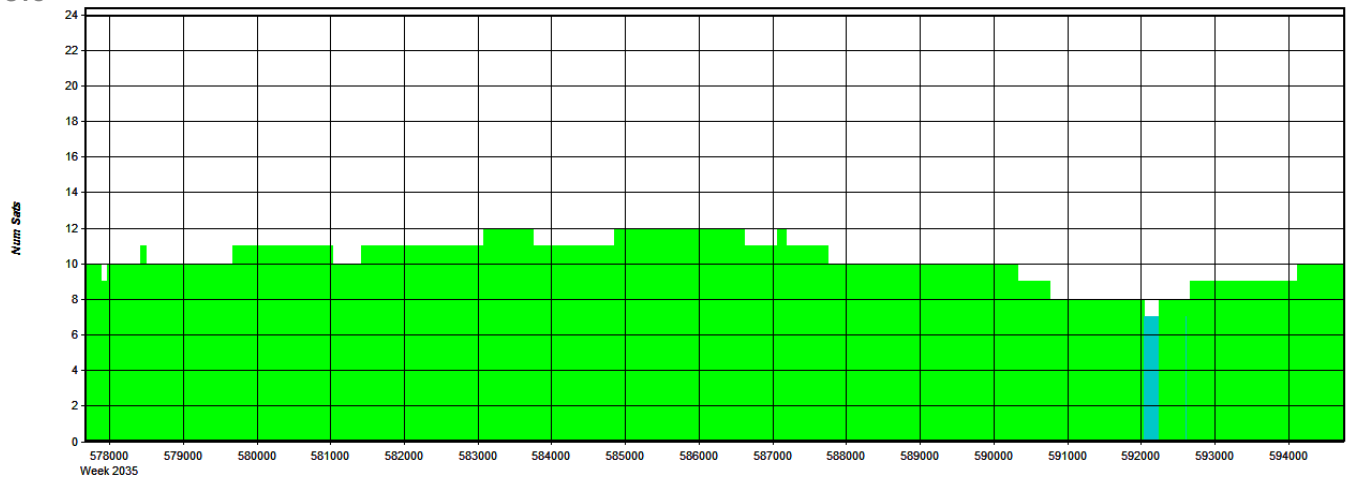


Distance from Base





SVs



GPS Time (TOW, GMT zone)  
- Too Few - Minimal - Acceptable - Good - Exceptional



Acquisition and Processing details ----- (January 13, 2019)

Log: 190113\_130\_33780084\_04

	Menu	18.165	Lift Begin			Lift End			Flt Duration	Flt Hrs	Hobbs Hrs	Activity
			Airport	Chocks	Hobbs	Airport	Chocks	Hobbs				
	1		KALI	14:35	1328.5	KALI	18:54	1332.4	4:19	4.25	3.9	
	2											

ALS  
Flight Log  
AC80-44-00-02

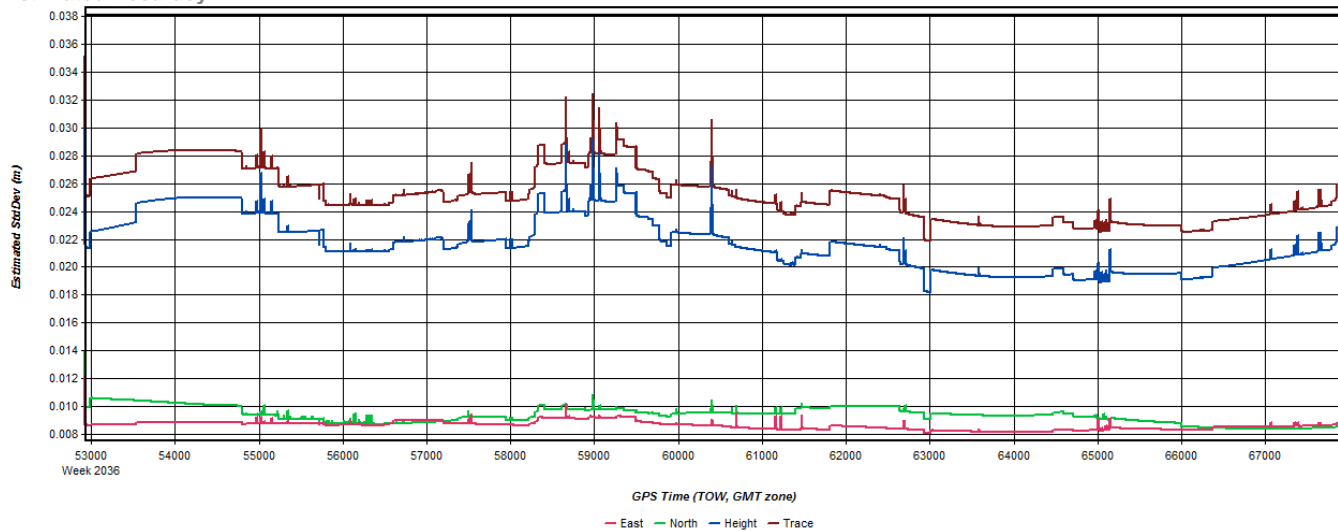
FGI Job # <b>33780084</b>	Project Name <b>Hurricane Harvey</b>			System <b>ALS80</b>	Unit <b>130</b>	IMU <b>uIRS</b>	PIA <b>4</b>	SW1	SW2-Gain	Aper	AutoScan	Ground Temp °C <b>7.0 13.0</b>	Min Range Gate <b>2232</b>	Data Logger Drive <b>LG101</b>				
Flight Date <b>13-Jan-19</b>	GPS Day <b>19-013</b>	Lift <b>4</b>		Sun°	Solar Times (UTC)	Laser Power <b>96%</b>	Pattern <b>Triangle</b>	Flying Temp °C <b>2.0 4.0</b>	Max Range Gate <b>2691</b>	Down load Drive <b>NS1TB-70</b>								
Mission ID (ymmdd_Sen_Job_Lift) <b>190113_130_33780084_04</b>	Aircraft <b>N97HC</b>	Airport ID <b>KALI</b>	FMS <b>CCNS 8</b>	UTC <b>-6</b>	AMT (ft) <b>7,900</b>	Speed <b>150</b>	Scan Hz <b>34.0</b>	Pulse Rate <b>443</b>	FOV	km/WPT <b>1.448</b>	Altm Setting <b>30.35 30.38</b>		Shipping Track <b>774179739350</b>					
Pilot #1 <b>Grant Cassell</b>		Pilot #2		Operator #1 <b>Riley Forsyth</b>		Operator #2												
Base 1 ID <b>FUSAL 100</b>	Location <b>KALI</b>		Rec ID <b>GR3-1</b>	Ant ID <b>GR3-1</b>	ARP (m) <b>1.8</b>	Start Time (UTC)	Stop Time (UTC)	GPS Filename <b>Unit10113n</b>	Operator <b>Riley Forsyth</b>	Data <b>With AB</b>								
Area	Flight #	Wpt	Distance	UTC		Flt	Altitude	Speed	Scan	Comments and Conditions				SVs	PDOP			
	FGI	Client's	From	To	Begin	End	Start	End	Dir	(GPS)	(knots)	Rate						
							14:42:18	14:47:18					Ground static at KALI				20	1.3
							15:05:17	15:10:17					overfly TXGW cors				18	1.5
							15:15:46						s turn				20	1.2
Block C	26	1	33	0	46.3	15:22:41	15:33:44	NE	8051	143			cross tie line				21	1.1
	25	1	51	0	72.4	15:40:24	15:57:26	NW	8153	135							22	1.1
	24	52	1	73.8	0	15:59:16	16:16:14	SE	8322	140							24	1.1
	24	1	10	0	13	16:18:59	16:22:05	NW	8178	128			calibration line				24	1.0
	23	1	52	0	73.8	16:28:35	16:45:42	NW	8154	136			clouds wpt 1-5				24	1.1
	22	52	1	73.8	0	16:47:26	17:04:28	SE	8321	139							20	1.2
	21	1	52	0	73.8	17:06:42	17:23:47	NW	8111	134							21	1.1
	20	52	1	73.8	0	17:25:30	17:42:47	SE	8253	138			clouds wpt 6-1				22	1.1
	19	1	52	0	73.8	17:45:12	18:02:14	NW	8054	139			clouds wpt 1-20				21	1.2
							18:02:17						s turn				22	1.1
							18:23:38	18:28:38					overfly TXGW cors				20	1.2
							18:47:02	18:52:02					Ground static at KALI				19	1.2



Trajectory and GPS Plots:

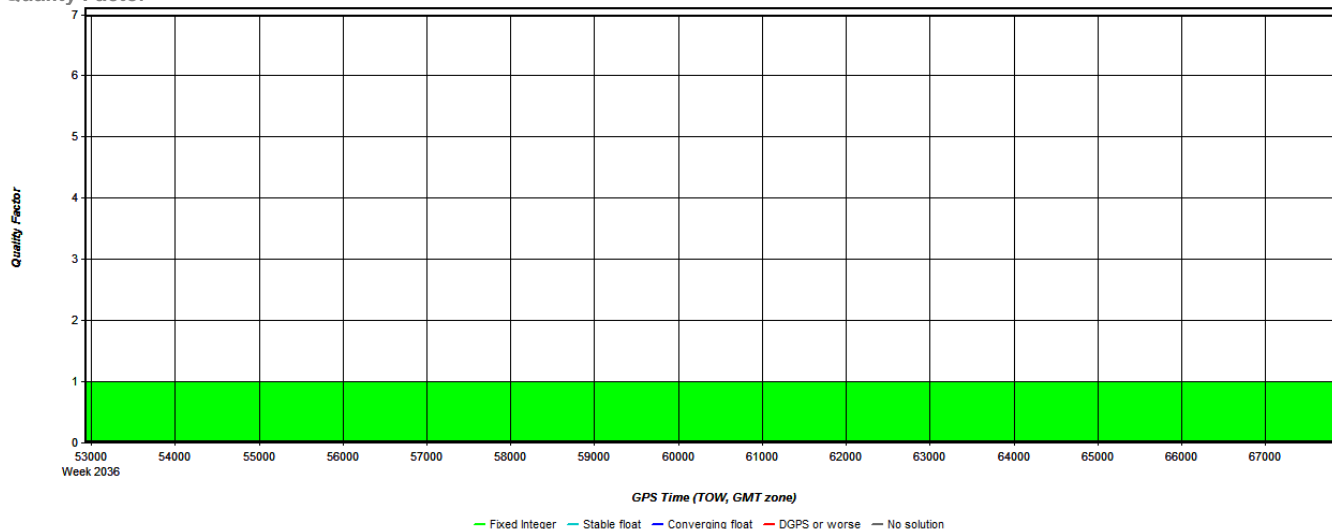


Estimated Accuracy

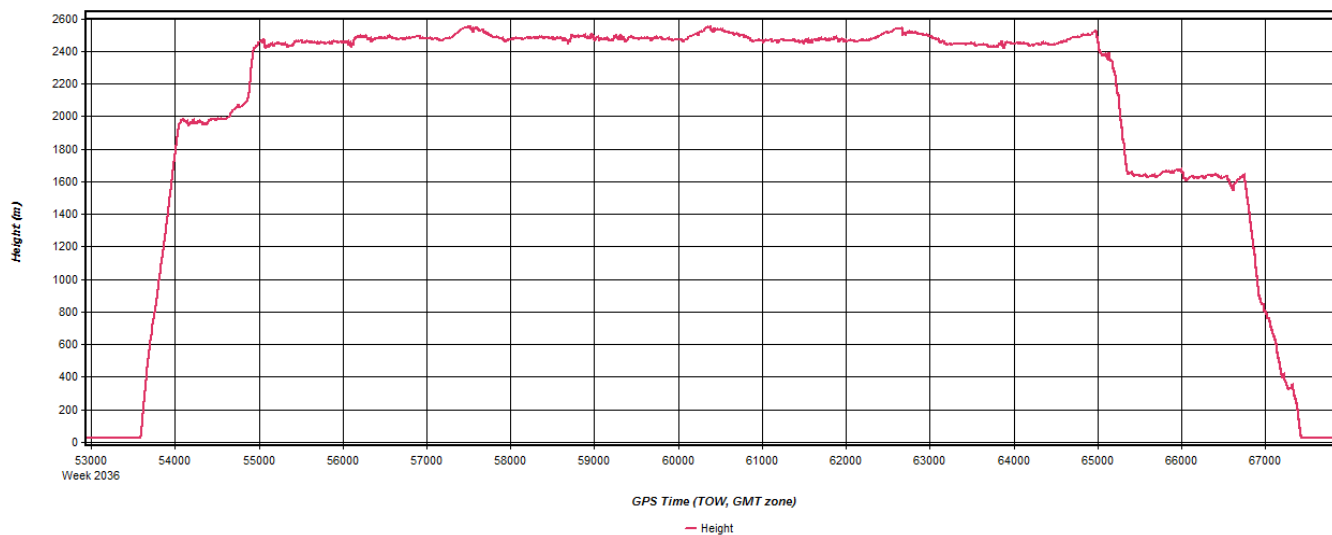




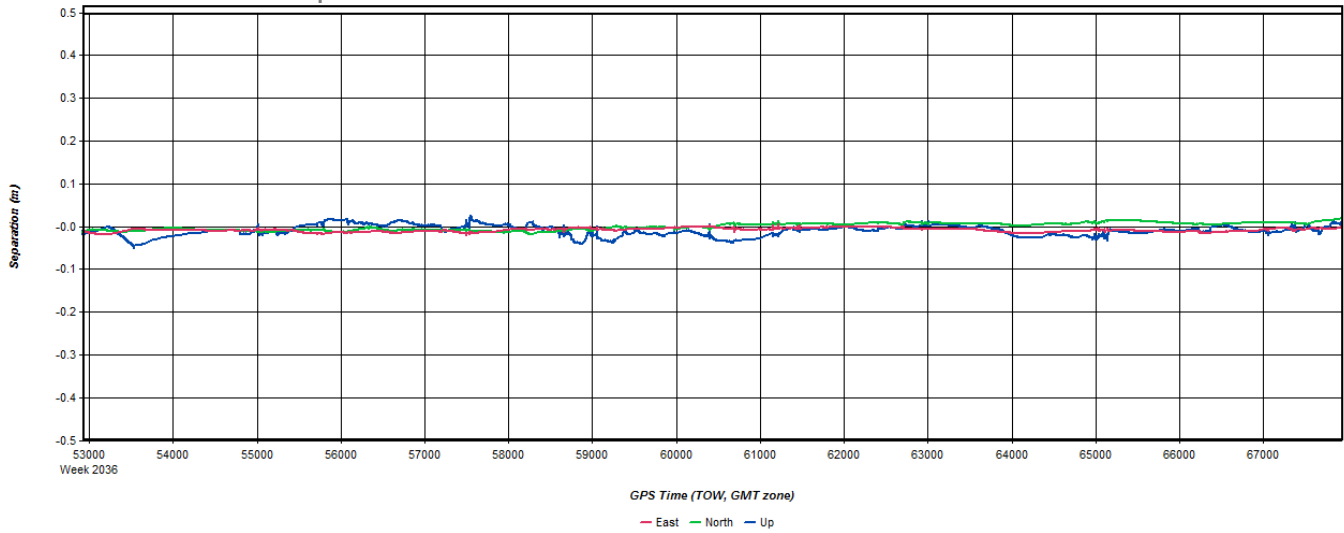
Quality Factor



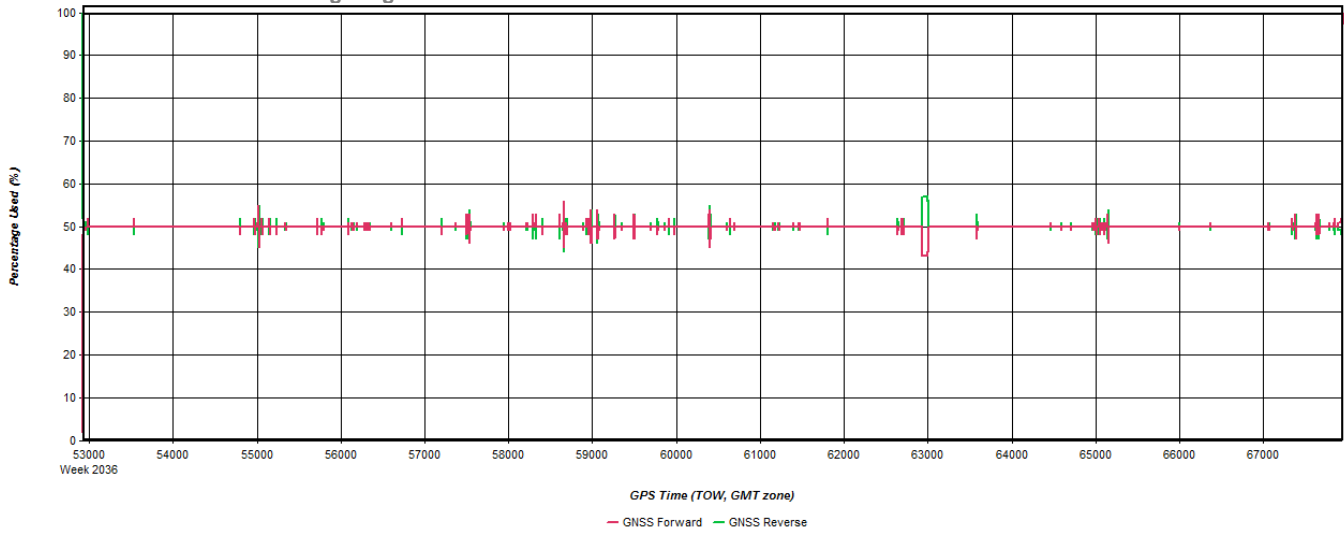
Height



Combined Forward/Reverse Separation

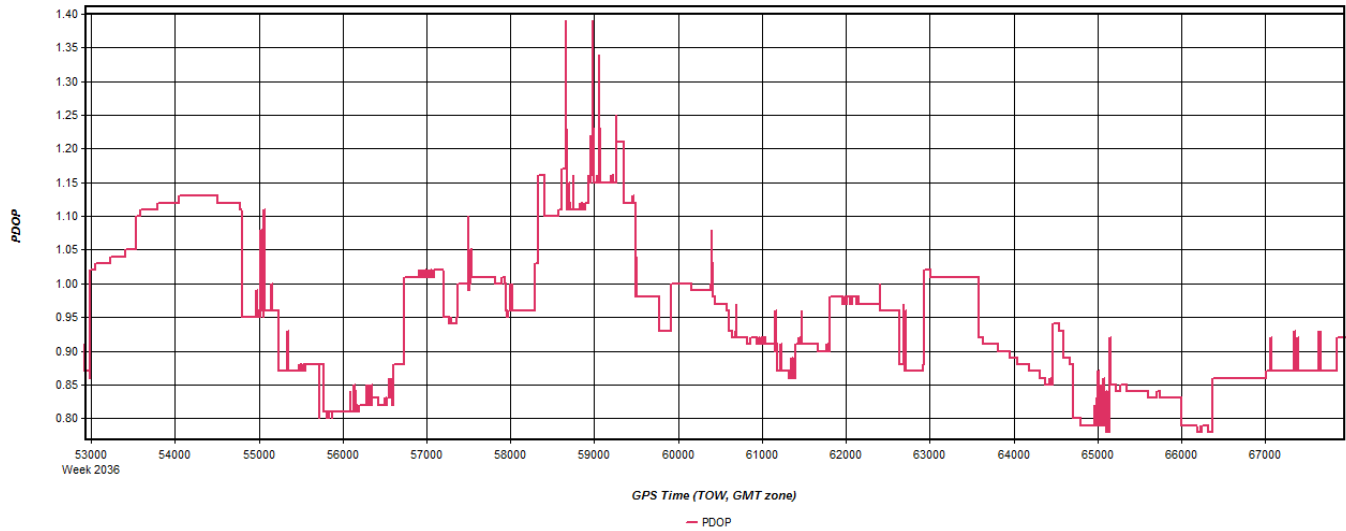


Combined Forward/Reverse Weighting

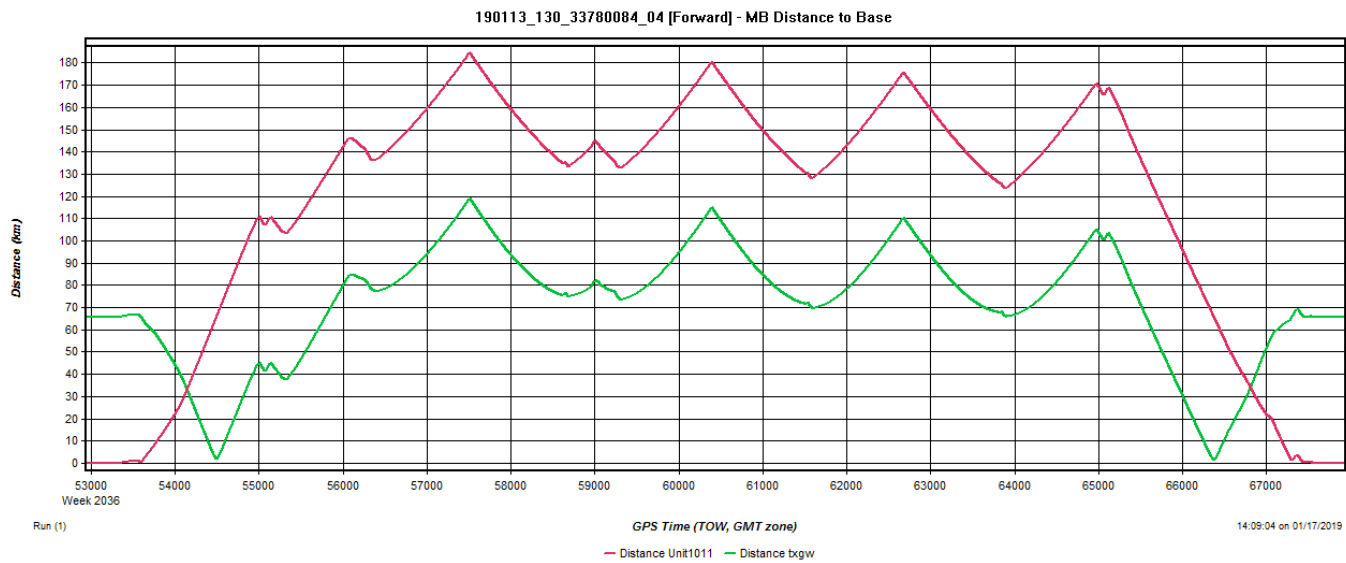


# USGS COLLECTION REPORT

## PDOP



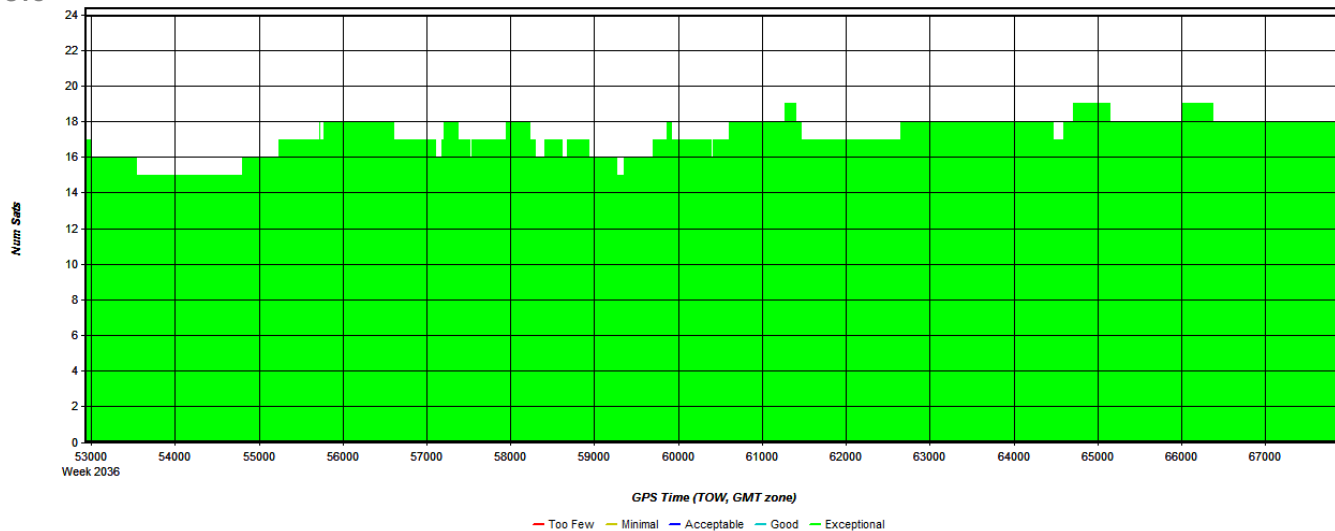
## Distance from Base



# USGS COLLECTION REPORT



SVs





Acquisition and Processing details ----- (January 13, 2019)

Log: 190113\_133\_33780084\_02

	Menu	18.165	Lift Begin			Lift End			Flt Duration	Flt Hrs	Hobbs Hrs	Activity
			Airport	Chocks	Hobbs	Airport	Chocks	Hobbs				
	1		KBAZ	14:58	8117.9	KBAZ	19:30	8122.4	4:31	4.50	4.5	0900-Production
	2											
		3										

**ALS**  
Flight Log  
AC80-44-00-02

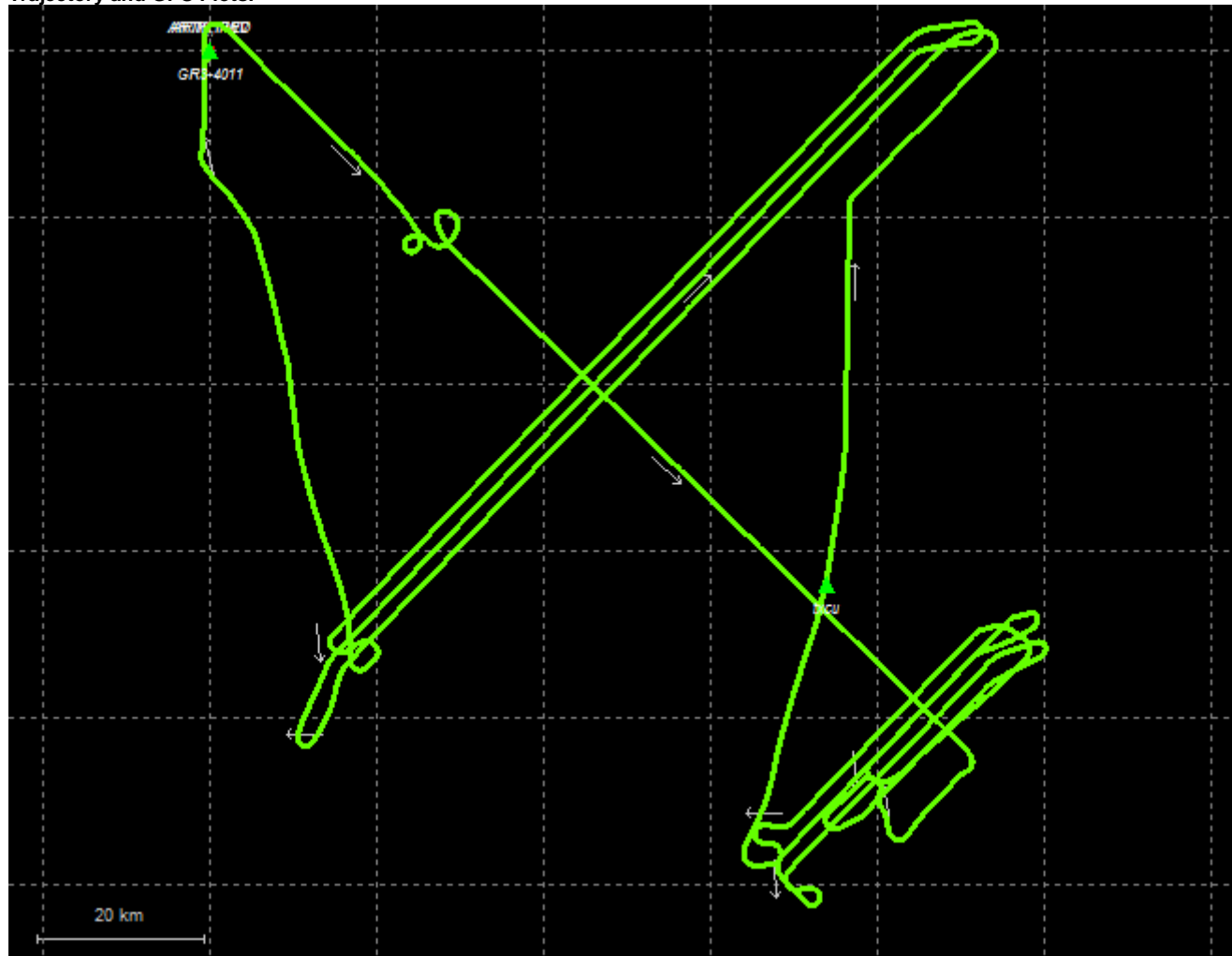
FGI Job # <b>33780084</b>	Project Name <b>Hurricane Harvey ALS80</b>		System <b>ALS80</b>	Unit <b>133</b>	IMU <b>uRS</b>	PIA <b>4</b>	SW1 <b>255</b>	SW2-Gain <b>60°</b>	Aper <b>Yes</b>	AutoScan <b>Yes</b>	Ground Temp °C <b>5.6 11.7</b>	Min Range Gate <b>7322</b>	Data Logger Drive <b>MM70-04</b>
Flight Date <b>13-Jan-19</b>	GPS Day <b>19-013</b>	Lift <b>2</b>	Sun° <b>NA</b>	Solar Times (UTC) <b>NA</b>	Laser Power <b>100%</b>	Pattern <b>Triangle</b>	Flying Temp °C <b>4.0 4.0</b>	Max Range Gate <b>8830</b>	Download Drive <b>NS1TB-95</b>		Shipping Track <b>774180238099</b>		
Mission ID (ymmdd_Sen_Job_Lift) <b>190113_133_33780084_02</b>	Aircraft <b>N76JN</b>	Airport ID <b>KBAZ</b>	FMS <b>FCMS</b>	UTC <b>7,900</b>	AMT (ft) <b>150</b>	Speed <b>34.0</b>	Scan Hz <b>442,600</b>	FOV <b>46</b>	km/WPT <b>1.448</b>	AltM Setting <b>30.39 30.34</b>			

Pilot #1 <b>Randy Green</b>	Pilot #2 <b>Jeff Faulkner</b>	Operator #1 <b>Adam Mueller</b>	Operator #2
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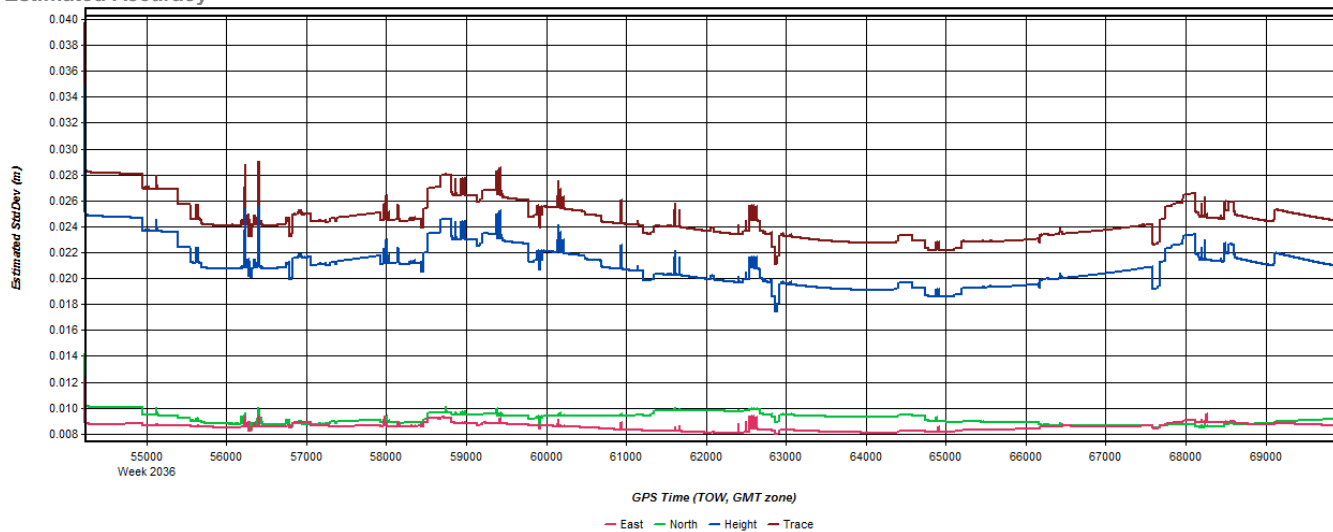
Base 1 ID <b>FGI 8003</b>	Location <b>KBAZ</b>	Rec ID <b>Unit 4</b>	Ant ID <b>U4</b>	ARP (m) <b>1.8</b>	Start Time (UTC) <b>13-Jan-19 14:24</b>	Stop Time (UTC) <b>13-Jan-19 19:37</b>	GPS Filename <b>GR3-401130</b>	Operator <b>Adam Mueller</b>	Data <b>With AB</b>
Base 2 ID <b>TXCU CORS</b>	Location <b>TX</b>	Rec ID <b>CORS</b>	Ant ID	ARP (m)	Start Time (UTC)	Stop Time (UTC)	GPS Filename <b>CORS</b>	Operator <b>CORS</b>	Data

Area	Flight #		Wpt		Distance		UTC		Flt Dir	Altitude (GPS)	Speed (knots)	Scan Rate	Comments and Conditions	SVs	PDOP
	FGI	Client's	From	To	Begin	End	Start	End							
							15:05:29	15:10:29					Ground Static at KBAZ	17	1.5
							15:35:44	15:39:13					S Turn	20	1.2
Block D	84		1	55	0	78.2	15:42:07	16:00:18	E	7913	143	34.0	Cross line	21	1.1
	82		1	11	0	14.5	16:11:15	16:14:49	N	7913	140	34.0		24	1.0
	81		19	1	26.1	0	16:20:21	16:27:54	S	7913	120	34.0		24	1.0
	80		1	21	0	29	16:32:58	16:39:52	N	7913	145	34.0	<b>km 1 roll</b>	24	1.0
	80		21	11	29	14.5	16:45:34	16:49:32	S	7913	125	34.0	Calibration line	21	1.1
	79		22		30.4		16:57:54	17:04:43	S	7913	125	34.0	<b>End line wpt 5 due to cloud layer</b>	21	1.1
							17:06:41	17:08:31					S Turn	21	1.1
							17:13:23	17:18:23					Over Flight TXCU CORS	22	1.1
Block D	50		66	1	94.1	0	17:33:38	17:57:24	S	8064	130	34.0		22	1.1
	49		1	66	0	94.1	18:04:26	18:25:45	N	8064	145	34.0		20	1.1
	48		66	1	94.1	0	18:31:19	18:55:23	S	8064	135	34.0	km 70 drift off line; km 4- 1 possible cloud	20	1.2
							18:55:42	18:57:38					S Turn	21	1.0
							19:20:07	19:25:07					Ground Static at KBAZ	16	1.4

Trajectory and GPS Plots:

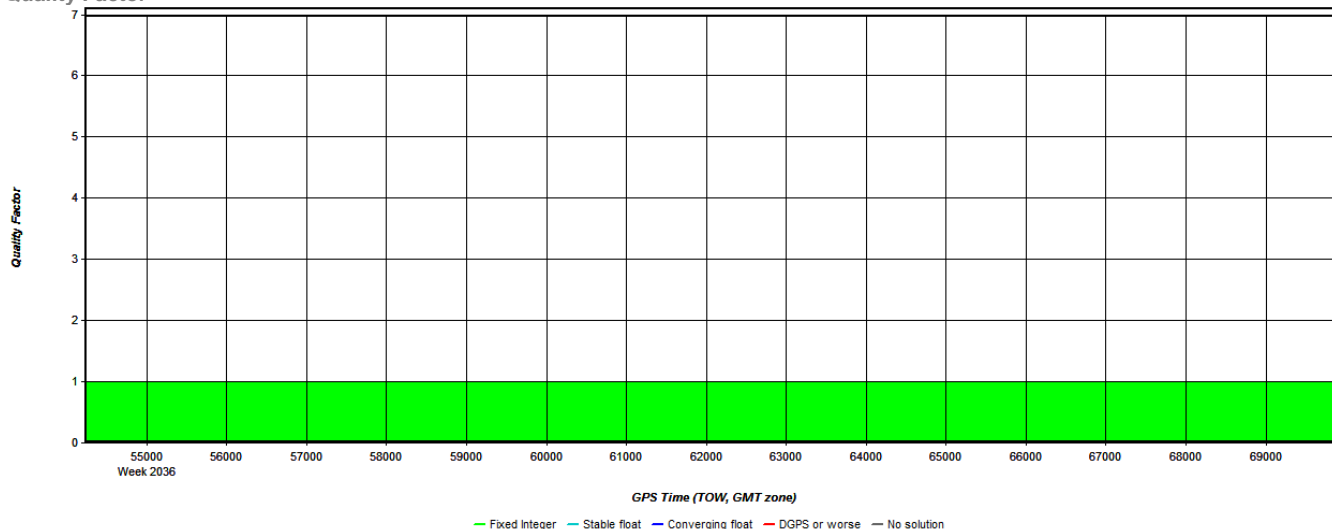


Estimated Accuracy

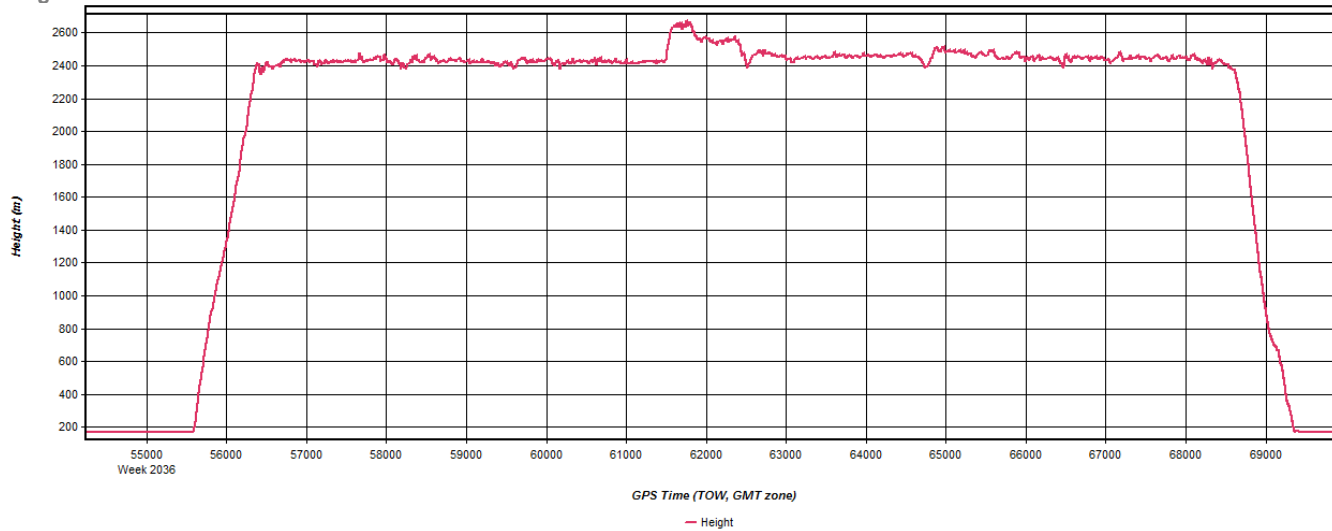




Quality Factor

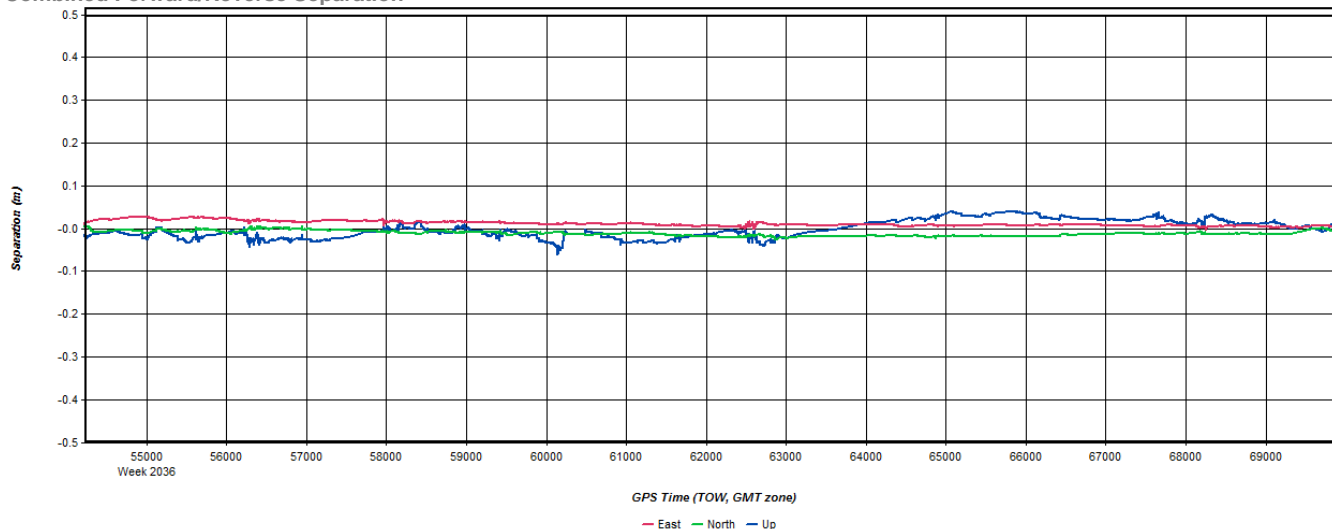


Height

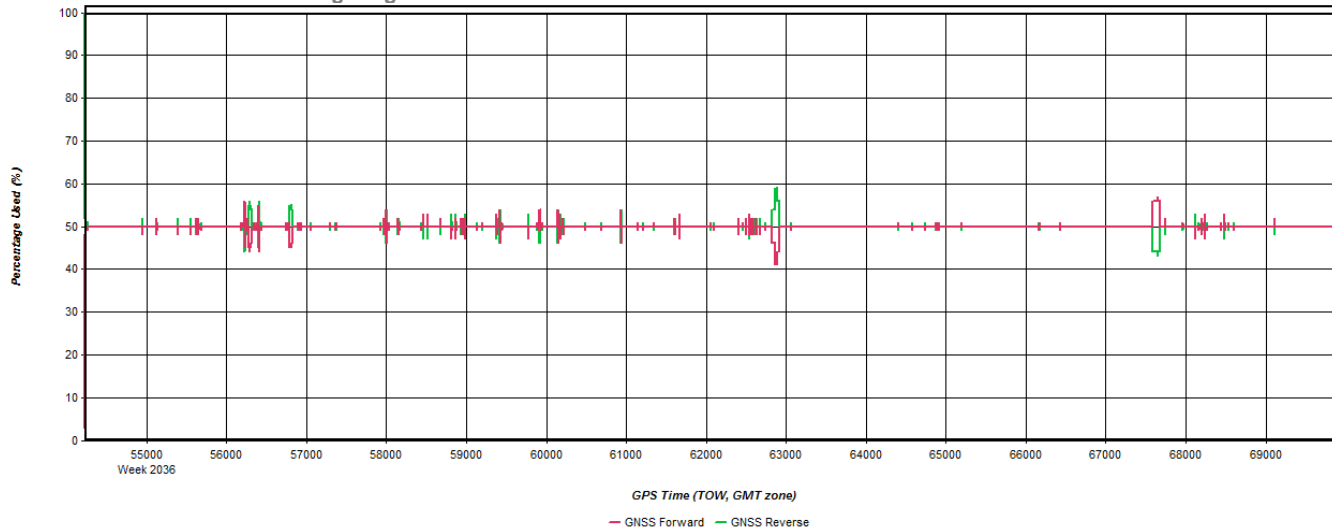




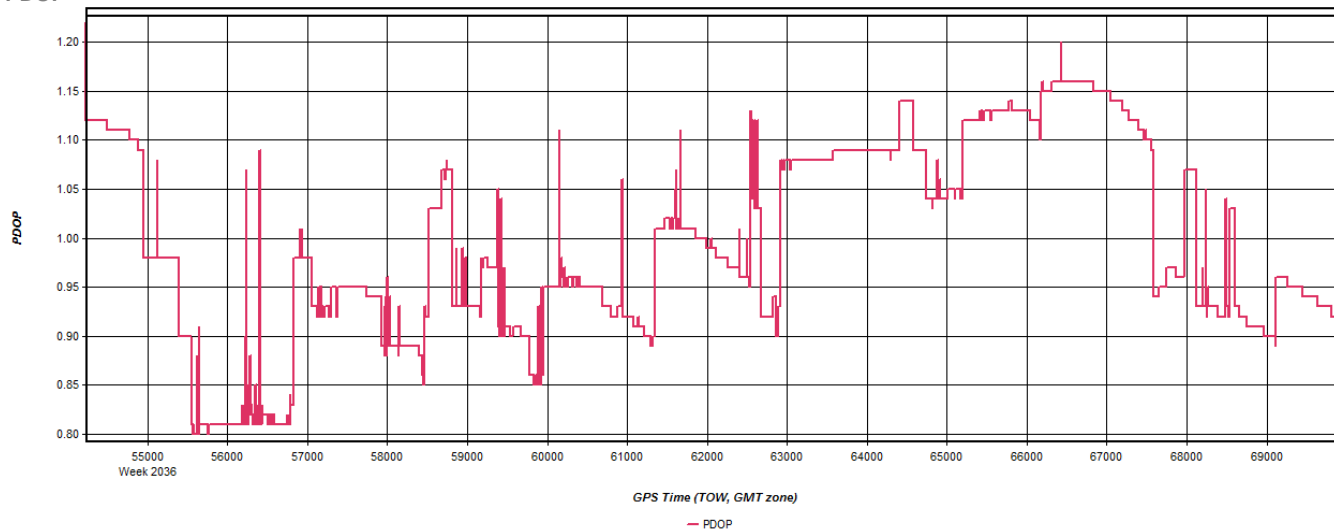
Combined Forward/Reverse Separation



Combined Forward/Reverse Weighting

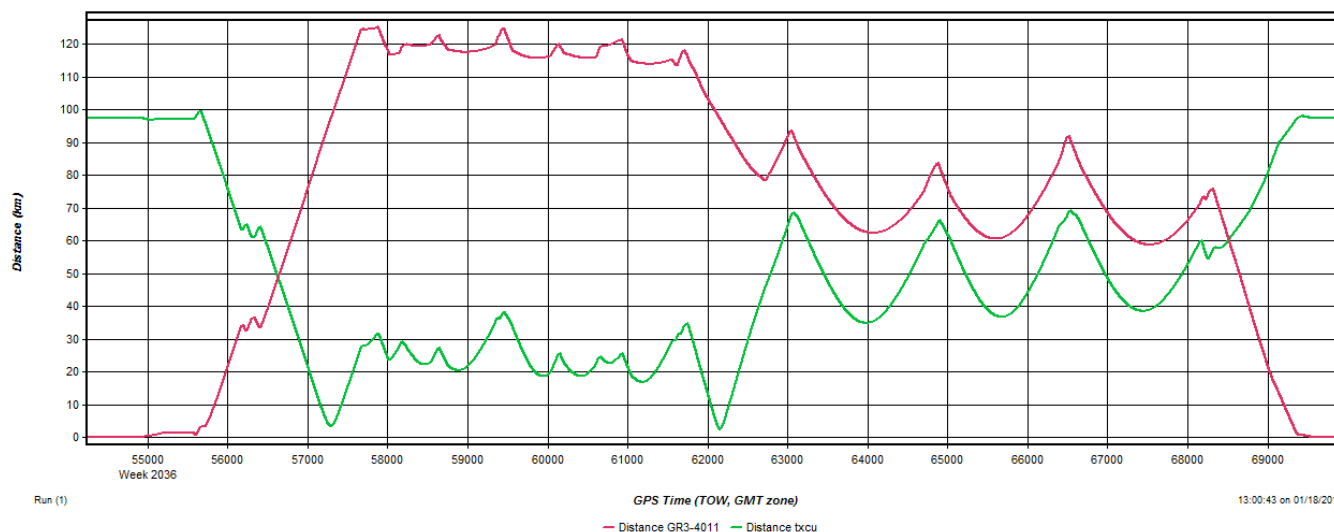


PDOP



Distance from Base

190113\_133\_33780084\_02 [Forward] - MB Distance to Base

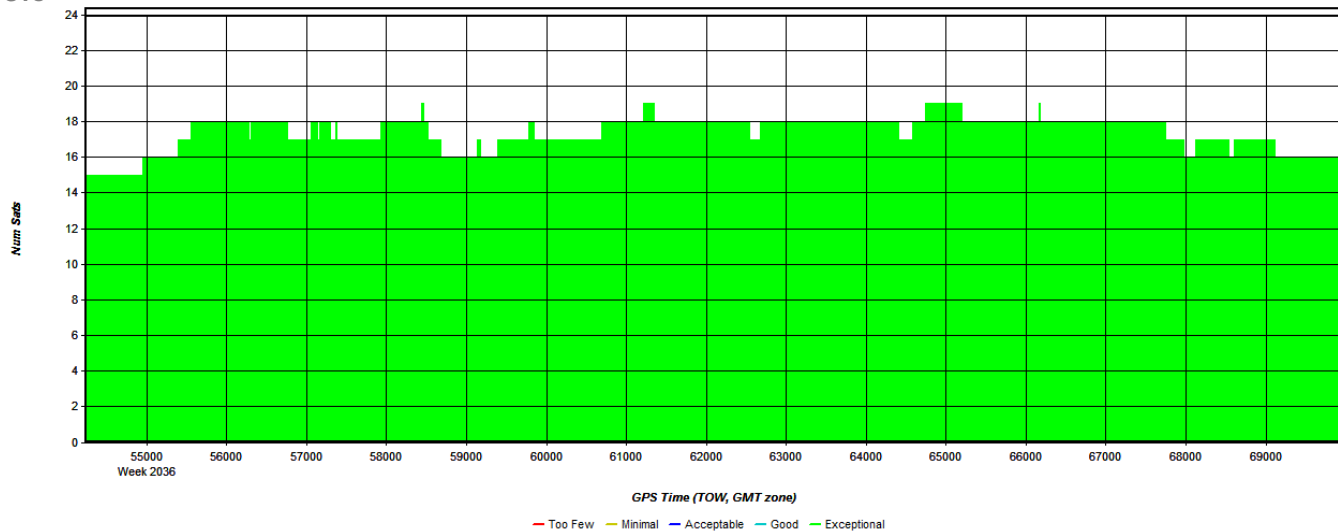


Run (1)

13:00:43 on 01/18/2019



SVs





Acquisition and Processing details ----- (January 17, 2019)

Log: 190117\_118\_33780084\_08

	Menu	18.165	Lift Begin			Lift End			Flt	Flt	Hobbs	 <b>ALS</b> Flight Log AC80-44-00-02	
			Airport	Chocks	Hobbs	Airport	Chocks	Hobbs	Duration	Hrs	Hrs		Activity
	1		16:19	2952.3	KBB	21:08	2956.7	4:48	4.75	4.4	0900-Production		
	2												
3													

FGI Job # <b>33780084</b>	Project Name <b>Hurricane Harvey ALS80</b>		System <b>ALS80</b>	Unit <b>118</b>	IMU <b>uRS</b>	PIA <b>4</b>	SW1 <b>-</b>	SW2-Gain <b>-</b>	Aper <b>60°</b>	AutoScan <b>Yes</b>	Ground Temp °C <b>16.0</b>	Min Range Gate <b>2232m</b>	Data Logger Drive <b>MM70-08</b>
Flight Date <b>17-Jan-19</b>	GPS Day <b>19-017</b>	Lift <b>8</b>	Sun° <b>-</b>		Solar Times (UTC) <b>-</b>		Laser Power <b>96%</b>		Pattern <b>Triangle</b>		Flying Temp °C <b>8.0</b>	Max Range Gate <b>2691m</b>	Down load Drive <b>NS1TB-107</b>
Mission ID (ymmdd_Sen_Job_Lift) <b>190117_118_33780084_08</b>		Aircraft <b>N8131</b>	Airport ID <b>KG TU</b>	FMS <b>CCNS 3</b>	UTC <b>-6</b>	AMT (ft) <b>7,900</b>	Speed <b>150</b>	Scan Hz <b>34.0</b>	Pulse Rate <b>442,600</b>	FOV <b>46</b>	kmWPT <b>1.448</b>	Altm Setting <b>#### 30.12</b>	Shipping Track <b>8106 5072 6389</b>

Plot #1 <b>Kevin Ellington</b>		Plot #2 <b>-</b>		Operator #1 <b>Chris Acuña</b>		Operator #2 <b>-</b>	
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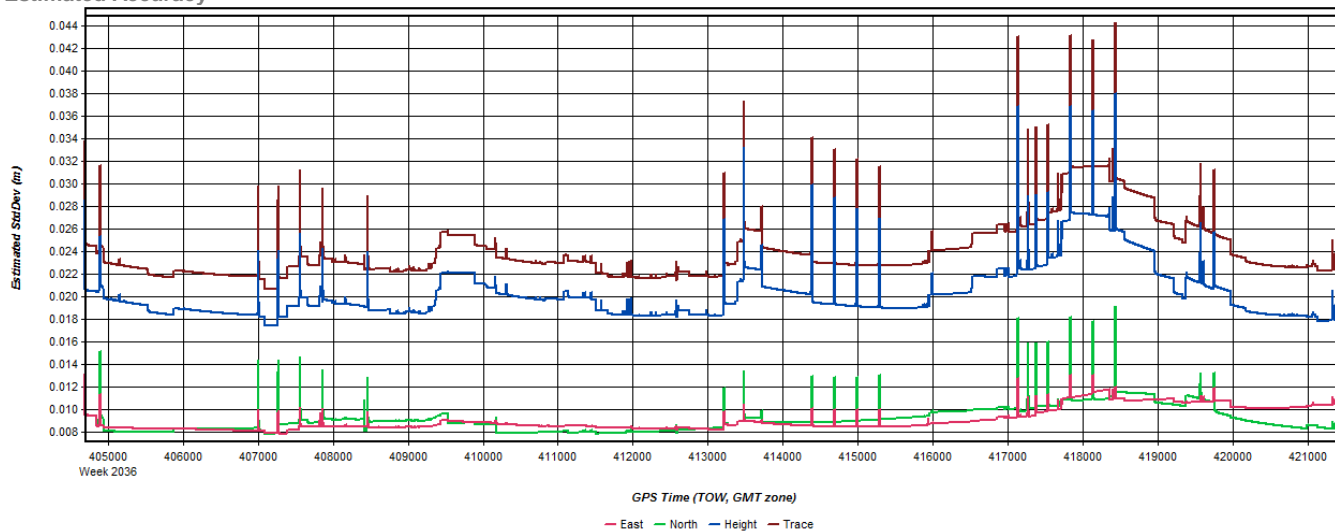
Base 1 ID <b>FEDI 1115</b>	Location <b>KG TU</b>		Rec ID <b>GR3#5</b>	Ant ID <b>GR3#5</b>	ARP (m) <b>1.8</b>	Start Time (UTC) <b>17-Jan-19 14:03</b>	Stop Time (UTC) <b>19-Jan-19 00:57</b>	GPS Filename <b>Unit#50117o</b>	Operator <b>Chris Acuña</b>	Data <b>With AB</b>
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Area	Flight #		Wpt		Distance		UTC		Flt	Altitude (GPS)	Speed (knots)	Scan Rate	Comments and Conditions	SVs	PDOP	
	FGI	Client's	From	To	Begin	End	Start	End								
													Aspen GPS Tracker is "Off"			
								16:24:57	16:29:57				5 Min GND static alignment at KG TU	20	1.2	
								17:03:21	17:08:21				5 Min acquisition of CORS TXSB	21	1.2	
								17:16:39	17:18:45				S-Turn in flight alignment	24	1.1	
Block_I	37		1	26				17:24:39					Crossing Line; Aborted line for speed was to fast over 175 kts			
	37		1	26	0	36.2		17:34:13	17:42:24	84	9030	144	-		25	1.1
	17		47	1	66.6	0		18:00:38	18:15:51	175	9036	142	-		22	1.3
	17		1	13	0	17.4		18:21:01	18:24:49	356	9020	147	-	Calibration line	24	1.1
	16		1	47	0	66.6		18:35:36	18:50:29	355	9060	146	-	Smoke from gnd fire first 7 km	24	1.1
	15		47	1	66.6	0		18:56:15	19:11:22	175	9005	145	-		21	1.1
	14		1	47	0	66.6		19:15:38	19:30:28	355	9000	145	-		18	1.3
	13		47	1	66.6	0		19:35:33	19:51:26	176	9045	149	-		18	1.2
	12		1	47	0	66.6		19:56:30	20:11:37	355	9000	137	-		16	1.4
	11		45	1	63.7	0		20:17:34	20:31:45	177	9025	150	-		18	1.2
								20:32:03	20:33:44					S-Turn post in flight alignment	19	1.1
								20:37:27	20:42:27					5 Min post acquisition of CORS TXSB	19	1.2
														Non static shut down at KBB		

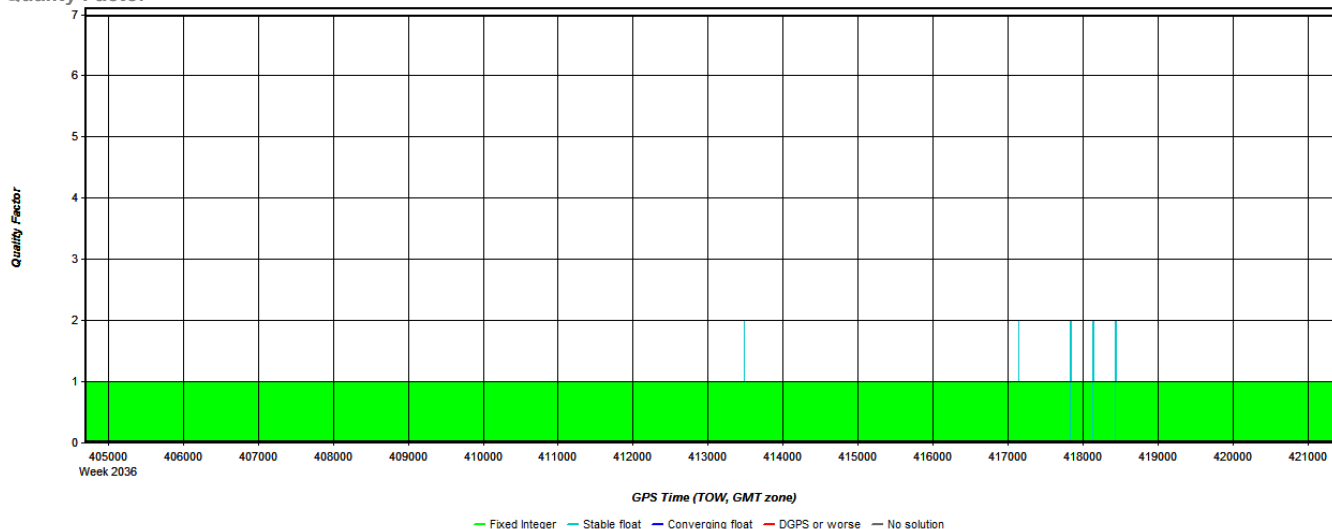
Trajectory and GPS Plots:



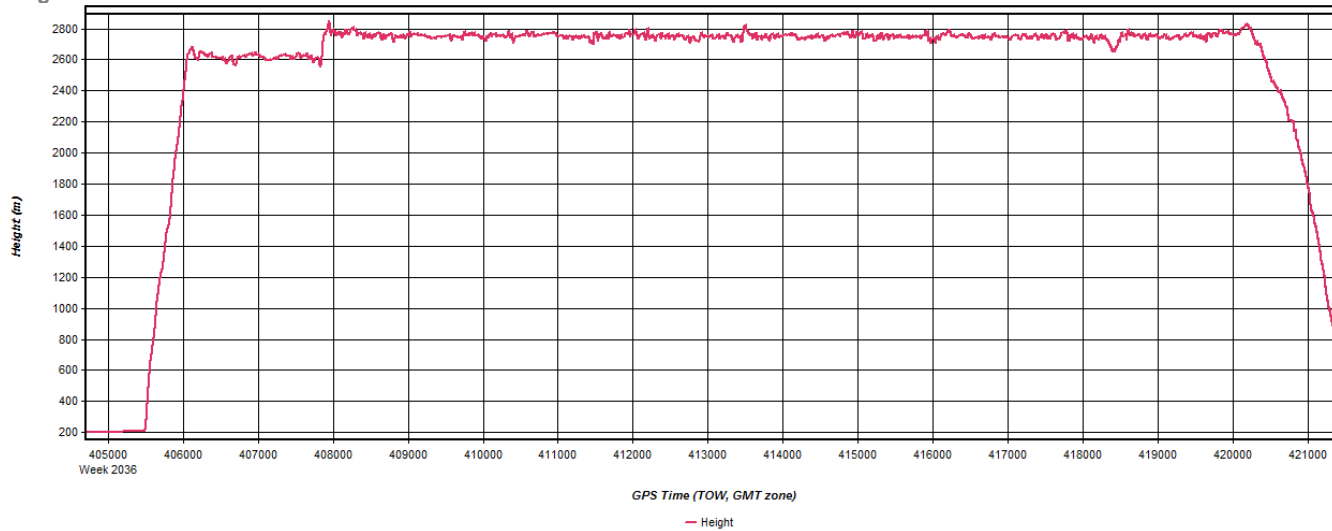
Estimated Accuracy



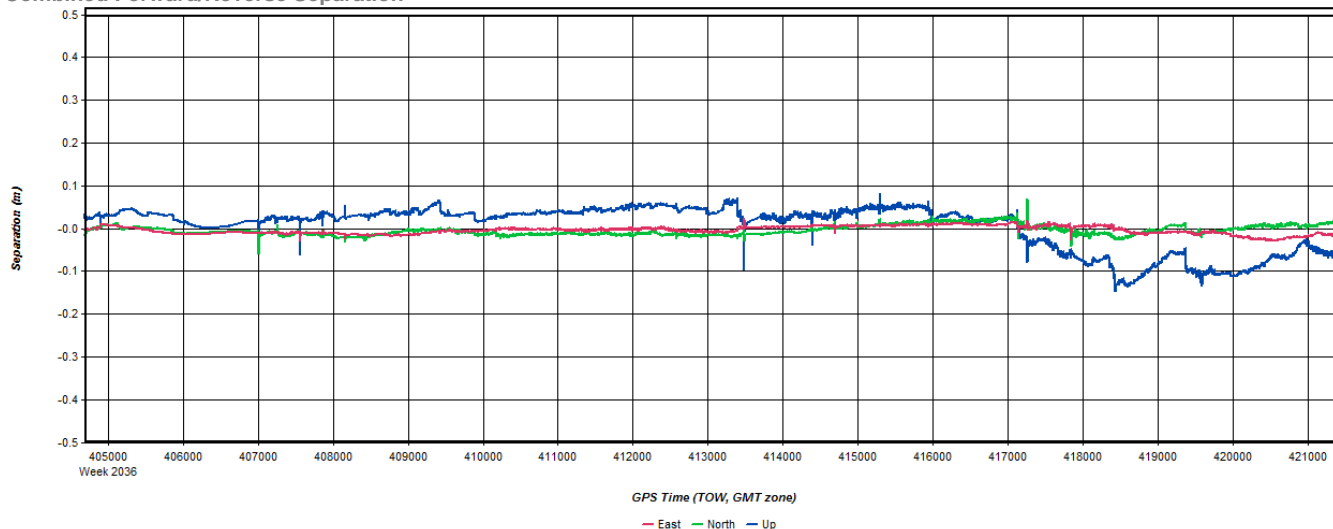
Quality Factor



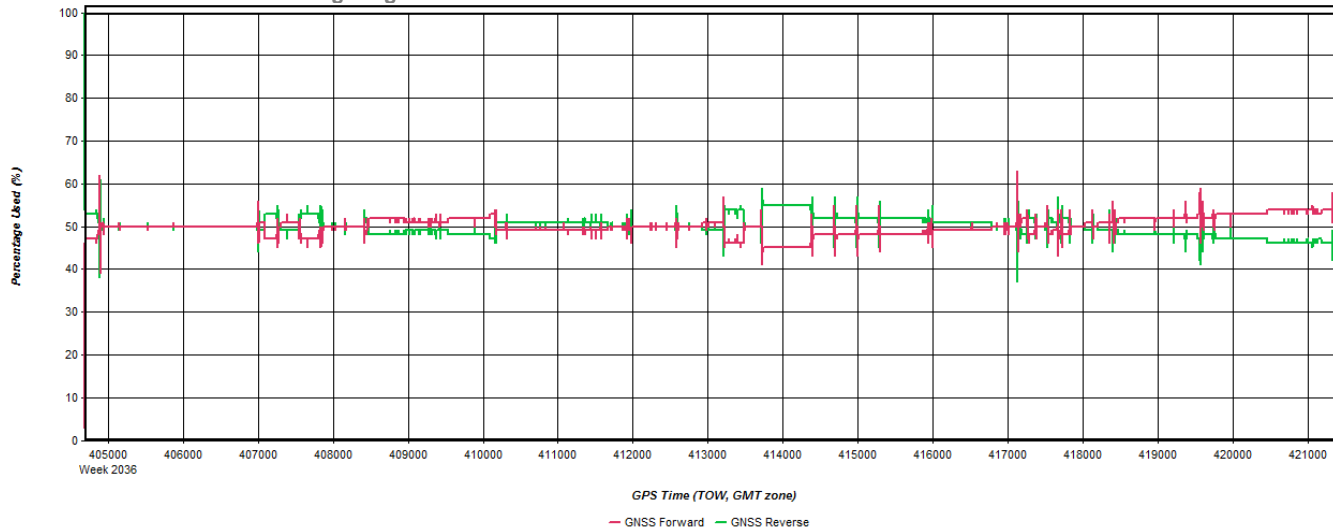
Height



Combined Forward/Reverse Separation

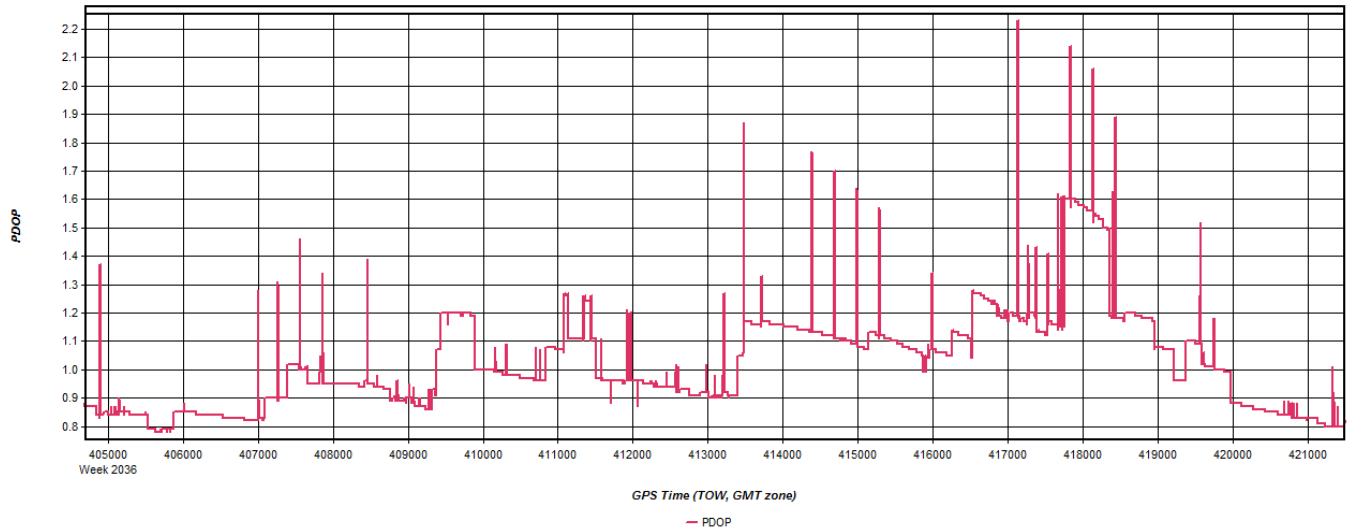


Combined Forward/Reverse Weighting

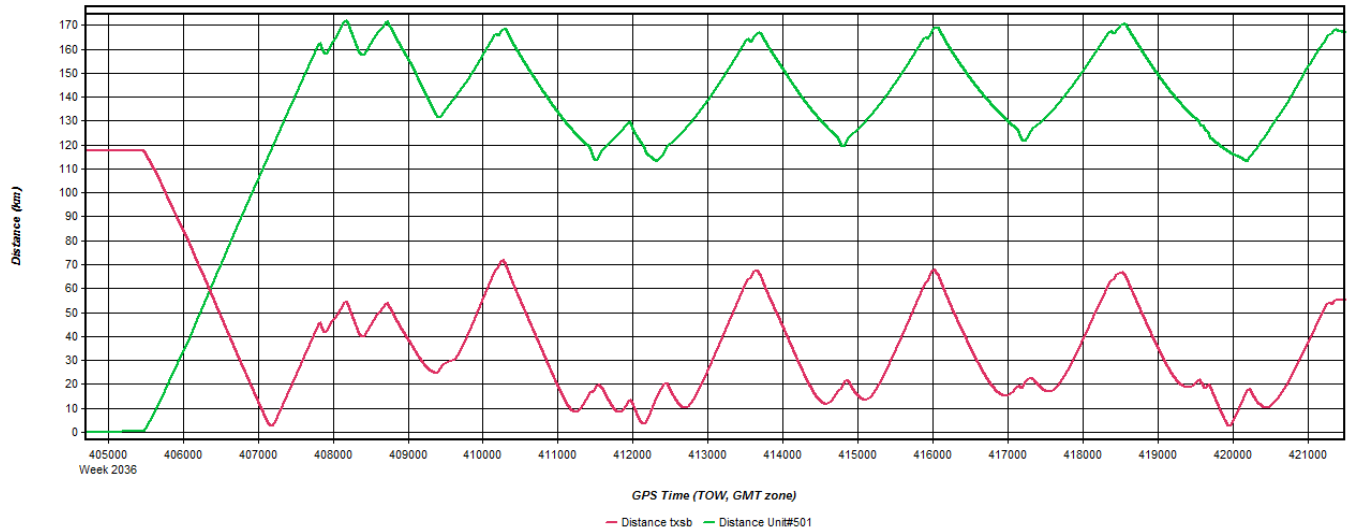


# USGS COLLECTION REPORT

## PDOP



## Distance from Base

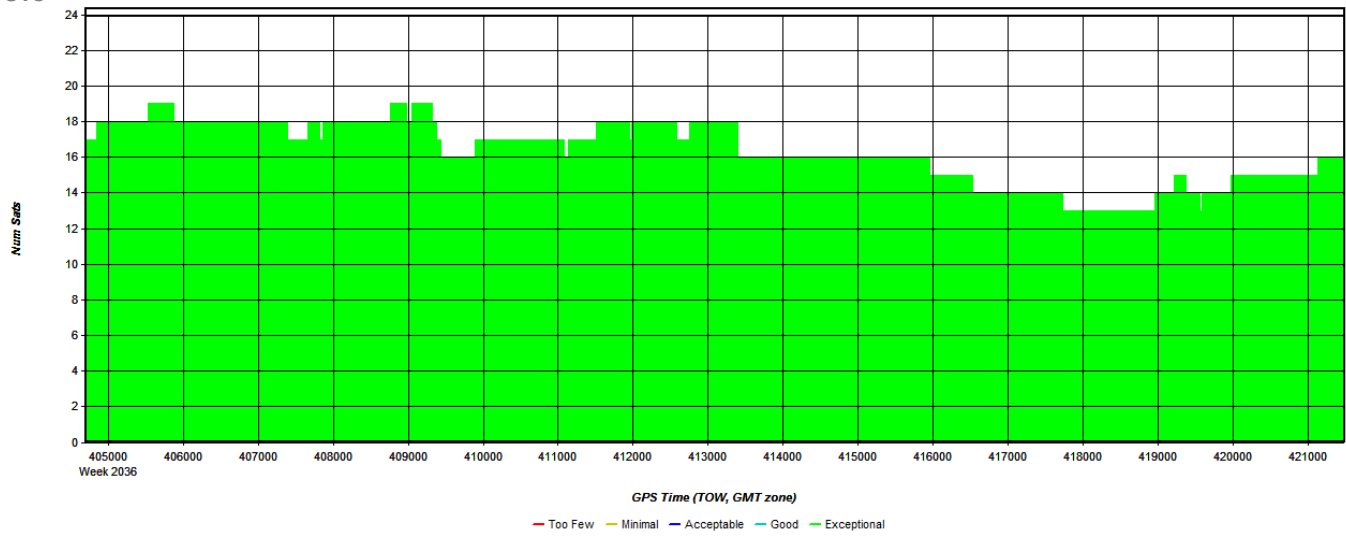




# USGS COLLECTION REPORT




SVs






Acquisition and Processing details ----- (January 17, 2019)

Log: 190117\_118\_33780084\_09


Menu
18.165

Lift Begin			Lift End			Flt Duration	Flt Hrs	Hobbs Hrs	Activity	
Airport	Chocks	Hobbs	Airport	Chocks	Hobbs					
1	KBBD	22:04	2956.7	KG TU	0:50	2959.0	2:46	2.75	2.3	0900-Production
2										
3										

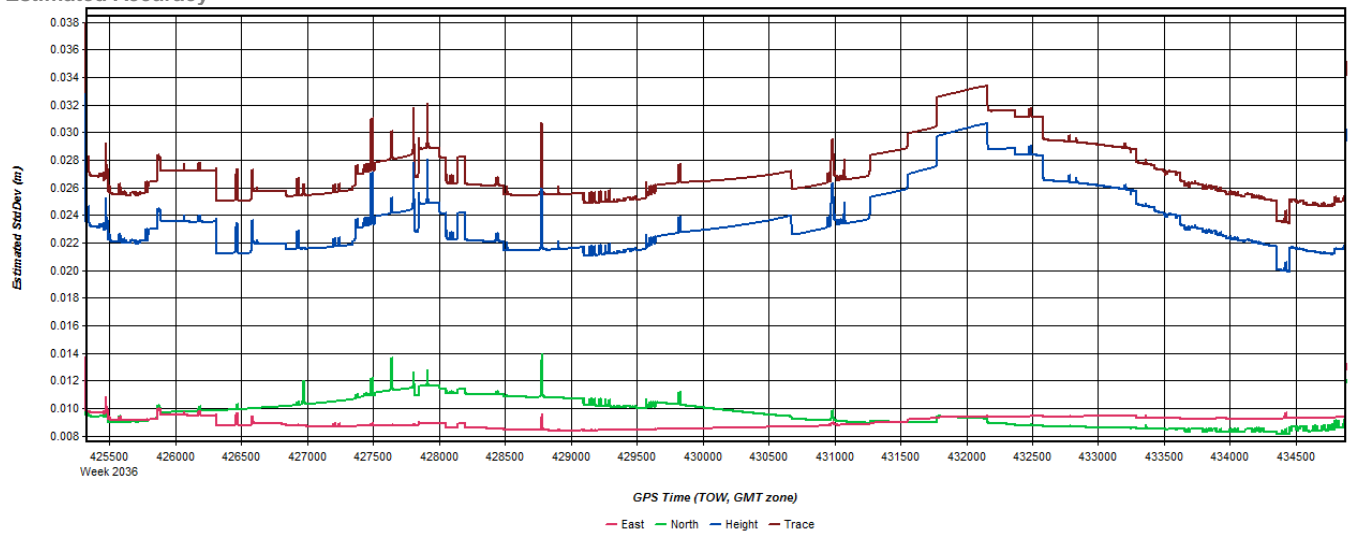

**ALS**  
**Flight Log**  
 AC80-44-00-02

FGI Job #	Project Name		System	Unit	IMU	PIA	SW1	SW2-Gain	Aper	AutoScan	Ground Temp °C	Min Range Gate	Data Logger Drive			
<b>33780084</b>	<b>Hurricane Harvey ALS80</b>		<b>ALS80</b>	<b>118</b>	<b>uIRS</b>	<b>4</b>	-	-	<b>60°</b>	<b>Yes</b>	<b>20.0 18.0</b>	<b>2232m</b>	<b>MM70-08</b>			
Flight Date	GPS Day	Lift	Sun°		Solar Times (UTC)		Laser Power		Pattern	Flying Temp °C	Max Range Gate	Download Drive				
<b>17-Jan-19</b>	<b>19-017</b>	<b>9</b>	-		-		<b>96%</b>		<b>Triangle</b>	<b>7.0 7.0</b>	<b>2691m</b>	<b>NS1TB-107</b>				
Mission ID (ymmdd_Sen_Job_Lift)		Aircraft	Airport ID	FMS	UTC	AMT (ft)	Speed	Scan Hz	Pulse Rate	FOV	km/WPT	Altm Setting	Shipping Track			
<b>190117_118_33780084_09</b>		<b>N8131</b>	<b>KG TU</b>	<b>CCNS 3</b>	<b>-6</b>	<b>7,900</b>	<b>150</b>	<b>34.0</b>	<b>442,600</b>	<b>46</b>	<b>1.448</b>	<b>#### 30.11</b>	<b>8106 5072 6389</b>			
Plot #1		Plot #2		Operator #1		Operator #2										
<b>Kevin Ellington</b>		-		<b>Chris Acuña</b>		-										
Base 1 ID	Location		Rec ID	Ant ID	ARP (m)	Start Time (UTC)		Stop Time (UTC)		GPS Filename	Operator	Data				
<b>FEDI 1115</b>	<b>KG TU</b>		<b>GR3#5</b>	<b>GR3#5</b>	<b>1.8</b>	<b>17-Jan-19 14:03</b>		<b>19-Jan-19 00:57</b>		<b>Unit#501170</b>	<b>Chris Acuña</b>	<b>With AB</b>				
Area	Flight #		Wpt		Distance		UTC		Flt	Altitude	Speed	Scan	Comments and Conditions		SVs	PDOP
	FGI	Client's	From	To	Begin	End	Start	End	Dir	(GPS)	(knots)	Rate				
													Aspen GPS Tracker is "Off"			
							22:28:44	22:33:44					5 Min acquisition of CORS TXSB		20	1.2
							22:43:18	22:45:13					S-Turn in flight alignment		22	1.1
Block_I	37		20	6	27.5	7.2	22:49:30	22:54:17	265	8990	139	-	Crossing line		24	1.1
	10		1	42	0	59.4	23:07:20	23:21:09	353	9055	147	-			23	1.2
	10		42	25	59.4	34.8	23:26:26	23:32:33	174	9035	146	-	Calibration line		24	1.3
	9		40	1	56.5	0	23:45:51	23:58:58	174	9030	145	-			23	1.3
							23:59:20	00:00:57					S-Turn post in flight alignment		23	1.2
							00:05:46	00:10:46					5 Min post acquisition of CORS TXSB		21	1.4
							00:42:37	00:47:37					5 Min GND static alignment at KG TU		24	1.2

Trajectory and GPS Plots:

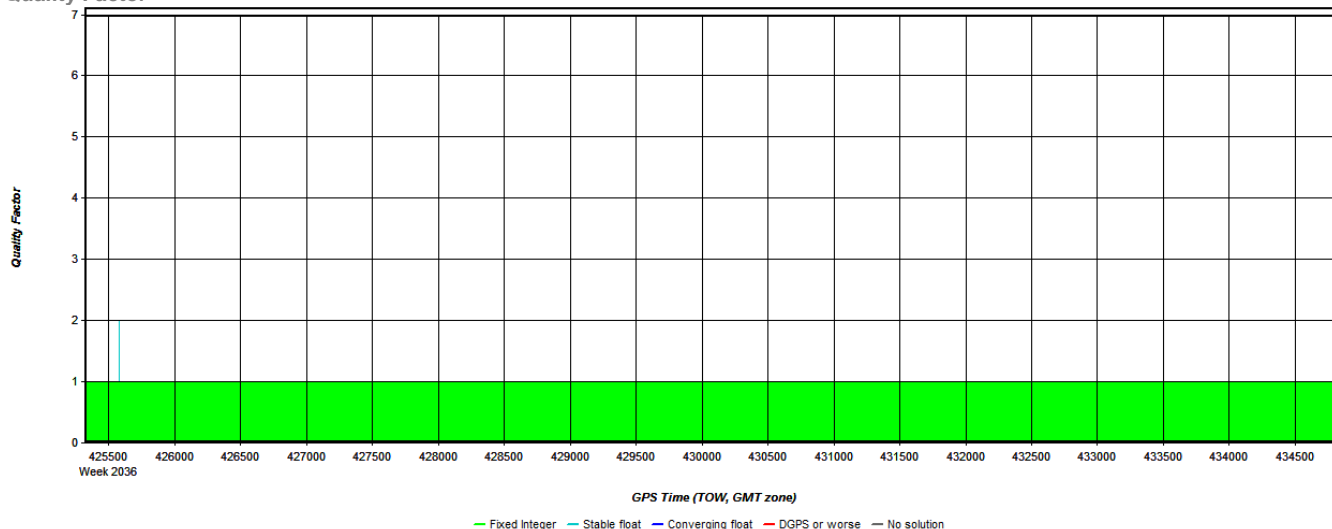


Estimated Accuracy

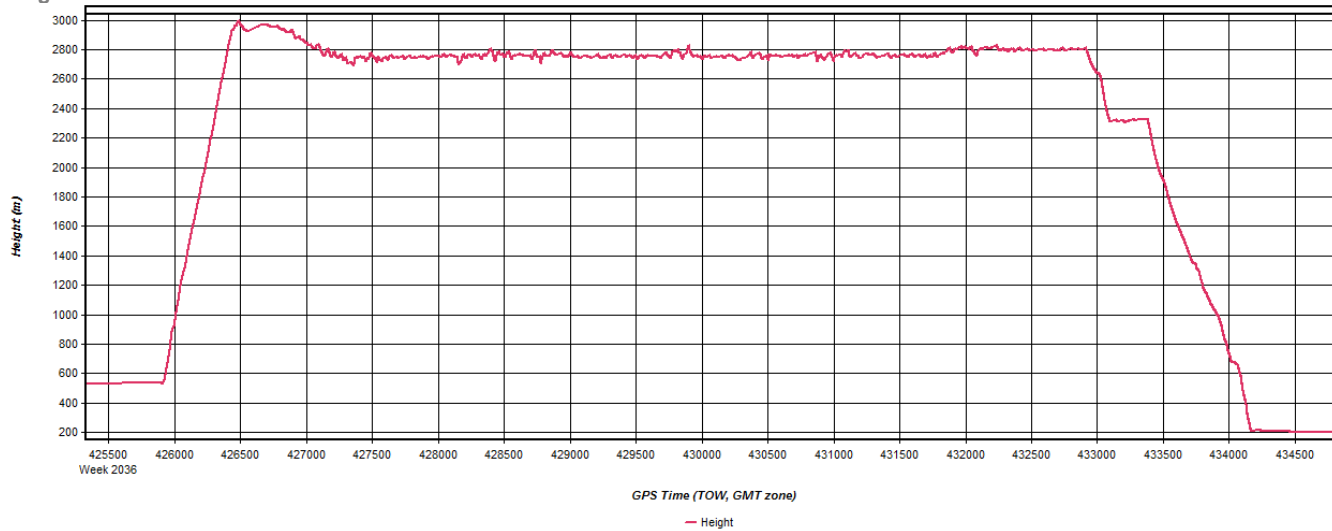




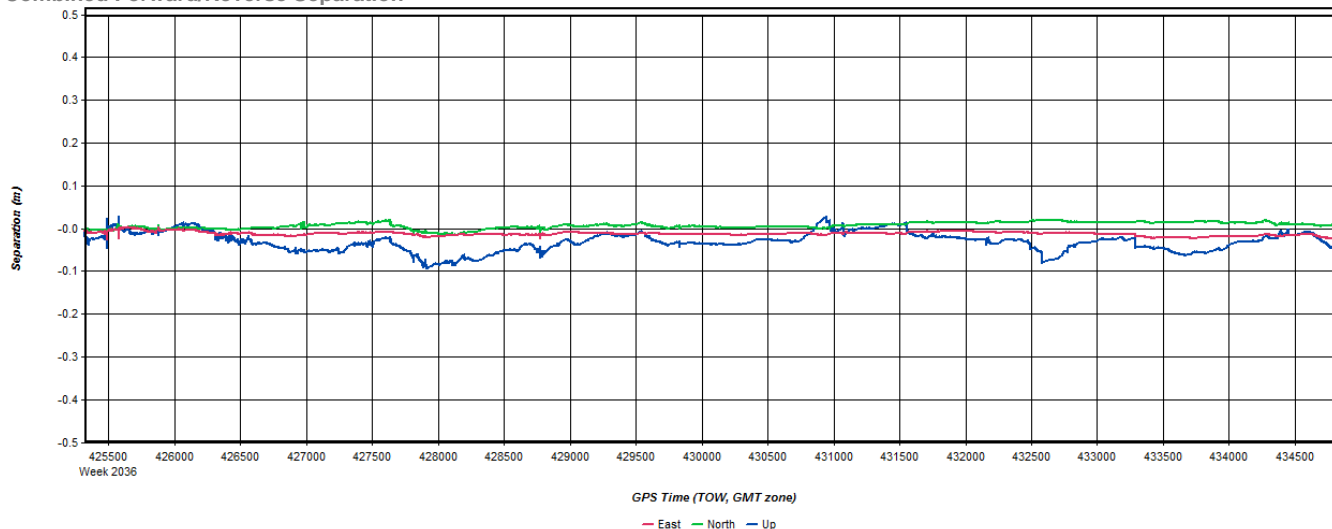
Quality Factor



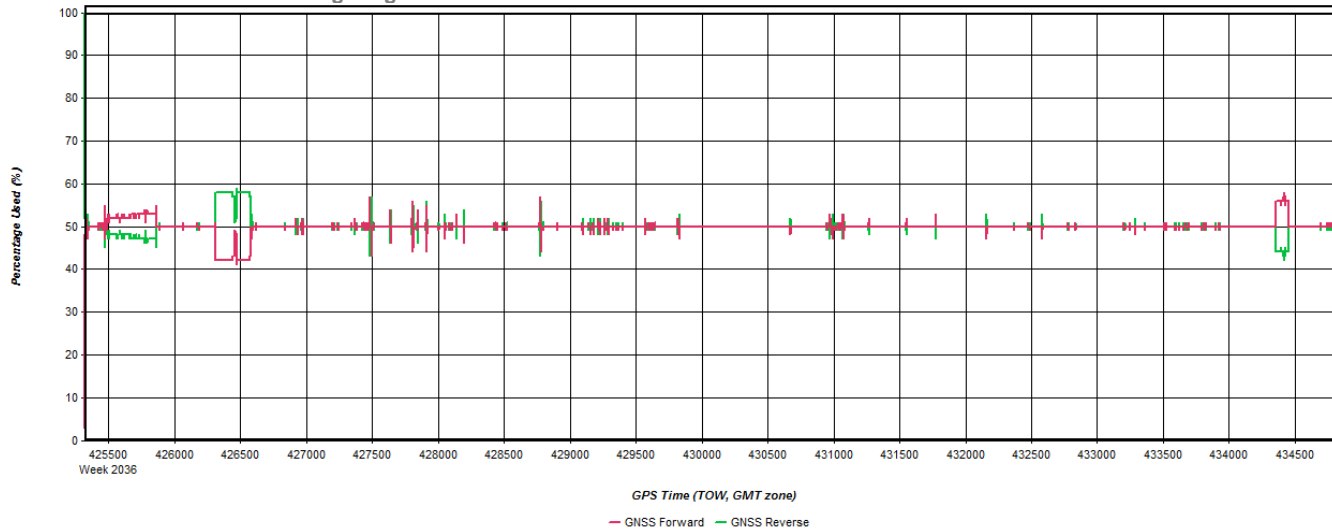
Height



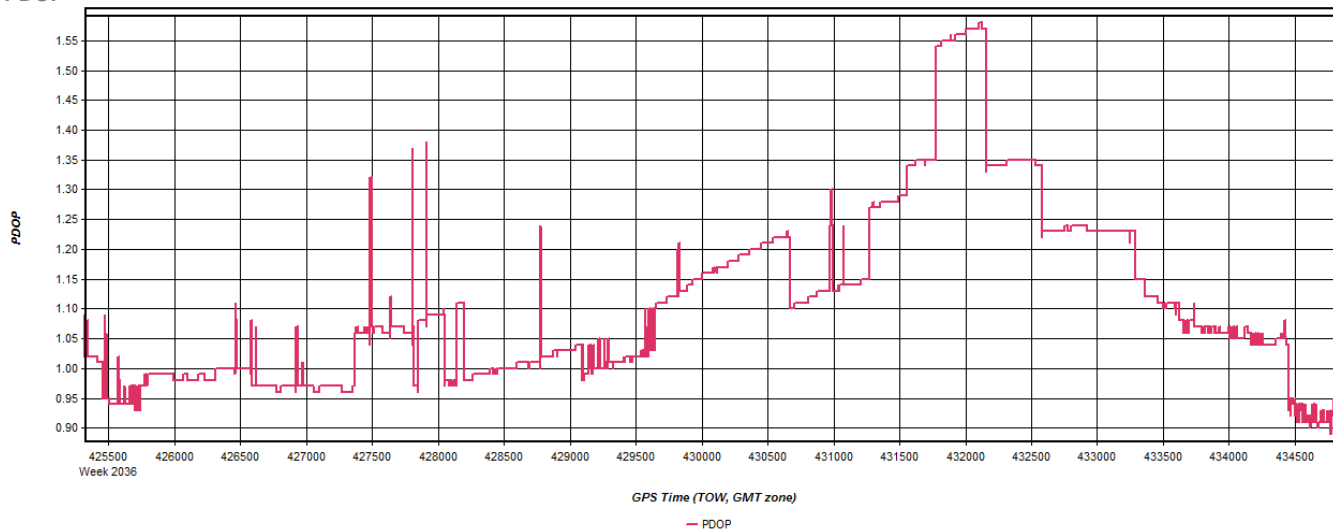
Combined Forward/Reverse Separation



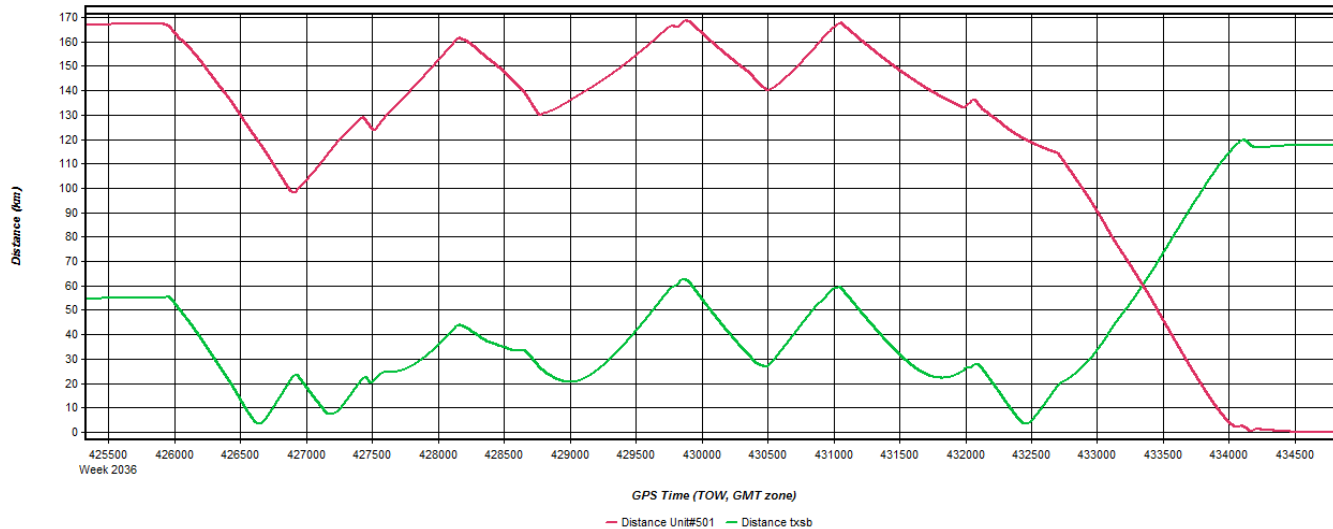
Combined Forward/Reverse Weighting



PDOP

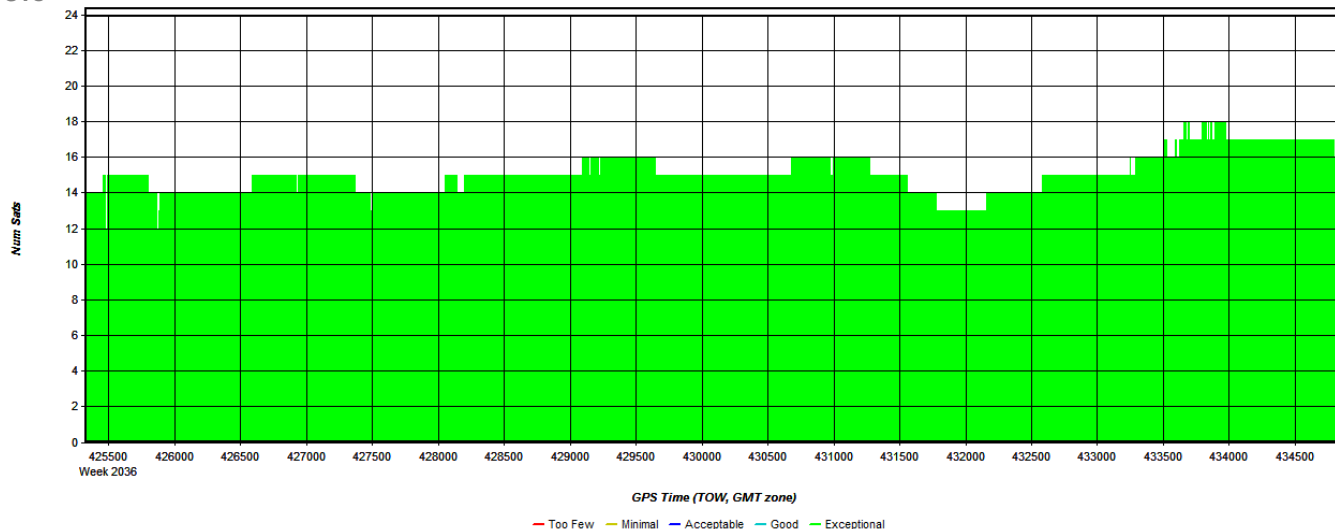


Distance from Base





SVs





Acquisition and Processing details ----- (January 17, 2019)

Log: 190117\_130\_33780084\_05

Menu  
**Fugro USA Land, Inc.**

18.165	Lift Begin			Lift End			Flt Duration	Flt Hrs	Hobbs Hrs	Activity
	Airport	Chocks	Hobbs	Airport	Chocks	Hobbs				
1	KALI	19:52	1332.4	KALI	23:18	1335.3	3:26	3.50	2.9	0900-Production
2										
3										

**ALS**  
**Flight Log**  
 AC80-44-00-02

FGI Job # <b>33780084</b>	Project Name <b>Hurricane Harvey</b>		System <b>ALS80</b>	Unit <b>130</b>	IMU <b>uIRS</b>	PIA <b>3</b>	SW1	SW2-Gain	Aper	AutoScan	Ground Temp °C <b>18.0 20.0</b>	Min Range Gate <b>2058</b>	Data Logger Drive <b>LG101</b>
Flight Date <b>17-Jan-19</b>	GPS Day <b>19-017</b>	Lift <b>5</b>	Sun°		Solar Times (UTC)	Laser Power <b>64%</b>	Pattern <b>Triangle</b>		Flying Temp °C <b>8.0 11.0</b>	Max Range Gate <b>2770</b>	Download Drive <b>NS1TB-62</b>		
Mission ID (ymmdd_Sen_Job_Lift) <b>190117_130_33780084_05</b>		Aircraft <b>N97HC</b>	Airport ID <b>KALI</b>	FMS <b>CCNS 8</b>	UTC <b>-6</b>	AMT (ft) <b>8,400</b>	Speed <b>150</b>	Scan Hz <b>34.0</b>	Pulse Rate <b>323</b>	FOV <b>37</b>	mi/WPT <b>0.957</b>	Altm Setting <b>30.20 30.12</b>	Shipping Track <b>7742 2558 2828</b>

Plot #1 <b>Grant Cassell</b>		Plot #2		Operator #1 <b>Riley Forsyth</b>		Operator #2 <b>David Verhey</b>	
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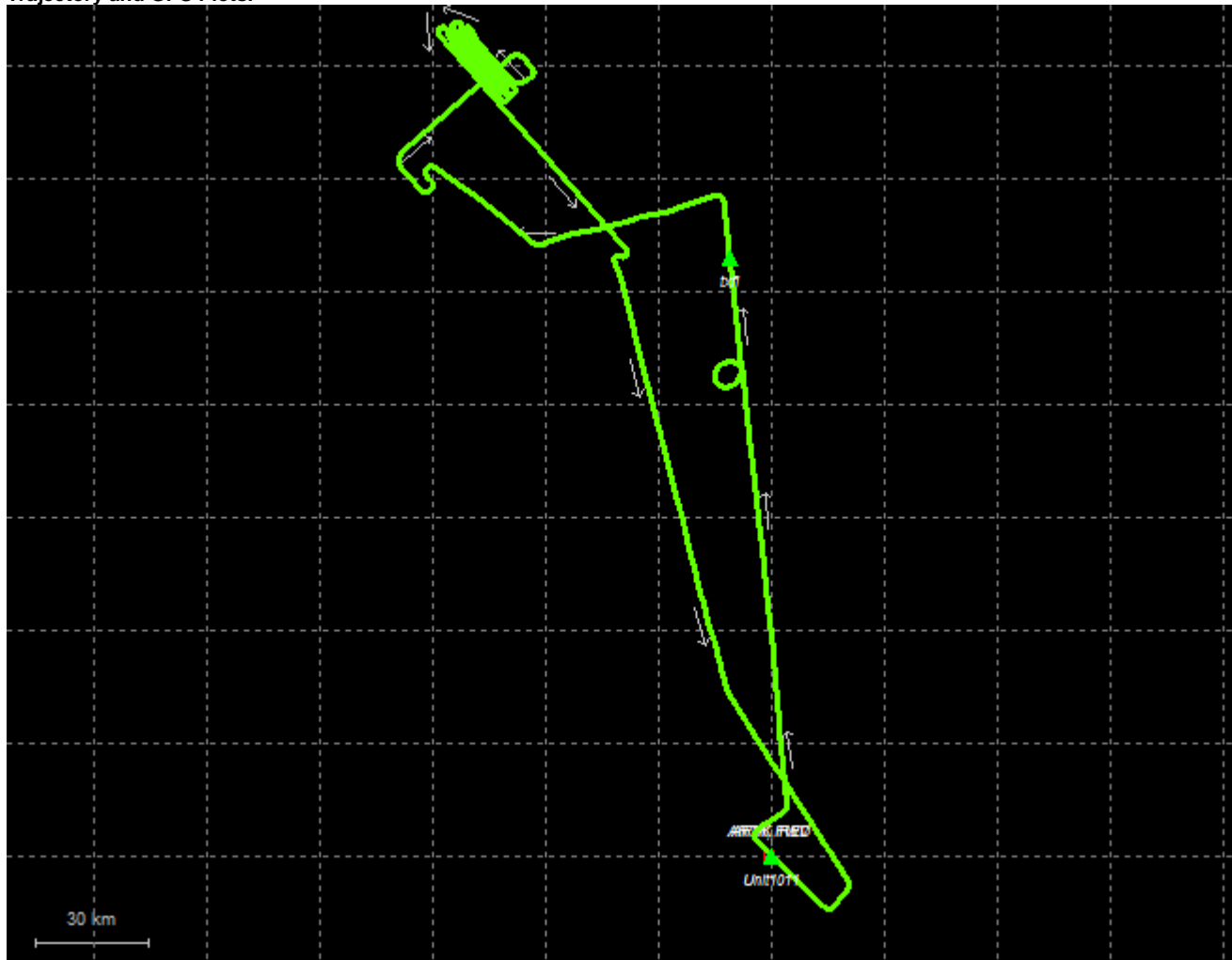
Base 1 ID <b>FUSAL 100</b>	Location <b>KALI</b>	Rec ID <b>GR3-1</b>	Ant ID <b>GR3-1</b>	ARP (m) <b>1.8</b>	Start Time (UTC) <b>17-Jan-19 19:15</b>	Stop Time (UTC) <b>17-Jan-19 23:30</b>	GPS Filename <b>Unit10117t</b>	Operator <b>David Verhey</b>	Data <b>With AB</b>
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Base 2 ID <b>TXFL</b>	Location	Rec ID	Ant ID	ARP (m)	Start Time (UTC)	Stop Time (UTC)	GPS Filename	Operator <b>CORS</b>	Data
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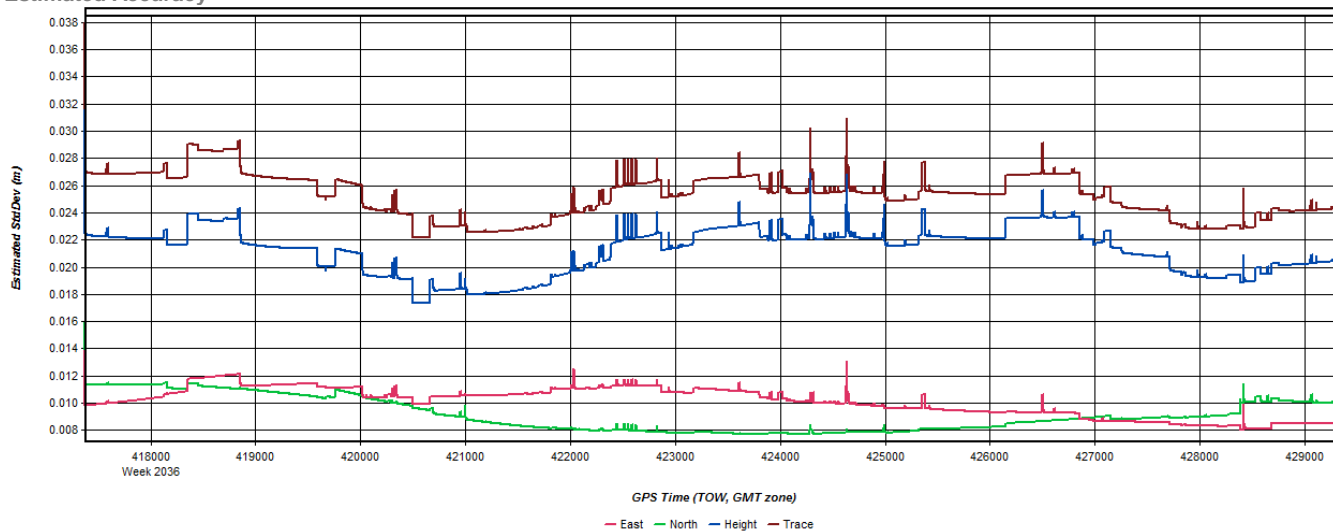
Area	Flight #		Wpt		Distance		UTC		Flt Dir	Altitude (GPS)	Speed (knots)	Scan Rate	Comments and Conditions	SVs	PDOP
	FGI	Client's	From	To	Begin	End	Start	End							
							19:56:24	20:01:24					Ground Static at KALI	18	1.3
							20:50:08	20:55:08		6631			Overflight of CORS at TXFL	21	1.2
							21:13:03	21:15:26					S-Turn	20	1.2
BLOCK_E	29		1	22	0	32.3	21:18:40	21:26:28	44.4	9171	138		Entire tie line	21	1.2
	26		1	7	0	9.2	21:31:14	21:33:45	314.6	9569	143			21	1.4
	25		8	1	10.8	0	21:36:11	21:38:53	134.6	9515	140			21	1.2
	24		1	10	0	13.9	21:41:17	21:44:35	314.6	9364	142			21	1.2
	24		10	1	13.9	0	21:47:36	21:50:56	134.5	9376	139		Calibration Line	20	1.4
	22		10	1	13.9	0	21:58:19	22:01:45	134.5	9434	141			21	1.4
	20		1	11	0	15.4	22:03:54	22:07:32	314.6	9490	144			21	1.3
	18		47	1	70.8	0	22:10:00	22:26:26	134.4	9064	143		Smoke to W of line at 50 km, return floor of 95%	21	1.3
							22:26:31	22:29:08					S-Turn	22	1.1
							23:10:59	23:15:59					Ground Static at KALI	22	1.1



Trajectory and GPS Plots:

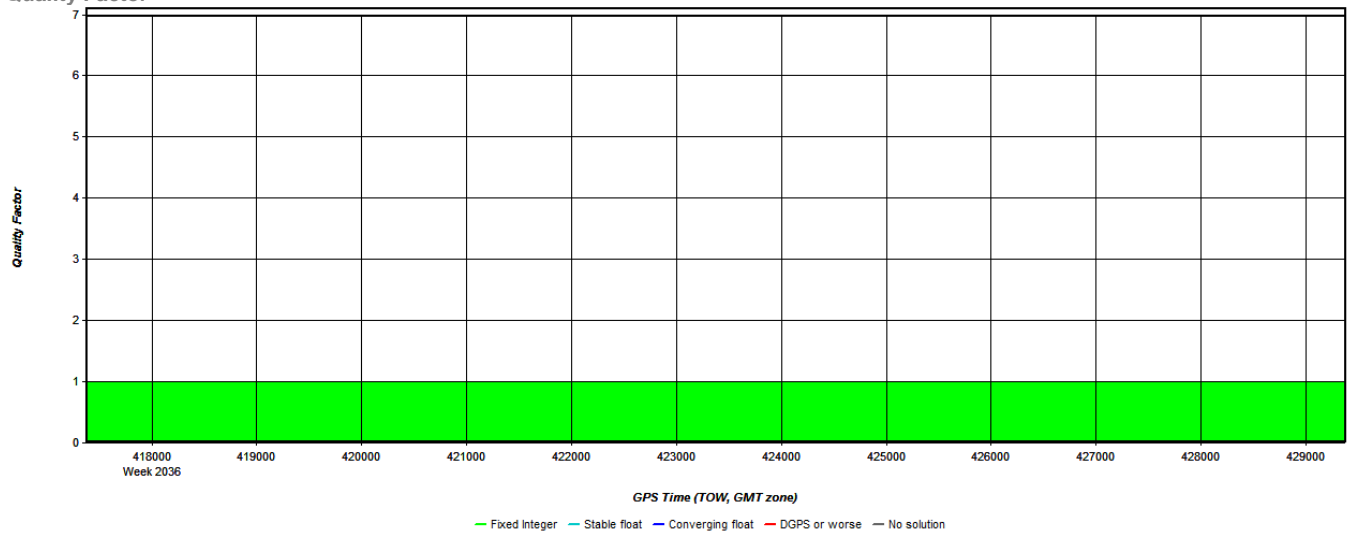


Estimated Accuracy

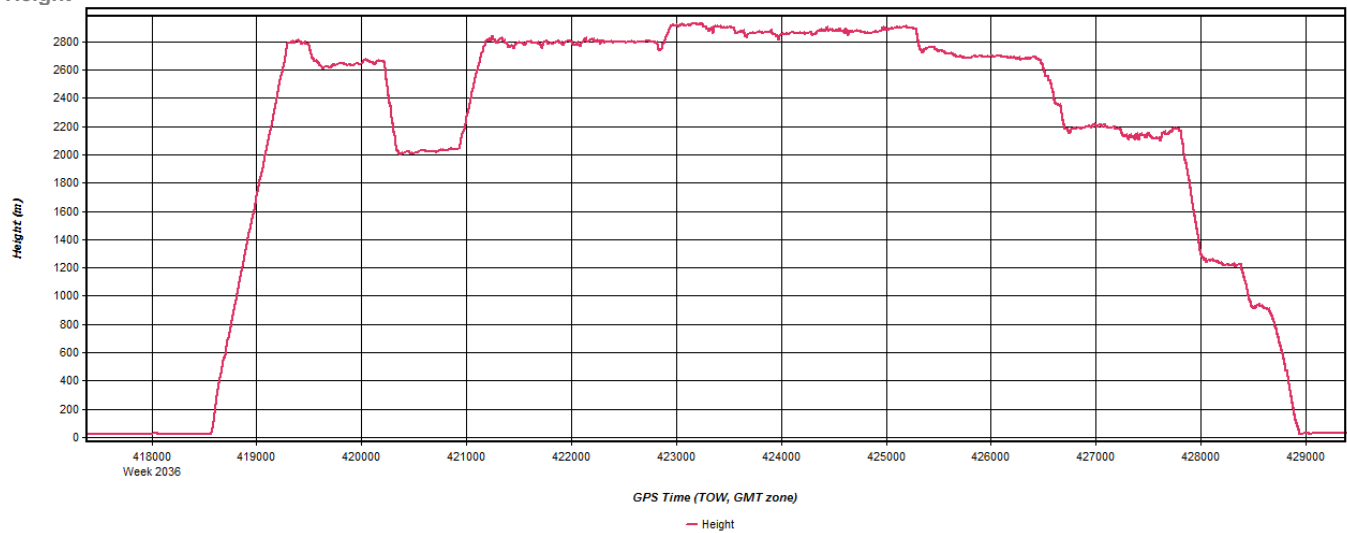


# USGS COLLECTION REPORT

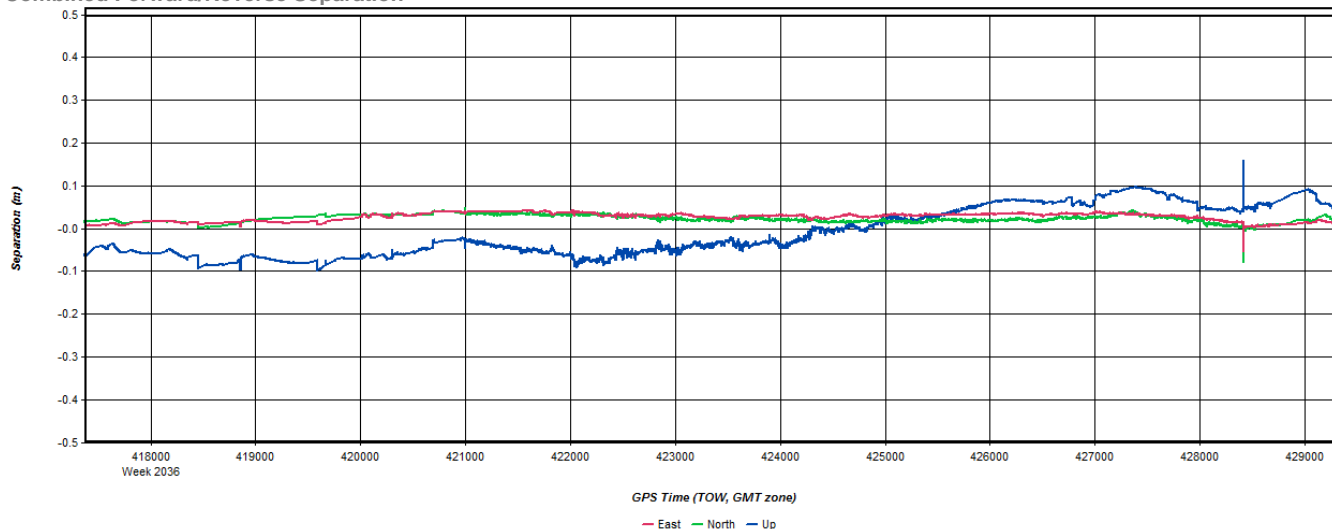
## Quality Factor



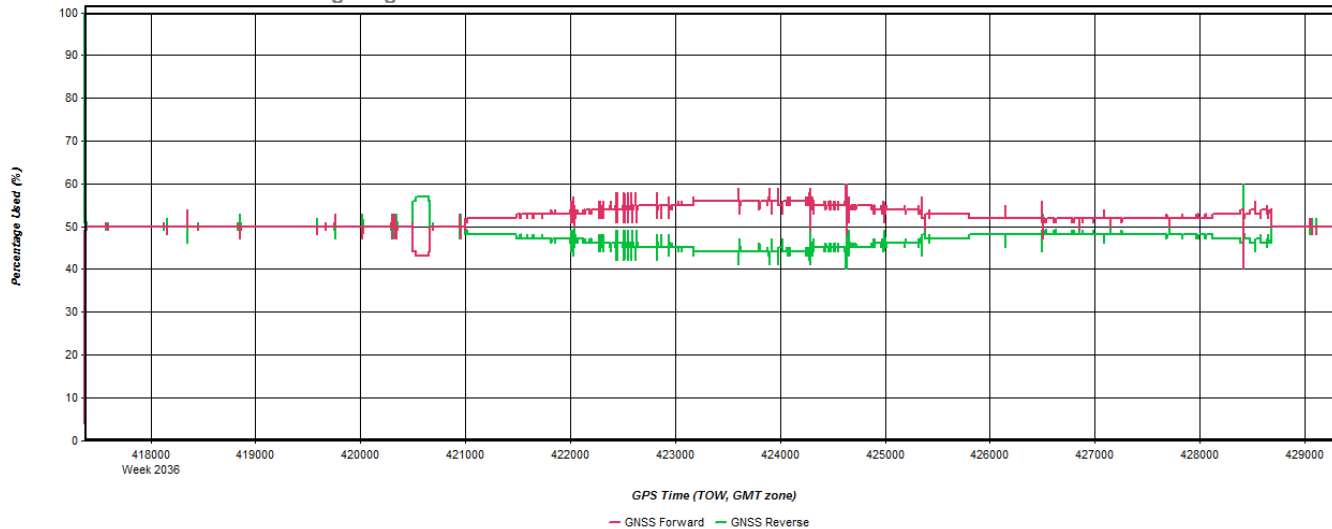
## Height



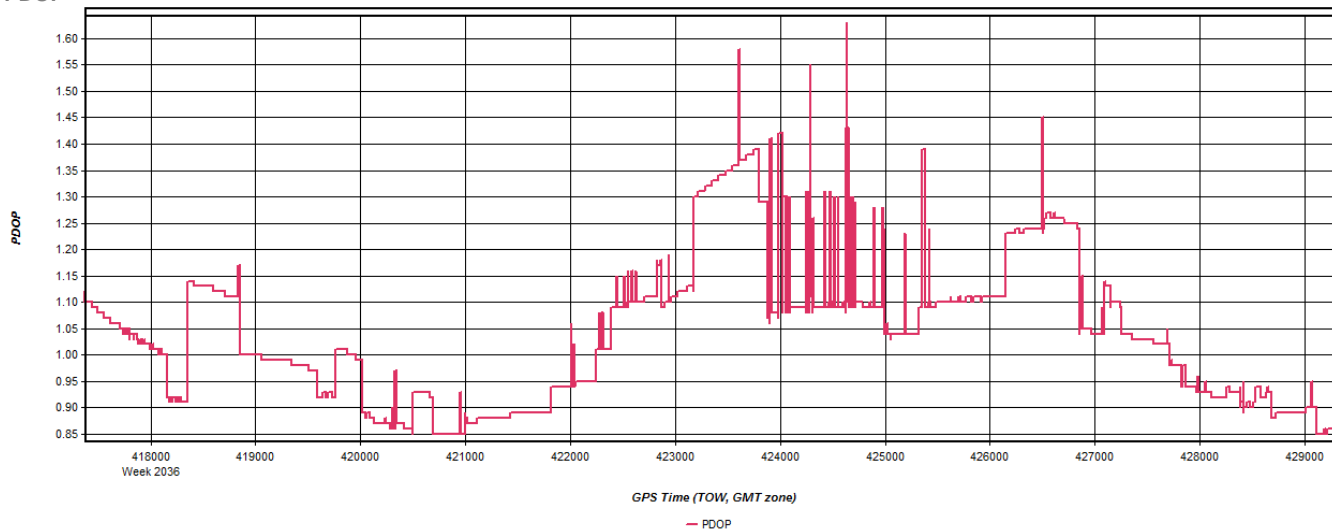
Combined Forward/Reverse Separation



Combined Forward/Reverse Weighting



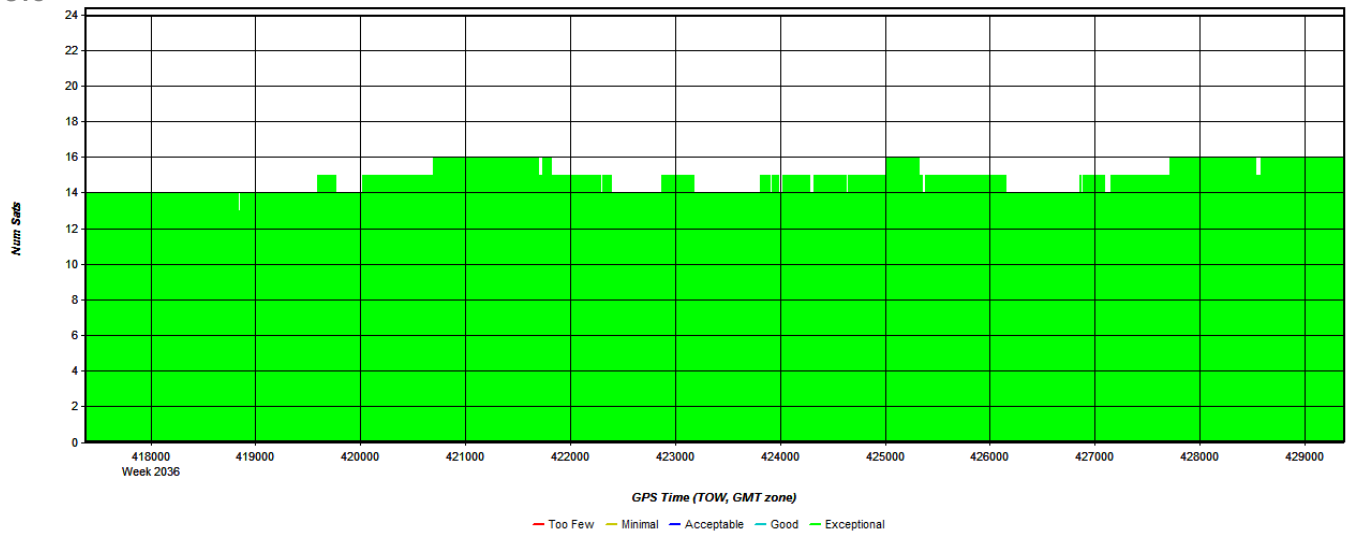
PDOP



Distance from Base



SVs





Acquisition and Processing details ----- (January 17, 2019)

Log: 190117\_133\_33780084\_03

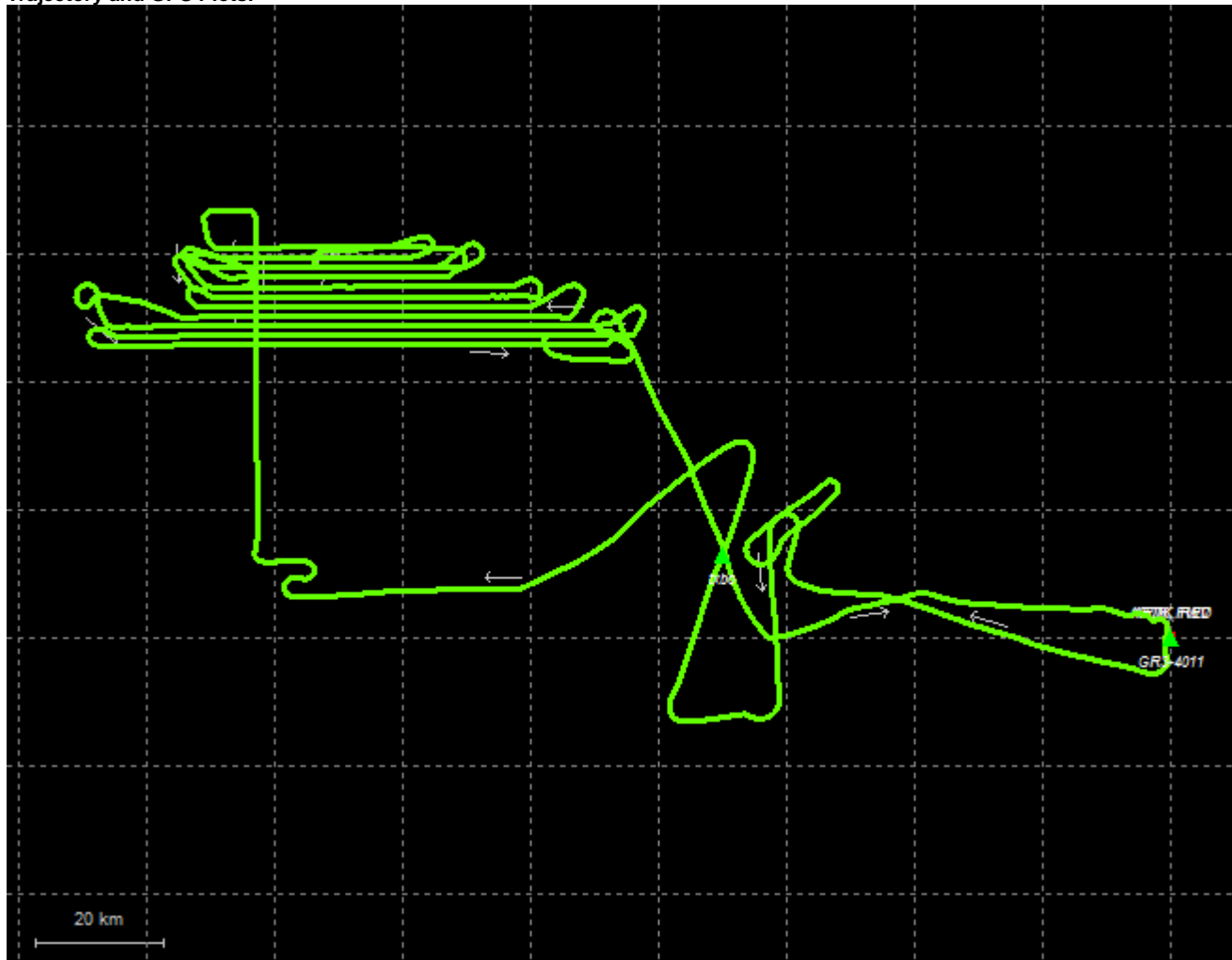
	Menu										Lift Begin		Lift End		Flt	Flt	Hobbs	
	1	KBAZ	17:53	8122.4	KBAZ	23:31	8128.0	5:38	5:75	5.6	0900-Production	ALS Flight Log						
	2																	
	3																	

FGI Job # <b>33780084</b>	Project Name <b>Hurricane Harvey ALS80</b>			System <b>ALS80</b>	Unit <b>133</b>	IMU <b>uRS</b>	PIA <b>4</b>	SW1 <b>255</b>	SW2-Gain <b>60°</b>	Aper <b>Yes</b>	AutoScan <b>Triangle</b>	Ground Temp °C <b>17.0 20.6</b>	Min Range Gate <b>6244</b>	Data Logger Drive <b>MM70-04</b>
Flight Date <b>17-Jan-19</b>	GPS Day <b>19-017</b>	Lift <b>3</b>		Sun° <b>NA</b>	Solar Times (UTC) <b>NA</b>	Laser Power <b>100%</b>	Pattern <b>Triangle</b>	Flying Temp °C <b>7.0</b>	Max Range Gate <b>8323</b>	Dow nload Drive <b>NS1TB-108</b>				
Mission ID (ymmdd_Sen_Job_Lift) <b>190117_133_33780084_03</b>			Aircraft <b>N76JN</b>	Airport ID <b>KBAZ</b>	FMS <b>FCMS</b>	UTC <b>7,550</b>	AMT (ft) <b>150</b>	Speed <b>35.0</b>	Scan Hz <b>352,000</b>	FOV <b>42</b>	km/WPT <b>1.384</b>	Altm Setting <b>30.20 30.09</b>	Shipping Track <b>774225508439</b>	

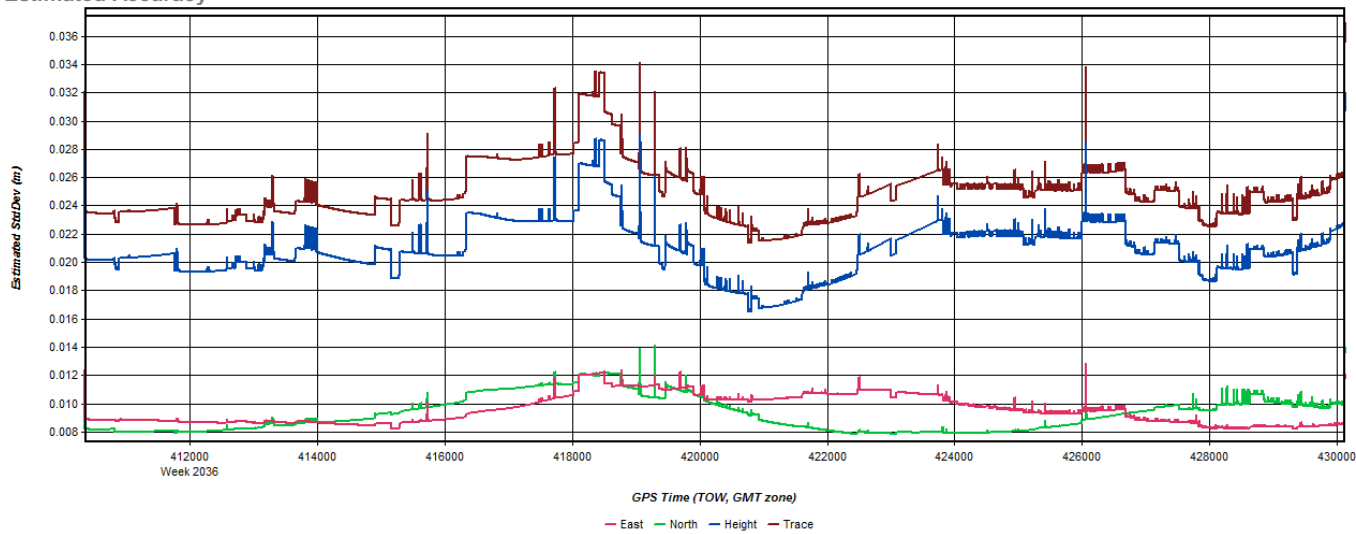
Pilot #1 <b>Randy Green</b>		Pilot #2 <b>Jeff Faulkner</b>		Operator #1 <b>Adam Mueller</b>		Operator #2		GPS Filename <b>GR3-40117r</b>		Operator <b>Adam Mueller</b>		Data <b>With AB</b>	
Base 1 ID <b>FGI 8003</b>	Location <b>KBAZ</b>		Rec ID <b>Unit 4</b>	Ant ID <b>U4</b>	ARP (m) <b>1.8</b>	Start Time (UTC) <b>17-Jan-19 17:43</b>		Stop Time (UTC) <b>17-Jan-19 23:40</b>		Operator <b>CORS</b>		Data <b>CORS</b>	
Base 2 ID <b>TXBO</b>	Location <b>TX</b>		Rec ID	Ant ID	ARP (m)	Start Time (UTC)		Stop Time (UTC)		Operator <b>CORS</b>		Data	

Area	Flight #		Wpt		Distance		UTC		Dir	Altitude (GPS)	Speed (knots)	Scan Rate	Comments and Conditions	SVs	PDOP
	FGI	Client's	From	To	Begin	End	Start	End							
							18:00:19	18:05:19					Ground Static at KBAZ	23	1.2
							19:02:15	19:07:15					Over flight TXBO	18	1.4
							19:24:33	19:26:55					S turn	18	1.3
BLOCK_G	33		1	31	0	41.5	19:30:01	19:39:46	N	9462	145	35.0	<b>Cross Line</b>	18	1.2
	32		1	16	0	20.8	19:44:41	19:49:24	E	9576	148	35.0		18	1.1
	31		16	1	20.8	0	19:53:59	19:59:29	W	9527	125	35.0		16	1.4
	30		1	21	0	27.7	20:03:49	20:10:10	E	9527	140	35.0		17	1.2
	30		21	11	27.7	13.8	20:15:09	20:18:41	W	9527	135	35.0	<b>Calibration line</b>	19	1.1
	29		21	1	27.7	0	20:25:48	20:32:22	W	9478	140	35.0		20	1.1
	28		1		0		20:37:33		E	9416		35.0	High speed and alt at start will restart line		
	28		1	30	0	40.1	20:42:44	20:52:00	E	9416	145	35.0		19	1.2
	27		30	1	40.1	0	20:55:47	21:05:43	W	9376	140	35.0		20	1.1
	26		1	35	0	47.1	21:08:36	21:19:16	E	9393	145	35.0	low alt wpt 20-23; high alt wpt 25-27.	20	1.2
	25		35	1	47.1	0	21:24:27	21:36:04	W	9344	140	35.0		20	1.2
	24		1	52	0	70.6	21:44:02	22:00:14	E	9317	150	35.0		19	1.2
	23		52		70.6		22:04:55		W	9317	130	35.0	Got off line near start; will restart	20	1.3
	23		52	1	70.6	0	22:11:55	22:29:26	W	9317	130	35.0	wpt 7 drift over correction	20	1.3
	22		1	52	0	70.6	22:32:44	22:48:57	E	9225	150	35.0		20	1.2
							22:49:25	22:51:58					S turn; GNSS/IMU error during S Turn	22	1.2
							23:23:10	23:28:10					Ground Static at KBAZ	21	1.2

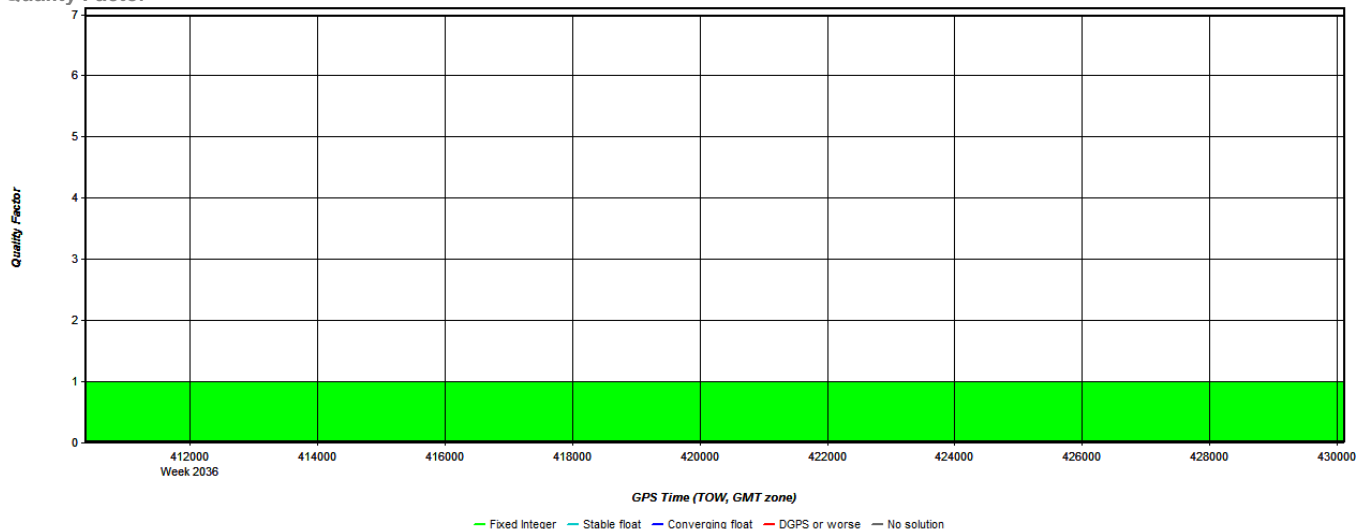
Trajectory and GPS Plots:



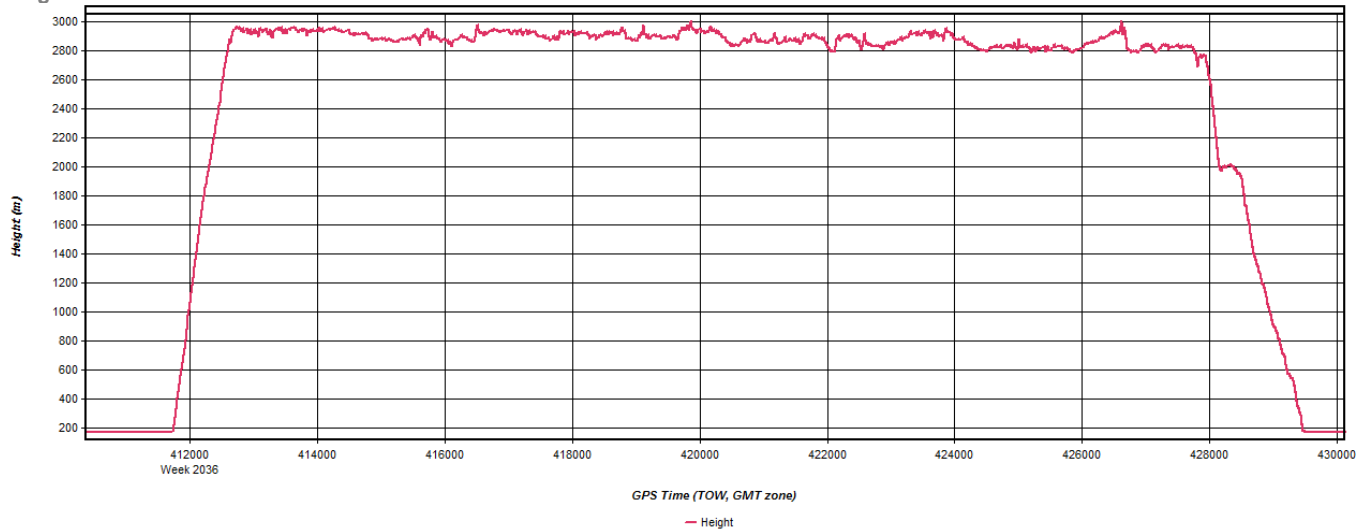
Estimated Accuracy



Quality Factor

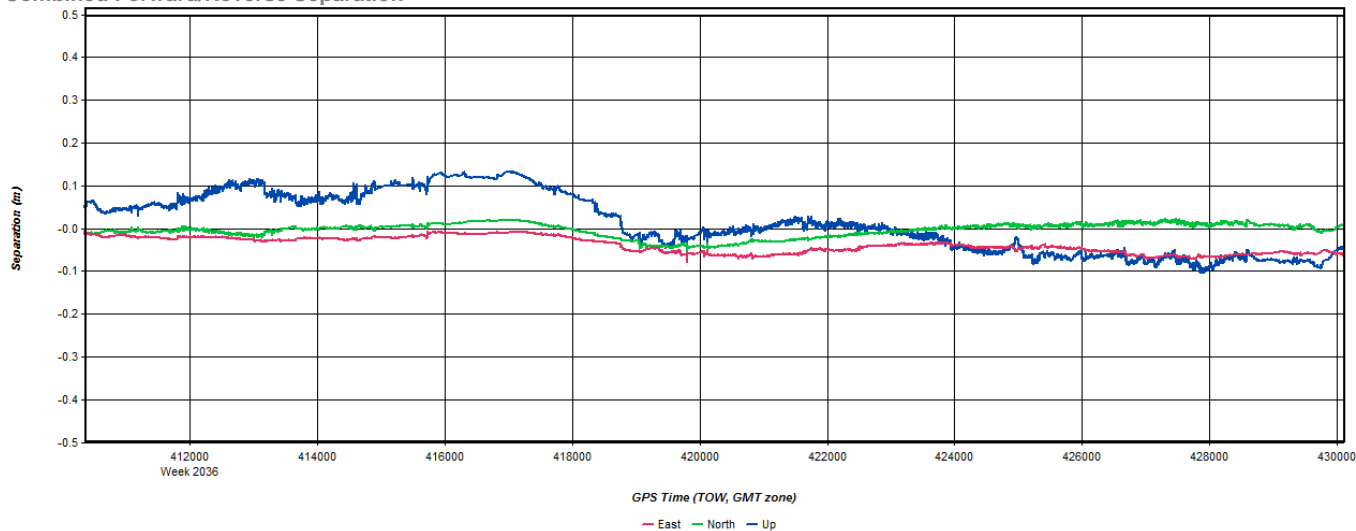


Height

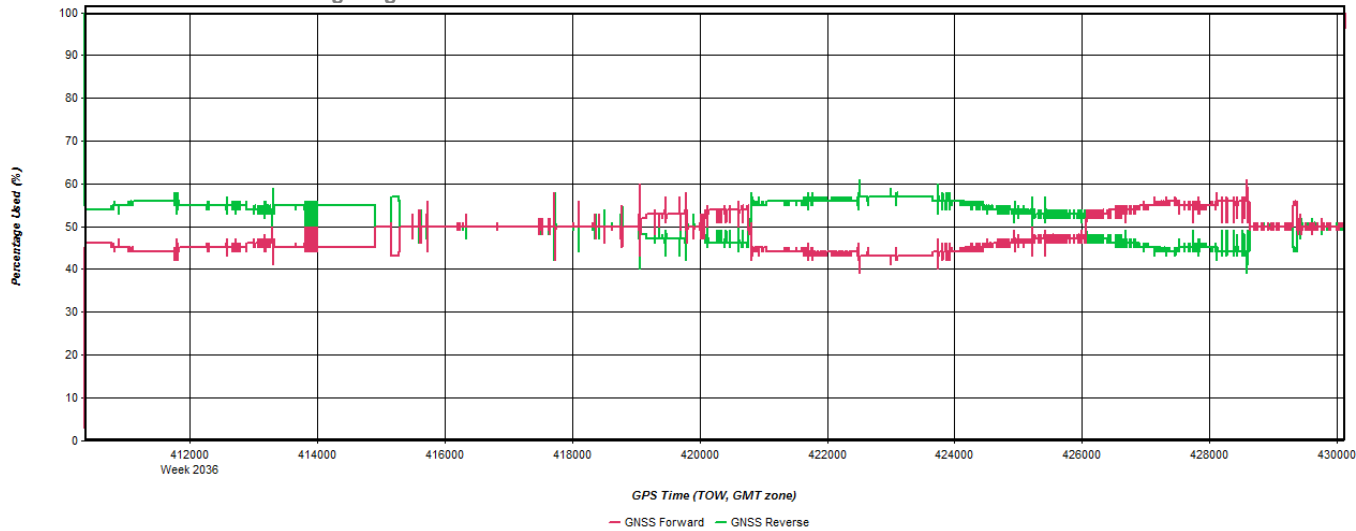




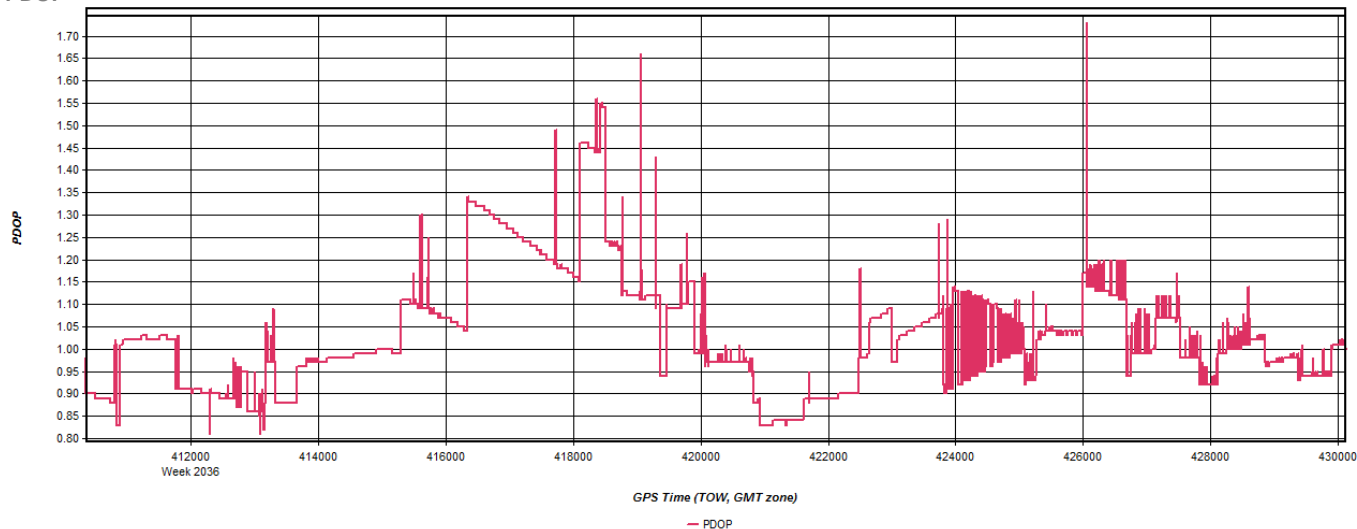
Combined Forward/Reverse Separation



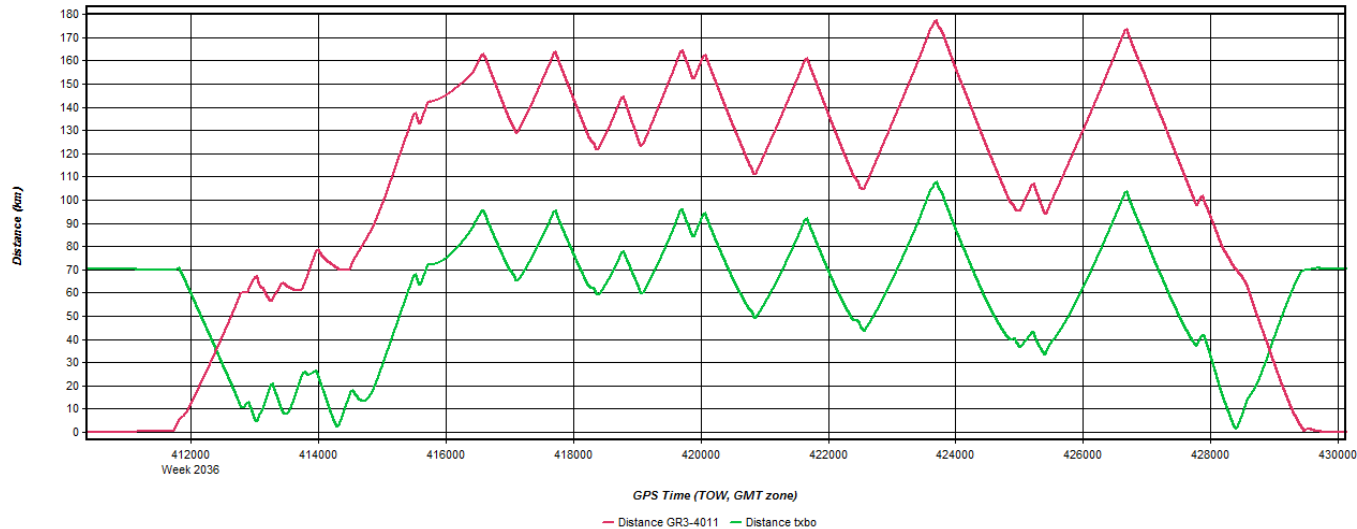
Combined Forward/Reverse Weighting



PDOP

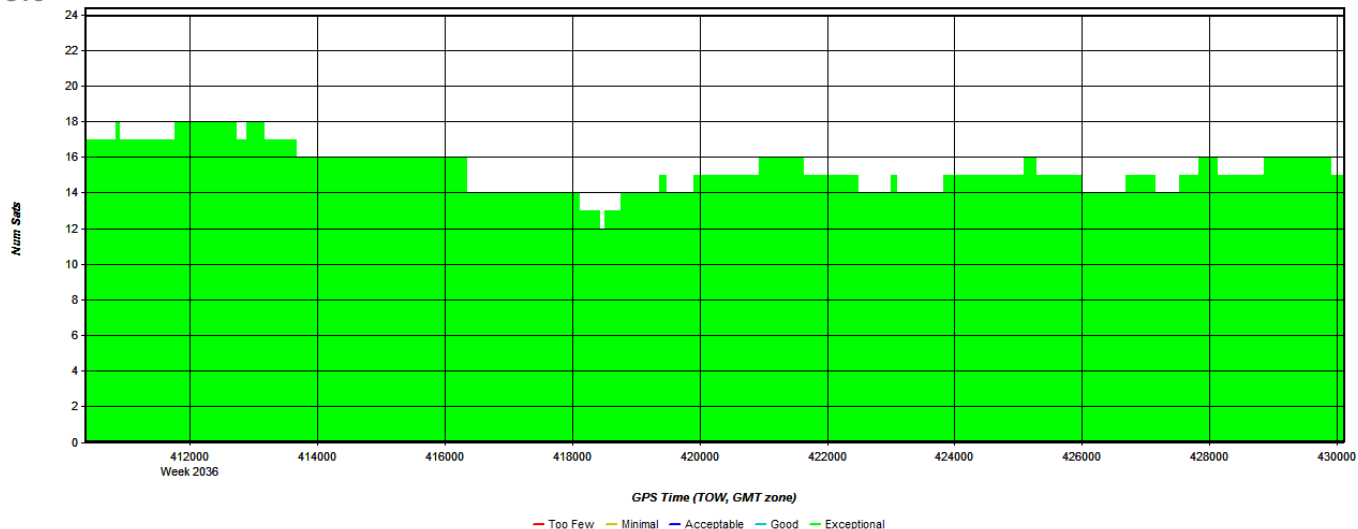


Distance from Base






SVs






Acquisition and Processing details ----- (January 19, 2019)

Log: 190119\_130\_33780084\_06


Menu
18.165

Lift Begin			Lift End			Flt Duration	Flt Hrs	Hobbs Hrs	Activity	
Airport	Chocks	Hobbs	Airport	Chocks	Hobbs					
1	KALI	14:07	1335.3	KALI	18:03	1338.8	3:55	4:00	3.5	0900-Production
2										
3										


**ALS**  
**Flight Log**  
 AC80-44-00-02

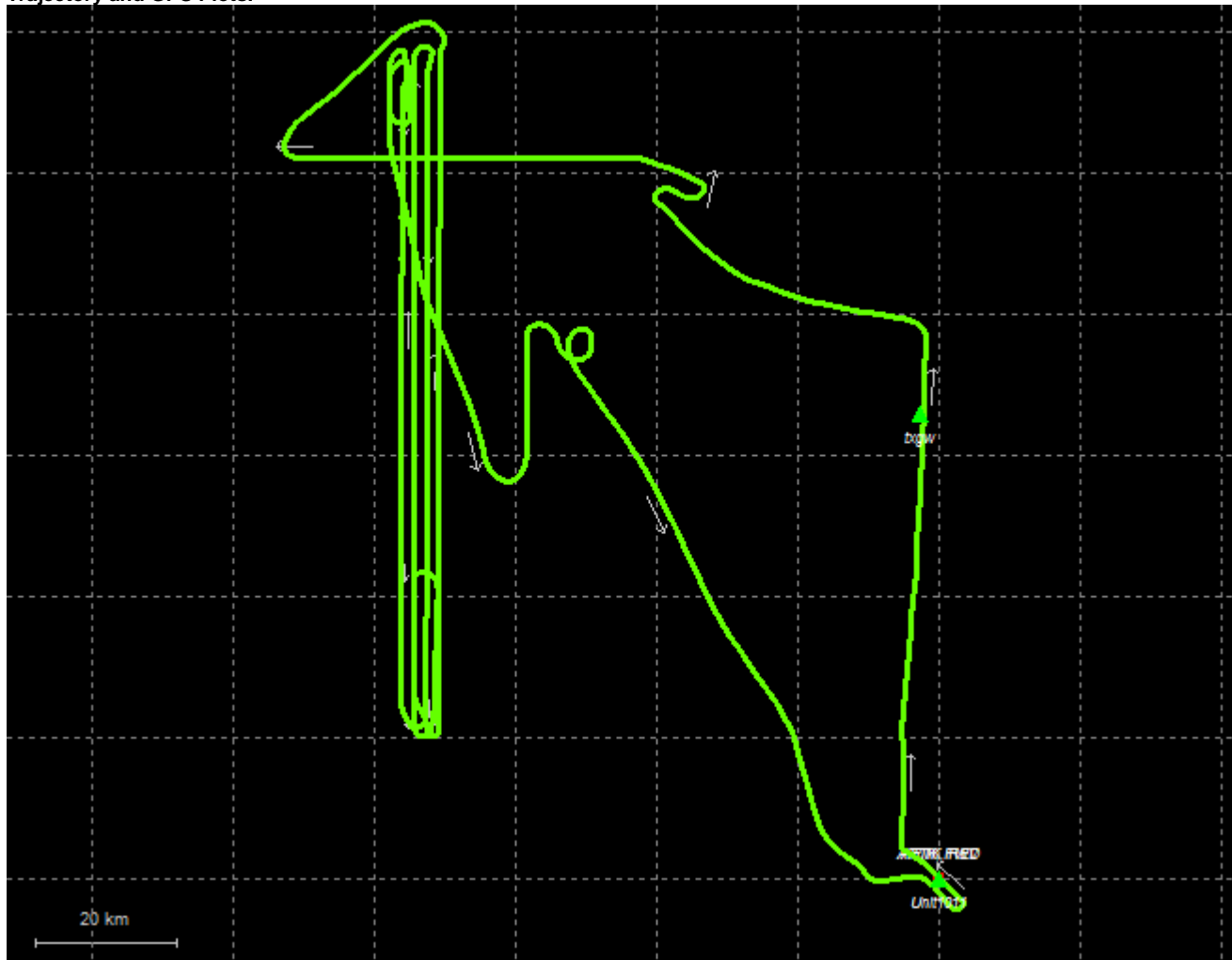
FGI Job # <b>33780084</b>		Project Name <b>Hurricane Harvey</b>			System <b>ALS80</b>	Unit <b>130</b>	IMU <b>uRS</b>	PIA <b>4</b>	SW1	SW2-Gain	Aper	AutoScan	Ground Temp °C <b>14.0 16.0</b>	Min Range Gate <b>2232</b>	Data Logger Drive <b>LG101</b>
Flight Date <b>19-Jan-19</b>	GPS Day <b>19-019</b>	Lift <b>6</b>			Sun°	Solar Times (UTC)	Laser Power <b>96%</b>	Pattern <b>Triangle</b>	Flying Temp °C <b>2.0 2.0</b>	Max Range Gate <b>2691</b>	Download Drive <b>NS1TB-66</b>		Shipping Track <b>7742 6089 4604</b>		
Mission ID (ymmdd_Sen_Job_Lift) <b>190119_130_33780084_06</b>		Aircraft <b>N97HC</b>	Airport ID <b>KALI</b>	FMS <b>CCNS 8</b>	UTC <b>-6</b>	AMT (ft) <b>7,900</b>	Speed <b>150</b>	Scan Hz <b>34.0</b>	Pulse Rate <b>442,600</b>	FOV <b>46</b>	kmWPT <b>1.448</b>	Altm Setting <b>30.07 30.18</b>			

Plot #1 <b>Grant Cassell</b>		Plot #2		Operator #1 <b>Riley Forsyth</b>		Operator #2 <b>David Verhey</b>	
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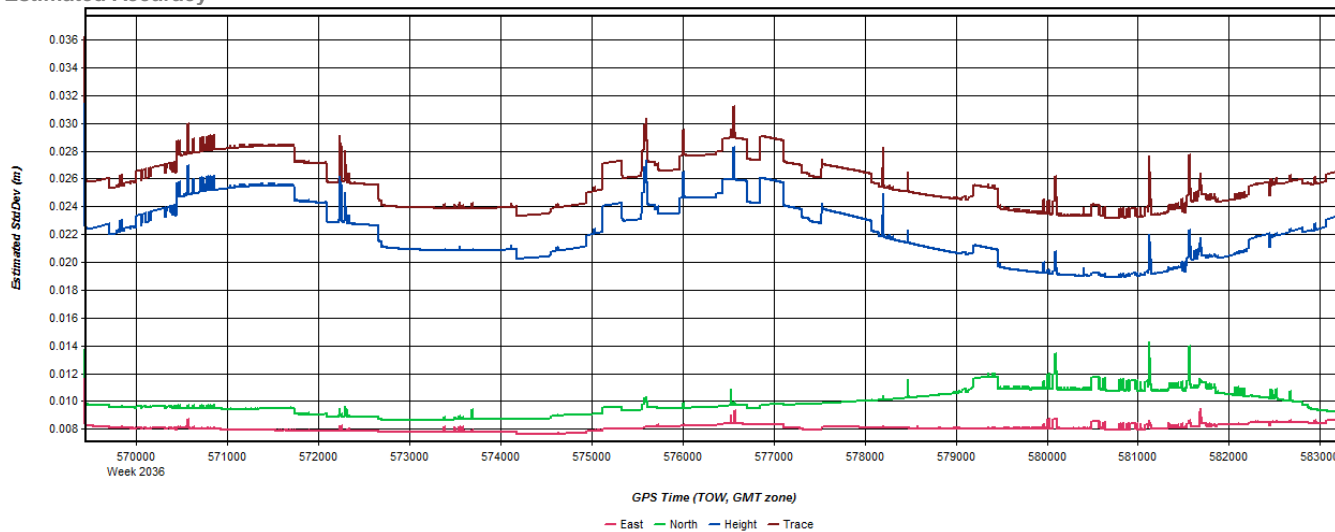
Base 1 ID <b>FUSAL 100</b>	Location <b>KALI</b>	Rec ID <b>GR3-1</b>	Ant ID <b>GR3-1</b>	ARP (m) <b>1.8</b>	Start Time (UTC) <b>19-Jan-19 13:35</b>	Stop Time (UTC) <b>19-Jan-19 18:10</b>	GPS Filename <b>Unit10119n.tps</b>	Operator <b>David Verhey</b>	Data <b>With AB</b>
Base 2 ID <b>TXGW</b>	Location <b>Live Oak, TX</b>	Rec ID	Ant ID	ARP (m)	Start Time (UTC)	Stop Time (UTC)	GPS Filename	Operator <b>CORS</b>	Data

Area	Flight #		Wpt		Distance		UTC		Flt Dir	Altitude (GPS)	Speed (knots)	Scan Rate	Comments and Conditions	SVs	PDOP
	FGI	Client's	From	To	Begin	End	Start	End							
							14:10:38	14:15:38					Ground Static at KALI	19	1.6
							14:40:40	14:45:40					Overflight of CORS at TXGW	20	1.3
							14:56:47	14:58:49					S-Turn	22	1.3
BLOCK_B	38		30	1	42	0	15:02:55	15:13:10	266.3	8037	128		Tie Line	22	1.1
	11		62	1	88.3	0	15:22:06	15:42:29	175.7	8045	143			23	1.1
	10		1	60	0	85.4	15:45:30	16:07:09	355.8	8090	129			25	1.0
	9		60	1	85.4	0	16:09:44	16:29:30	175.8	8038	143			28	1.0
	9		1	10	0	13	16:32:32	16:35:42	355.8	8103	132		Calibration Line	24	1.2
	8		1	58	0	82.5	16:42:58	17:04:18	355.8	8075	129			25	1.2
	7		58	1	82.5	0	17:07:05	17:07:14	175.8	8133	153		Line aborted, over speed due to high winds	25	1.1
	7		58	1	82.5	0	17:15:29	17:16:00	175.8	8135	152		Line aborted, over speed due to high winds	22	1.2
	18		32	36	44.9	50.7	17:28:40	17:30:36	355.9	8010	121		Reflight from 1-4-19	23	1.1
							17:30:47	17:33:12					S-Turn	23	1.2
							17:55:48	18:00:48					Ground Static at KALI		

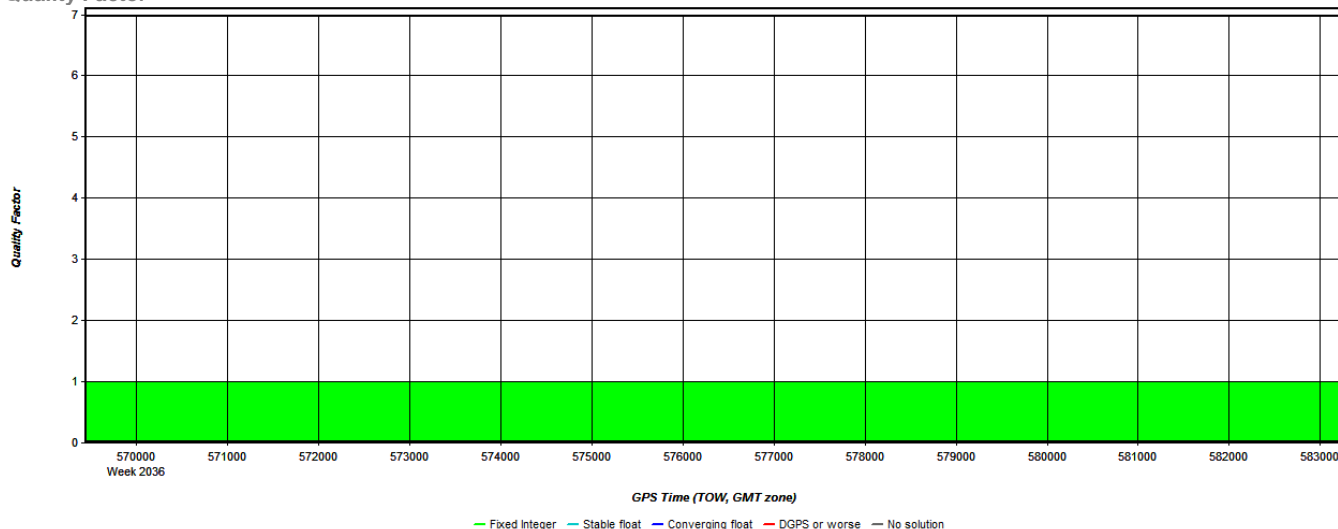
Trajectory and GPS Plots:



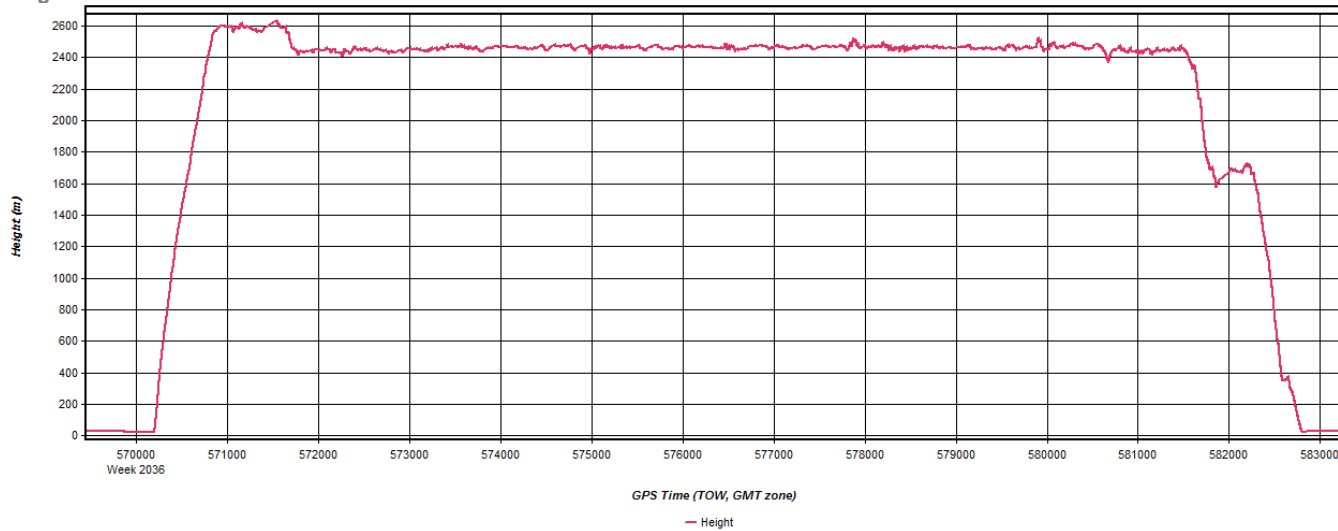
Estimated Accuracy



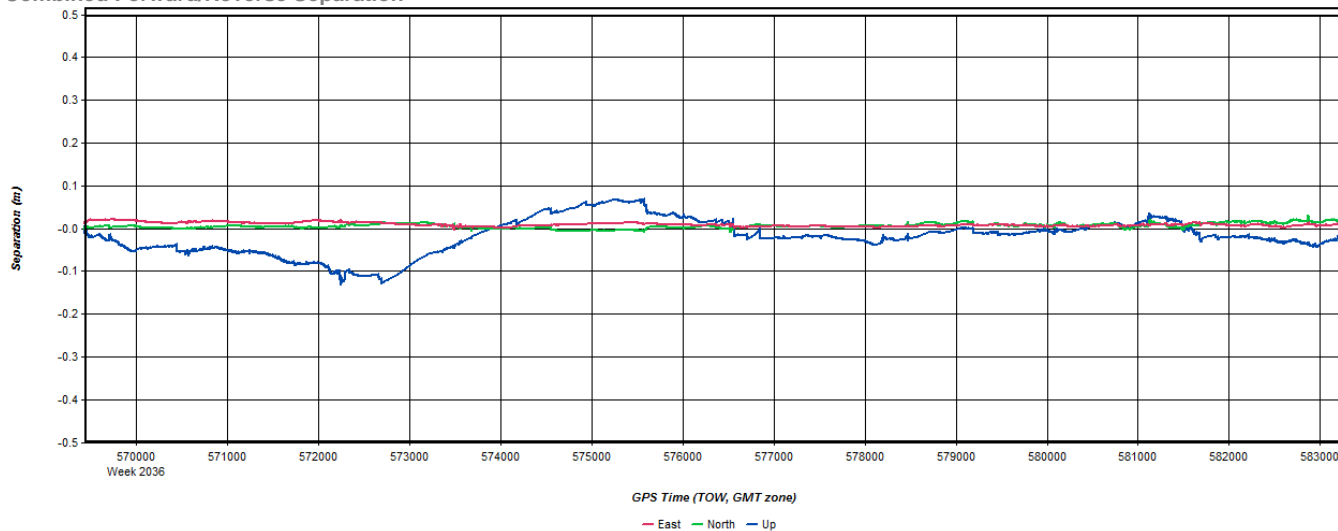
Quality Factor



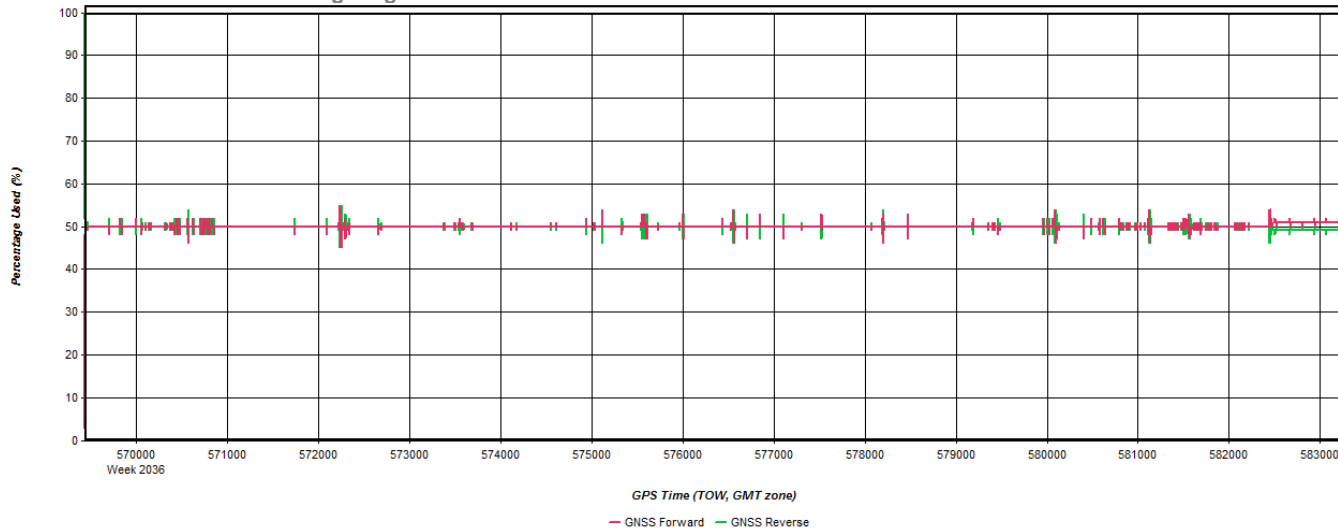
Height



Combined Forward/Reverse Separation

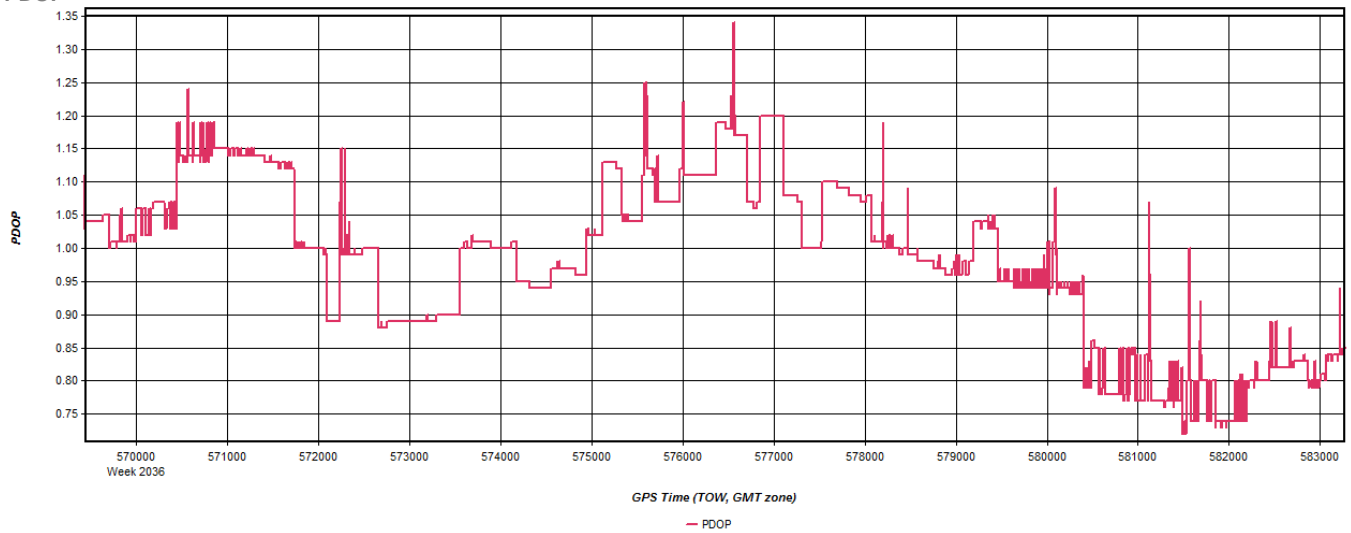


Combined Forward/Reverse Weighting

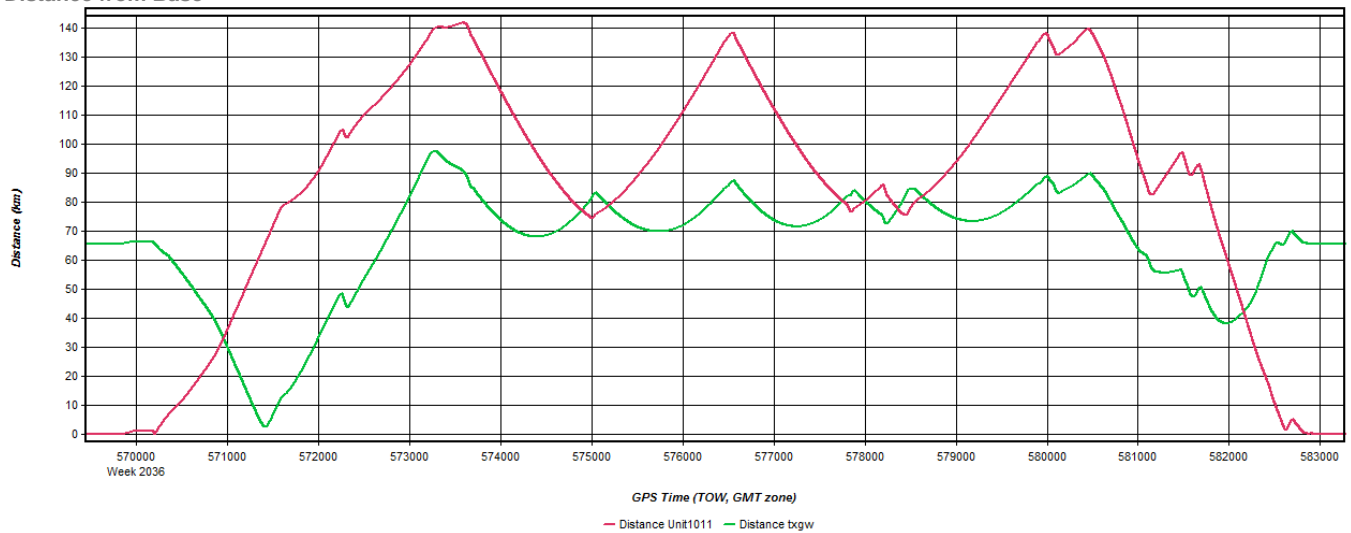


# USGS COLLECTION REPORT

## PDOP



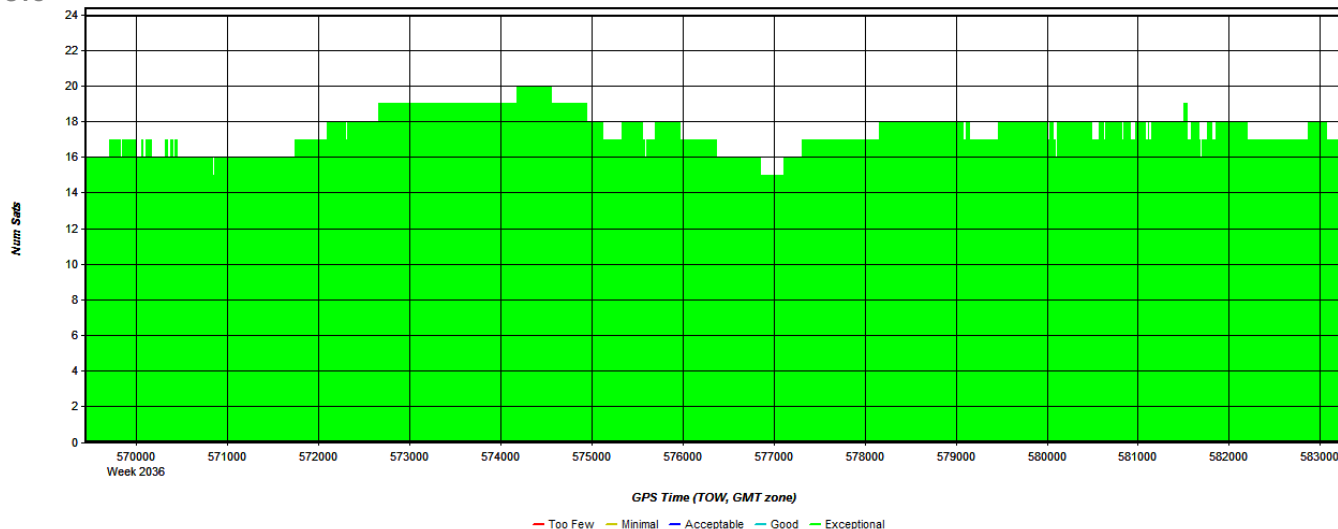
## Distance from Base







SVs





Acquisition and Processing details ----- (January 19, 2019)

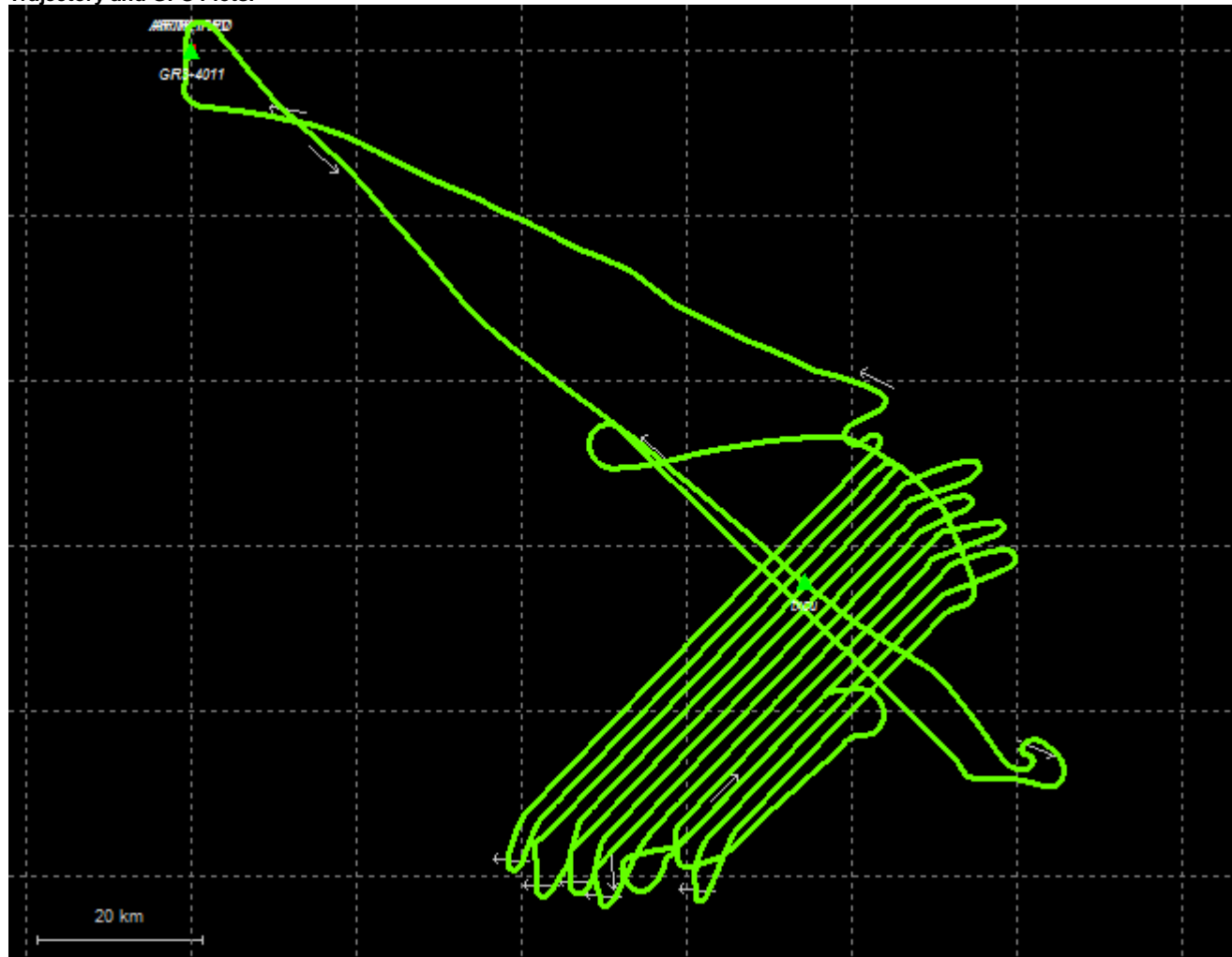
Log: 190119\_133\_33780084\_04

	Menu	18.165	Lift Begin			Lift End			Flt Duration	Flt Hrs	Hobbs Hrs	Activity
			Airport	Chocks	Hobbs	Airport	Chocks	Hobbs				
	1		KBAZ	17:23	8128.0	KBAZ	23:07	8133.7	5:43	5.75	5.7	0900-Production
	2											
		3										

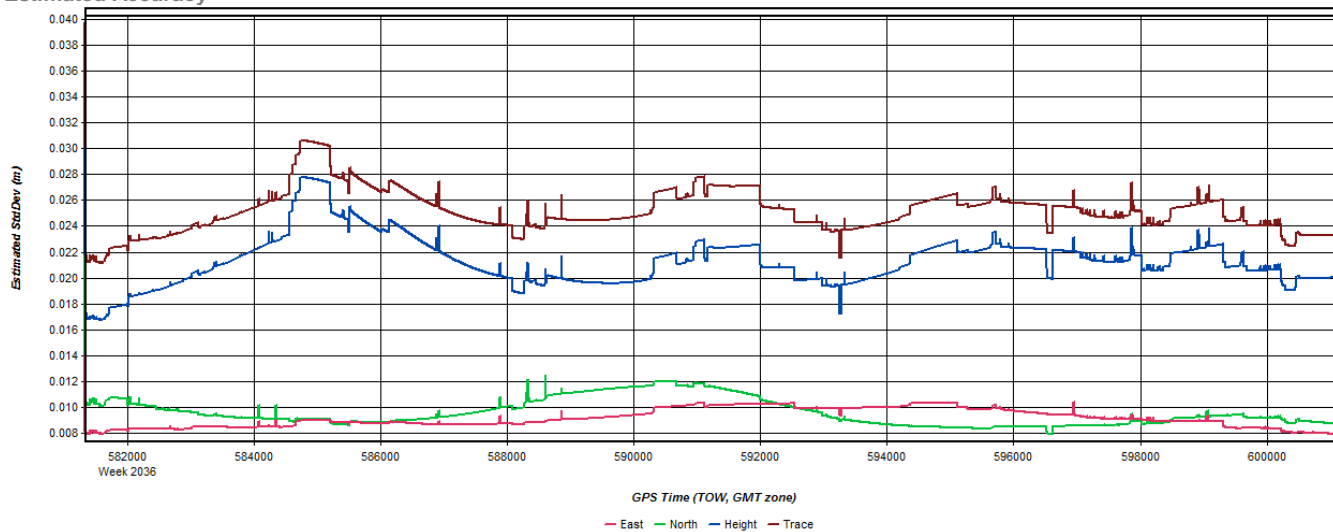
ALS  
Flight Log  
AC80-44-00-02

FGI Job # <b>33780084</b>	Project Name <b>Hurricane Harvey ALS80</b>		System <b>ALS80</b>	Unit <b>133</b>	IMU <b>uRS</b>	PIA <b>4</b>	SW1 <b>255</b>	SW2-Gain <b>60°</b>	Aper <b>Yes</b>	AutoScan <b>Yes</b>	Ground Temp °C <b>11.1 13.9</b>	Min Range Gate <b>7322</b>	Data Logger Drive <b>MM70-04</b>		
Flight Date <b>19-Jan-19</b>	GPS Day <b>19-019</b>	Lift <b>4</b>	Sun° <b>NA</b>	Solar Times (UTC) <b>NA</b>	Laser Power <b>100%</b>	Pattern <b>Triangle</b>	Flying Temp °C <b>2.0 2.0</b>	Max Range Gate <b>8830</b>	Down load Drive <b>NS1TB-111</b>						
Mission ID (ymmdd_Sen_Job_Lift) <b>190119_133_33780084_04</b>		Aircraft <b>N76JN</b>	Airport ID <b>KBAZ</b>	FMS <b>FCMS</b>	UTC <b>7,900</b>	AMT (ft) <b>150</b>	Speed <b>34.0</b>	Scan Hz <b>442,600</b>	FOV <b>46</b>	kmWPT <b>1.448</b>	Altm Setting <b>30.17 30.17</b>	Shipping Track			
Pilot #1 <b>Randy Green</b>		Pilot #2 <b>Jeff Faulkner</b>		Operator #1 <b>Adam Mueller</b>		Operator #2									
Base 1 ID <b>FGI 8003</b>	Location <b>KBAZ</b>	Rec ID <b>Unit 4</b>	Ant ID <b>U4</b>	ARP (m) <b>1.8</b>	Start Time (UTC) <b>19-Jan-19 17:04</b>	Stop Time (UTC) <b>19-Jan-19 23:11</b>	GPS Filename <b>GR3-40119r</b>	Operator <b>Adam Mueller</b>	Data <b>With AB</b>						
Base 2 ID <b>TXCU</b>	Location <b>TX</b>	Rec ID	Ant ID	ARP (m)	Start Time (UTC) <b>CORS</b>	Stop Time (UTC)	GPS Filename <b>CORS</b>	Operator	Data						
Area	Flight #		Wpt		Distance		UTC		Flt Dir	Altitude (GPS)	Speed (knots)	Scan Rate	Comments and Conditions	SVs	PDOP
	FGI	Client's	From	To	Begin	End	Start	End							
													Ground Static at KBAZ	24	1.1
													Over Flight TXCU CORS	21	1.4
													S Turn	22	1.4
Block D	84		50	20	71	27.5	18:25:06	18:40:32	W	7913	110	34.0	<b>Cross Line</b>	22	1.3
	78		23	1	31.9	0	18:53:32	19:01:19	S	7913	135	34.0		20	1.3
	77		1	25	0	34.8	19:07:47	19:16:31	N	7913	130	34.0		19	1.2
	76		24	1	33.3	0	19:22:08	19:30:15	S	7913	145	34.0		20	1.1
	76		1	10	0	13	19:38:41	19:42:03	N	7913	135	34.0	<b>Calibration Line</b>	19	1.3
	75		1	26	0	36.2	19:54:16	20:03:04	N	7913	135	34.0		19	1.3
	74		28	1	39.1	0	20:08:44	20:17:39	S	7913	145	34.0		21	1.1
	73		1	34	0	47.8	20:24:23	20:36:34	N	7962	135	34.0		19	1.2
	72		34	1	47.8	0	20:41:15	20:52:00	S	7962	145	34.0		20	1.1
	71		1	35	0	49.2	20:57:17	21:09:56	N	7962	130	34.0		20	1.2
	70		35	1	49.2	0	21:15:58	21:27:40	S	7962	130	34.0		19	1.2
	69		1	37	0	52.1	21:34:19	21:47:51	N	7962	130	34.0		20	1.2
	68		38	1	53.6	0	21:49:57	22:02:16	S	7962	145	34.0		20	1.2
	67		1	39	0	55	22:07:32	22:20:56	N	7692	140	34.0		20	1.1
							22:21:20	22:23:25					S Turn	22	1.0
							22:54:52	22:59:52					Ground Static at KBAZ	21	1.1

Trajectory and GPS Plots:

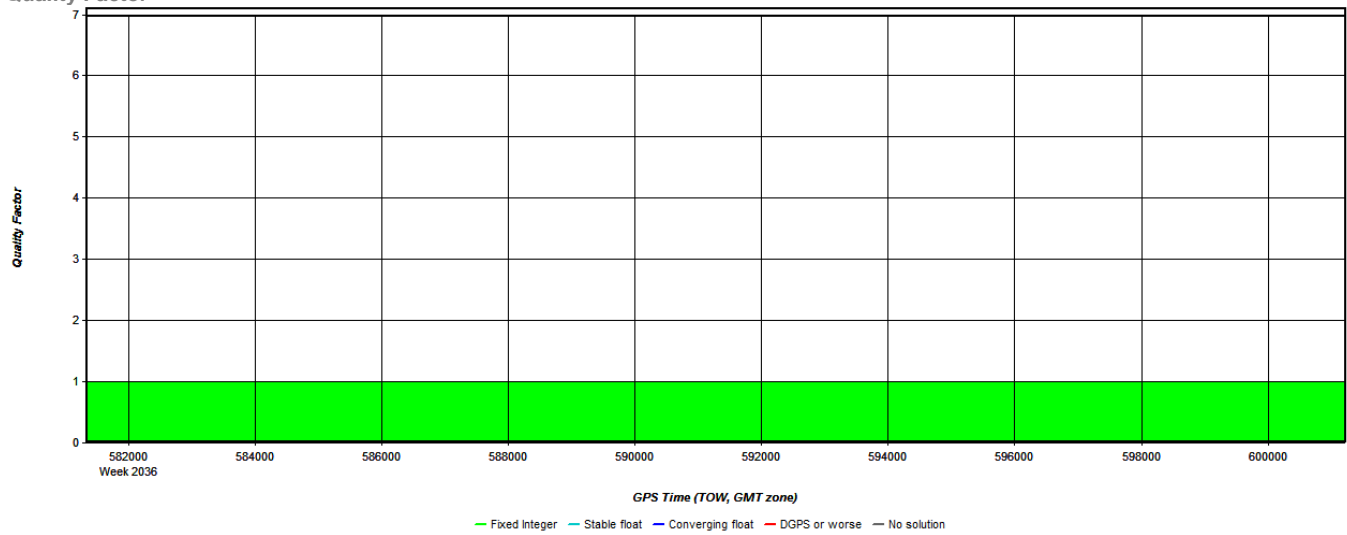


Estimated Accuracy

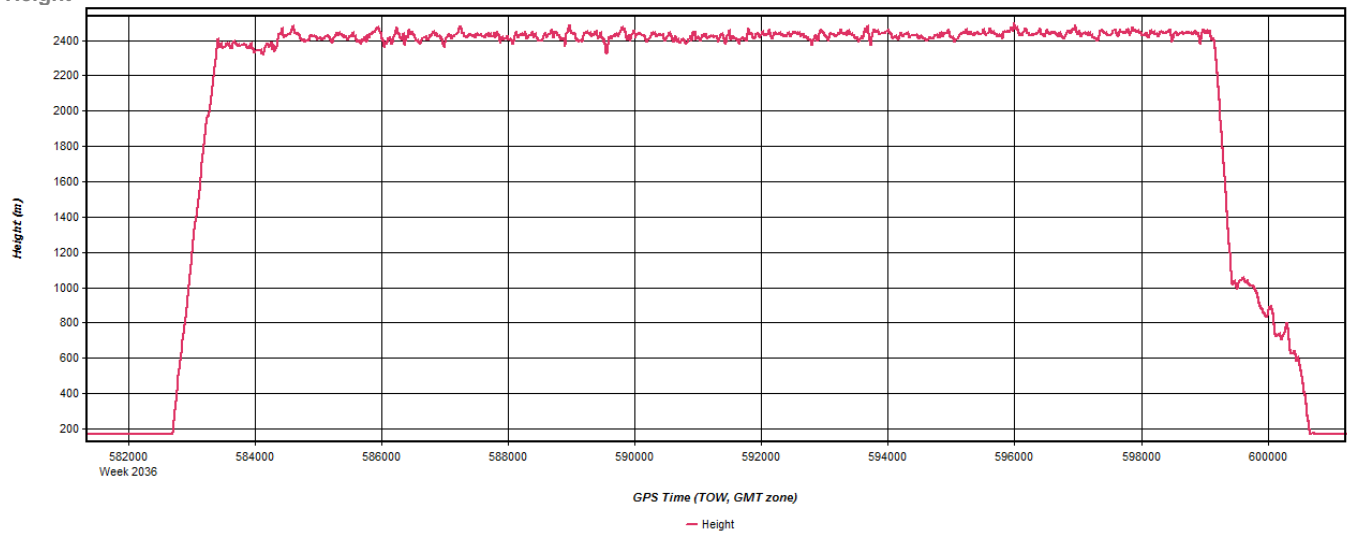


# USGS COLLECTION REPORT

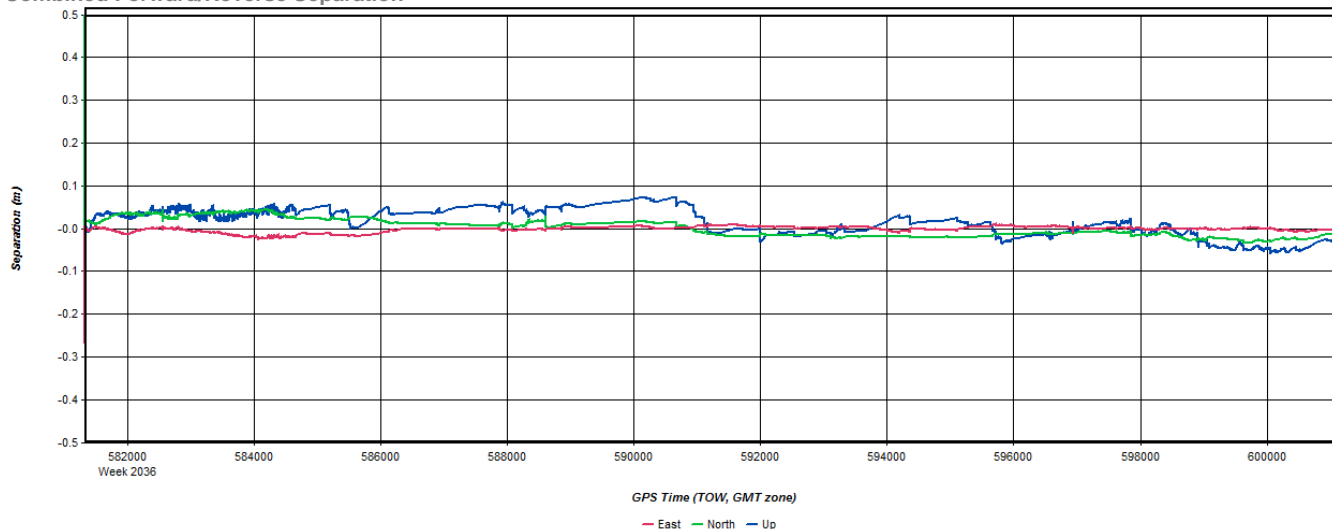
## Quality Factor



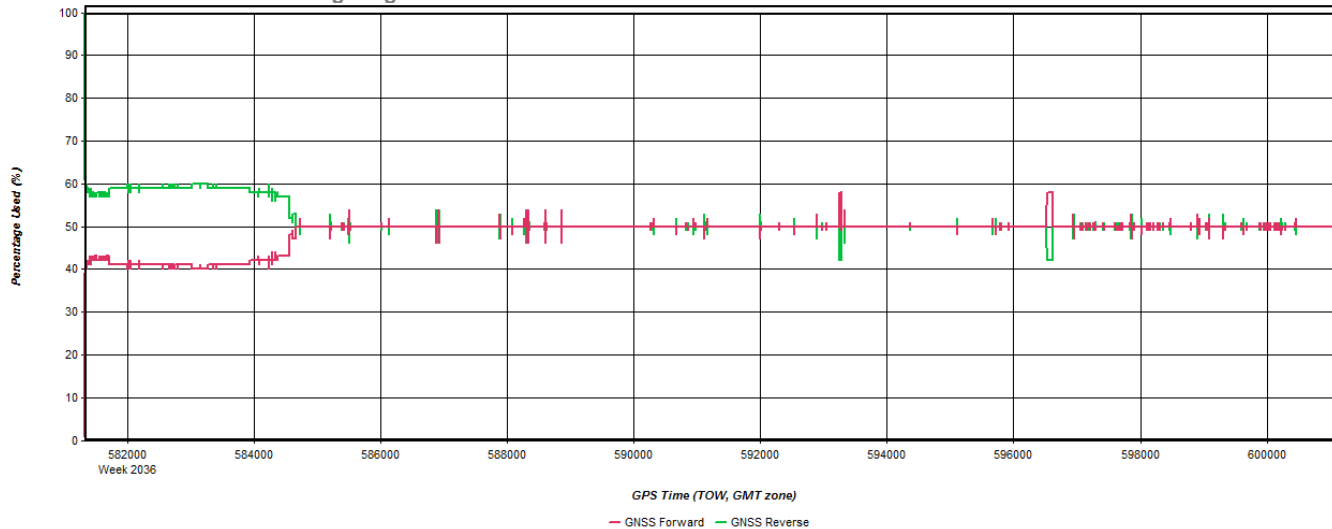
## Height



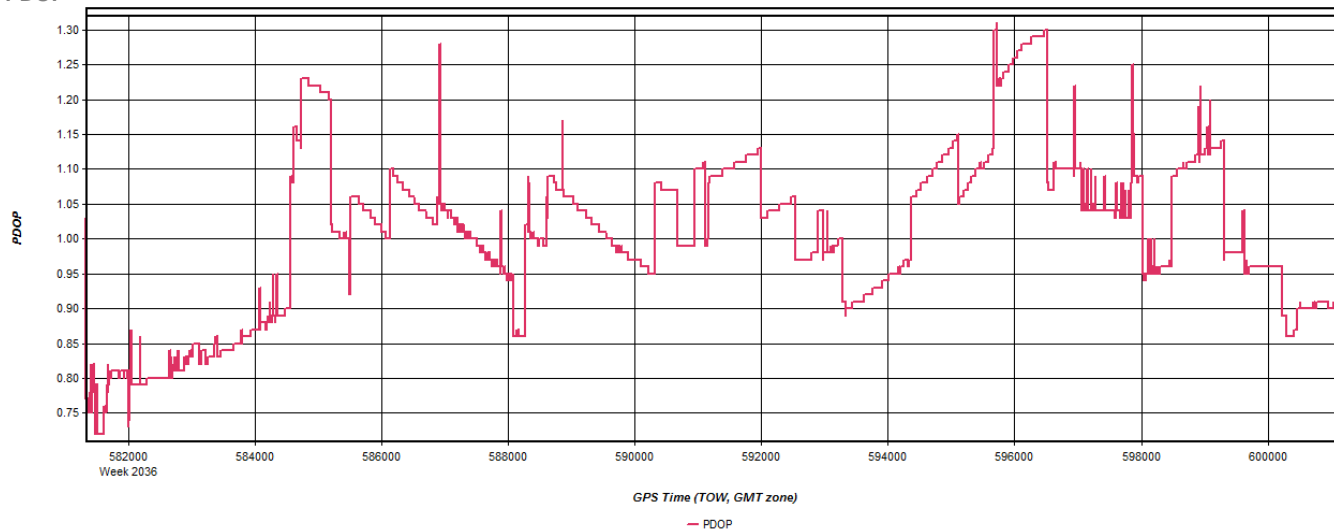
Combined Forward/Reverse Separation



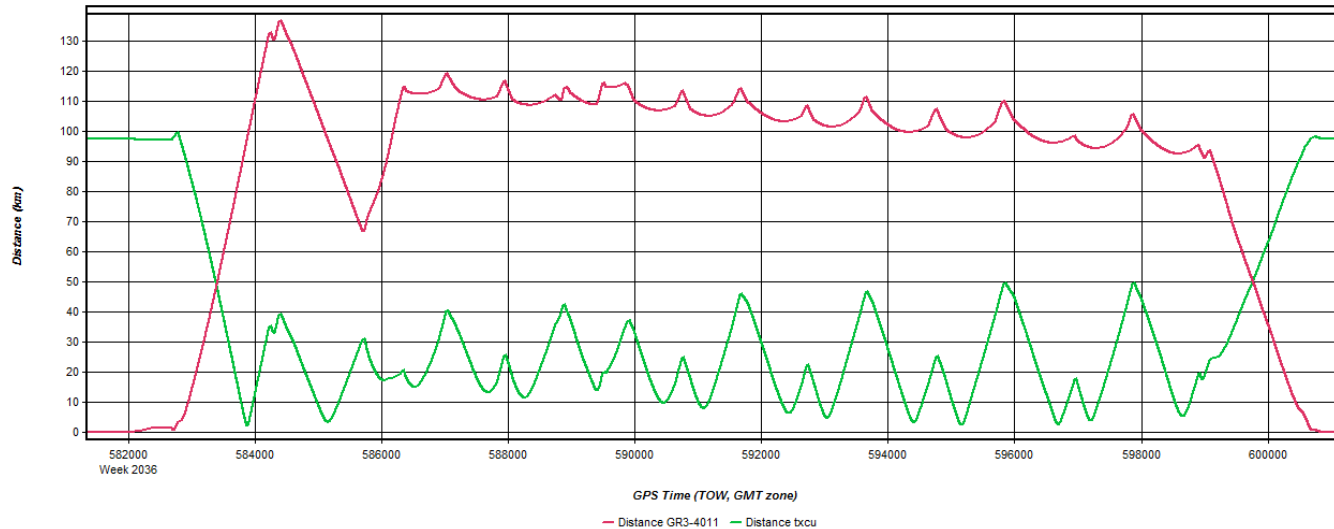
Combined Forward/Reverse Weighting



PDOP

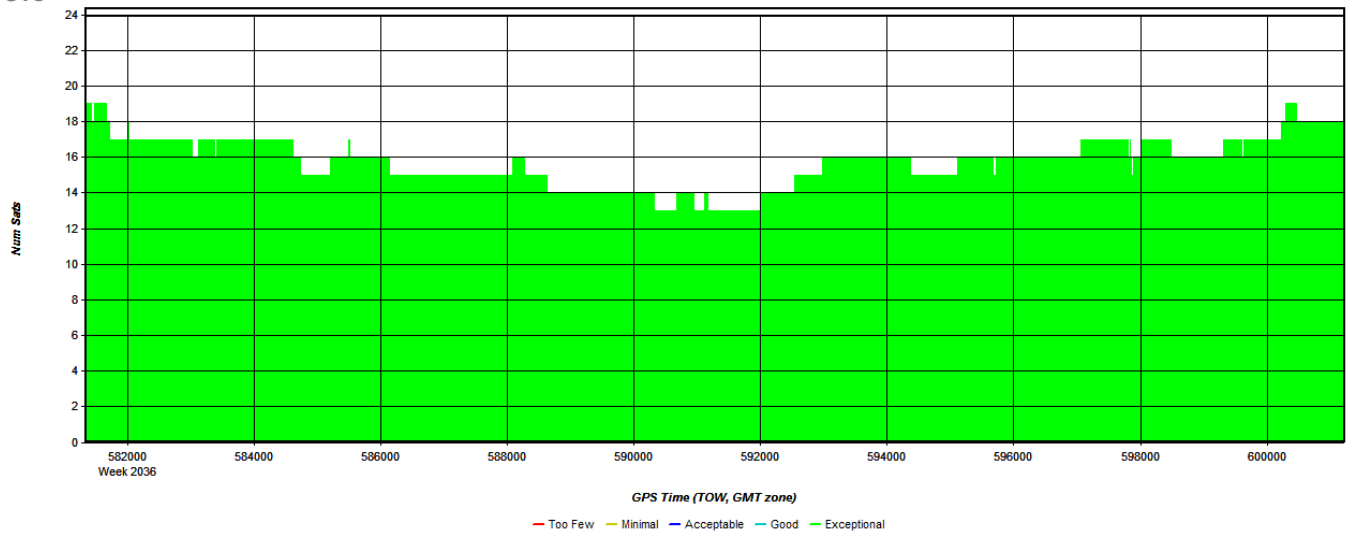


Distance from Base





SVs





Acquisition and Processing details ----- (January 20, 2019)

Log: 190120\_118\_33780084\_10

	Menu	18.165	Lift Begin			Lift End			Flt	Flt	Hobbs	 <b>ALS</b> Flight Log AC80-44-00-02	
			Airport	Chocks	Hobbs	Airport	Chocks	Hobbs	Duration	Hrs	Hrs		Activity
	1		KGTU	14:35	2959.0	KBBD	18:12	2962.2	3:37	3.50	3.2		0900-Production
	2												
3													

FGI Job # <b>33780084</b>	Project Name <b>Hurricane Harvey ALS80</b>		System <b>ALS80</b>	Unit <b>118</b>	IMU <b>uIRS</b>	PIA <b>4</b>	SW1 <b>-</b>	SW2-Gain <b>-</b>	Aper <b>60°</b>	AutoScan <b>Yes</b>	Ground Temp °C <b>-2.0 9.0</b>	Min Range Gate <b>2232m</b>	Data Logger Drive <b>MM70-06</b>
Flight Date <b>20-Jan-19</b>	GPS Day <b>19-020</b>	Lift <b>10</b>	Sun° <b>-</b>		Solar Times (UTC) <b>-</b>		Laser Power <b>96%</b>		Pattern <b>Triangle</b>	Flying Temp °C <b>1.0 3.0</b>	Max Range Gate <b>2691m</b>	Download Drive <b>NS1TB-102</b>	
Mission ID (ymmdd_Sen_Job_Lift) <b>190120_118_33780084_10</b>		Aircraft <b>N8131</b>	Airport ID <b>KGTU</b>	FMS <b>CCNS 3</b>	UTC <b>-6</b>	AMT (ft) <b>7,900</b>	Speed <b>150</b>	Scan Hz <b>34.0</b>	Pulse Rate <b>442,600</b>	FOV <b>46</b>	km/WPT <b>1.448</b>	Altm Setting <b>30.42 30.34</b>	Shipping Track <b>7850 4587 5298</b>

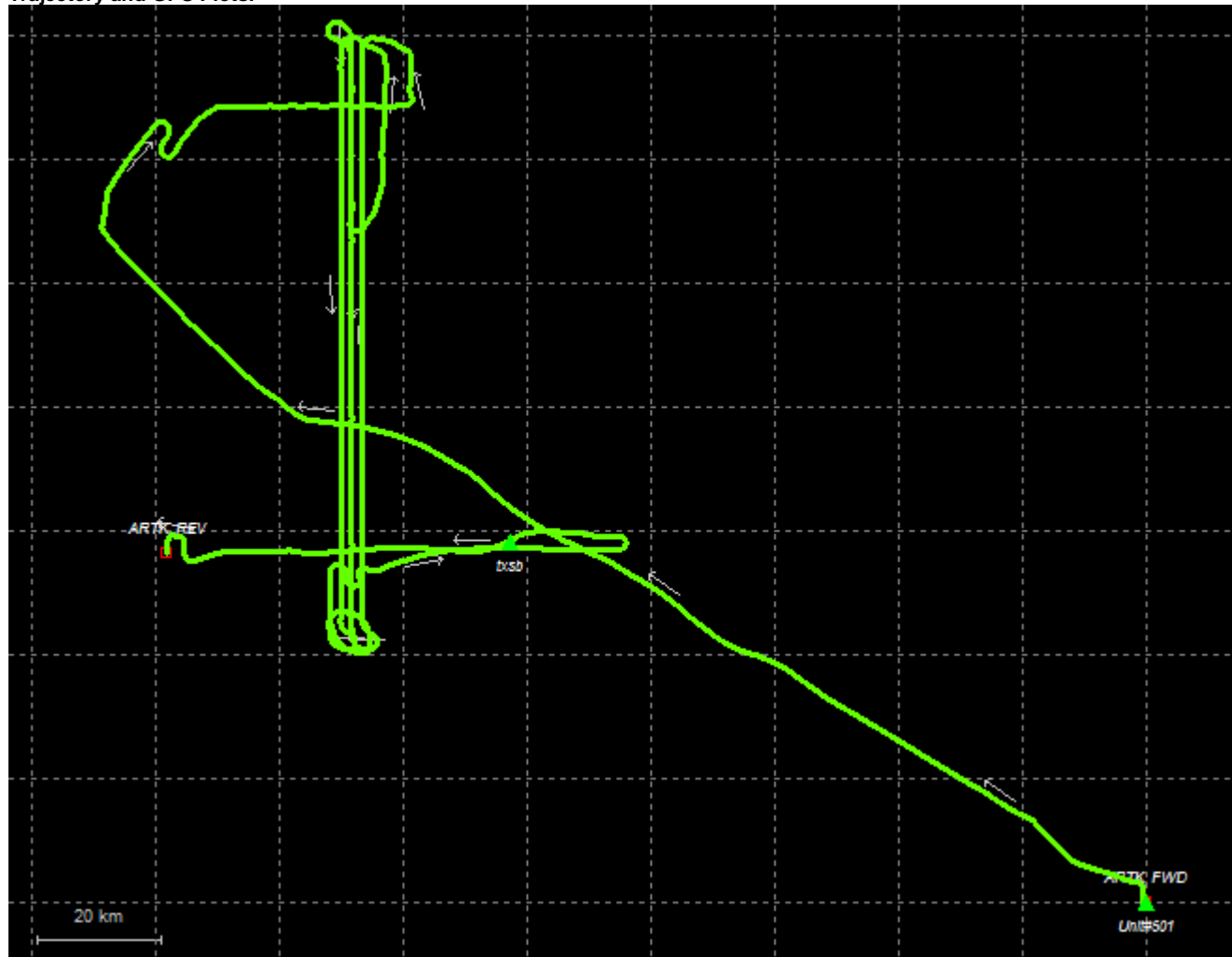
Pilot #1 <b>Wayne Manning</b>		Pilot #2 <b>-</b>		Operator #1 <b>Chris Acuña</b>		Operator #2 <b>-</b>	
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Base 1 ID <b>FEDI 1115</b>	Location <b>KGTU</b>		Rec ID <b>GR3#5</b>	Ant ID <b>GR3#5</b>	ARP (m) <b>1.8</b>	Start Time (UTC) <b>20-Jan-18 13:43</b>		Stop Time (UTC) <b>1/20/1018 23:20</b>		GPS Filename <b>Unit#50120n</b>	Operator <b>Chris Acuña</b>	Data <b>With AB</b>
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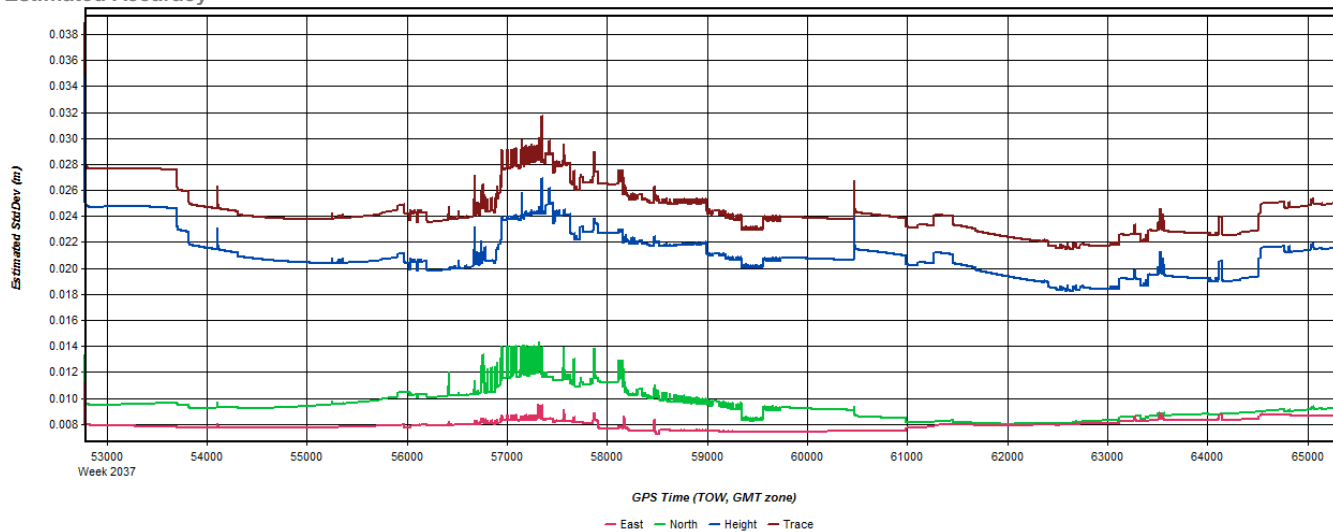
Area	Flight #		Wpt		Distance		UTC		Flt Dir	Altitude (GPS)	Speed (knots)	Scan Rate	Comments and Conditions	SVs	PDOP
	FGI	Client's	From	To	Begin	End	Start	End							
													Aspen GPS Tracker is "Off"		
							14:39:59	14:44:59					5 Min GND static alignment at KGTU	18	1.5
							15:19:04	15:24:04					5 Min acquisition of CORS TXSB	22	1.1
							15:43:54	15:46:06					S-Turn in flight alignment	25	1.0
BLOCK_I	38		1	12	0	15.9	15:50:11	15:54:10	86	9130	139	-		25	1.0
-															
	8		59	1	84	0	16:00:55	16:19:59	176	9125	145	-		24	1.0
-															
	7		1	59	0	84	16:24:19	16:44:56	355	9155	132	-		22	1.1
	7		59	46	84	65.2	16:49:33	16:54:05	175	9105	143	-	Calibration line	21	1.3
	6		59	1	84	0	17:06:34	17:26:15	175	9190	144	-		22	1.1
	5												Broke off line 5 twice fo CCNS dropping off prior to IP		
							17:36:42	17:38:41					S-Turn post in flight alignment	23	1.0
							17:42:35	17:47:35					5 Min post acquisition of CORS TXSB	22	1.1
													Non static shut down at KBBD		



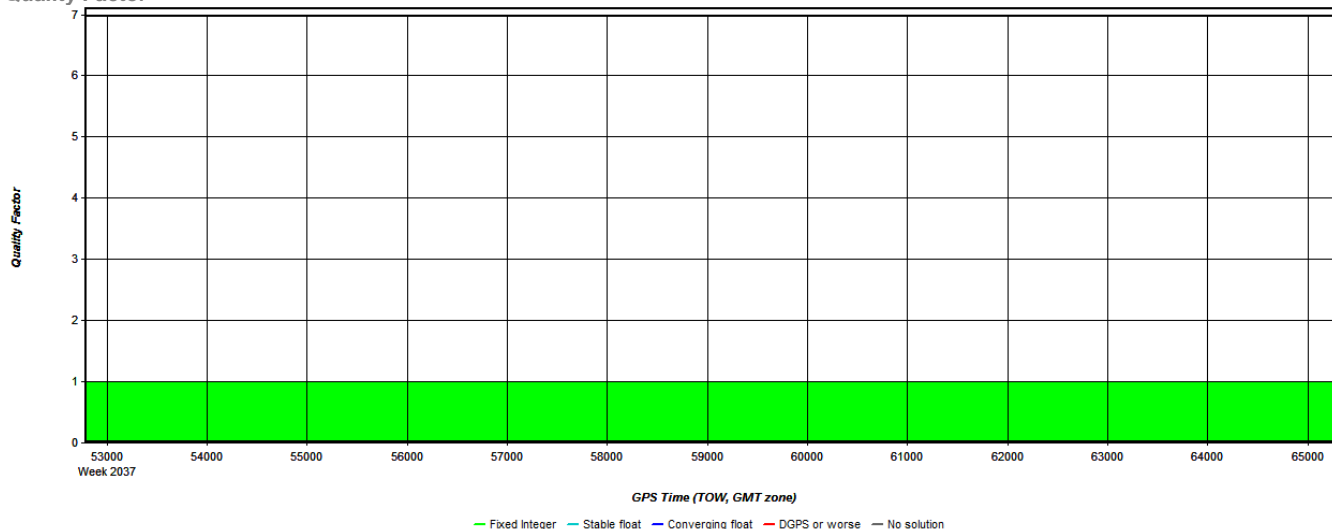
Trajectory and GPS Plots:



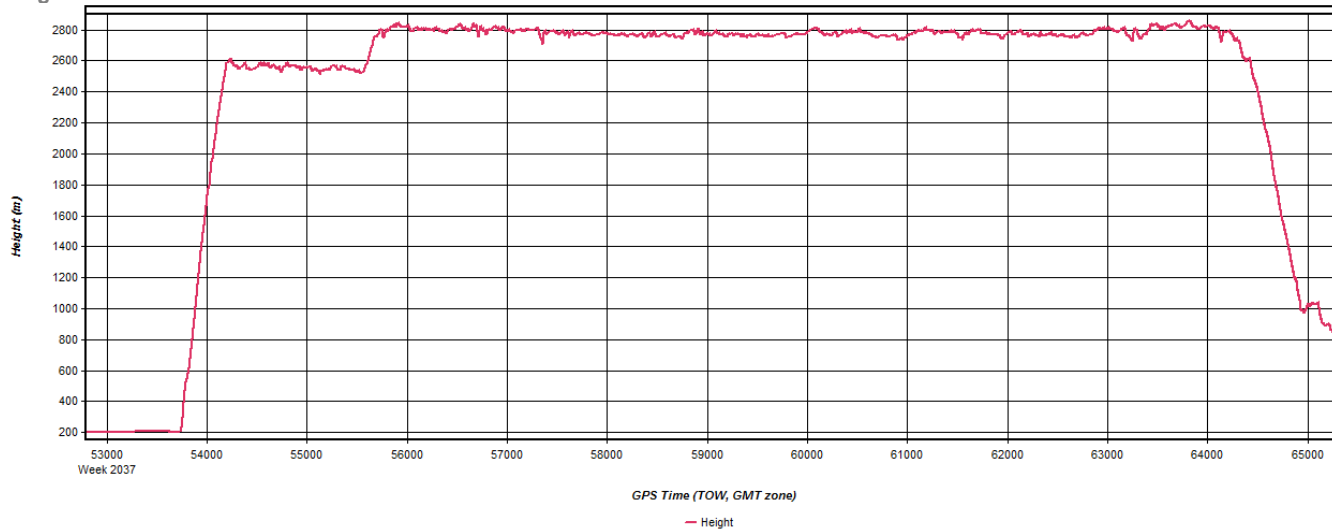
Estimated Accuracy



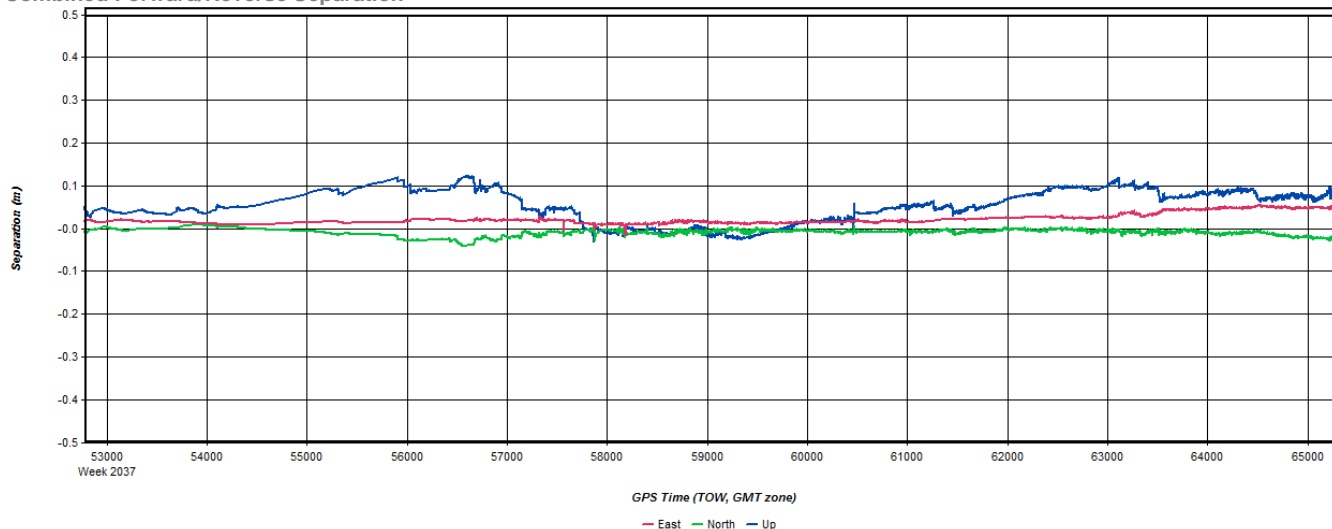
Quality Factor



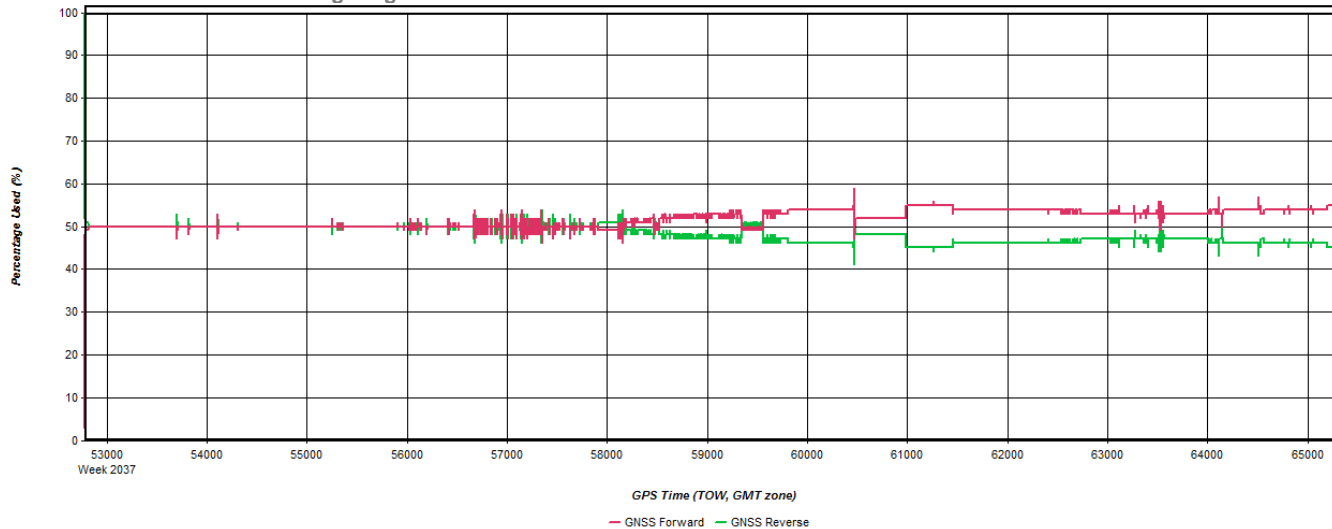
Height



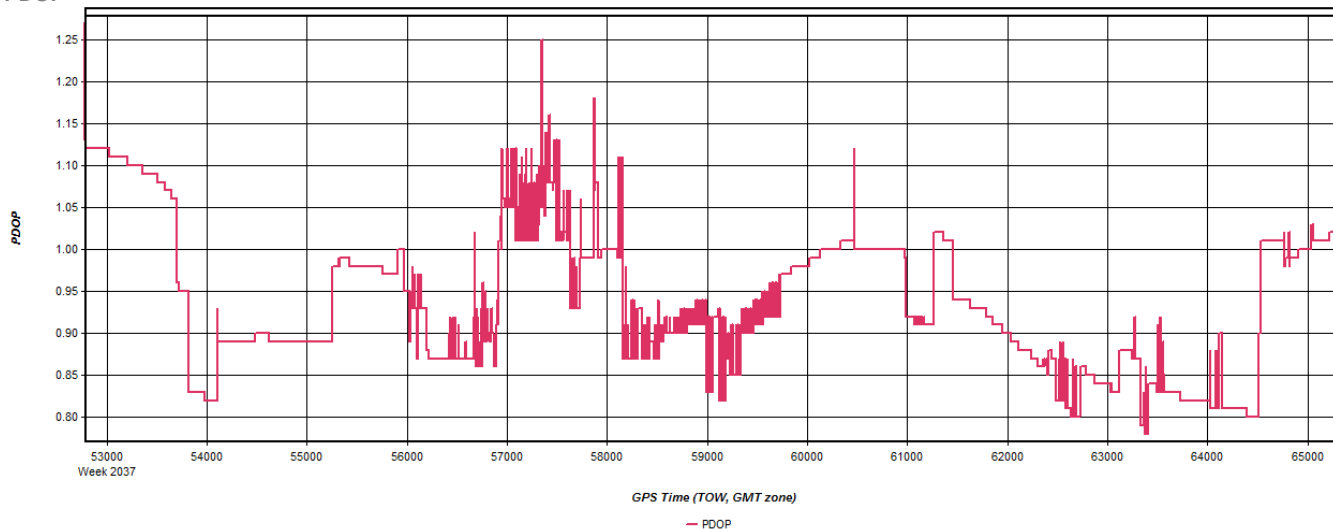
Combined Forward/Reverse Separation



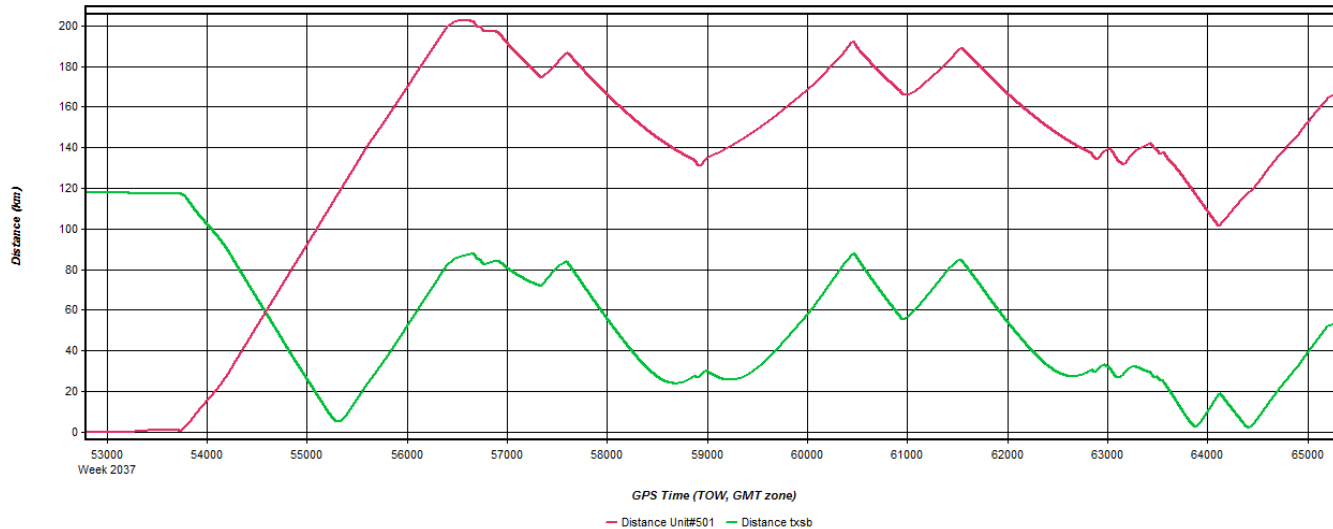
Combined Forward/Reverse Weighting



PDOP



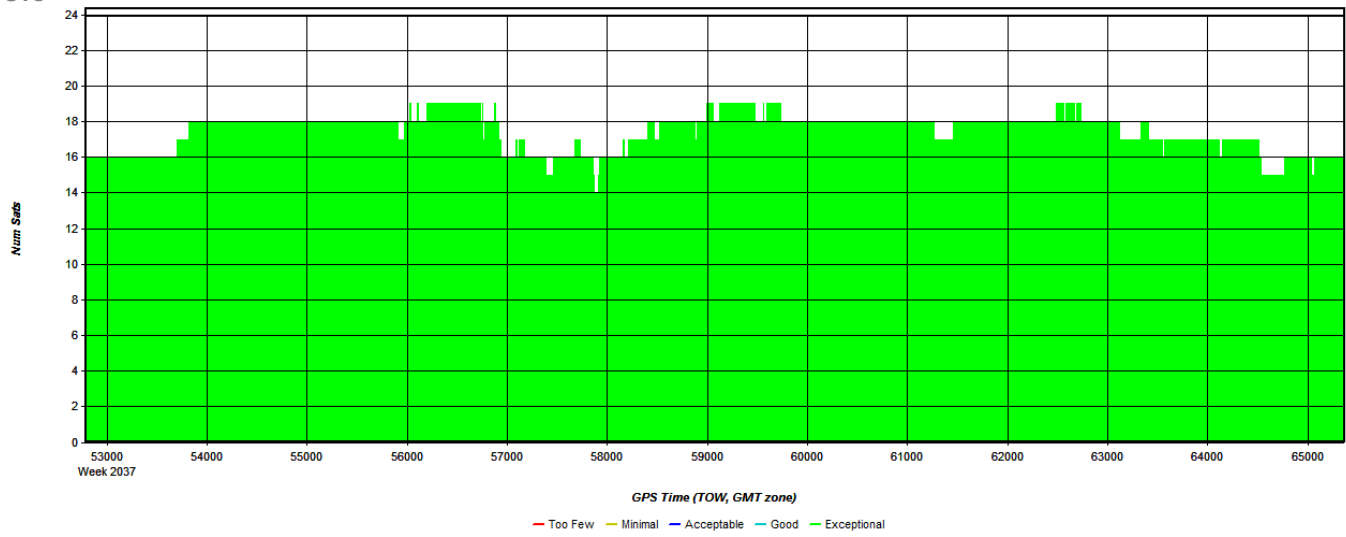
Distance from Base



# USGS COLLECTION REPORT



SVs





Acquisition and Processing details ----- (January 20, 2019)

Log: 190120\_118\_33780084\_11

	Menu	18.165	Lift Begin			Lift End			Flt Duration	Flt Hrs	Hobbs Hrs	Activity
			Airport	Chocks	Hobbs	Airport	Chocks	Hobbs				
	1		KBBB	18:55	2962.2	KGTU	23:05	2966.1	4:10	4.25	3.9	0900-Production
	2											
		3										

ALS  
Flight Log  
AC80-44-00-02

FGI Job # <b>33780084</b>	Project Name <b>Hurricane Harvey ALS80</b>		System <b>ALS80</b>	Unit <b>118</b>	IMU <b>uRS</b>	PIA <b>4</b>	SW1 <b>-</b>	SW2-Gain <b>-</b>	Aper <b>60°</b>	AutoScan <b>Yes</b>	Ground Temp °C <b>- 10.0</b>	Min Range Gate <b>2232m</b>	Data Logger Drive <b>MM70-06</b>
Flight Date <b>20-Jan-19</b>	GPS Day <b>19-020</b>	Lift <b>11</b>		Sun° <b>-</b>	Solar Times (UTC) <b>-</b>		Laser Power <b>96%</b>	Pattern <b>Triangle</b>	Flying Temp °C <b>5.0 5.0</b>	Max Range Gate <b>2691m</b>		Download Drive <b>NS1TB-102</b>	
Mission ID (ymmdd_Sen_Job_Lift) <b>190120_118_33780084_11</b>		Aircraft <b>N8131</b>	Airport ID <b>KGTU</b>	FMS <b>CCNS 3</b>	UTC <b>-6</b>	AMT (ft) <b>7,900</b>	Speed <b>150</b>	Scan Hz <b>34.0</b>	Pulse Rate <b>442,600</b>	FOV <b>46</b>	kmWPT <b>1.448</b>	AltM Setting <b>- 30.28</b>	Shipping Track <b>7850 4587 5298</b>

Plot #1 <b>Wayne Manning</b>	Plot #2 <b>-</b>	Operator #1 <b>Chris Acuña</b>	Operator #2 <b>-</b>
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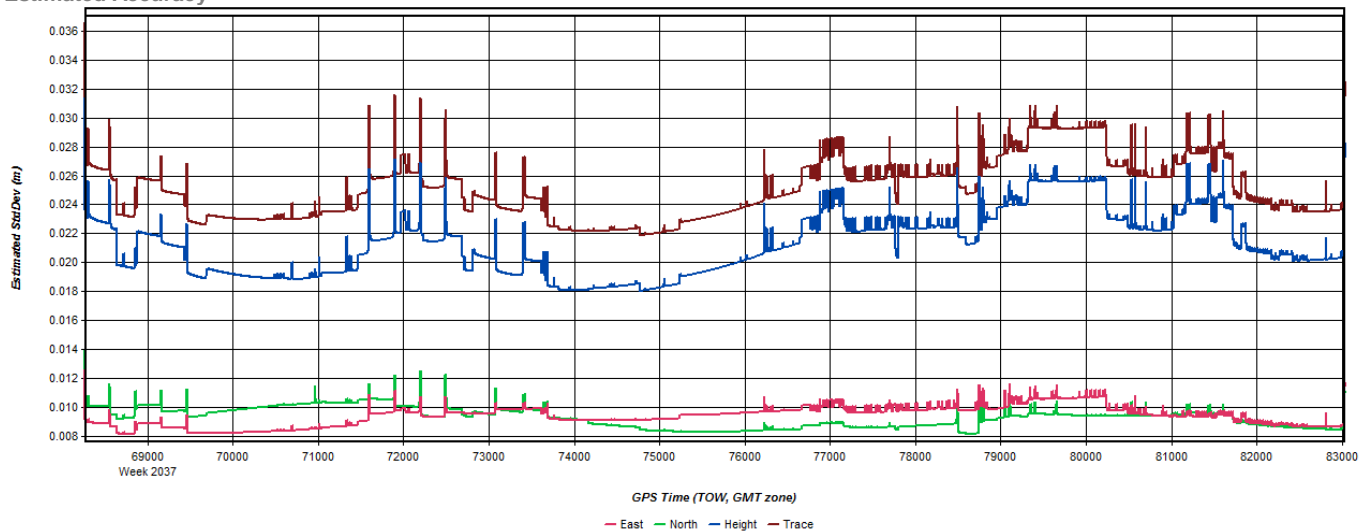
Base 1 ID <b>FEDI 1115</b>	Location <b>KGTU</b>	Rec ID <b>GR3#5</b>	Ant ID <b>GR3#5</b>	ARP (m) <b>1.8</b>	Start Time (UTC) <b>20-Jan-18 13:43</b>	Stop Time (UTC) <b>20-Jan-18 23:20</b>	GPS Filename <b>Unit#50120n</b>	Operator <b>Chris Acuña</b>	Data <b>With AB</b>
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Area	Flight #		Wpt		Distance		UTC		Flt Dir	Altitude (GPS)	Speed (knots)	Scan Rate	Comments and Conditions	SVs	PDOP
	FGI	Client's	From	To	Begin	End	Start	End							
													Aspen GPS Tracker is "Off"		
							19:14:04	19:19:04					5 Min acquisition of CORS TXSB	18	1.3
							19:36:14	19:38:18					S-Turn in flight alignment	17	1.3
BLOCK_I	38		12	1	15.9	0	19:53:39	19:57:35	264	9185	136	-	Crossing line	18	1.1
	-														
	5		59	1	84	0	20:09:41	20:29:50	177	9195	147	-		19	1.1
	5		1	13	0	17.4	20:34:51	20:38:38	356	9295	148	-	Calibration line	20	1.2
	4		1	59	0	84	20:48:18	21:08:15	355	9170	137	-		22	1.2
	3		59	1	84	0	21:13:07	21:32:32	173	9075	147	-		21	1.2
	2		1	59	0	84	21:37:07	21:56:59	354	9185	144	-		19	1.4
	1		59	1	84	0	22:01:53	22:21:10	173	9075	144	-		20	1.3
							22:21:37	22:23:30					S-Turn post in flight alignment	20	1.2
							22:29:14	22:34:14					5 Min post acquisition of CORS TXSB	21	1.1
							22:58:13	23:03:13					5 Min GND static at KGTU	19	1.2

Trajectory and GPS Plots:

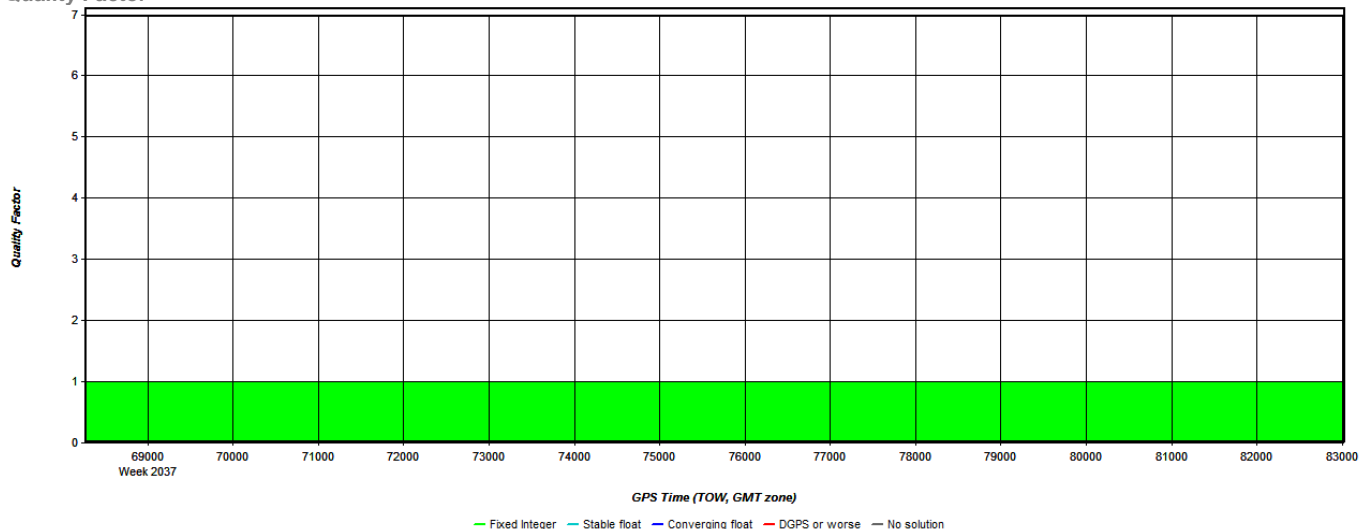


Estimated Accuracy

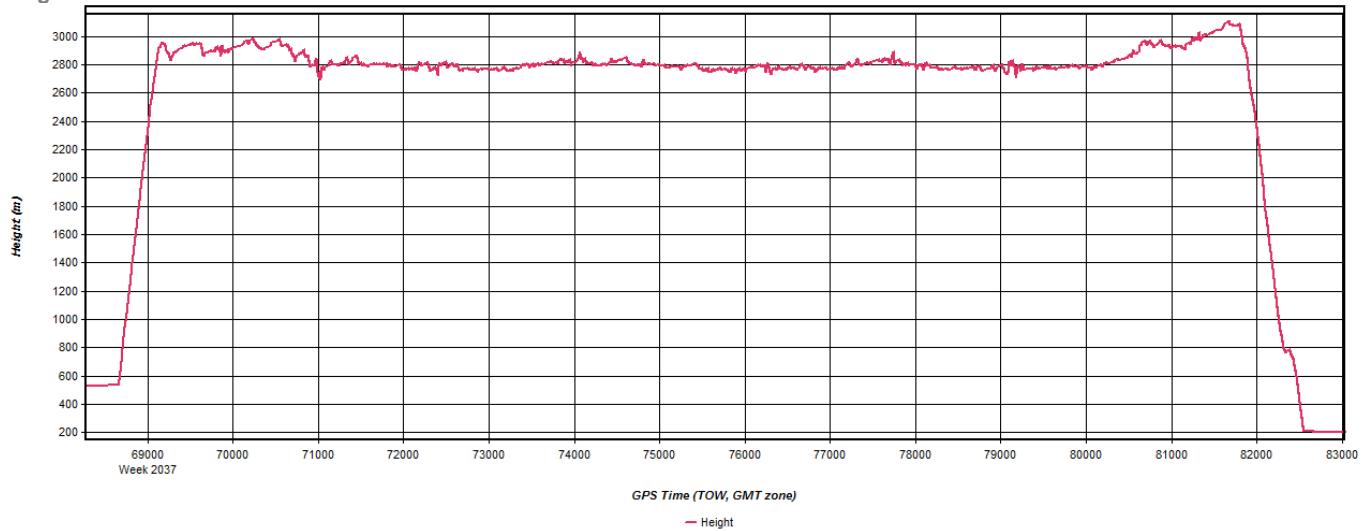




Quality Factor

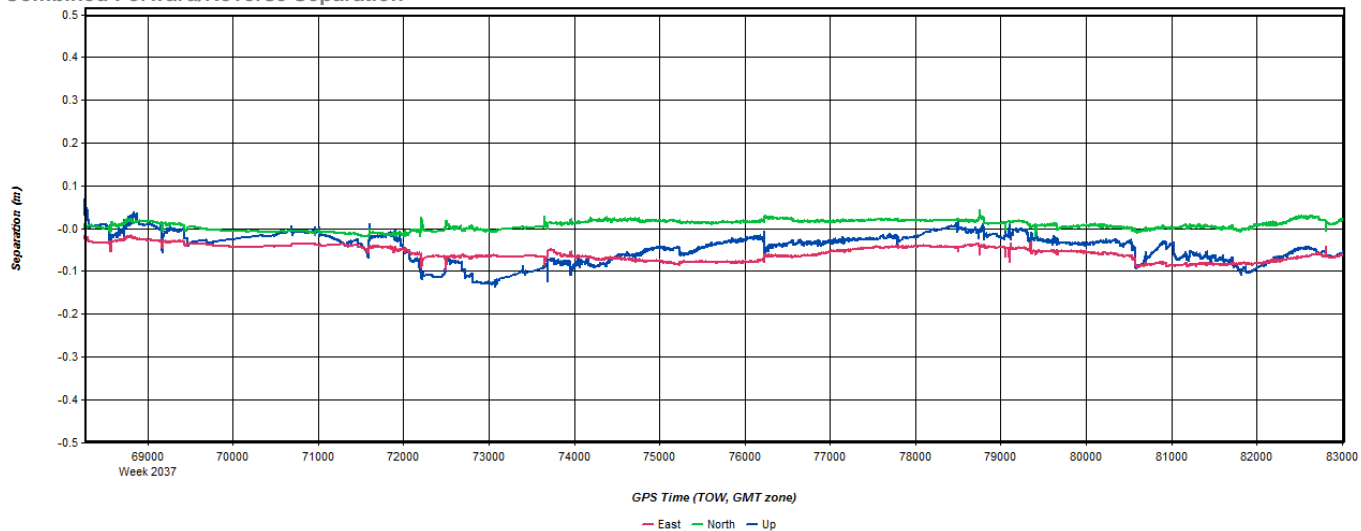


Height

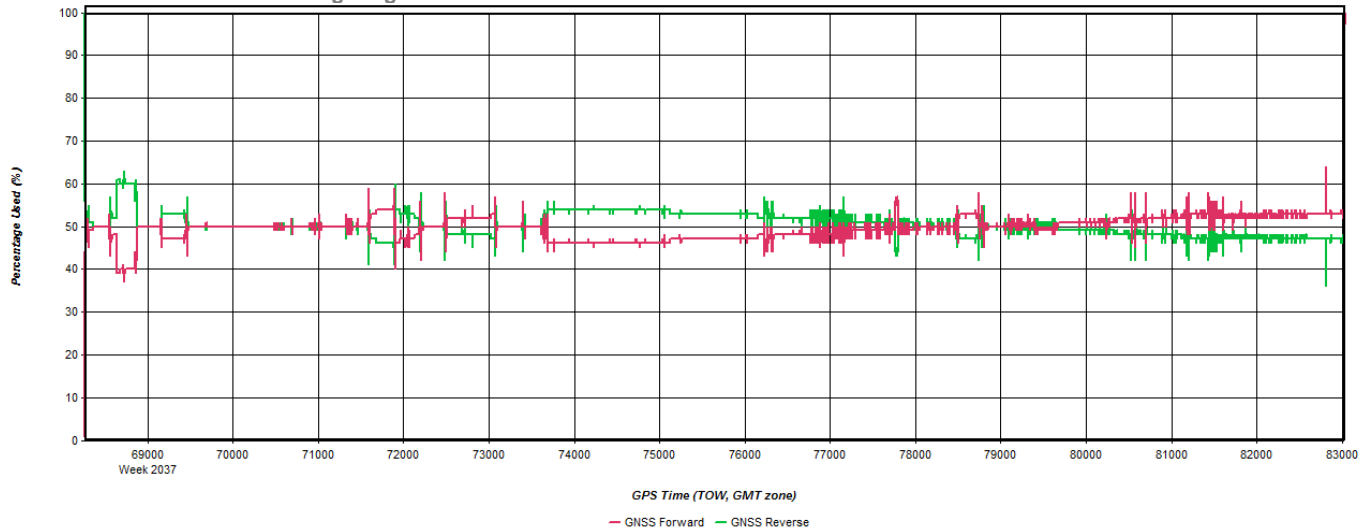




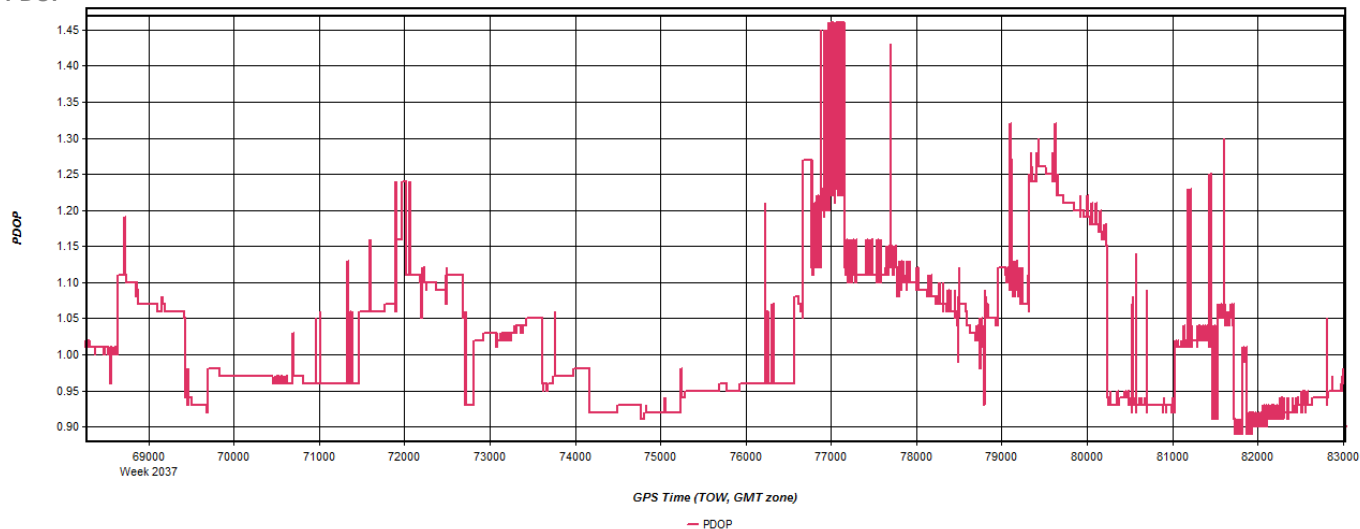
Combined Forward/Reverse Separation



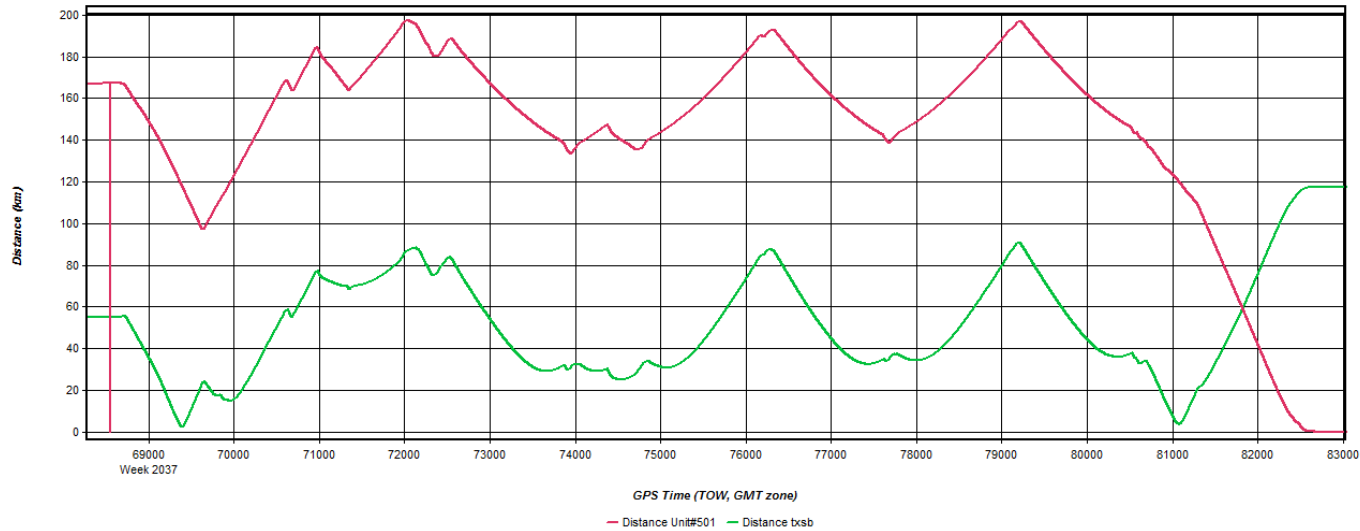
Combined Forward/Reverse Weighting



PDOP

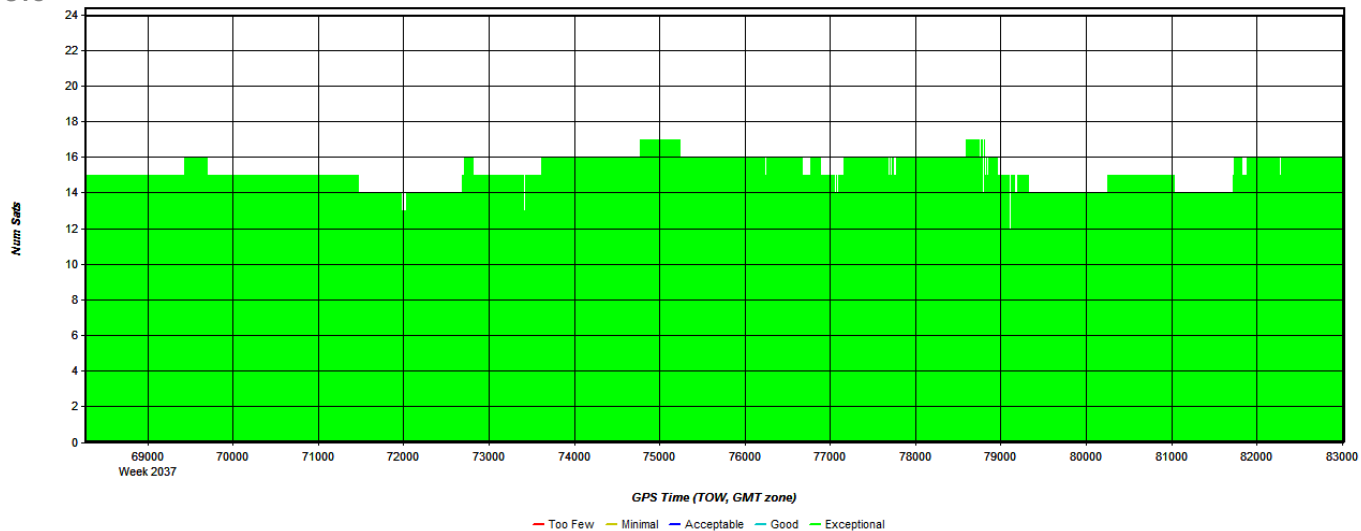


Distance from Base





SVs




USGS  
COLLECTION REPORT



Acquisition and Processing details ----- (January 20, 2019)

Log: 190120\_130\_33780084\_07

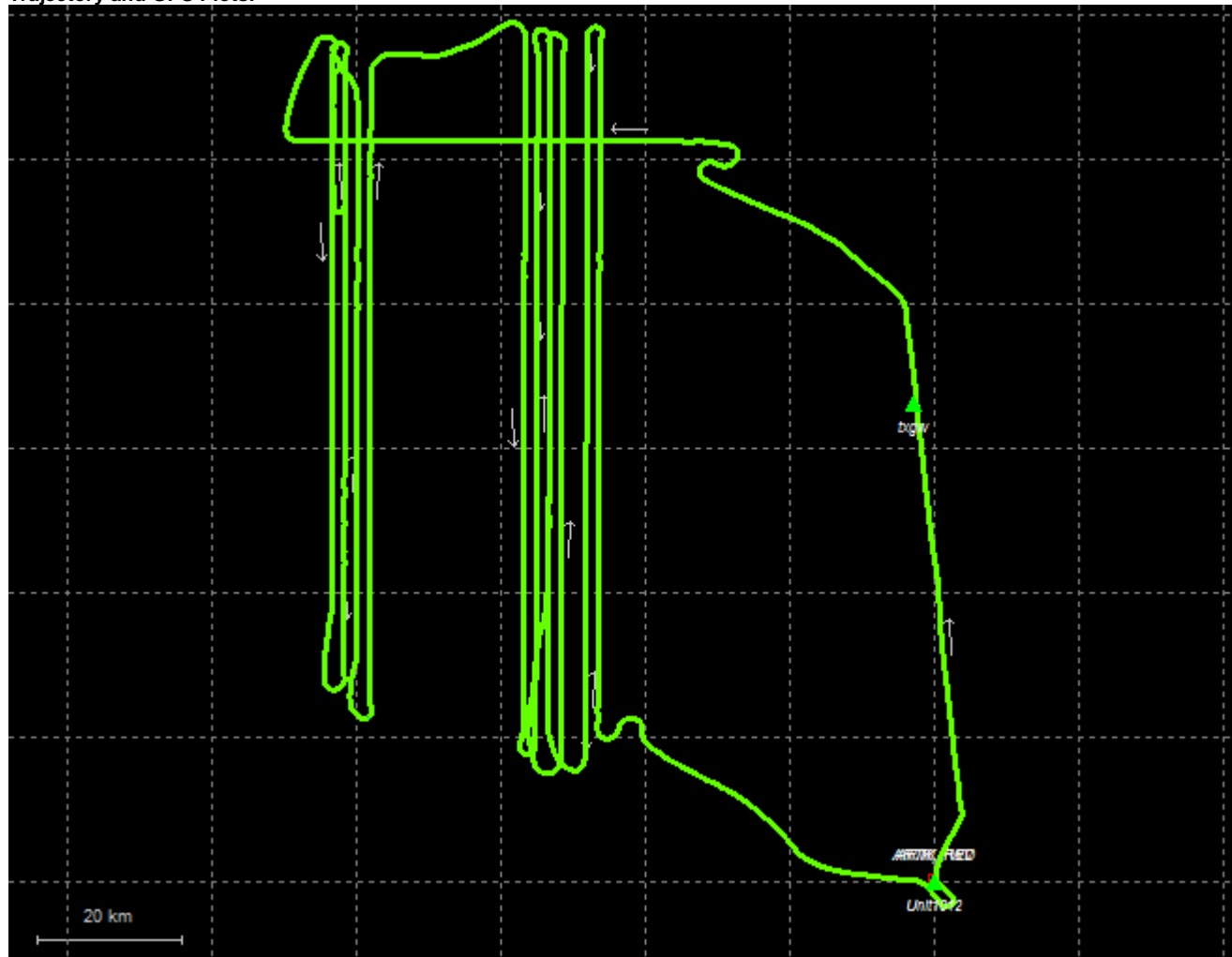

Menu
18.165

Lift Begin			Lift End			Flt Duration	Flt Hrs	Hobbs Hrs	Activity	
Airport	Chocks	Hobbs	Airport	Chocks	Hobbs					
1	KALI	13:59	1338.8	KALI	19:44	1344.1	5:44	5.75	5.3	0900-Production
2										
3										

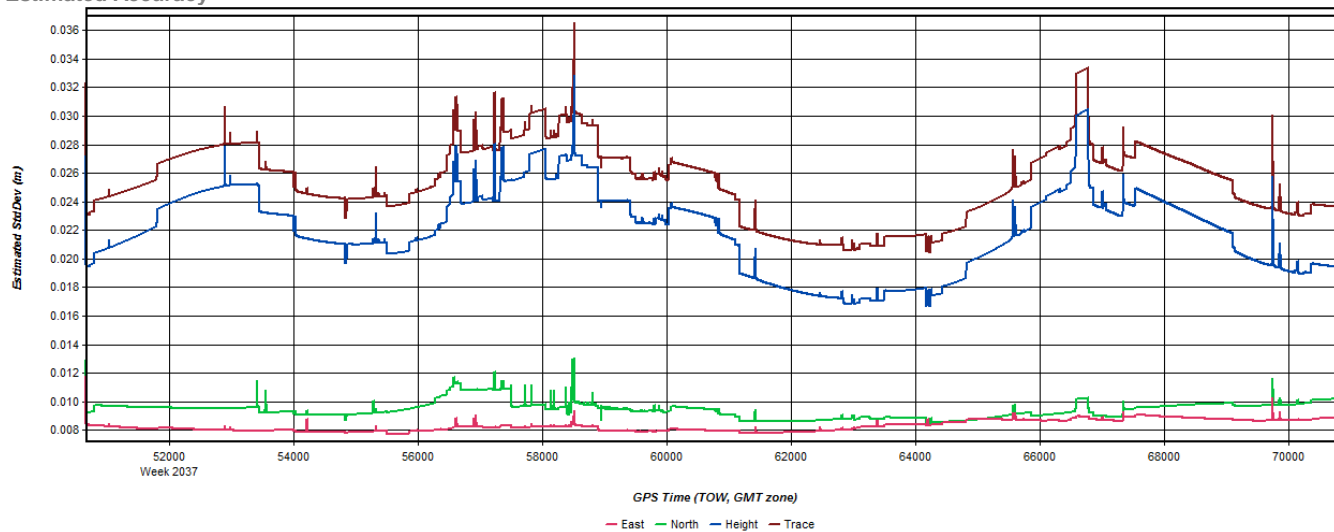
ALS  
Flight Log  
AC80-44-00-02

FGI Job # 33780084		Project Name Hurricane Harvey			System ALS80	Unit 130	IMU uIRS	PIA 4	SW1	SW2-Gain	Aper	AutoScan	Ground Temp °C 2.0 14.0	Min Range Gate 2232	Data Logger Drive LG101	
Flight Date 20-Jan-19	GPS Day 19-020	Lift 7			Sun°	Solar Times (UTC)	Laser Power 96%	Pattern Triangle	Flying Temp °C 2.0 4.0	Max Range Gate 2691	Download Drive NS1TB-66		Shipping Track 7742 6089 4604			
Mission ID (ymmdd_Sen_Job_Lift) 190120_130_33780084_07	Aircraft N97HC	Airport ID KALI	FMS CCNS 8	UTC -6	AMT (ft) 7,900	Speed 150	Scan Hz 34.0	Pulse Rate 442,600	FOV 46	kmWPT 1.448	Altm Setting 30.40 30.35					
Pilot #1 Grant Cassell		Pilot #2		Operator #1 David Verhey		Operator #2										
Base 1 ID FUSAL 100	Location KALI	Rec ID GR3-1	Ant ID GR3-1	ARP (m) 1.8	Start Time (UTC) 20-Jan-19 13:25	Stop Time (UTC) 21-Jan-19 00:55	GPS Filename Unit10120n.tps	Operator David Verhey	Data With AB							
Base 2 ID TXGW	Location Live Oak, TX	Rec ID	Ant ID	ARP (m)	Start Time (UTC)	Stop Time (UTC)	GPS Filename	Operator CORS	Data							
Area	Flight #		Wpt		Distance		UTC		Flt Dir	Altitude (GPS)	Speed (knots)	Scan Rate	Comments and Conditions		SVs	PDOP
	FGI	Client's	From	To	Begin	End	Start	End								
							14:04:29	14:09:29					Ground Static at KALI		20	1.2
							14:29:04	14:34:04					Overflight of CORS at TXGW		20	1.3
							14:40:55	14:42:58					S-Turn		20	1.5
BLOCK_B	38		35	4	49.2	4.3	14:45:52	14:56:28	266.4	8029	144		Tie Line		20	1.3
	4		51	1	72.4	0	15:02:09	15:18:41	175.7	8092	143		Water at 6 km		21	1.2
	5		1	55	0	78.2	15:22:40	15:41:20	355.7	8099	138				23	1.1
	5		55	44	78.2	62.3	15:43:59	15:47:55	175.7	8038	143		Calibration Line		26	0.9
	6		52	1	73.8	0	15:55:16	16:12:28	175.7	8038	143		Water at 34 km		22	1.1
	7		1	58	0	82.5	16:15:53	16:35:04	355.8	8068	140				25	1.0
	19		64	1	91.2	0	16:41:22	17:02:23	175.9	8000	139				23	1.1
	20		1	64	0	91.2	17:04:25	17:25:30	356.0	8077	140				20	1.3
	21		64	1	91.2	0	17:27:29	17:43:26	176.0	7979	142		IMU data missing and check GNSS antenna connection at 17:32:11; line		24	1.1
	22		1	64	0	91.2	17:50:59	18:11:56	356.0	8290	143				21	1.2
	21		64	1	91.2	0	18:14:00	18:34:41	176.0	8035	145				18	1.4
	24		1	64	0	91.2	18:37:52	18:58:40	356.0	8211	139				20	1.1
	25		64	1	91.2	0	19:00:52	19:21:51	176.1	8030	135				16	1.4
							19:21:57	19:23:39					S-Turn		16	1.3
							19:36:40	19:41:40					Ground Static at KALI		16	1.2

Trajectory and GPS Plots:

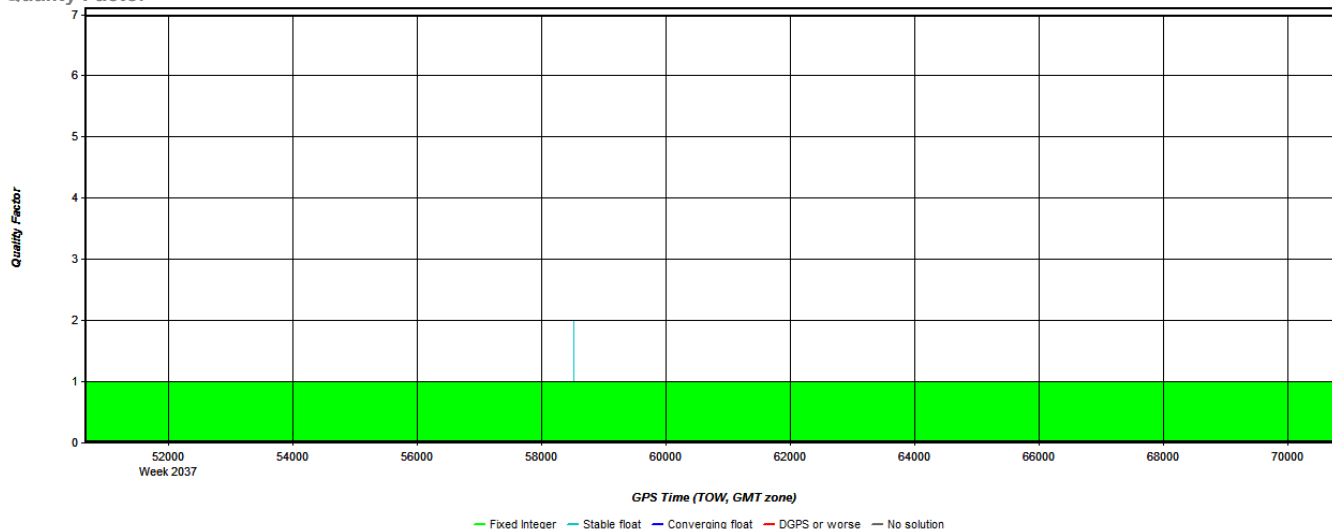


Estimated Accuracy



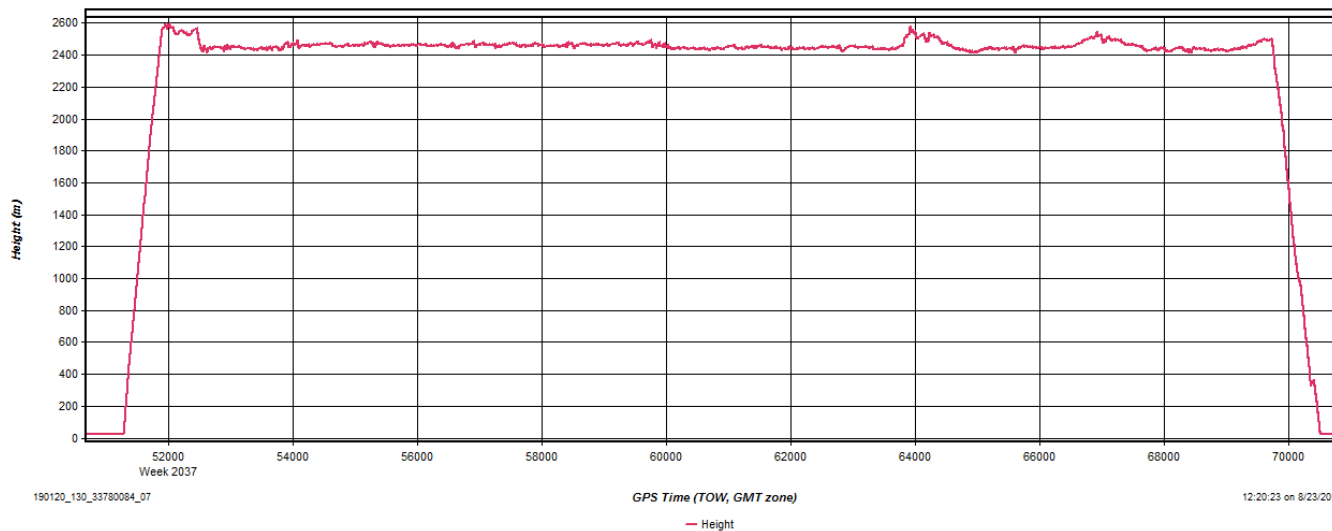


Quality Factor



Height

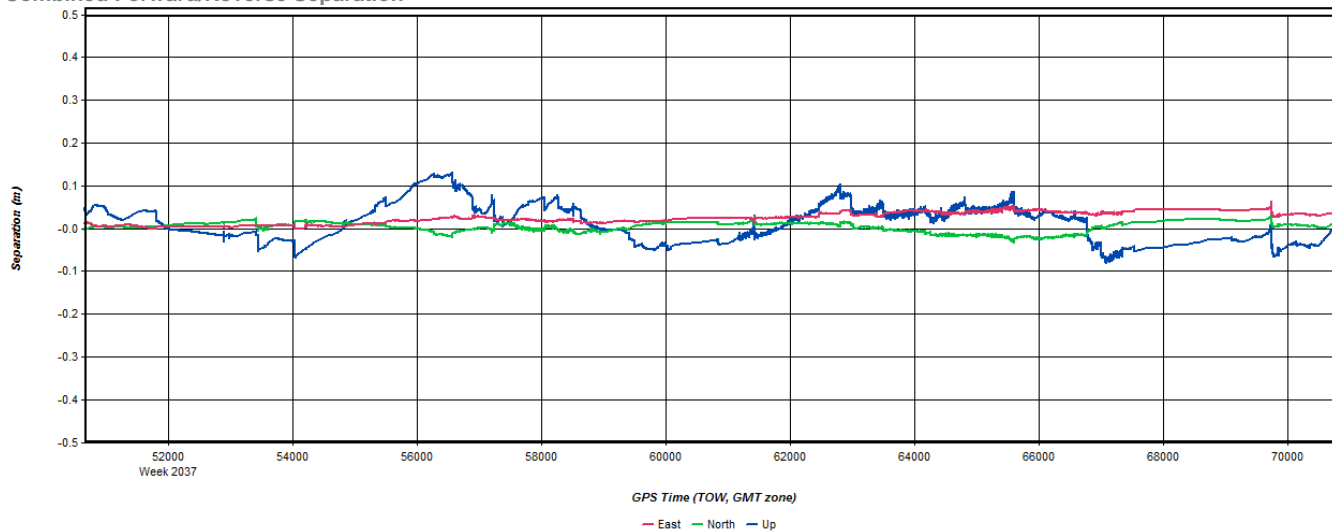
190120\_130\_33780084\_07 [Smoothed LC Combined] - Height Profile Plot



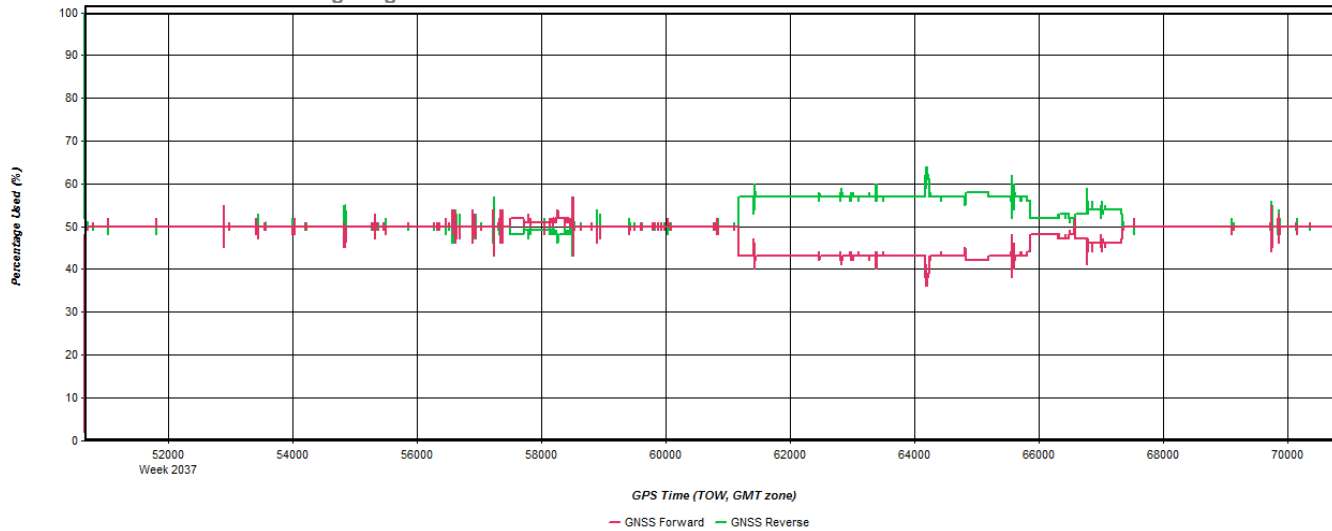
190120\_130\_33780084\_07

12:20:23 on 8/23/2019

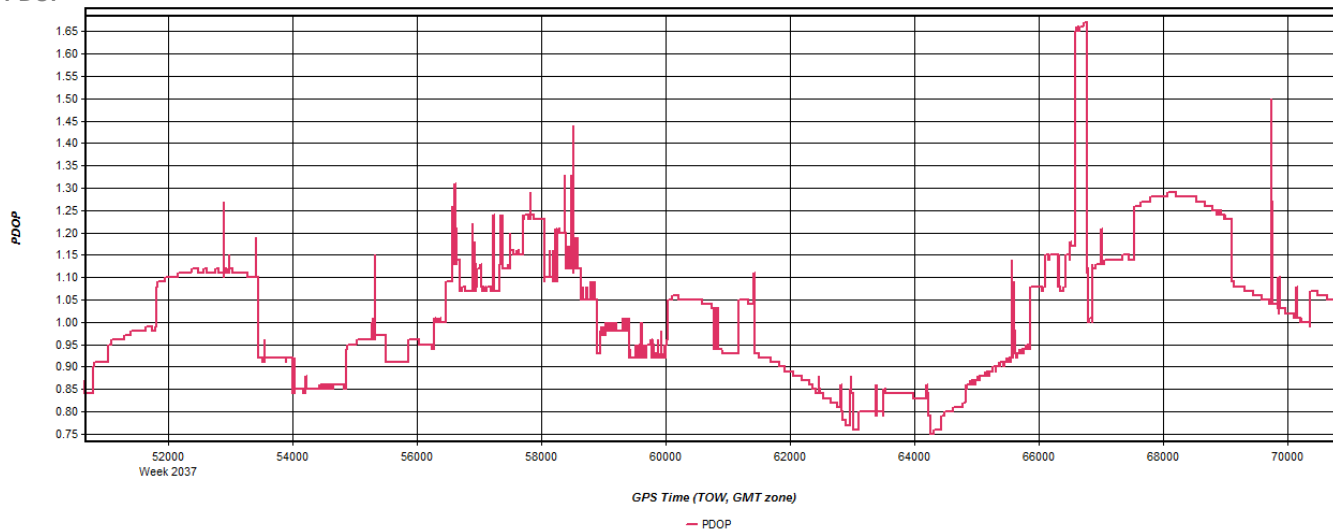
Combined Forward/Reverse Separation



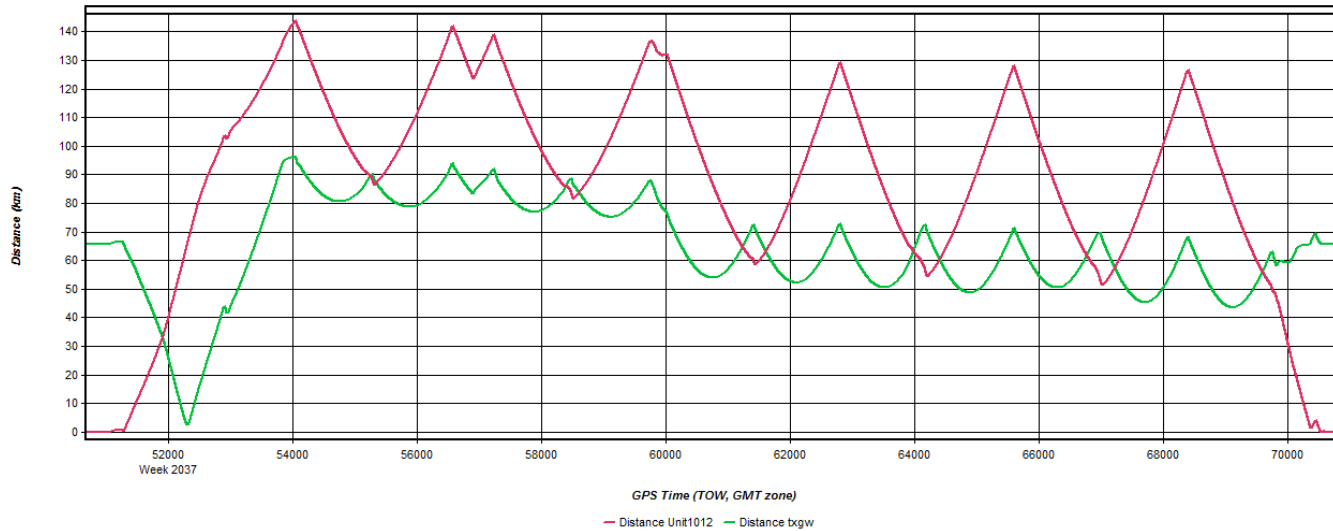
Combined Forward/Reverse Weighting



PDOP



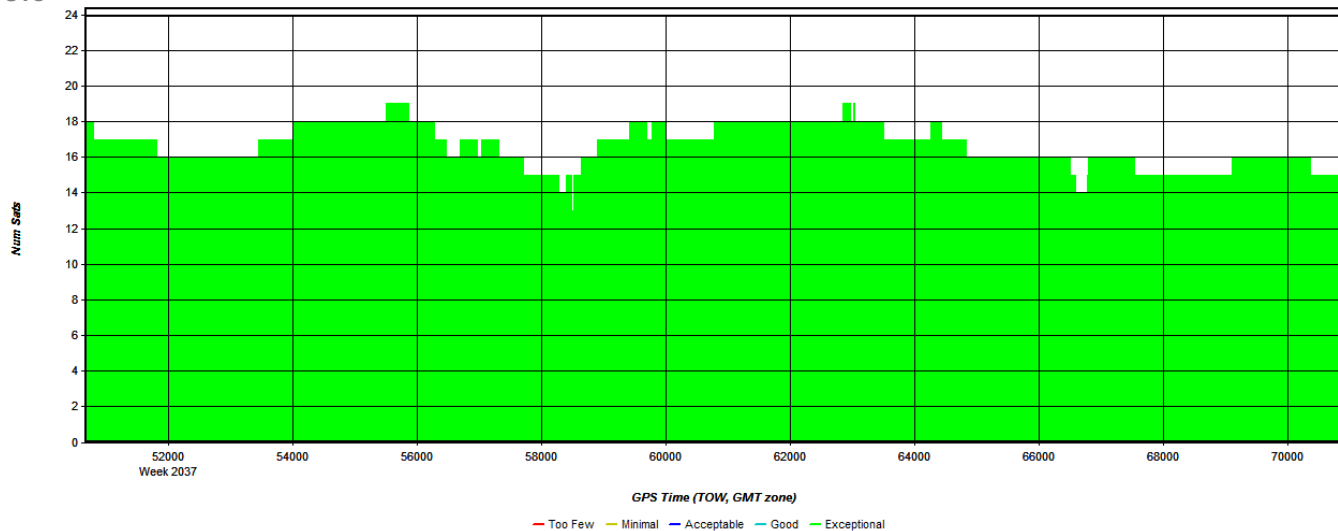
Distance from Base







SVs



USGS  
COLLECTION REPORT



Acquisition and Processing details ----- (January 20, 2019)

Log: 190120\_130\_33780084\_08

	Menu										Lift Begin		Lift End		Flt	Flt	Hobbs	
	Port	Chocks	Hobbs	Airport	Chocks	Hobbs	Duration	Hrs	Hrs	Activity								
	1	KALI	20:07	1344.1	KALI	0:44	1348.3	4:36	4.50	4.2	0900-Production							
	2																	
	Fugro USA Land, Inc.																	

FGI Job # <b>33780084</b>	Project Name <b>Hurricane Harvey</b>			System <b>ALS80</b>	Unit <b>130</b>	IMU <b>uIRS</b>	PIA <b>4</b>	SW1	SW2-Gain	Aper	AutoScan	Ground Temp °C <b>14.0 11.0</b>	Min Range Gate <b>2232</b>	Data Logger Drive <b>LG101</b>
Flight Date <b>20-Jan-19</b>	GPS Day <b>19-020</b>	Lift <b>8</b>		Sun°	Solar Times (UTC)	Laser Power <b>96%</b>	Pattern <b>Triangle</b>	Flying Temp °C <b>5.0 9.0</b>	Max Range Gate <b>2691</b>	Download Drive <b>NS1TB-66</b>				
Mission ID (ymmdd_Sen_Job_Lift) <b>190120_130_33780084_08</b>		Aircraft <b>N97HC</b>	Airport ID <b>KALI</b>	FMS <b>CCNS 8</b>	UTC <b>-6</b>	AMT (ft) <b>7,900</b>	Speed <b>150</b>	Scan Hz <b>34.0</b>	Pulse Rate <b>442,600</b>	FOV <b>46</b>	km/WPT <b>1.448</b>	Altm Setting <b>30.35 30.26</b>	Shipping Track <b>7742 6089 4604</b>	

Pilot #1 <b>Grant Cassell</b>		Pilot #2		Operator #1 <b>David Verhey</b>		Operator #2	
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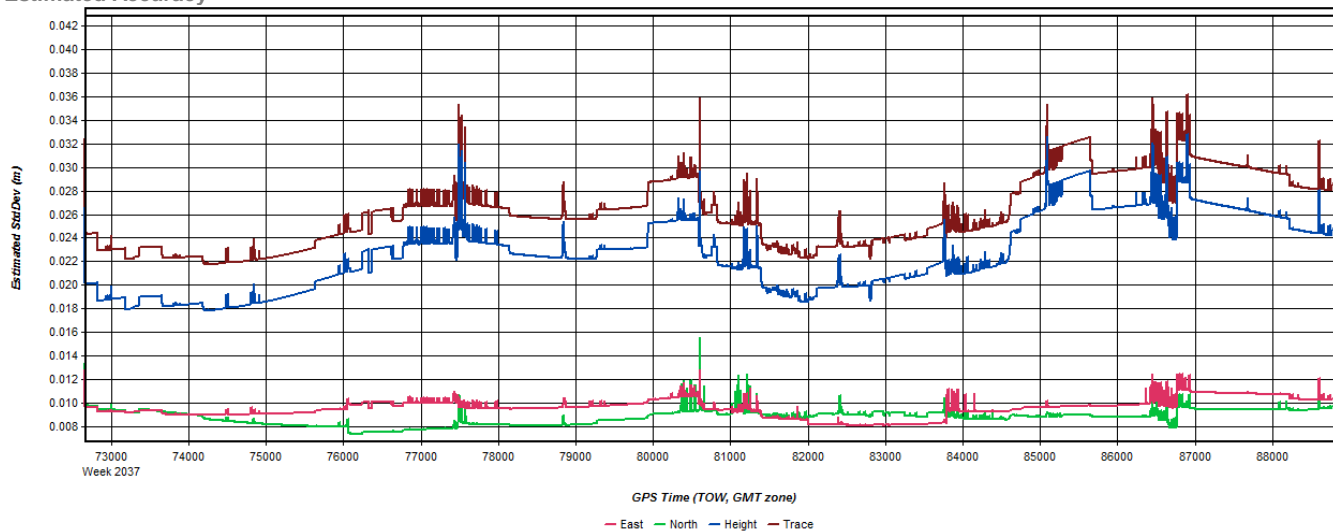
Base 1 ID <b>FUSAL 100</b>	Location <b>KALI</b>	Rec ID <b>GR3-1</b>	Ant ID <b>GR3-1</b>	ARP (m) <b>1.8</b>	Start Time (UTC) <b>20-Jan-19 13:25</b>	Stop Time (UTC) <b>21-Jan-19 00:55</b>	GPS Filename <b>Unit10120n.tps</b>	Operator <b>David Verhey</b>	Data <b>With AB</b>
Base 2 ID <b>TXGW</b>	Location <b>Live Oak, TX</b>	Rec ID	Ant ID	ARP (m)	Start Time (UTC)	Stop Time (UTC)	GPS Filename	Operator <b>CORS</b>	Data

Area	Flight #		Wpt		Distance		UTC		Flt Dir	Altitude (GPS)	Speed (knots)	Scan Rate	Comments and Conditions	SVs	PDOP
	FGI	Client's	From	To	Begin	End	Start	End							
							20:11:13	20:16:13					Ground Static at KALI	17	1.2
							20:35:53	20:40:53					Overflight of CORS at TXGW	23	1.1
							20:46:20	20:48:25					S-Turn	21	1.2
BLOCK_B	39		44	31	62.3	43.4	20:52:03	20:56:46	266.3	7998	140		Tie Line	20	1.2
	26		1	66	0	94.1	21:07:12	21:29:00	356.1	8198	131			21	1.2
	27		66	1	94.1	0	21:30:56	21:52:43	176.1	7949	140			21	1.3
	28		1	66	0	94.1	21:54:38	22:16:40	356.1	8160	144			21	1.3
	28		66	56	94.1	79.6	22:19:52	22:23:32	176.1	7981	140		Calibration Line	22	1.1
	29		62	1	88.3	0	22:31:48	22:52:11	176.2	7973	143			21	1.0
	30		1	62	0	88.3	22:54:05	23:14:41	356.2	8064	138			20	1.2
	31		62	1	88.3	0	23:16:20	23:36:44	176.2	7960	141			20	1.2
	32		1	60	0	85.4	23:38:44	23:58:56	356.2	8246	136			20	1.2
	33		60	1	85.4	0	0:01:02	0:20:34	176.2	7973	142			19	1.4
							0:20:49	0:23:07					S-Turn	21	1.3
							0:36:39	0:41:39					Ground Static at KALI	20	1.3

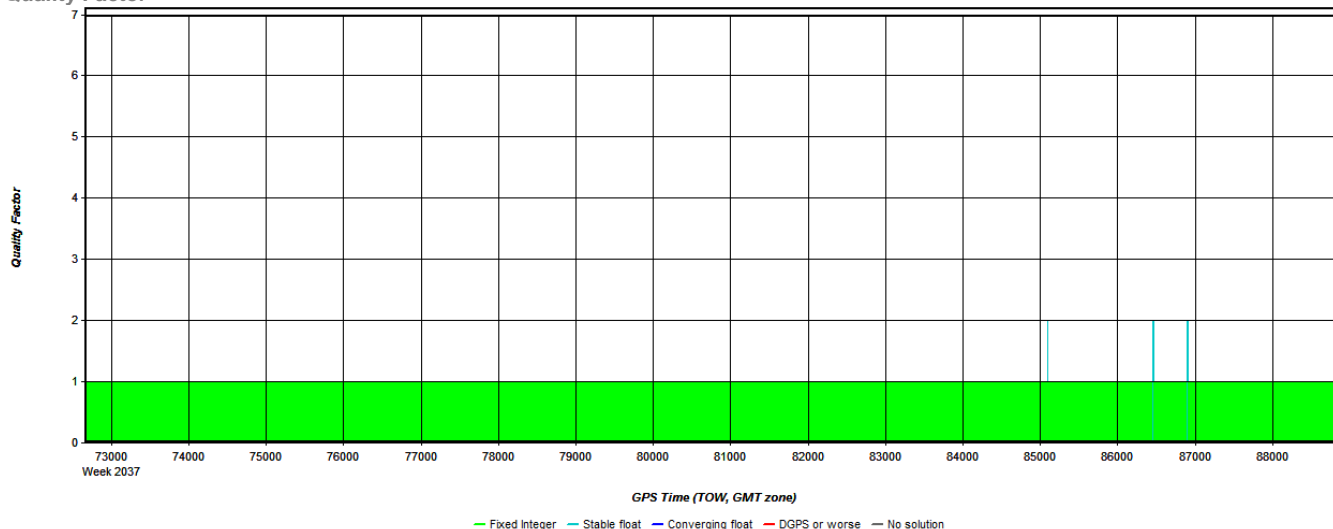
Trajectory and GPS Plots:



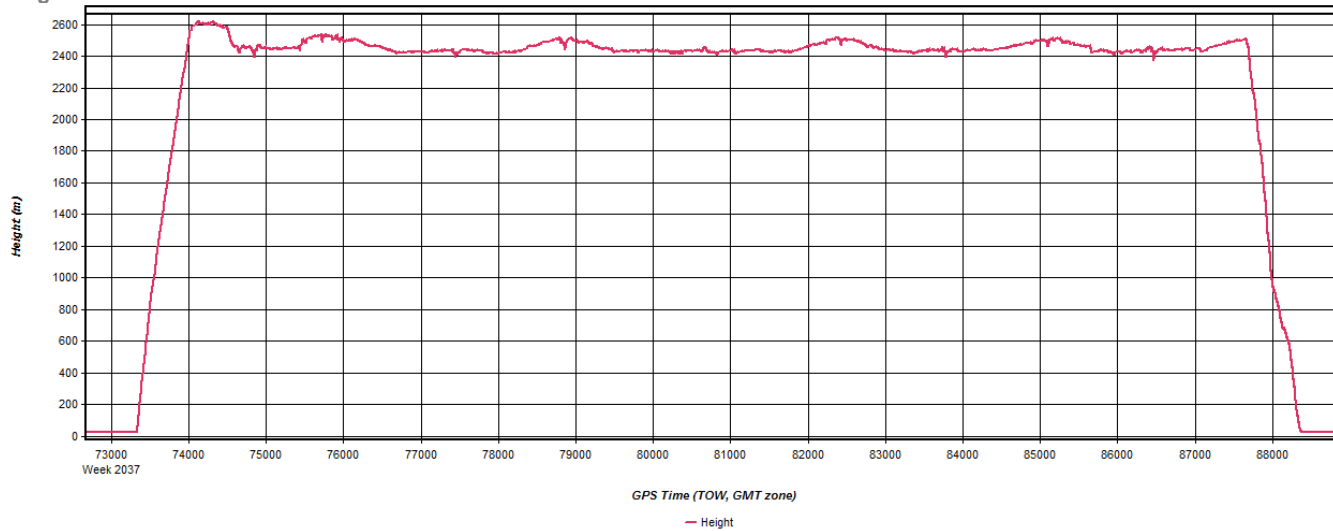
Estimated Accuracy



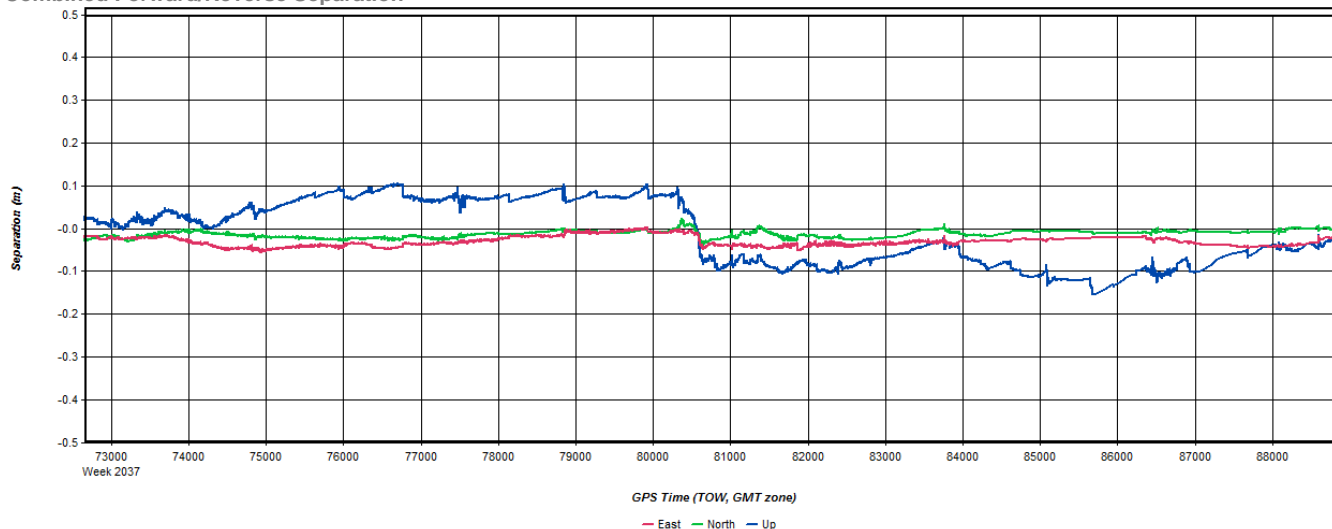
Quality Factor



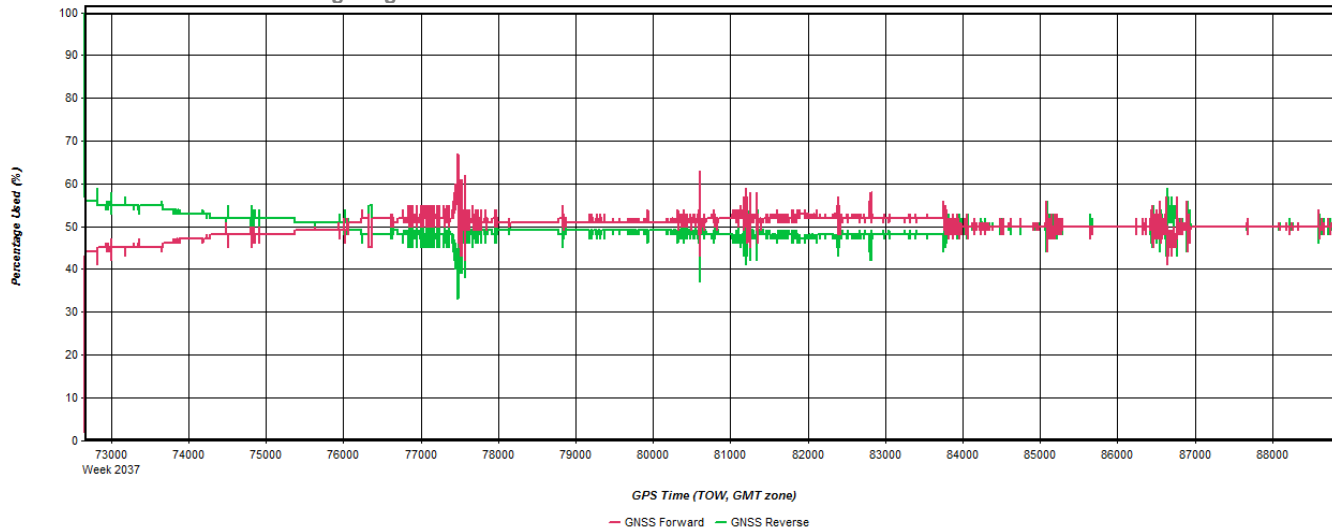
Height



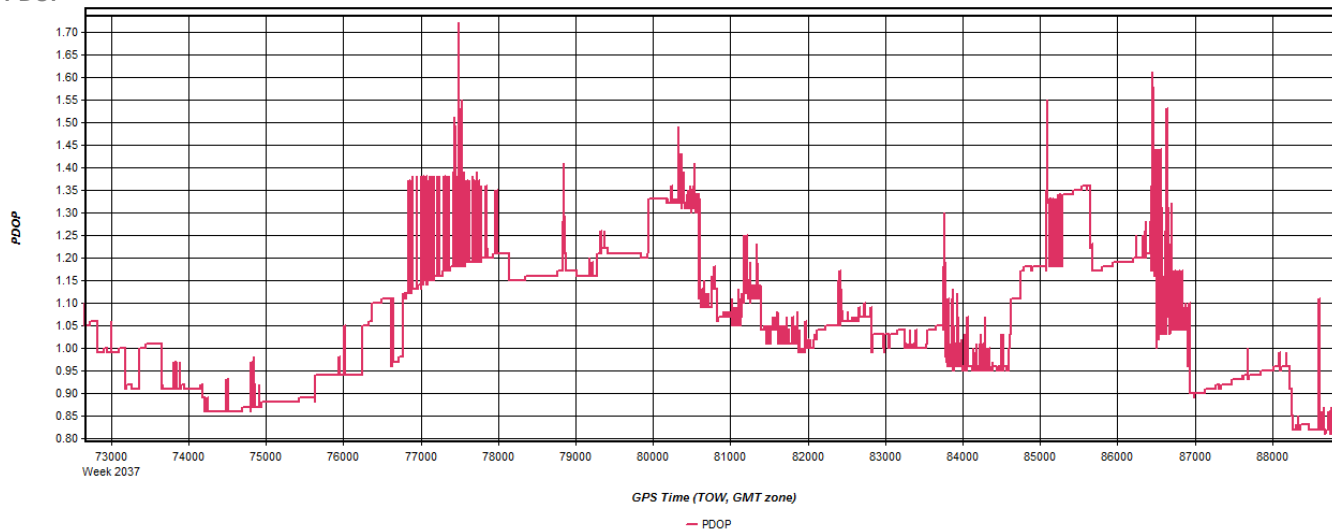
Combined Forward/Reverse Separation



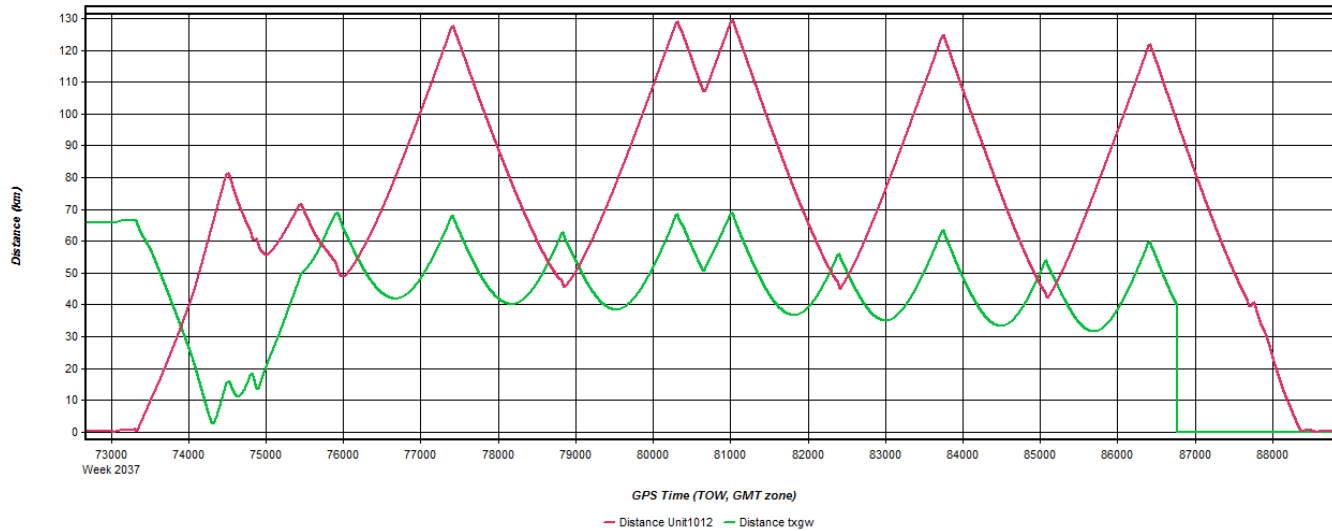
Combined Forward/Reverse Weighting



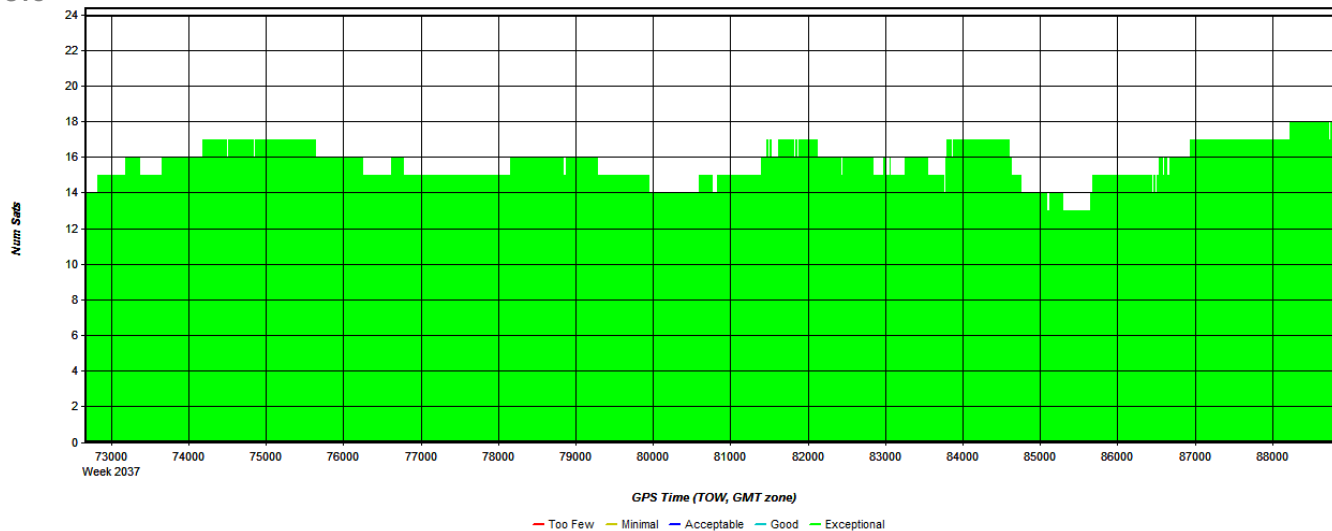
PDOP



Distance from Base



SVs





Acquisition and Processing details ----- (January 20, 2019)

Log: 190120\_133\_33780084\_05

	Menu	18.165	Lift Begin			Lift End			Flt Duration	Flt Hrs	Hobbs Hrs	Activity
			Airport	Chocks	Hobbs	Airport	Chocks	Hobbs				
	1		KBAZ	14:46	8133.7	KBAZ	20:49	8139.6	6:02	6:00	5.9	0900-Production
	2											

ALS  
Flight Log  
AC80-44-00-02

FGI Job # <b>33780084</b>	Project Name <b>Hurricane Harvey ALS80</b>		System <b>ALS80</b>	Unit <b>133</b>	IMU <b>uIRS</b>	PIA <b>4</b>	SW1 <b>255</b>	SW2-Gain <b>60°</b>	Aper <b>Yes</b>	AutoScan <b>Yes</b>	Ground Temp °C <b>3.9 13.3</b>	Min Range Gate <b>7322</b>	Data Logger Drive <b>MM70-04</b>
Flight Date <b>20-Jan-19</b>	GPS Day <b>19-020</b>	Lift <b>5</b>	Sun° <b>NA</b>	Solar Times (UTC) <b>NA</b>		Laser Power <b>100%</b>	Pattern <b>Triangle</b>	Flying Temp °C <b>2.0 2.0</b>	Max Range Gate <b>8830</b>	Download Drive <b>NS1TB-111</b>			
Mission ID (ymmdd_Sen_Job_Lift) <b>190120_133_33780084_05</b>		Aircraft <b>N76JN</b>	Airport ID <b>KBAZ</b>	FMS <b>FCMS</b>	UTC <b>7,900</b>	AMT (ft) <b>150</b>	Speed <b>34.0</b>	Scan Hz <b>443,000</b>	FOV <b>46</b>	kmWPT <b>1.448</b>	Altm Setting <b>30.40 30.26</b>	Shipping Track	

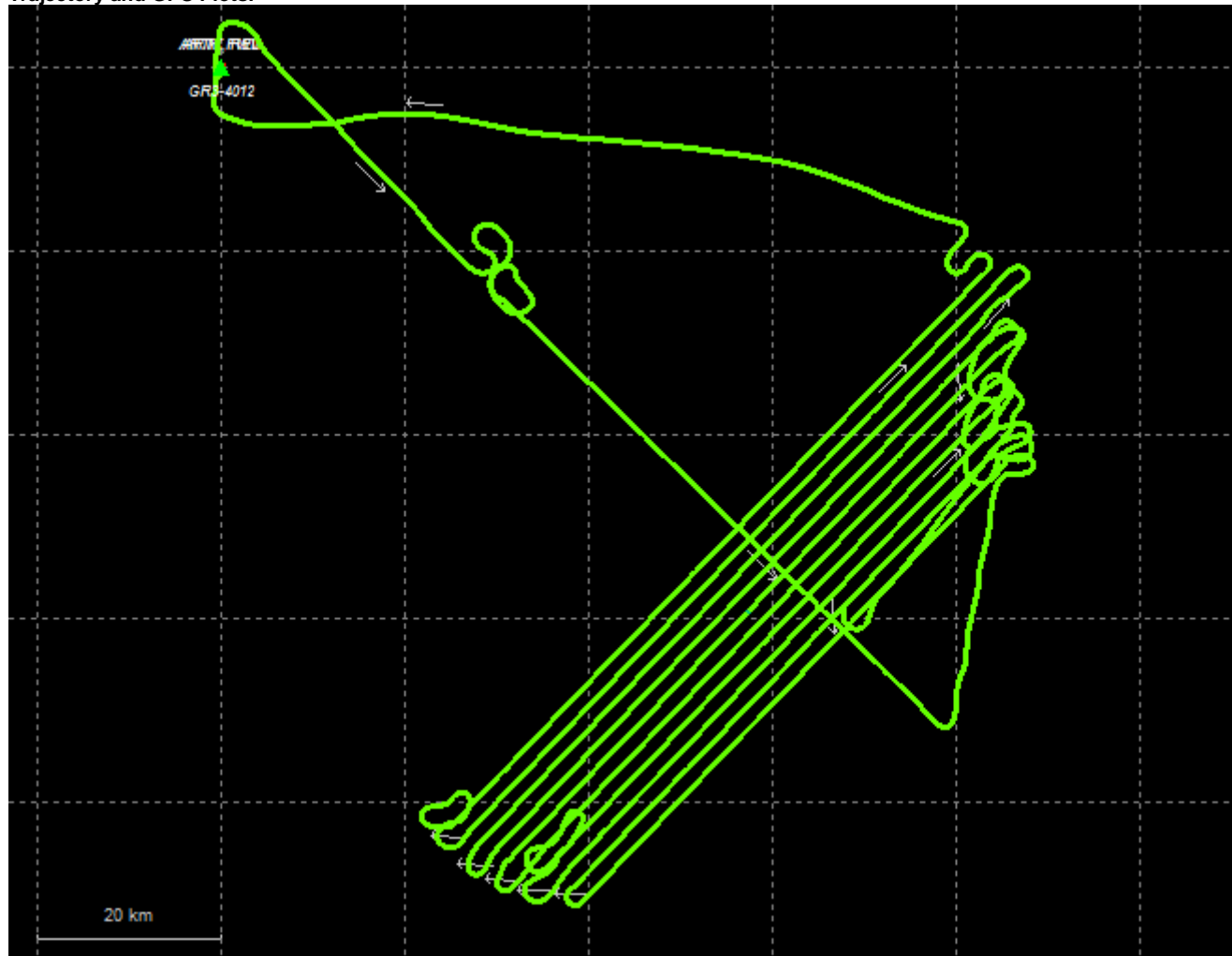
Pilot #1 <b>Randy Green</b>		Pilot #2 <b>Jeff Faulkner</b>		Operator #1 <b>Adam Mueller</b>		Operator #2	
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Base 1 ID <b>FGI 8003</b>	Location <b>KBAZ</b>	Rec ID <b>Unit 4</b>	Ant ID <b>U4</b>	ARP (m) <b>1.8</b>	Start Time (UTC) <b>20-Jan-19 14:14</b>	Stop Time (UTC) <b>21-Jan-19 00:31</b>	GPS Filename <b>GR3-40120o</b>	Operator <b>Adam Mueller</b>	Data <b>With AB</b>
Base 2 ID	Location	Rec ID	Ant ID	ARP (m)	Start Time (UTC)	Stop Time (UTC)	GPS Filename	Operator	Data

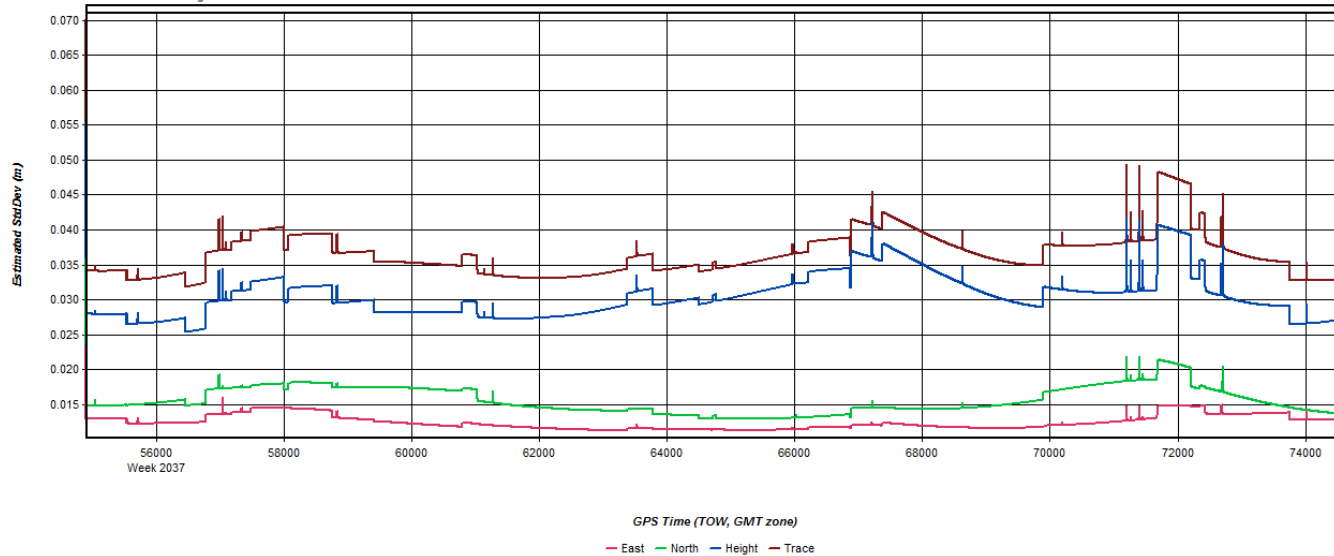
Area	Flight #		Wpt		Distance		UTC		Dir	Altitude (GPS)	Speed (knots)	Scan Rate	Comments and Conditions	SVs	PDOP
	FGI	Client's	From	To	Begin	End	Start	End							
							15:16:04	15:21:04					Ground Static at KBAZ	22	1.1
							15:47:22	15:50:04					S Turn	25	1.0
Block D	84		1	40	0	56.5	15:56:27	16:09:53	E	7913	140	34.0	Cross Line; km 30 drift off line a bit	22	1.1
	66		41	1	57.9	0	16:22:37	16:36:17	S	7962	140	34.0		22	1.1
	65		1	41	0	57.9	16:38:32	16:52:49	N	7962	140	34.0		22	1.2
	65		41	31	57.9	43.4	16:57:04	17:01:06	S	7962	145	34.0	Calibration line	23	1.1
	64		43	1	60.8	0	17:17:40	17:31:46	S	7962	145	34.0		20	1.2
	63		1		0				N	7962			Off line at start; will restart		
	63		1	44	0	62.3	17:40:20	17:54:55	N	7962	145	34.0	km 41 drift off line	22	1.0
	62		45	1	63.7	0	18:02:01	18:17:10	S	8015	145	34.0	km 39 drift off line; km 19 drift off line	20	1.2
	61		1	49	0	69.5	18:20:33	18:36:52	N	8015	140	34.0	Km 36 drift off line	18	1.4
	60		51	1	72.4	0	18:45:37	19:02:18	S	8015	145	34.0		18	1.3
	59		1	52	0	73.8	19:05:03	19:23:16	N	8015	135	34.0	km 53 drift off line	16	1.4
	58		53	1	75.3	0	19:27:25	19:45:07	S	8015	140	34.0		16	1.3
	57		1	55	0	78.2	19:51:15	20:10:01	N	8015	136	34.0	km 4 drift off line	17	1.2
							20:10:19	20:12:30					S Turn	18	1.2
							20:38:15	20:43:15					Ground Static at KBAZ	20	1.1



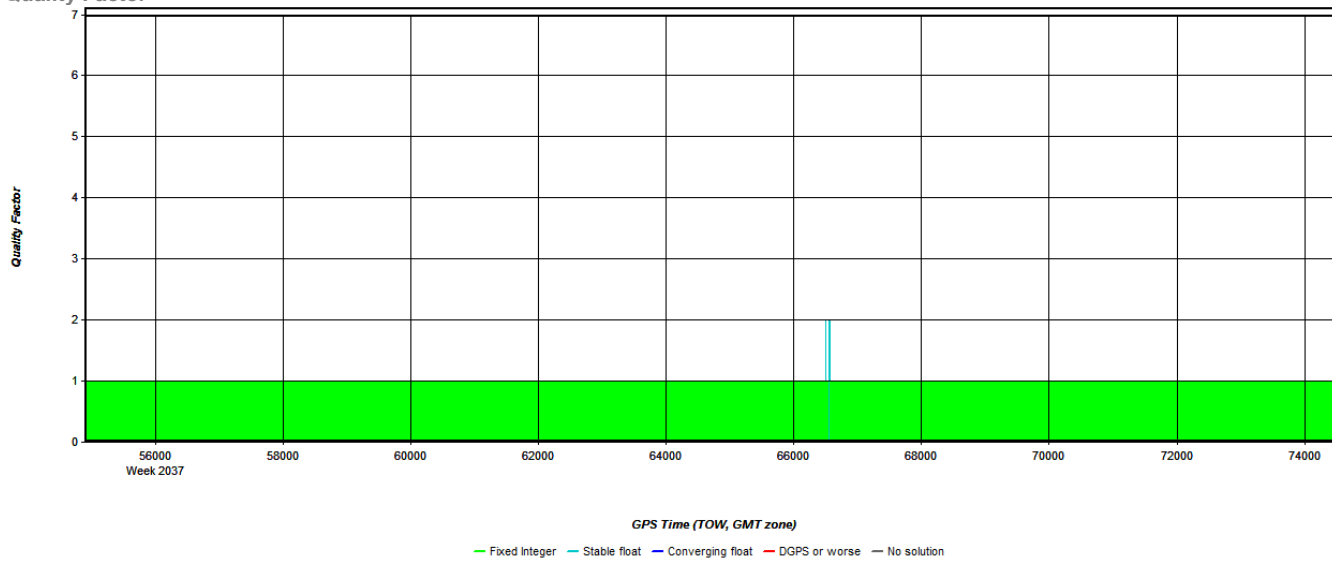
Trajectory and GPS Plots:



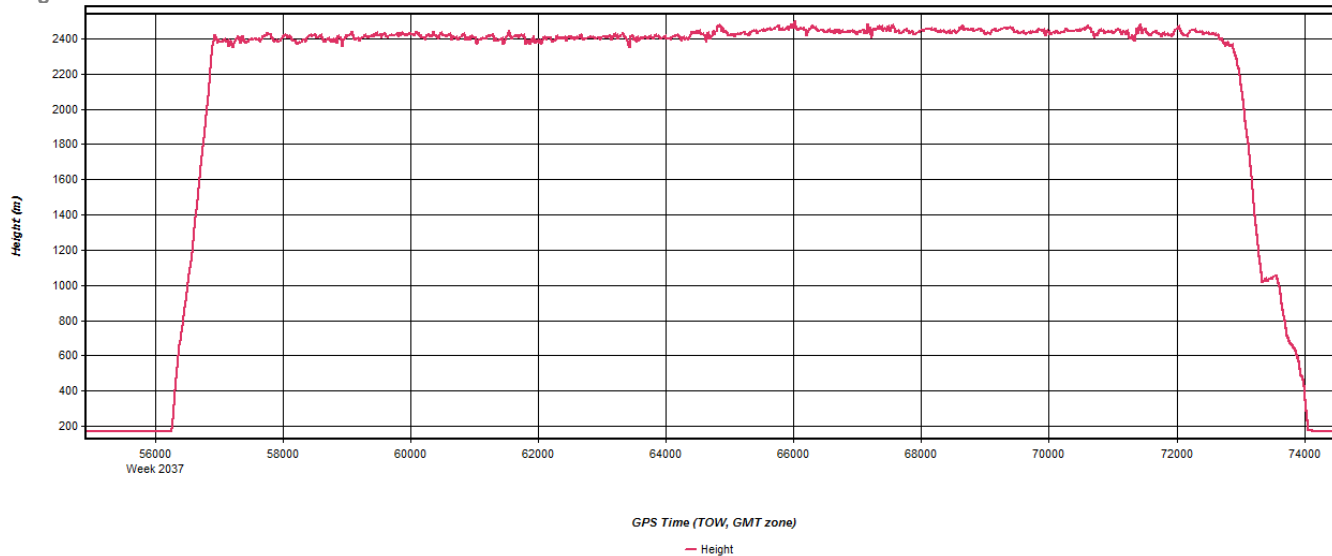
Estimated Accuracy



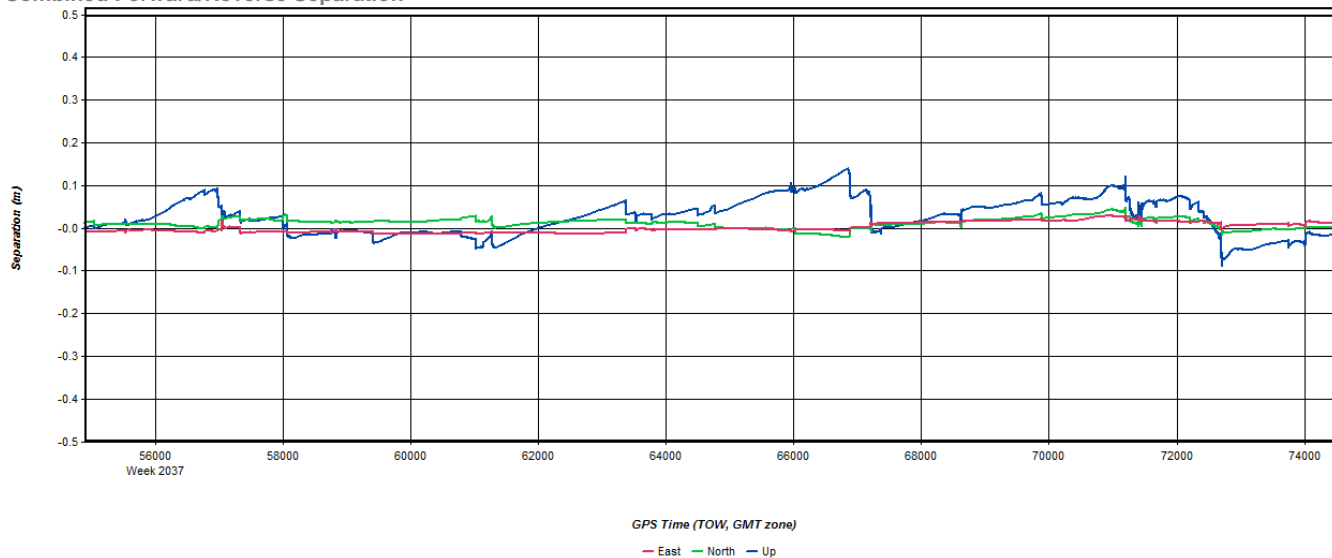
Quality Factor



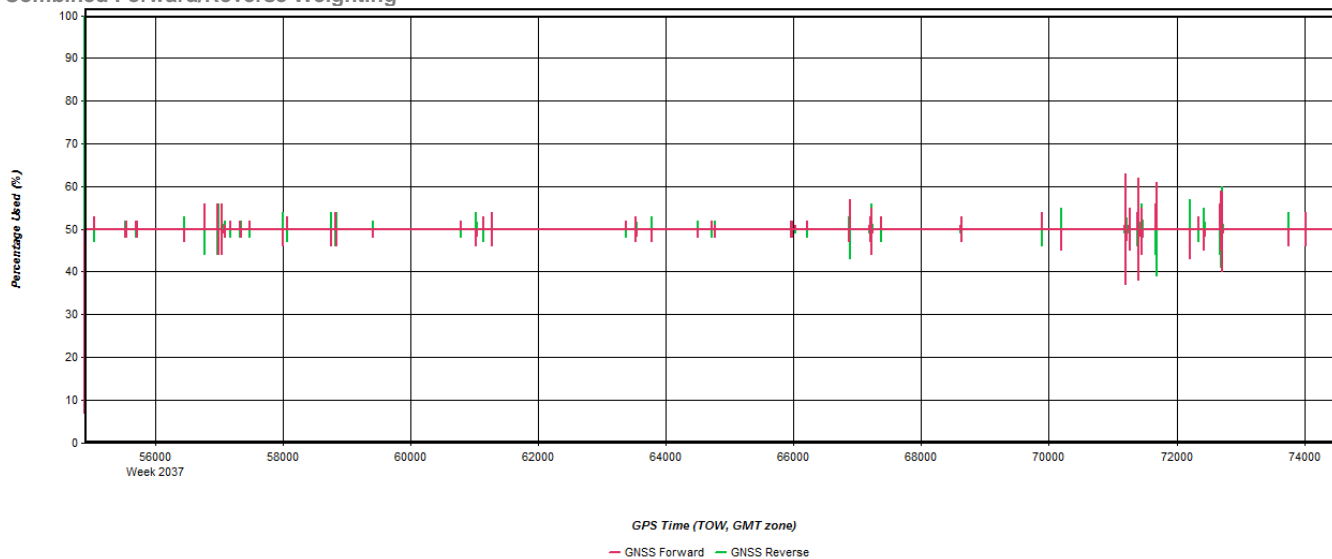
Height



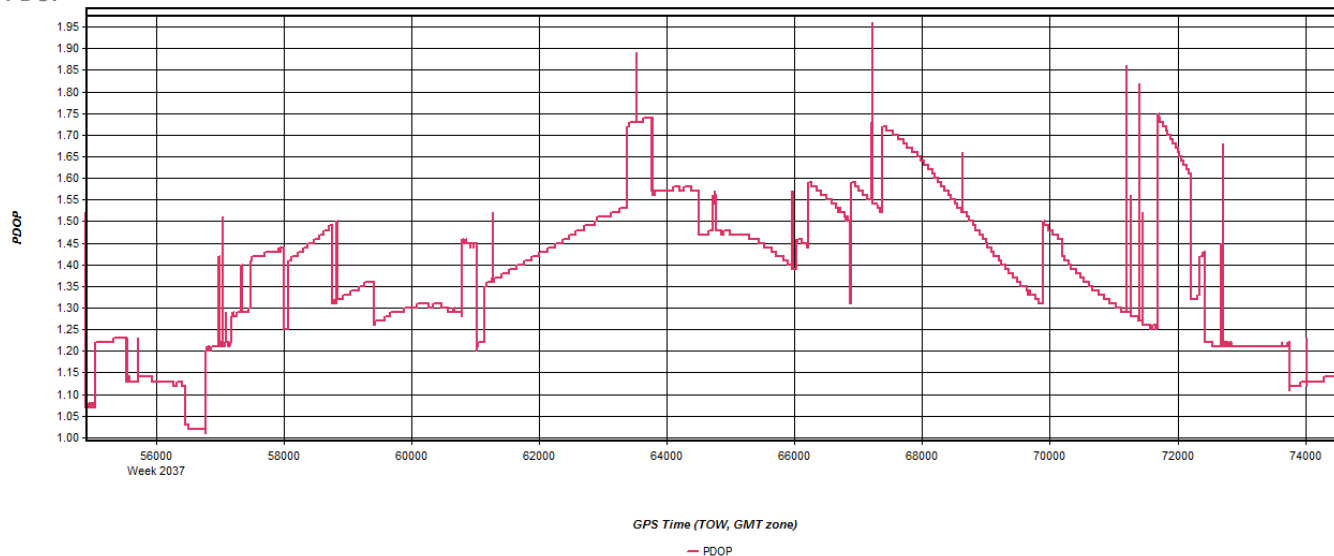
Combined Forward/Reverse Separation



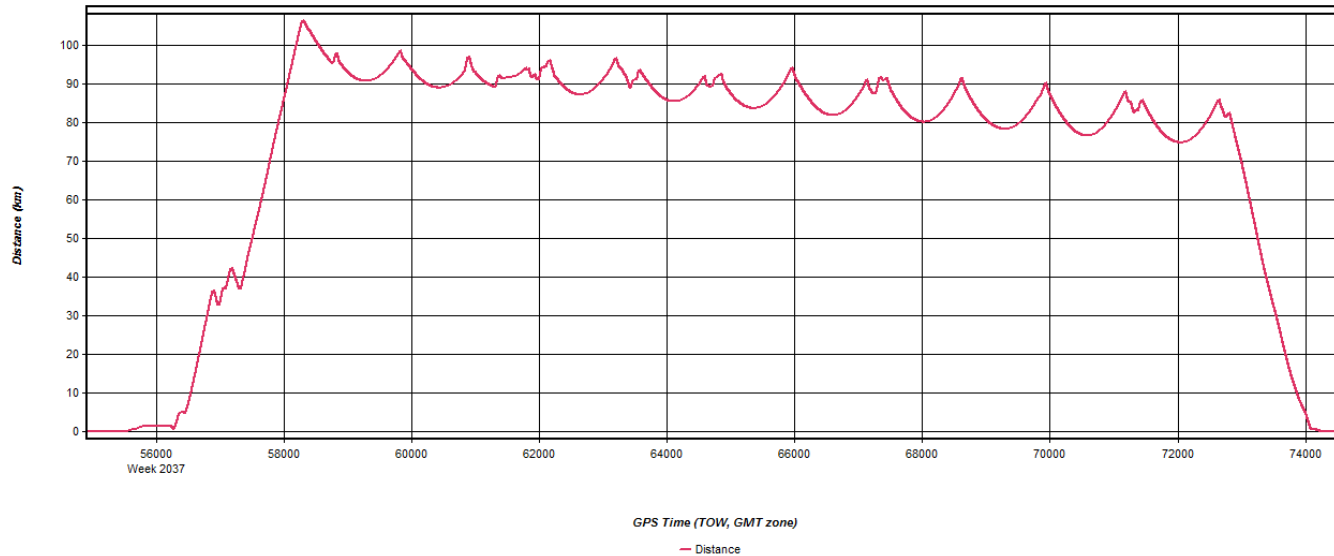
Combined Forward/Reverse Weighting



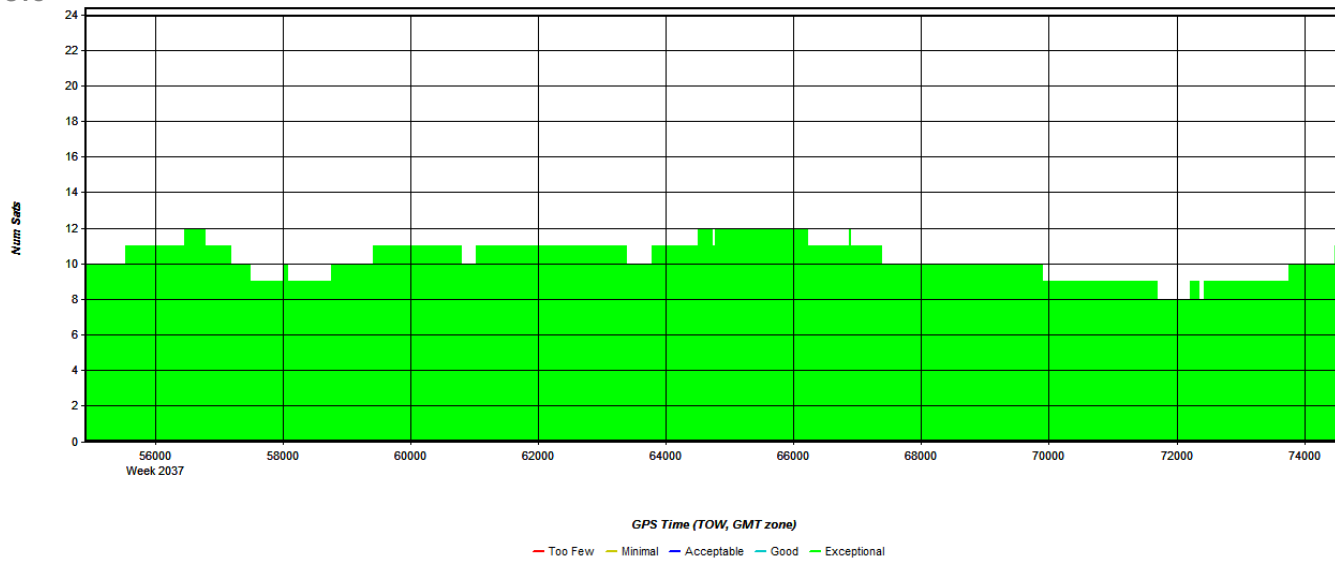
PDOP



Distance from Base



SVs



USGS  
COLLECTION REPORT



Acquisition and Processing details ----- (January 20, 2019)

Log: 190120\_133\_33780084\_06

**FUGRO** **Menu** **ALS**  
**Fugro USA Land, Inc.** **Flight Log**  
 AC80-44-00-02

Lift Begin		Lift End		Fit	Fit	Hobbs	Activity			
Port	Chocks	Hobbs	Airport	Chocks	Hobbs	Duration	Hrs	Hrs		
1	KBAZ	21:35	8139.6	KBAZ	0:27	8142.5	2:51	2.75	2.9	0900-Production
2										
3										

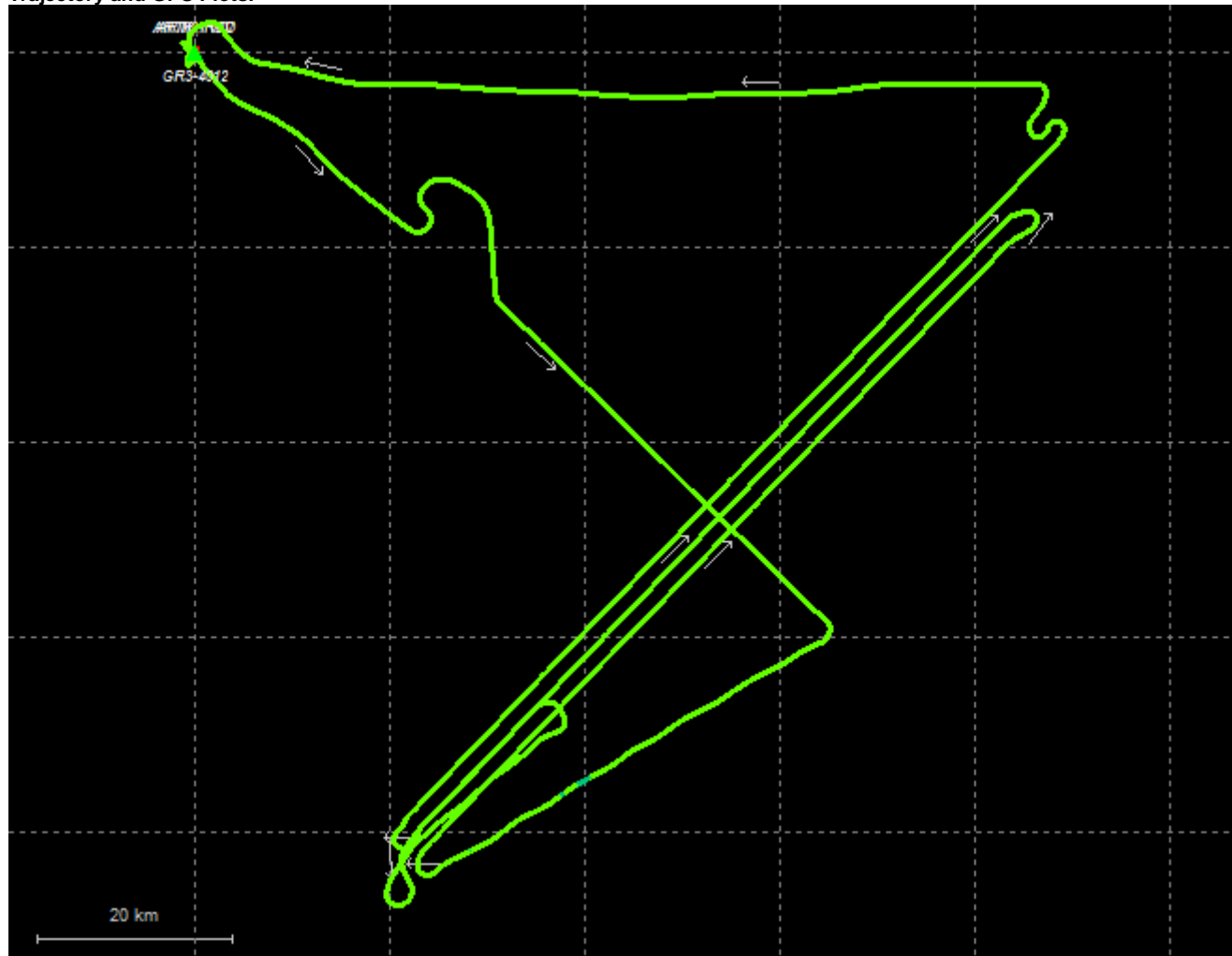
  

FGI Job # <b>33780084</b>	Project Name <b>Hurricane Harvey ALS80</b>		System <b>ALS80</b>	Unit <b>133</b>	IMU <b>uRS</b>	PIA <b>4</b>	SW1 <b>255</b>	SW2-Gain <b>60°</b>	Aper <b>Yes</b>	AutoScan <b>Yes</b>	Ground Temp °C <b>13.3</b> <b>11.1</b>	Min Range Gate <b>7322</b>	Data Logger Drive <b>MM70-04</b>
Flight Date <b>20-Jan-19</b>	GPS Day <b>19-020</b>	Lift <b>6</b>	Sun° <b>NA</b>	Solar Times (UTC) <b>NA</b>		Laser Power <b>100%</b>	Pattern <b>Triangle</b>	Flying Temp °C <b>6.0</b> <b>7.0</b>	Max Range Gate <b>8830</b>	Download Drive <b>NS1TB-111</b>	Shipping Track		
Mission ID (yyymmdd_Sen_Job_Lift) <b>190120_133_33780084_06</b>		Aircraft <b>N76JN</b>	Airport ID <b>KBAZ</b>	FMS <b>FCMS</b>	UTC <b>7,900</b>	AMT (ft) <b>150</b>	Speed <b>34.0</b>	Scan Hz <b>443,000</b>	Pulse Rate <b>46</b>	FOV <b>1.448</b>	km/WPT <b>30.26</b> <b>30.24</b>	Altitude Setting	
Pilot #1 <b>Randy Green</b>		Pilot #2 <b>Jeff Faulkner</b>		Operator #1 <b>Adam Mueller</b>		Operator #2							
Base 1 ID <b>FGI 8003</b>	Location <b>KBAZ</b>	Rec ID <b>Unit 4</b>	Ant ID <b>U4</b>	ARP (m) <b>1.8</b>	Start Time (UTC) <b>20-Jan-19 14:14</b>	Stop Time (UTC) <b>21-Jan-19 00:31</b>	GPS Filename <b>GR3-40120c</b>	Operator <b>Adam Mueller</b>	Data <b>With AB</b>				
Base 2 ID	Location	Rec ID	Ant ID	ARP (m)	Start Time (UTC)	Stop Time (UTC)	GPS Filename	Operator	Data				

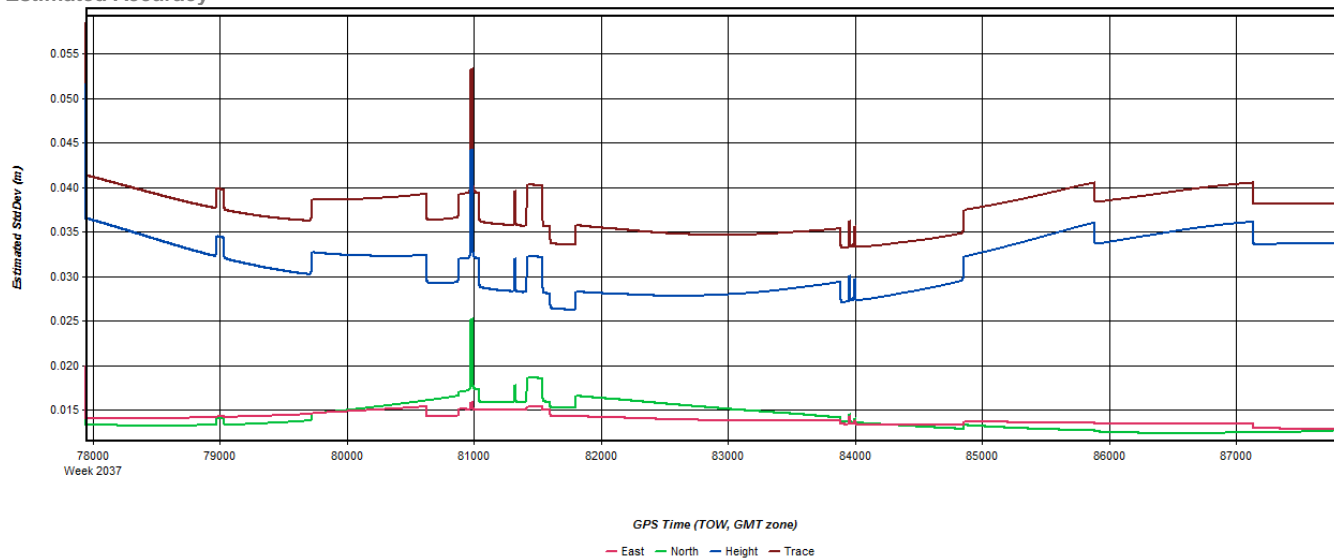
  

Area	Flight #		Wpt		Distance		UTC		Fit	Altitude (GPS)	Speed (knots)	Scan Rate	Comments and Conditions	SVs	PDOP
	FGI	Client's	From	To	Begin	End	Start	End							
							21:39:55	21:44:55					Ground Static at KBAZ	19	1.3
							22:00:16	22:02:53					S Turn	19	1.3
Block D	84		1	30	0	42	22:06:26	22:16:09	E	7913	140	34.0	Cross Line	19	1.3
	56		1	56	0	79.6	22:29:47	22:47:49	N	8015	140	34.0		22	1.1
	55		57	1	81.1	0	22:50:39	23:09:45	S	8015	145	34.0		20	1.1
	55		1	10	0	13	23:15:00	23:18:31	N	8015	140	34.0	Calibration Line	20	1.1
	54		1	64	0	91.2	23:27:08	23:48:45	N	8015	145	34.0	Drift little off line near end	19	1.2
							23:49:06	23:51:08					S Turn	21	1.2
							00:18:53	00:23:53					Ground Static at KBAZ	21	1.3

Trajectory and GPS Plots:

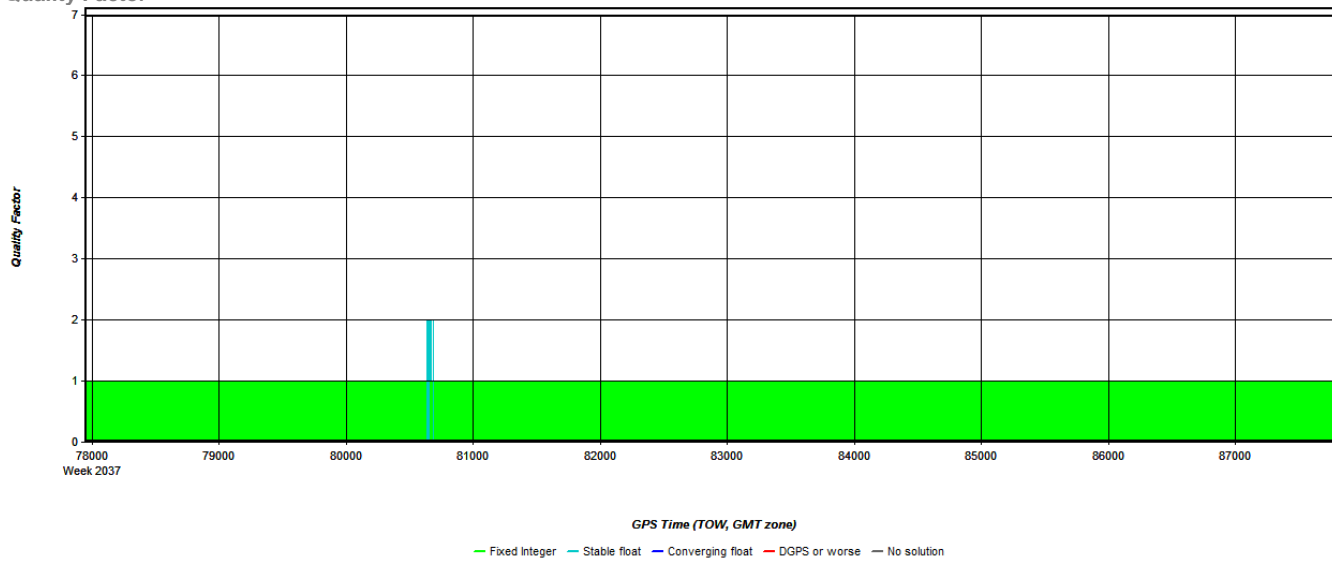


Estimated Accuracy

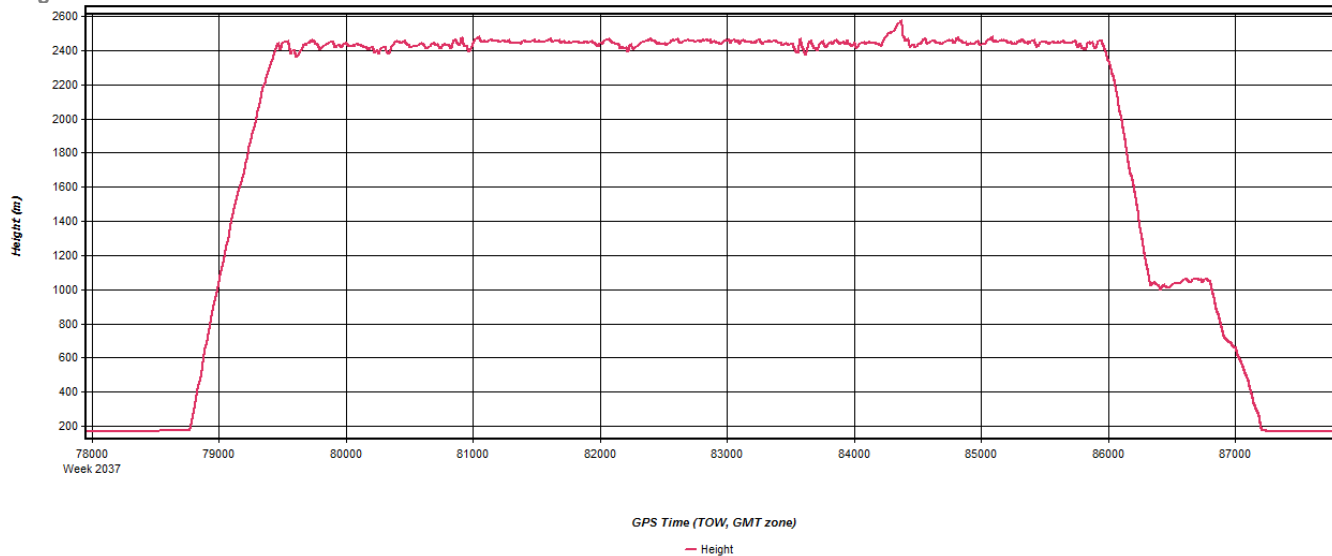




Quality Factor



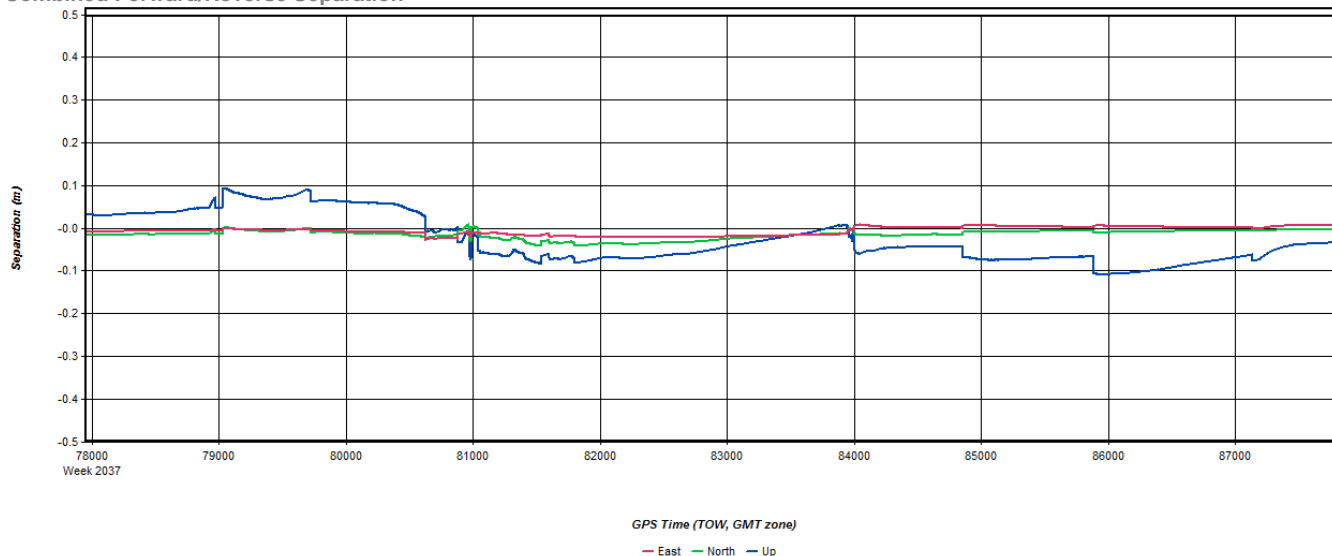
Height



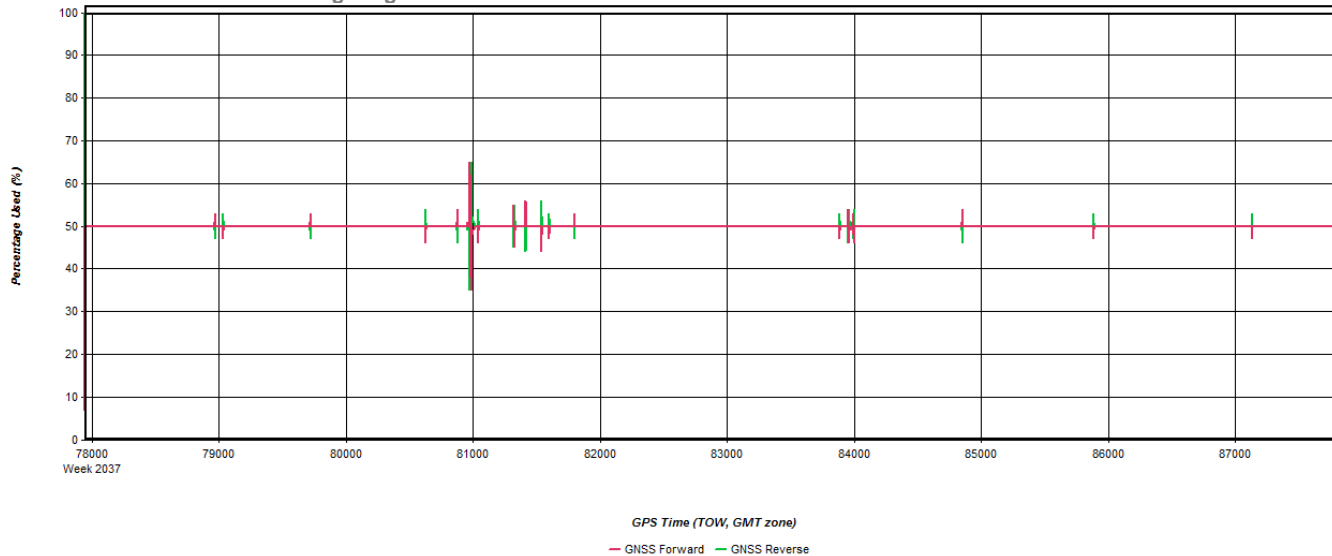




Combined Forward/Reverse Separation

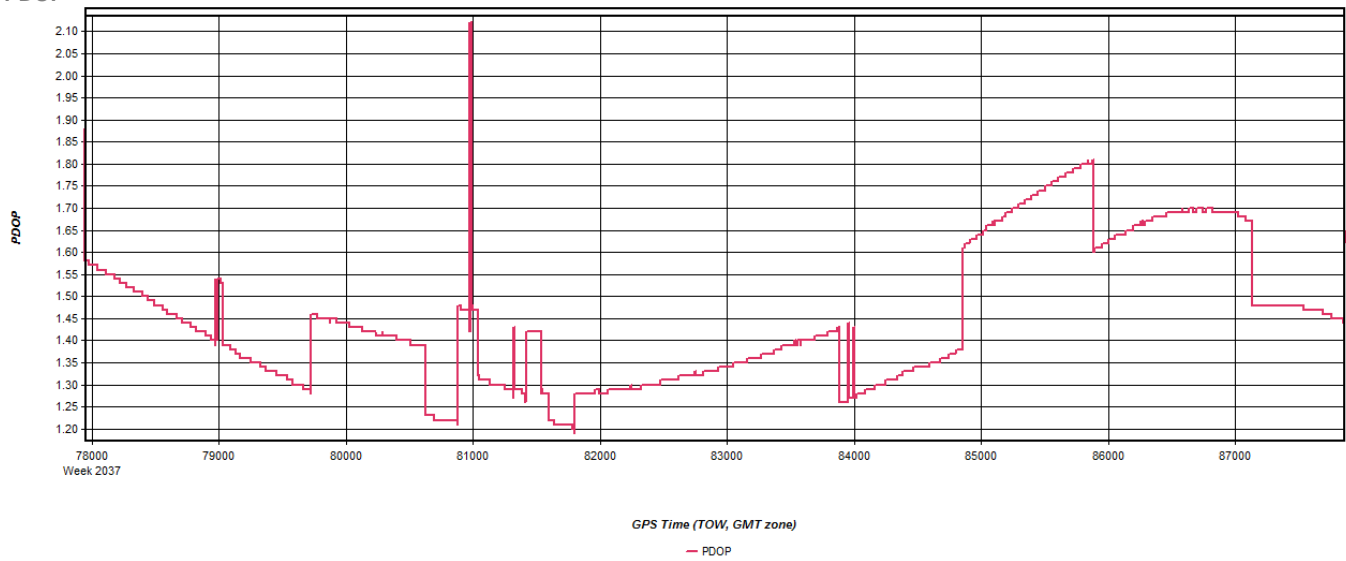


Combined Forward/Reverse Weighting

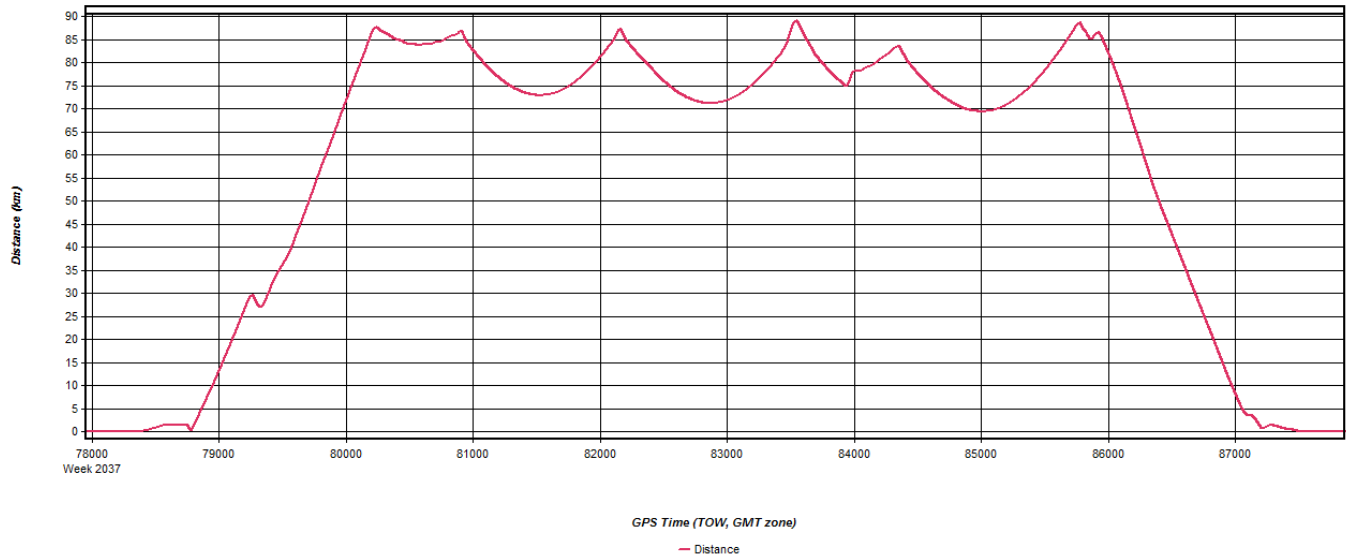


# USGS COLLECTION REPORT

## PDOP

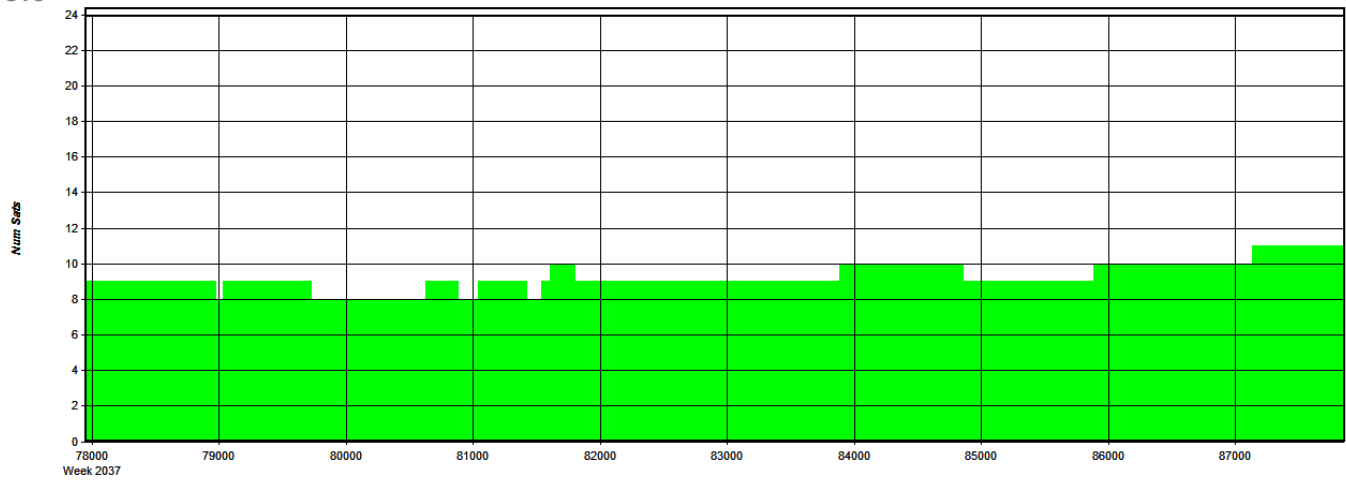


## Distance from Base





SVs



GPS Time (TOW, GMT zone)  
- Too Few - Minimal - Acceptable - Good - Exceptional

USGS  
COLLECTION REPORT



Acquisition and Processing details ----- (January 21, 2019)

Log: 190121\_118\_33780084\_12

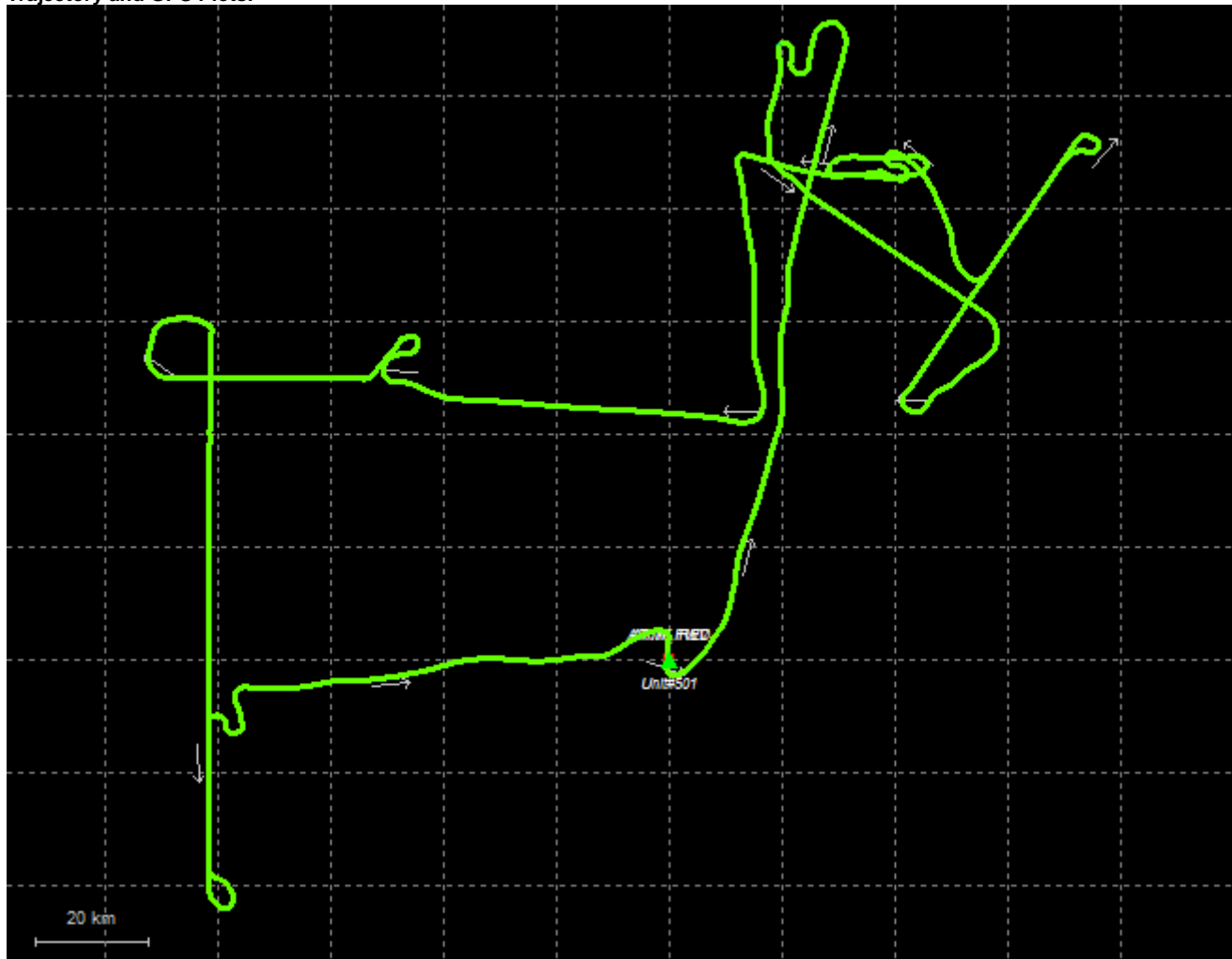
	Menu	18.165	Lift Begin			Lift End			Fit	Fit	Hobbs		
			Airport	Chocks	Hobbs	Airport	Chocks	Hobbs	Duration	Hrs	Hrs		Activity
	1		KG TU	14:50	2966.1	KG TU	18:29	2969.2	3:38	3.75	3.1		0900-Production
	2												
3													

AC80-44-00-02

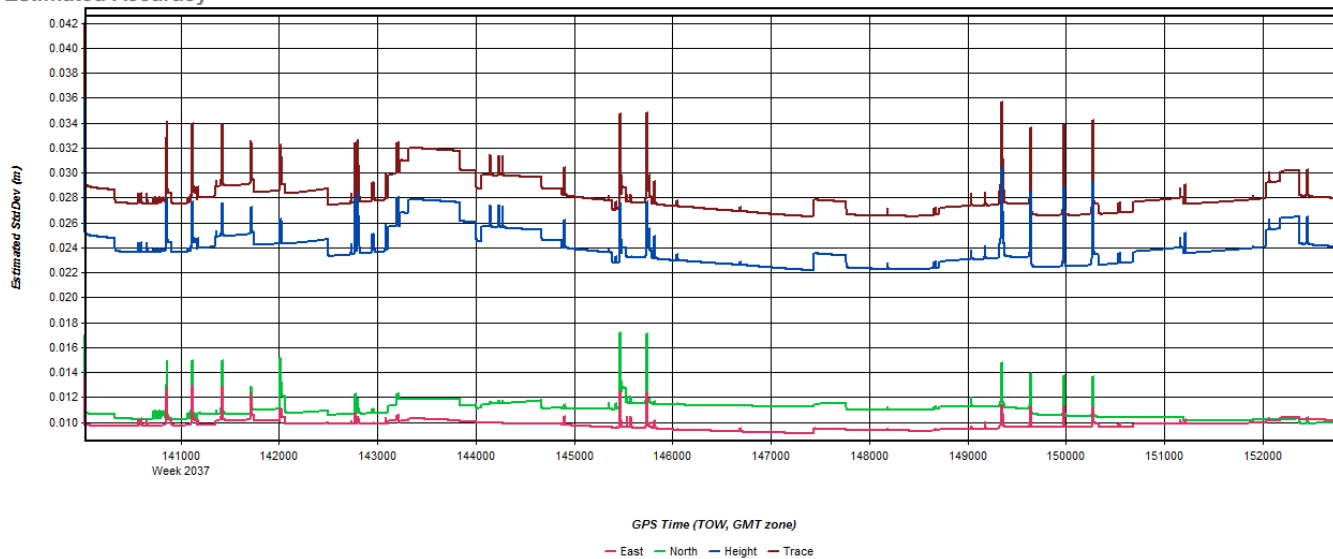
FGI Job # <b>33780084</b>	Project Name <b>Hurricane Harvey ALS80</b>		System <b>ALS80</b>	Unit <b>118</b>	IMU <b>uRS</b>	PIA <b>3</b>	SW1 <b>-</b>	SW2-Gain <b>-</b>	Aper <b>60°</b>	AutoScan <b>Yes</b>	Ground Temp °C <b>3.0 12.0</b>	Min Range Gate <b>1903m</b>	Data Logger Drive <b>MM70-01</b>
Flight Date <b>21-Jan-19</b>	GPS Day <b>19-021</b>	Lift <b>12</b>		Sun° <b>-</b>	Solar Times (UTC) <b>-</b>	Laser Power <b>100%</b>	Pattern <b>Triangle</b>	Flying Temp °C <b>- 12.0</b>	Max Range Gate <b>2537m</b>	Download Drive <b>NS1TB#01</b>			
Mission ID (yyymmdd_Sen_Job_Lift) <b>190121_118_33780084_12</b>	Aircraft <b>N8131</b>	Airport ID <b>KG TU</b>	FMS <b>CCNS 3</b>	UTC <b>-6</b>	AMT (ft) <b>7,550</b>	Speed <b>150</b>	Scan Hz <b>35.0</b>	Pulse Rate <b>352,000</b>	FOV <b>42</b>	km/WPT <b>1.384</b>	AltM Setting <b>30.20 30.15</b>		Shipping Track <b>7742 7151 0060</b>
Pilot #1 <b>Wayne Manning</b>	Pilot #2 <b>-</b>	Operator #1 <b>Chris Acuña</b>		Operator #2 <b>-</b>									
Base 1 ID <b>FEDI 1115</b>	Location <b>KG TU</b>	Rec ID <b>GR3#5</b>	Ant ID <b>GR3#5</b>	ARP (m) <b>1.8</b>	Start Time (UTC) <b>21-Jan-19 13:57</b>	Stop Time (UTC) <b>21-Jan-18 19:42</b>	GPS Filename <b>Unit#50121n</b>	Operator <b>Chris Acuña</b>	Data <b>With AB</b>				

Area	Flight #		Wpt		Distance		UTC		Fit	Altitude (GPS)	Speed (knots)	Scan Rate	Comments and Conditions	SVs	PDOP
	FGI	Client's	From	To	Begin	End	Start	End							
													Aspen GPS Tracker is "Off"		
							14:53:55	14:58:55					5 Min GND static at KG TU	21	1.1
							15:28:05	15:33:05					5 Min acquisition of CORS TXMR	25	1.0
							15:37:46	15:39:58					S-Turn in flight alignment	24	1.0
BLOCK_J	17		1	22	0	30.4	15:46:53	15:53:50	121	8275	141	-		25	1.0
	-														
	16		1	29	0	40.5	16:03:12	16:12:30	29	8090	149	-		22	1.1
	16		29	16	40.5	21.7	16:17:55	16:22:09	210	8160	140	-	Calibration line; 33-29 km low clouds	22	1.1
	-												Moving west, trying to get out of clouds		
	1		9	1									Block_J clouded out		
							16:28:49	16:30:59					S-Turn in flight alignment	22	1.1
							16:38:53	16:43:53					5 Min acquisition of CORS TXMR	21	1.2
													Revised settings for Block_H from Block_J		
													Had to reset CCNS pwr to change block		
							17:09:07	17:11:33					S-Turn in flight alignment	24	1.0
BLOCK_H	75		56	40	76.1	54	17:16:16	17:21:18	265	8565	142	-	Partial crossing line	23	1.2
	43		61	1	83	0	17:27:06	17:47:26	177	8335	146	-	Lt turb; 35	22	1.1
	43		1	13	0	16.6	17:53:05	17:57:18	355	8370	149	-	Calibration line	22	1.2
													This portion of H with crossing line clouding out ending lift		
							17:57:52	18:00:03					S-Turn in flight alignment	22	1.2
							18:21:26	18:26:26					5 Min post GND static alignment at KG TU	21	1.1

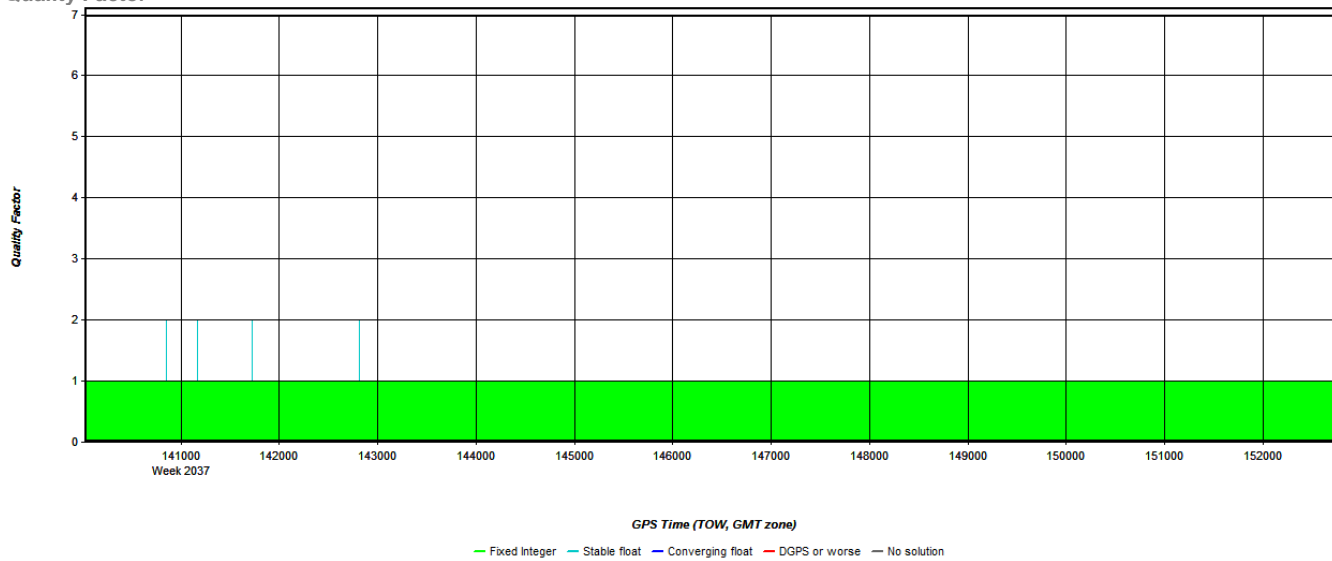
Trajectory and GPS Plots:



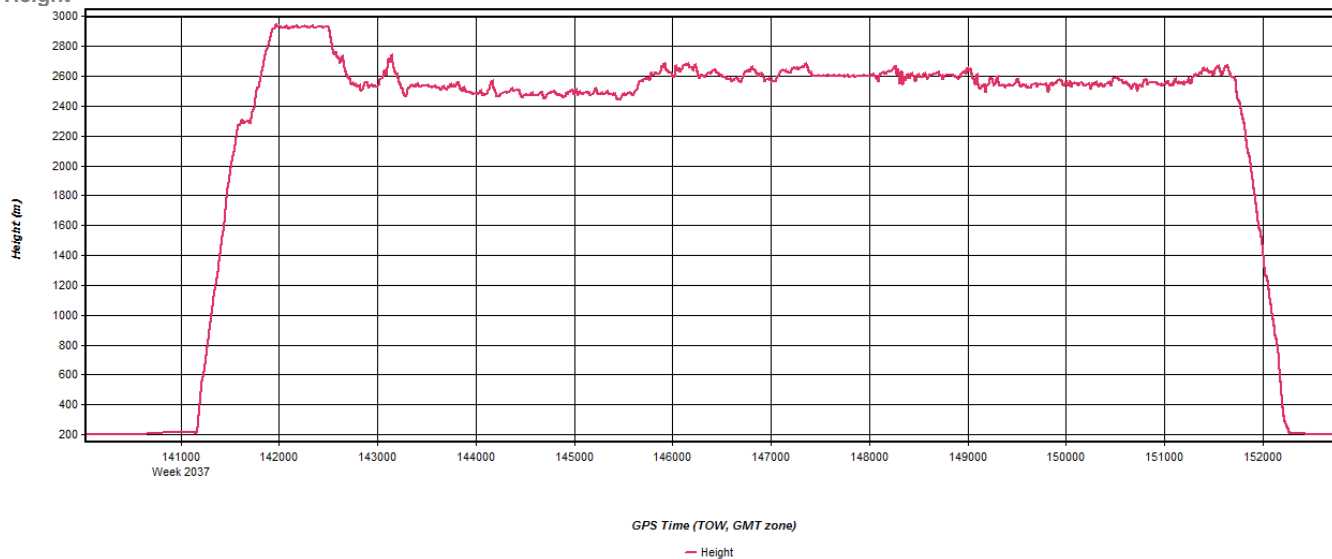
Estimated Accuracy



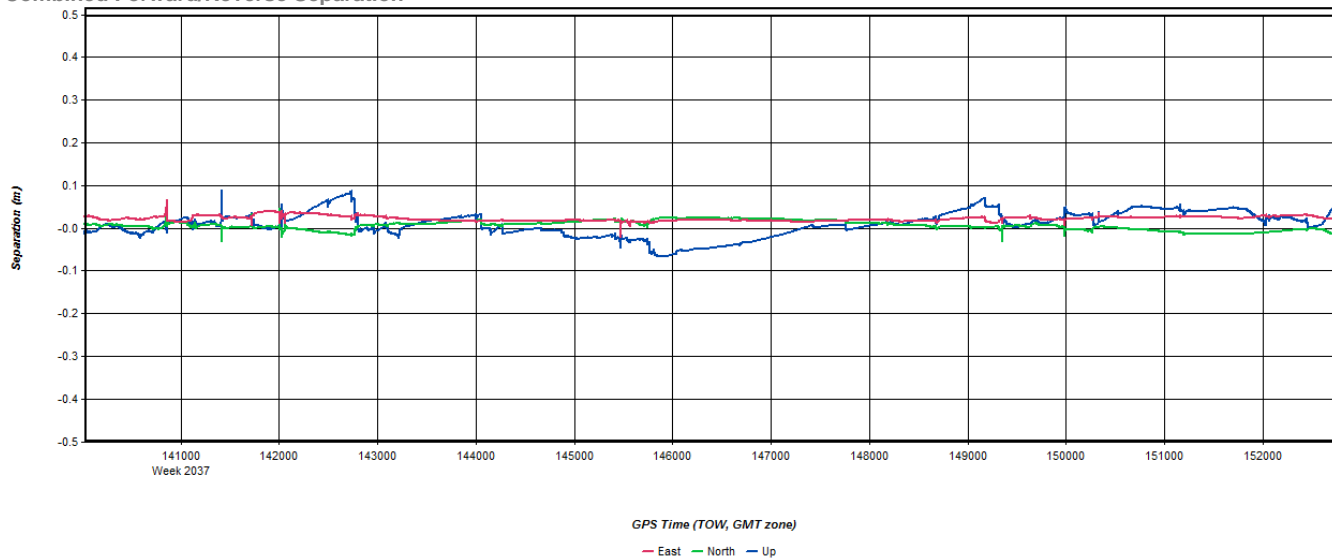
Quality Factor



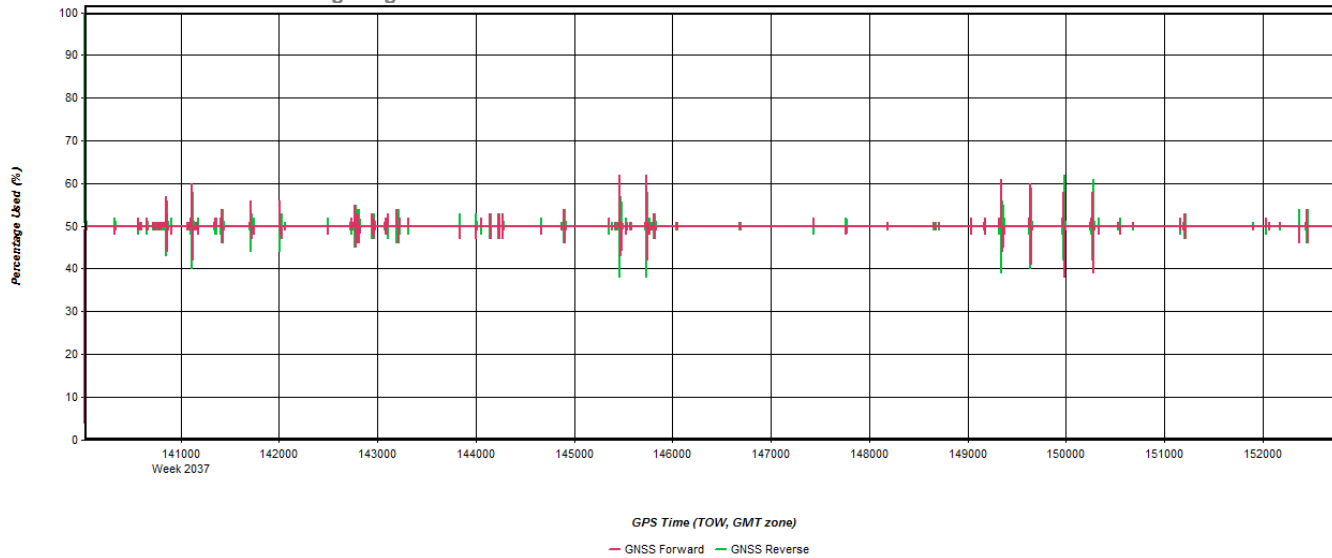
Height



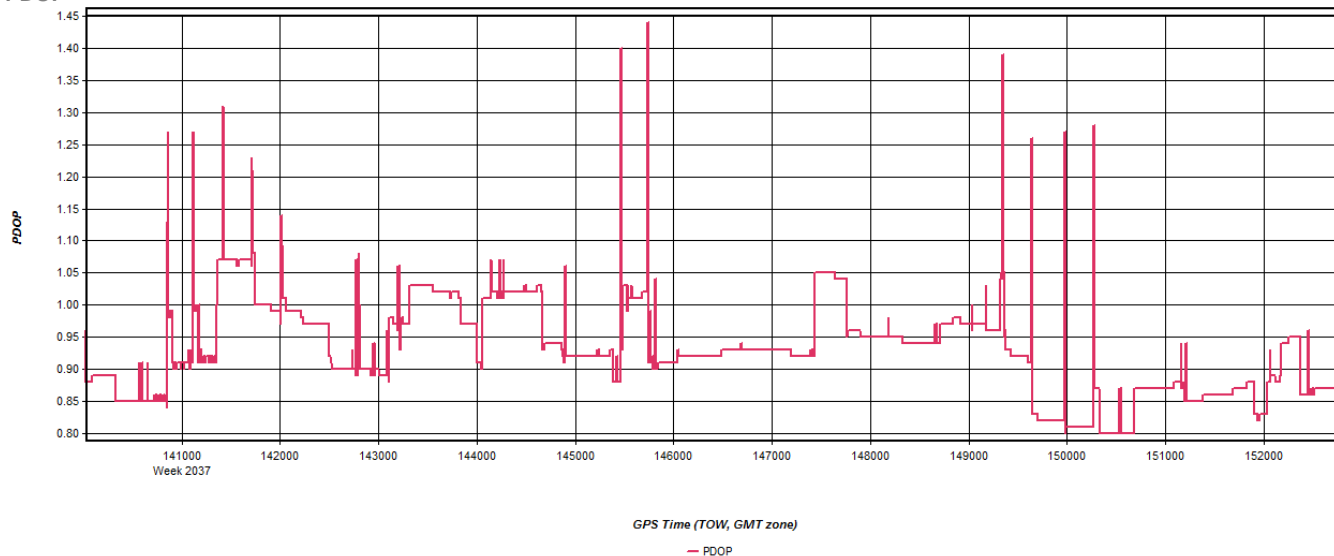
Combined Forward/Reverse Separation



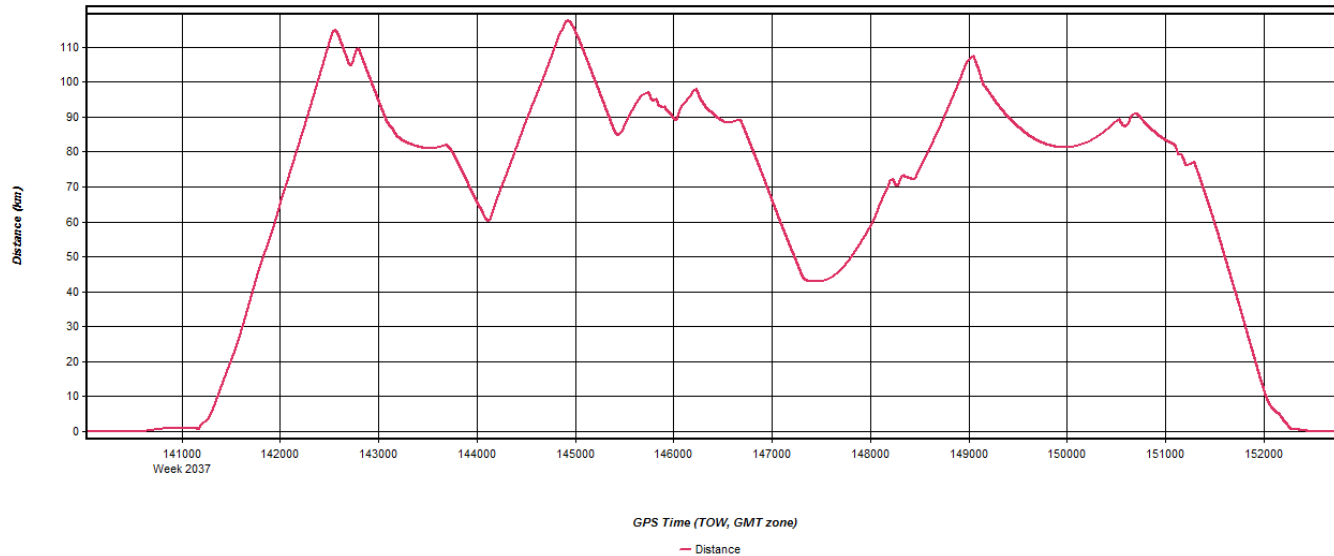
Combined Forward/Reverse Weighting



PDOP



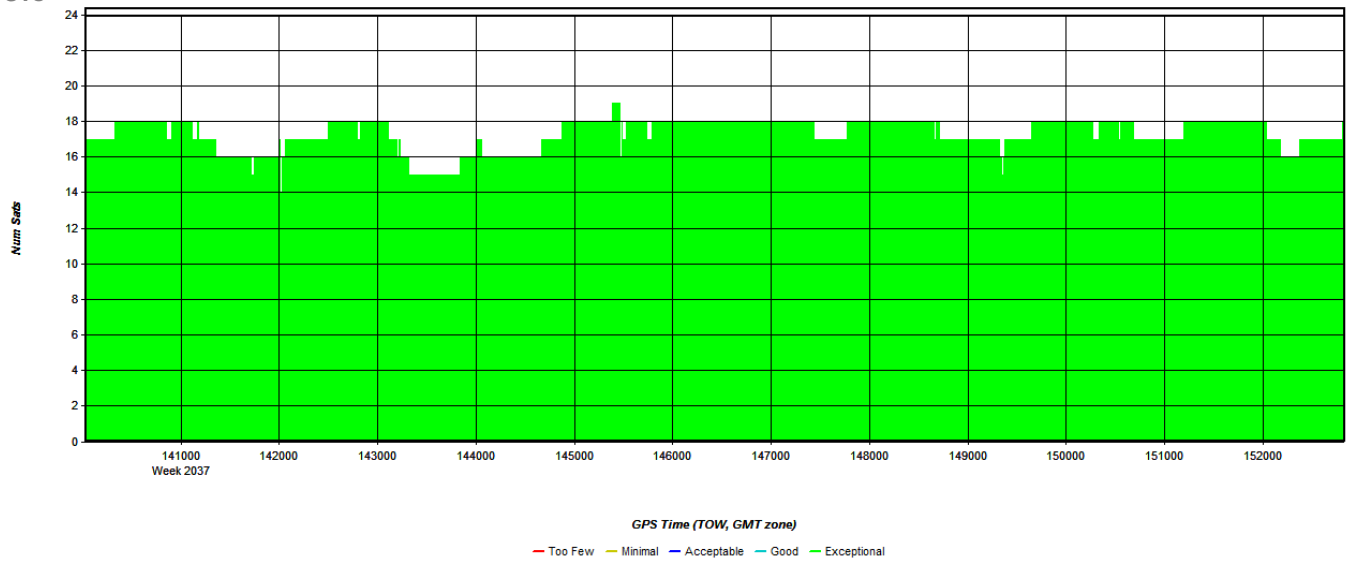
Distance from Base







SVs



USGS  
COLLECTION REPORT



Acquisition and Processing details ----- (January 21, 2019)

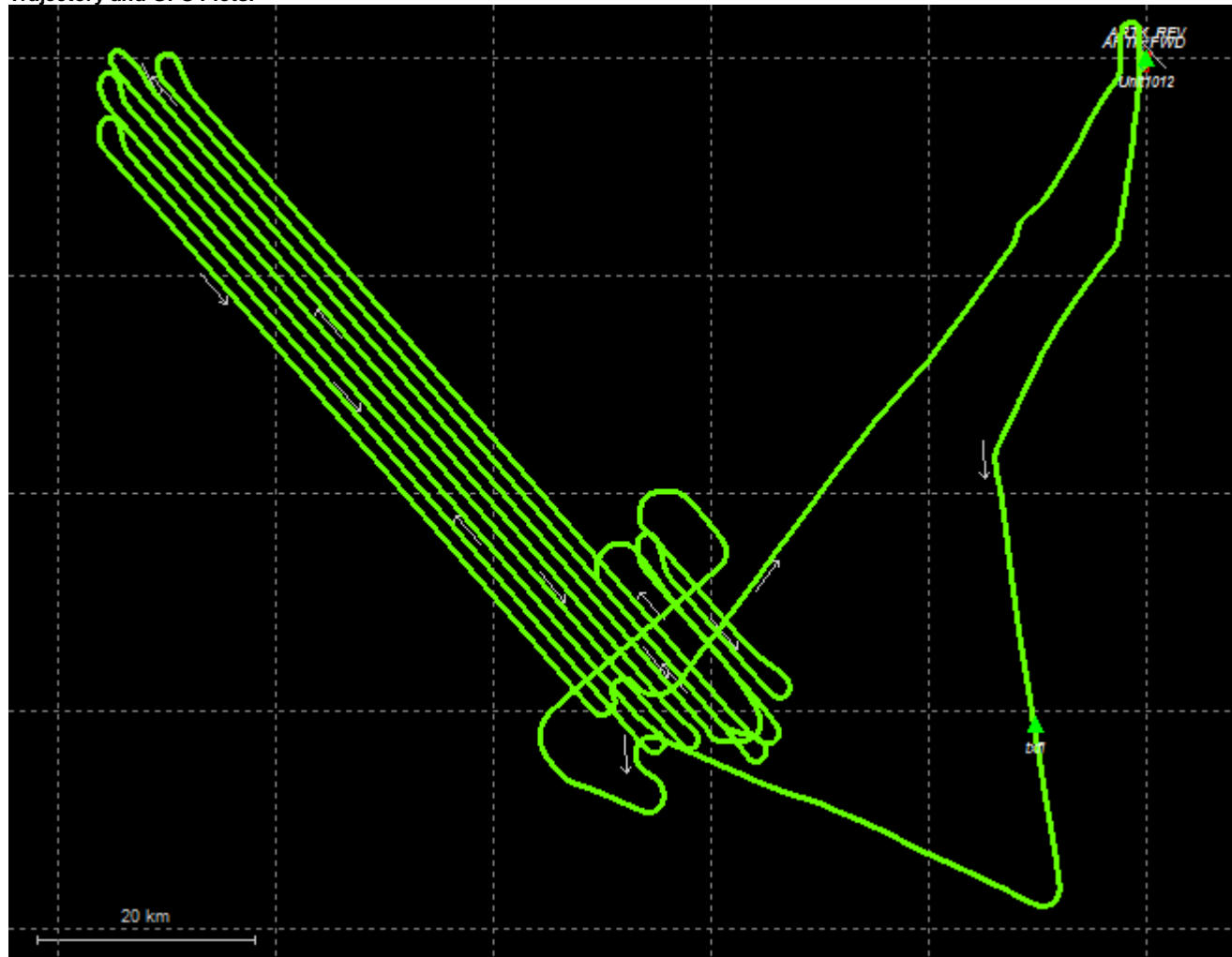
Log: 190121\_130\_33780084\_09

 <b>Fugro USA Land, Inc.</b>	Menu										ALS	
	Lift Begin		Lift End		Fit	Fit	Hobbs	Activity				
	Port	Chocks	Hobbs	Airport	Chocks	Hobbs	Duration	Hrs	Hrs	0900-Production		
	1	KBAZ	19:19	1349.5	KBAZ	23:45	1353.5	4:25	4.50	4.0		
2												
3												

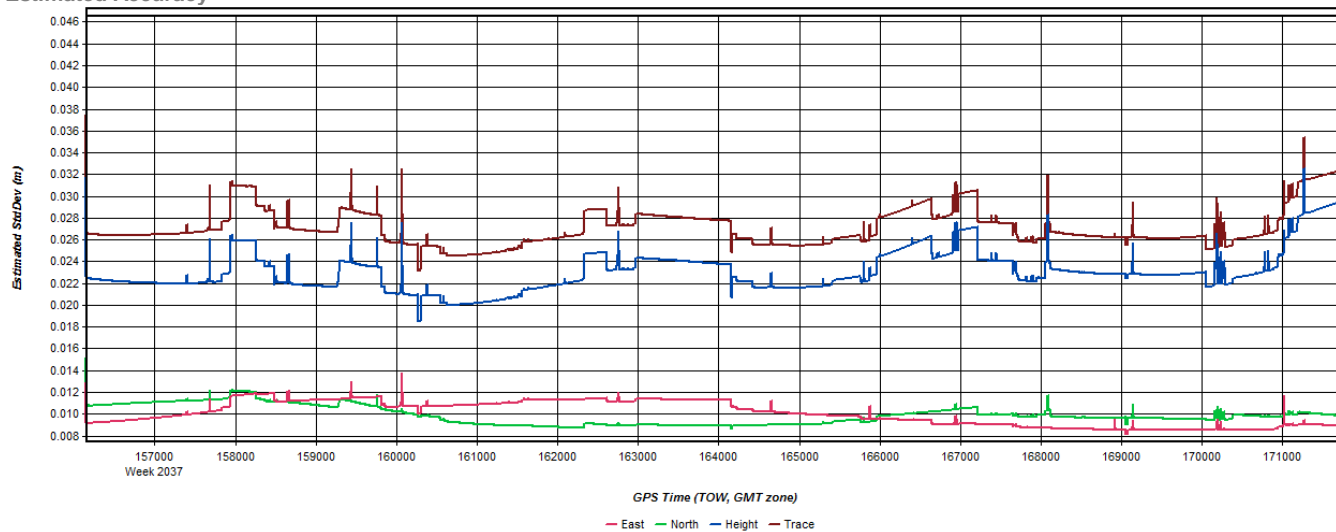
FGI Job # <b>33780084</b>	Project Name <b>Hurricane Harvey</b>				System <b>ALS80</b>	Unit <b>130</b>	IMU <b>uRS</b>	PIA <b>3</b>	SW1	SW2-Gain	Aper	AutoScan	Ground Temp °C <b>18.0 19.0</b>	Min Range Gate <b>2058</b>	Data Logger Drive <b>LG101</b>	
Flight Date <b>21-Jan-19</b>	GPS Day <b>19-021</b>	Lift <b>9</b>			Sun°	Solar Times (UTC)		Laser Power <b>64%</b>	Pattern <b>Triangle</b>		Flying Temp °C <b>10.0 11.0</b>	Max Range Gate <b>2770</b>	Download Drive <b>NS1TB-67</b>			
Mission ID (ymmdd_Sen_Job_Lift) <b>190121_130_33780084_09</b>		Aircraft <b>N97HC</b>	Airport ID <b>KBAZ</b>	FMS <b>CCNS 8</b>	UTC <b>-6</b>	AMT (ft) <b>8,400</b>	Speed <b>150</b>	Scan Hz <b>35.0</b>	Pulse Rate <b>322,600</b>	FOV <b>37</b>	km/WPT <b>1.540</b>	AltM Setting <b>30.10 29.98</b>	Shipping Track <b>7742 7304 0705</b>			
Pilot #1 <b>Grant Cassell</b>		Pilot #2		Operator #1 <b>David Verhey</b>		Operator #2										
Base 1 ID <b>FUSAL 100</b>	Location <b>KBAZ</b>	Rec ID <b>GR3-1</b>	Ant ID <b>GR3-1</b>	ARP (m) <b>1.8</b>	Start Time (UTC) <b>21-Jan-19 18:38</b>		Stop Time (UTC) <b>21-Jan-19 23:58</b>		GPS Filename <b>Unit10121s.tps</b>		Operator <b>David Verhey</b>		Data <b>FTP</b>			
Base 2 ID <b>TXFL</b>	Location <b>Floresville, TX</b>	Rec ID	Ant ID	ARP (m)	Start Time (UTC)		Stop Time (UTC)		GPS Filename		Operator <b>CORS</b>		Data			

Area	Flight #	Client's	Wpt	Distance	UTC		Fit	Altitude	Speed	Scan	Rate	Comments and Conditions	SVs	PDOP
					Begin	End								
					19:22:36	19:27:36						Ground Static at KBAZ	17	1.3
					19:50:16	19:55:16						Overflight of CORS at TXFL	17	1.3
					20:03:41	20:05:45						S-Turn	17	1.1
BLOCK_E	27	1	12	0	16.9	20:09:56	20:13:51	45.6	8782	138			18	1.2
	23	6	1	7.7	0	20:18:54	20:20:55	134.9	8748	140			18	1.1
	21	1	7	0	9.2	20:23:43	20:26:04	315.0	8795	140			17	1.3
	19	8	1	10.8	0	20:28:47	20:31:26	134.8	8796	139			19	1.2
	17	1	48	0	72.4	20:34:25	20:51:19	314.8	8825	137			19	1.2
	16	48	1	72.4	0	20:54:03	21:11:09	134.4	9058	135			19	1.2
	16	1	10	0	13.9	21:14:07	21:17:36	314.9	8845	141		Calibration Line	19	1.3
	15	1	48	0	72.4	21:25:08	21:42:22	314.9	8838	143			20	1.2
	14	48	1	72.4	0	21:45:03	22:01:50	134.4	8794	136		Minor cloud at 13 km, returns stable	20	1.4
	13	1	48	0	72.4	22:04:08	22:20:57	314.9	8855	142			22	1.2
	12	46	1	69.3	0	22:23:41	22:40:00	134.4	9260	138			23	1.2
	11	1	44	0	66.2	22:42:33	22:58:01	314.8	8904	139			23	1.2
	10	42	1	63.1	0	23:00:41	23:15:26	134.4	8936	139			21	1.3
						23:15:32	23:16:59					S-Turn	21	1.3
						23:37:36	23:42:36					Ground Static at KBAZ	20	1.3

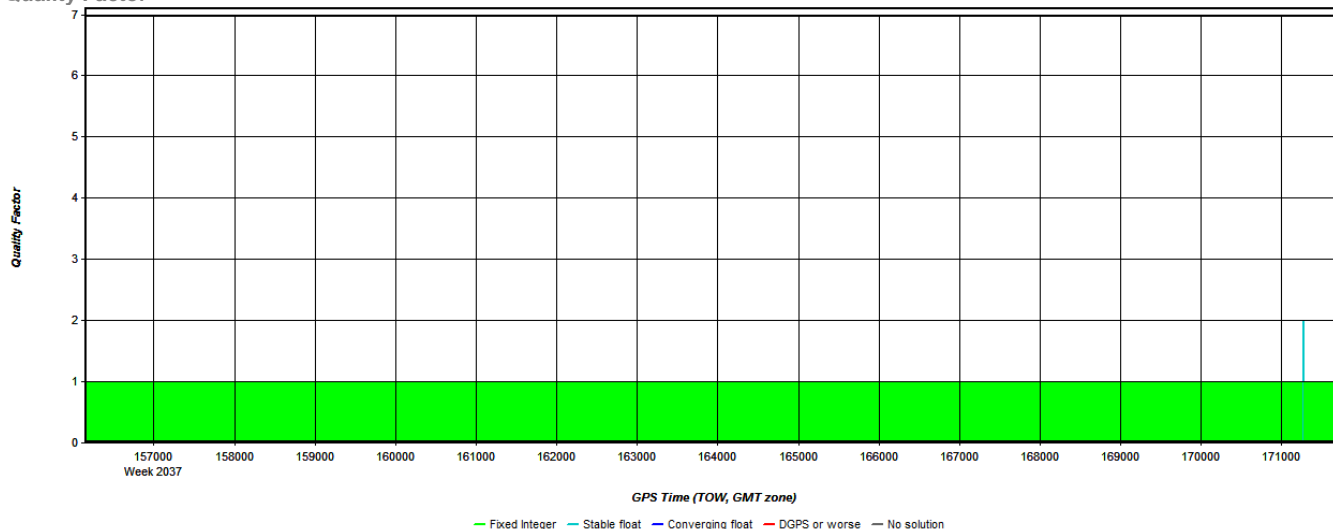
Trajectory and GPS Plots:



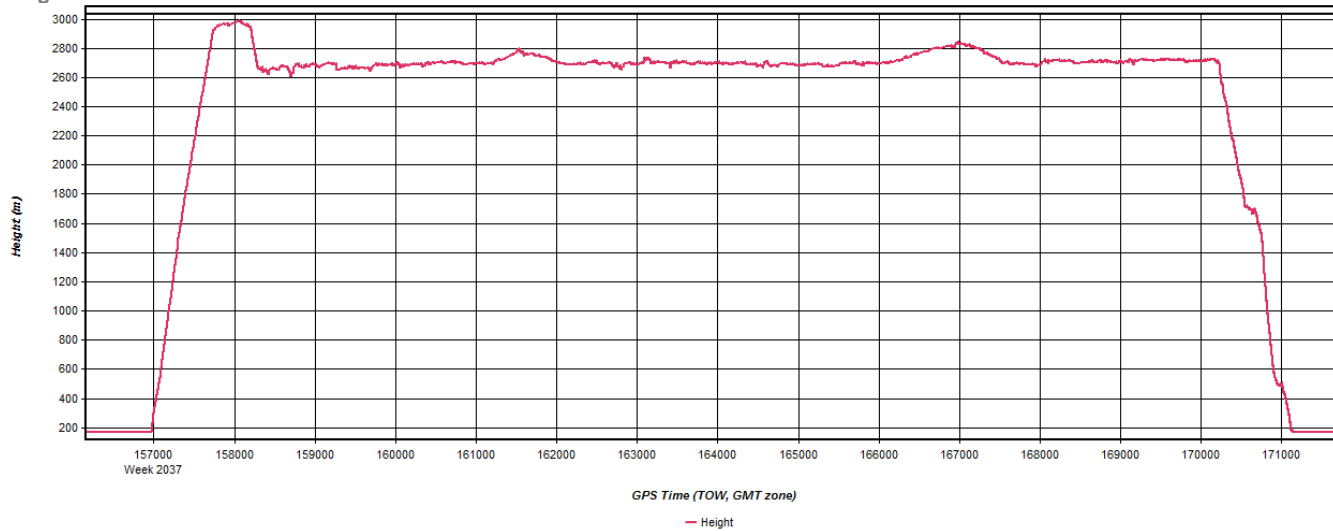
Estimated Accuracy



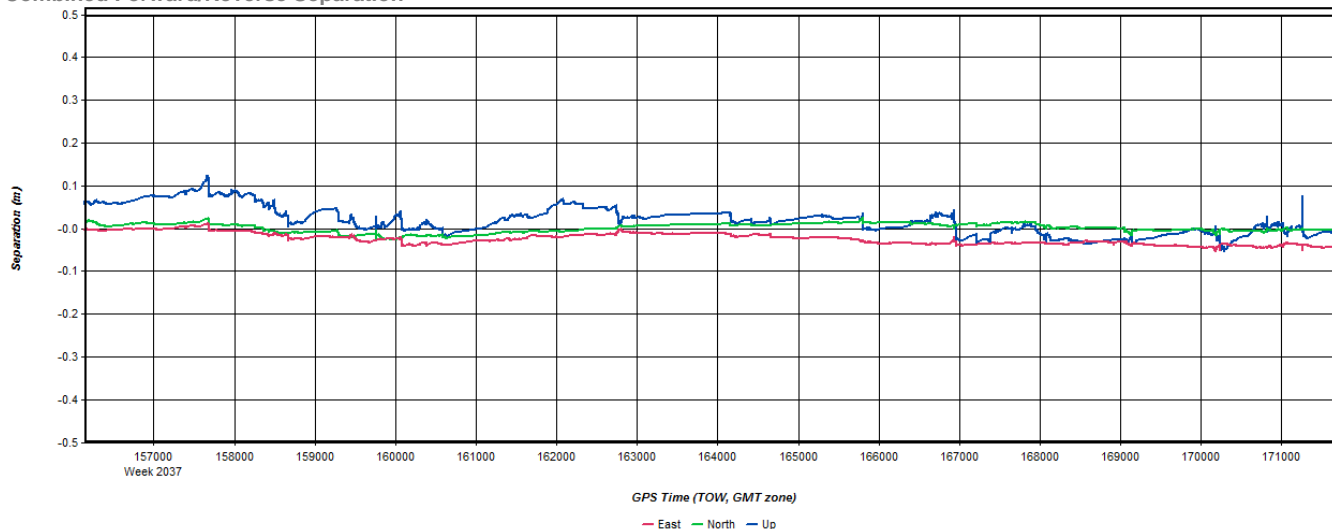
Quality Factor



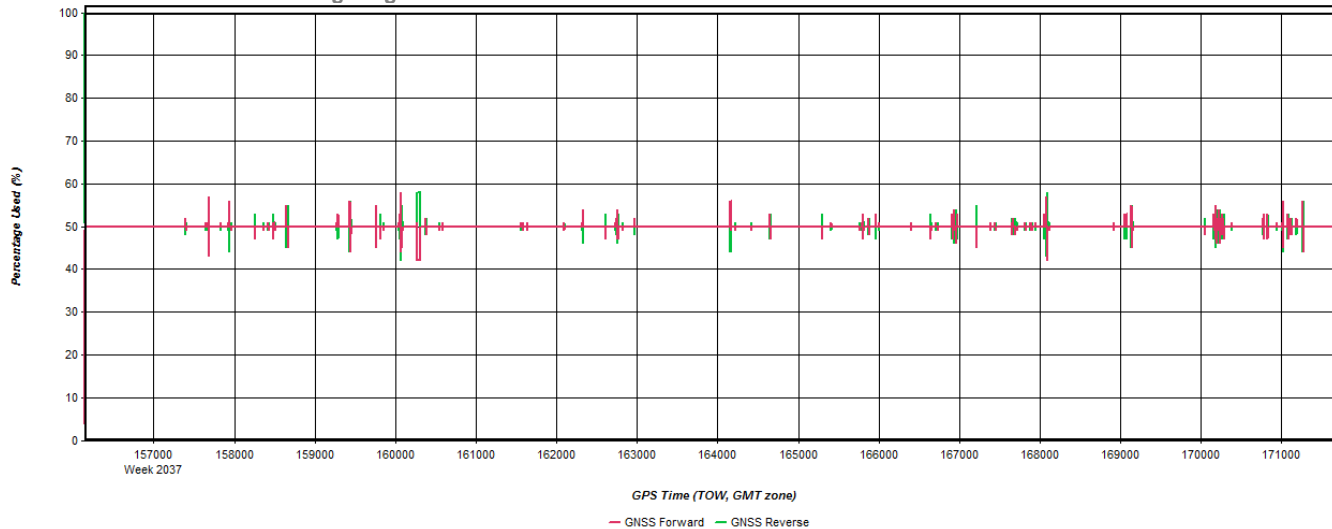
Height



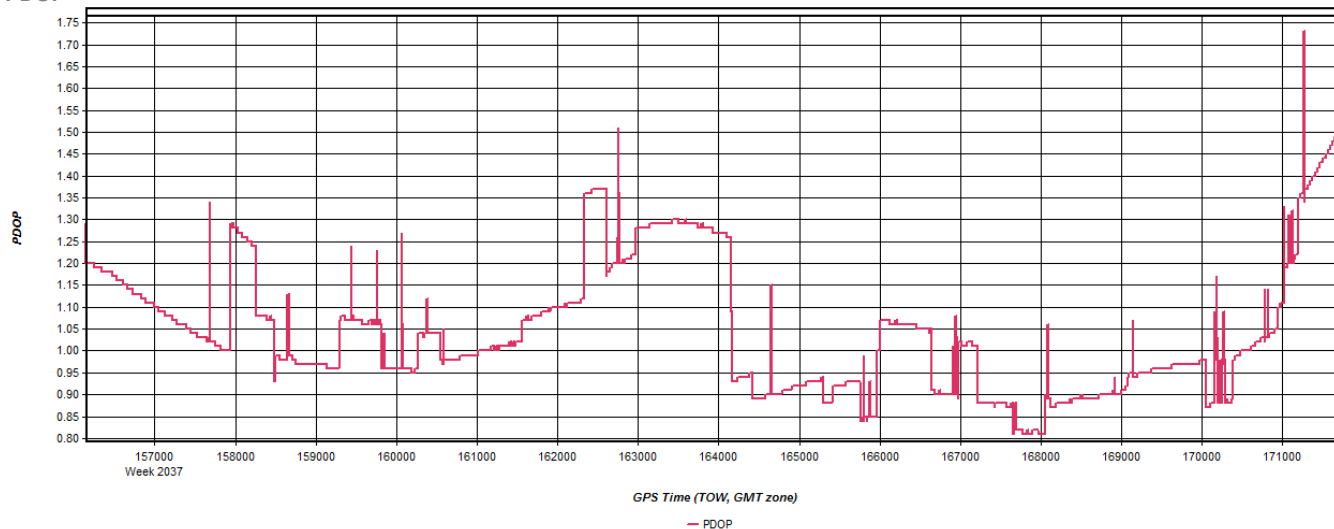
Combined Forward/Reverse Separation



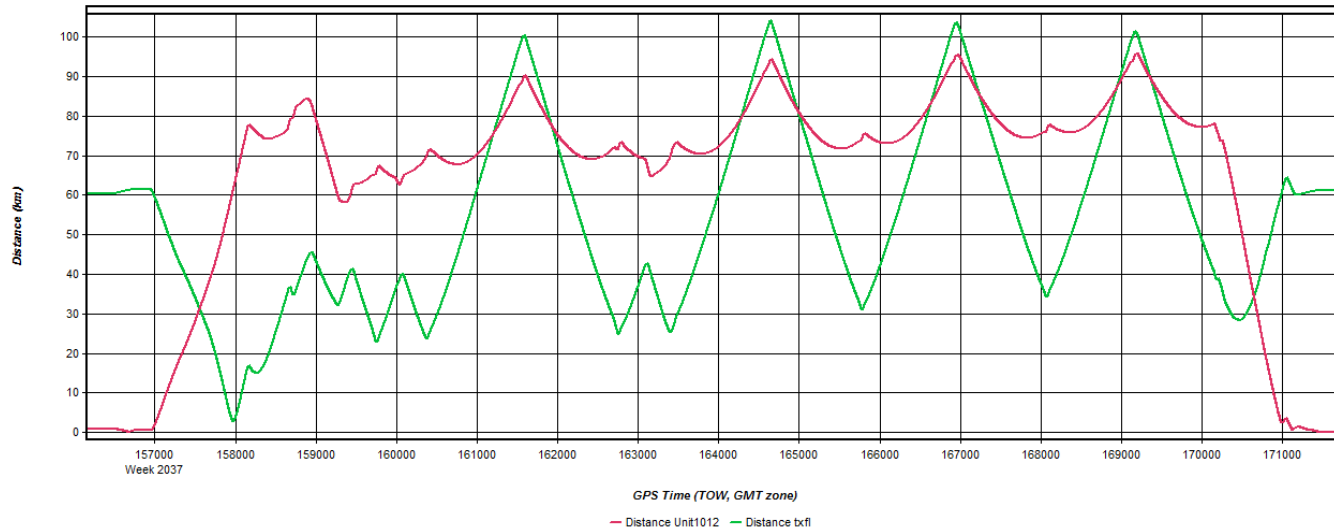
Combined Forward/Reverse Weighting



PDOP

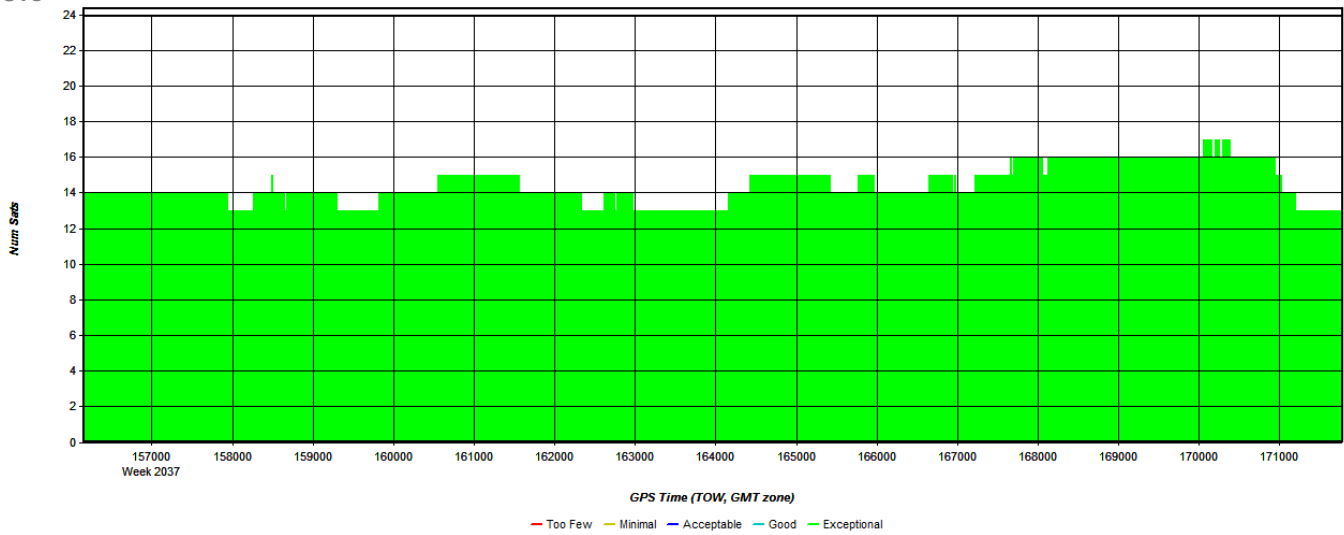


Distance from Base





SVs



USGS  
COLLECTION REPORT



Acquisition and Processing details ----- (January 21, 2019)

Log: 190121\_133\_33780084\_07

Menu 18.165

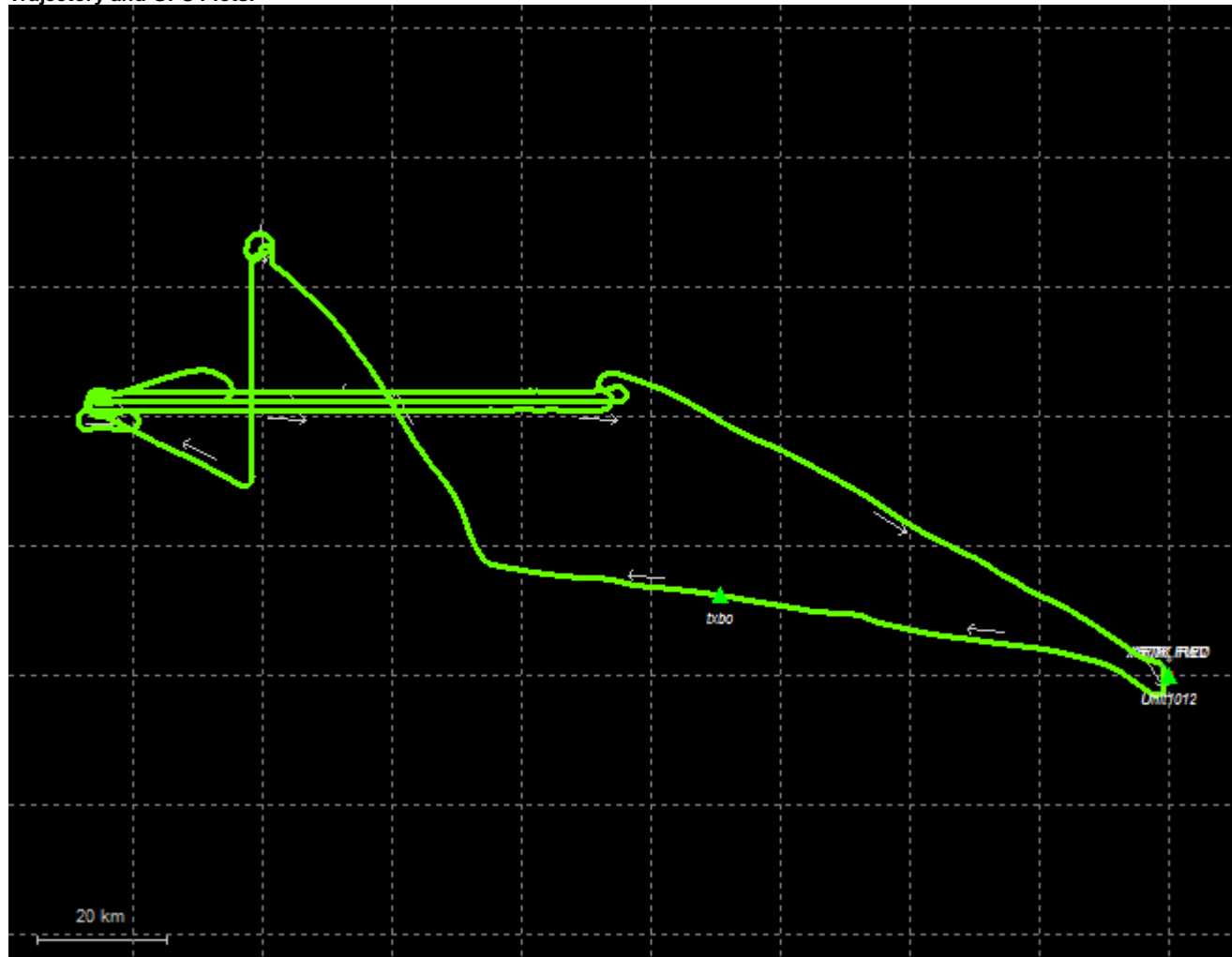
	Lift Begin			Lift End			Fit Duration	Fit Hrs	Hobbs Hrs	Activity
	Airport	Chocks	Hobbs	Airport	Chocks	Hobbs				
1	KBAZ	19:26	8142.5	KBAZ	22:32	8145.8	3:05	3.00	3.3	0900-Production
2										
3										

**ALS**  
Flight Log  
AC80-44-00-02

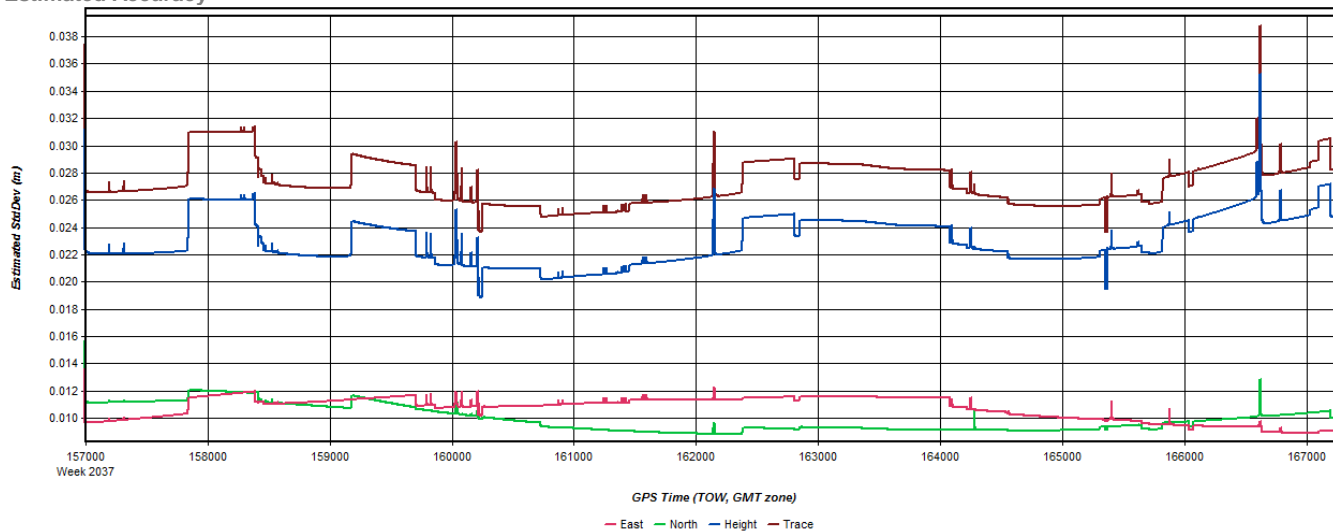
FGI Job # <b>33780084</b>		Project Name <b>Hurricane Harvey ALS80</b>				System <b>ALS80</b>	Unit <b>133</b>	IMU <b>uRS</b>	PIA <b>3</b>	SW1 <b>255</b>	SW2-Gain <b>60°</b>	Aper <b>Yes</b>	AutoScan <b>Yes</b>	Ground Temp °C <b>21.1 20.6</b>	Min Range Gate <b>7322</b>	Data Logger Drive <b>MM70-04</b>	
Flight Date <b>21-Jan-19</b>	GPS Day <b>19-021</b>	Lift <b>7</b>			Sun° <b>NA</b>	Solar Times (UTC) <b>NA</b>		Laser Power <b>100%</b>	Pattern <b>Triangle</b>	Flying Temp °C <b>10.0 10.0</b>	Max Range Gate <b>8830</b>	Download Drive <b>NS1TB-111</b>					
Mission ID (ymmdd_Sen_Job_Lift) <b>190121_133_33780084_07</b>		Aircraft <b>N76JN</b>	Airport ID <b>KBAZ</b>	FMS <b>FCMS</b>	UTC <b>7,550</b>	AMT (ft) <b>150</b>	Speed <b>35.0</b>	Scan Hz <b>352,000</b>	Pulse Rate <b>42</b>	FOV <b>1.384</b>	km/WPT <b>30.06</b>	AltM Setting <b>29.99</b>	Shipping Track <b>774273040705</b>				
Pilot #1 <b>Randy Green</b>		Pilot #2		Operator #1 <b>Adam Mueller</b>		Operator #2											
Base 1 ID <b>FGI 8003</b>	Location <b>KBAZ</b>	Rec ID <b>GR3-1</b>	Ant ID <b>GR3-1</b>	ARP (m) <b>1.8</b>	Start Time (UTC) <b>21-Jan-19 18:38</b>	Stop Time (UTC) <b>21-Jan-19 23:58</b>	GPS Filename <b>Unit10121s.tps</b>	Operator <b>Adam Mueller</b>	Data <b>FTP</b>								
Base 2 ID <b>TXBO CORS</b>	Location <b>TX</b>	Rec ID	Ant ID	ARP (m)	Start Time (UTC) <b>CORS</b>	Stop Time (UTC)	GPS Filename <b>CORS</b>	Operator	Data								
Area	Flight #	Client's	Wpt	Distance		UTC		Dir	Altitude (GPS)	Speed (knots)	Scan Rate	Comments and Conditions			SVs	PDOP	
				From	To	Begin	End										Start
												Ground Static at KBAZ			15	1.4	
												Over Flight TXBO CORS			17	1.1	
												S Turn			16	1.3	
Block G	33		31	10	41.5	12.5	20:30:31	20:38:00	S	9576	141	35.0	<b>Cross Line</b>			18	1.3
	21		1	52	0	70.6	20:45:28	21:01:15	E	9176	150	35.0				18	1.2
	20		52	1	70.6	0	21:04:07	21:20:32	W	9127	145	35.0				18	1.3
	20		1	10	0	12.5	21:23:30	21:26:30	E	9127	150	35.0	Calibration Line			19	1.3
	19		1	52	0	70.6	21:38:57	21:54:55	E	9127	159	35.0				20	1.3
							21:55:10	21:56:11					S Turn			20	1.2
							22:22:44	22:27:44					Ground Static at KBAZ			22	1.2



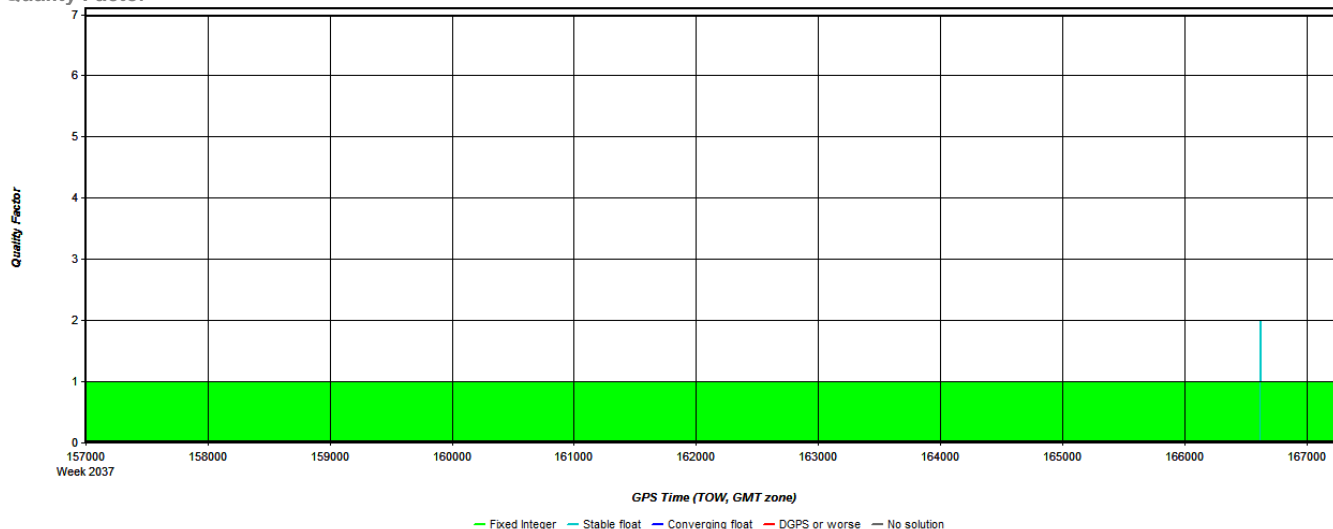
Trajectory and GPS Plots:



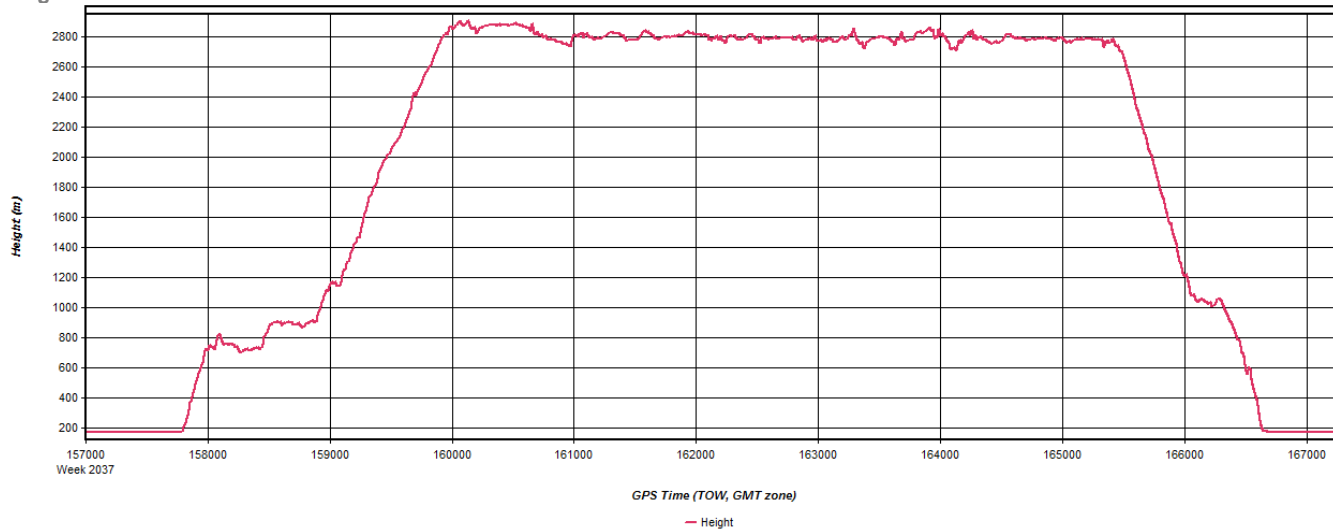
Estimated Accuracy



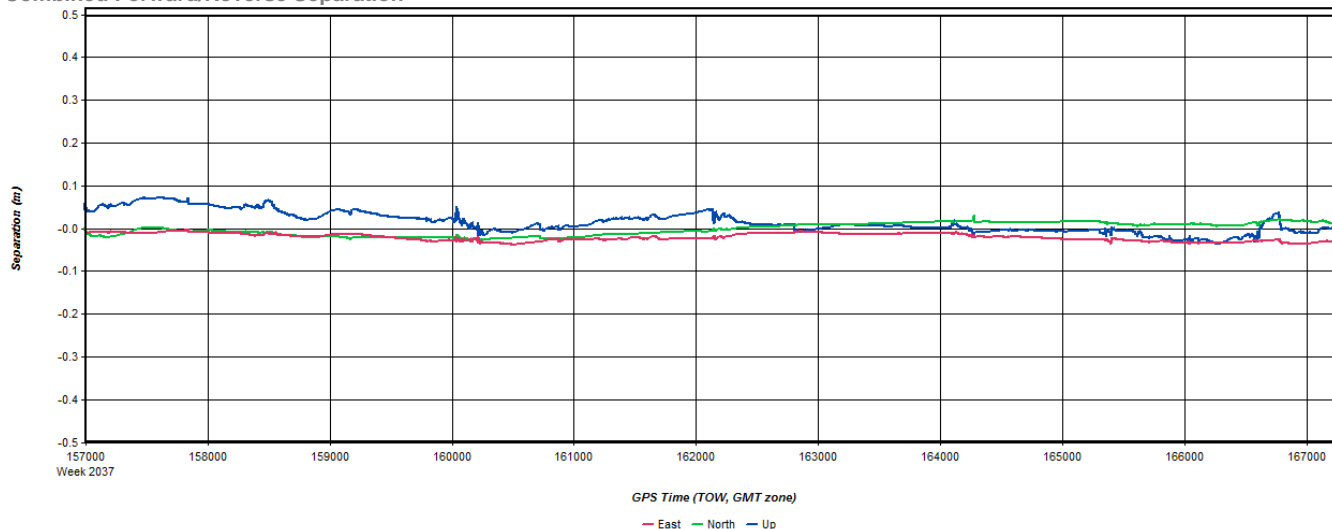
Quality Factor



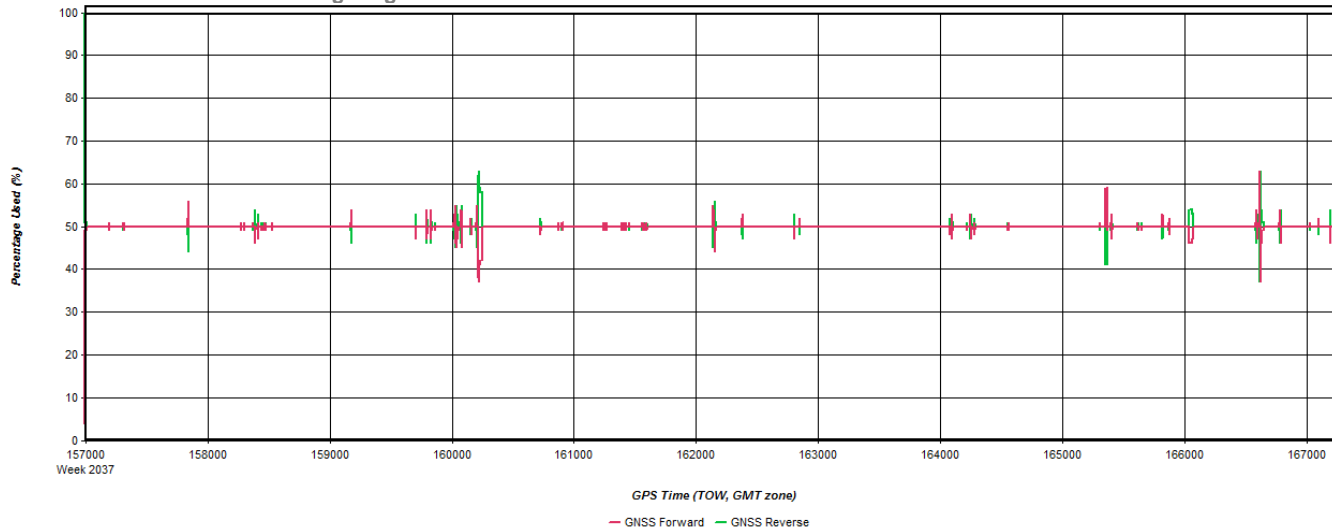
Height



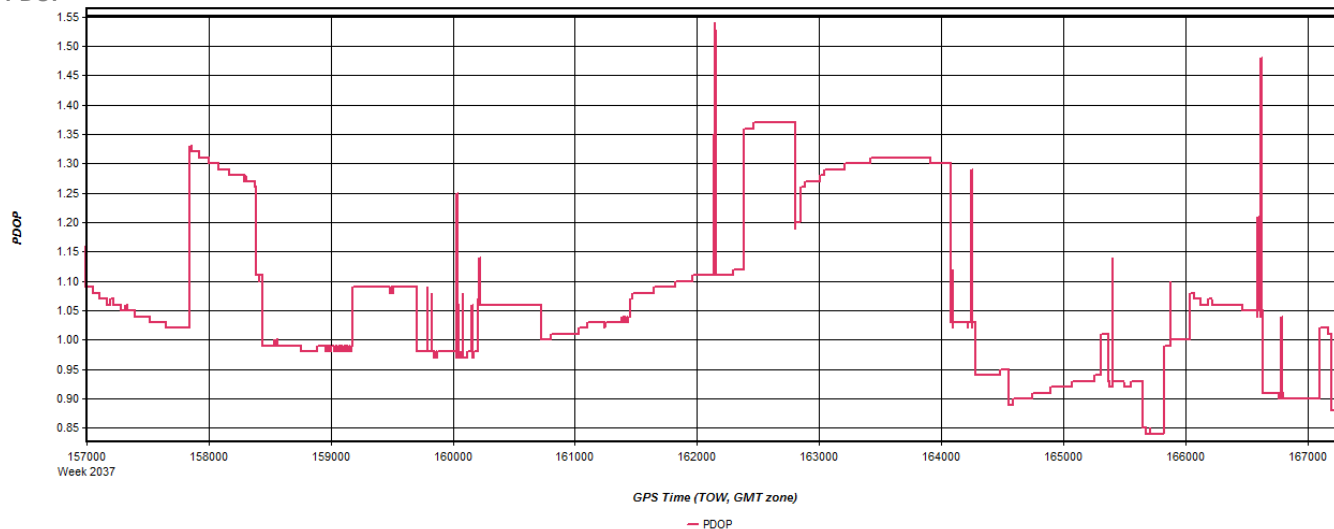
Combined Forward/Reverse Separation



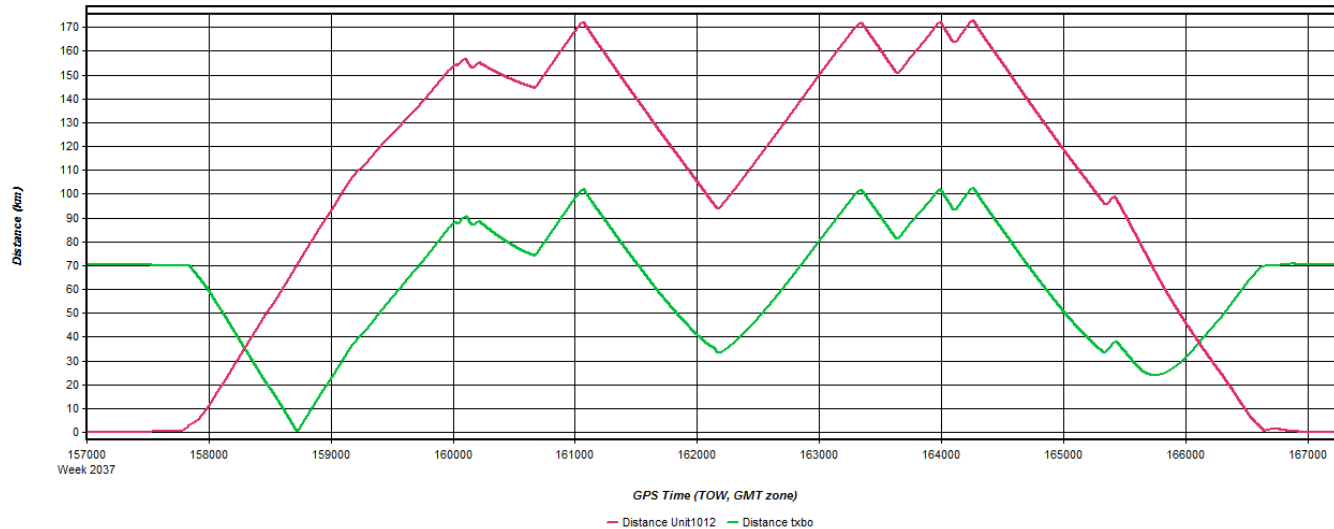
Combined Forward/Reverse Weighting



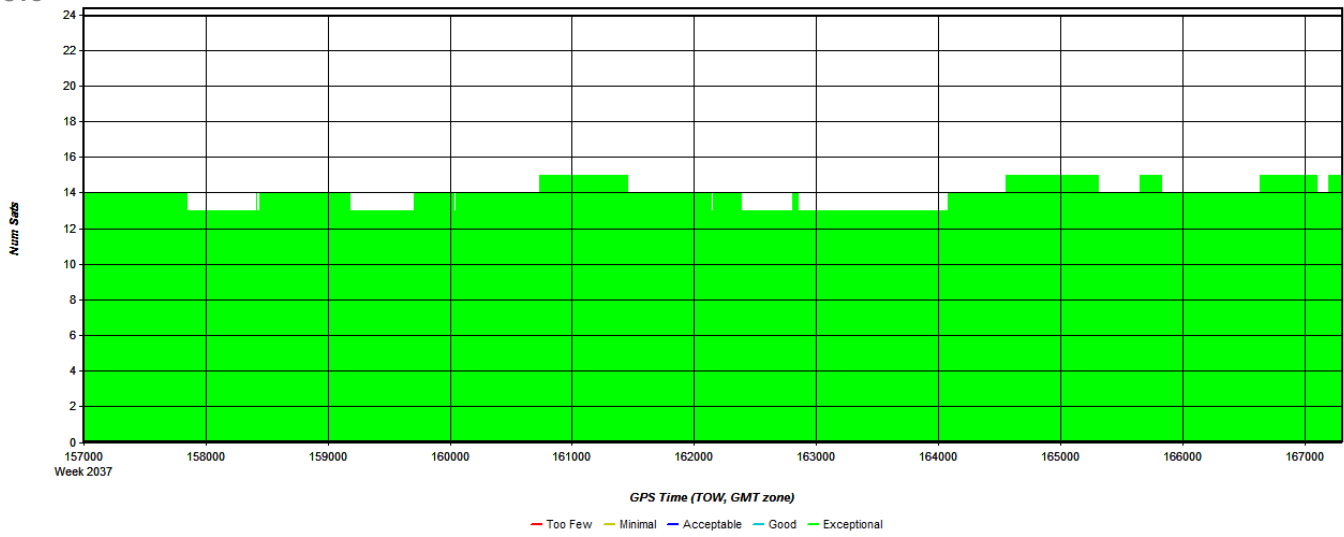
PDOP



Distance from Base

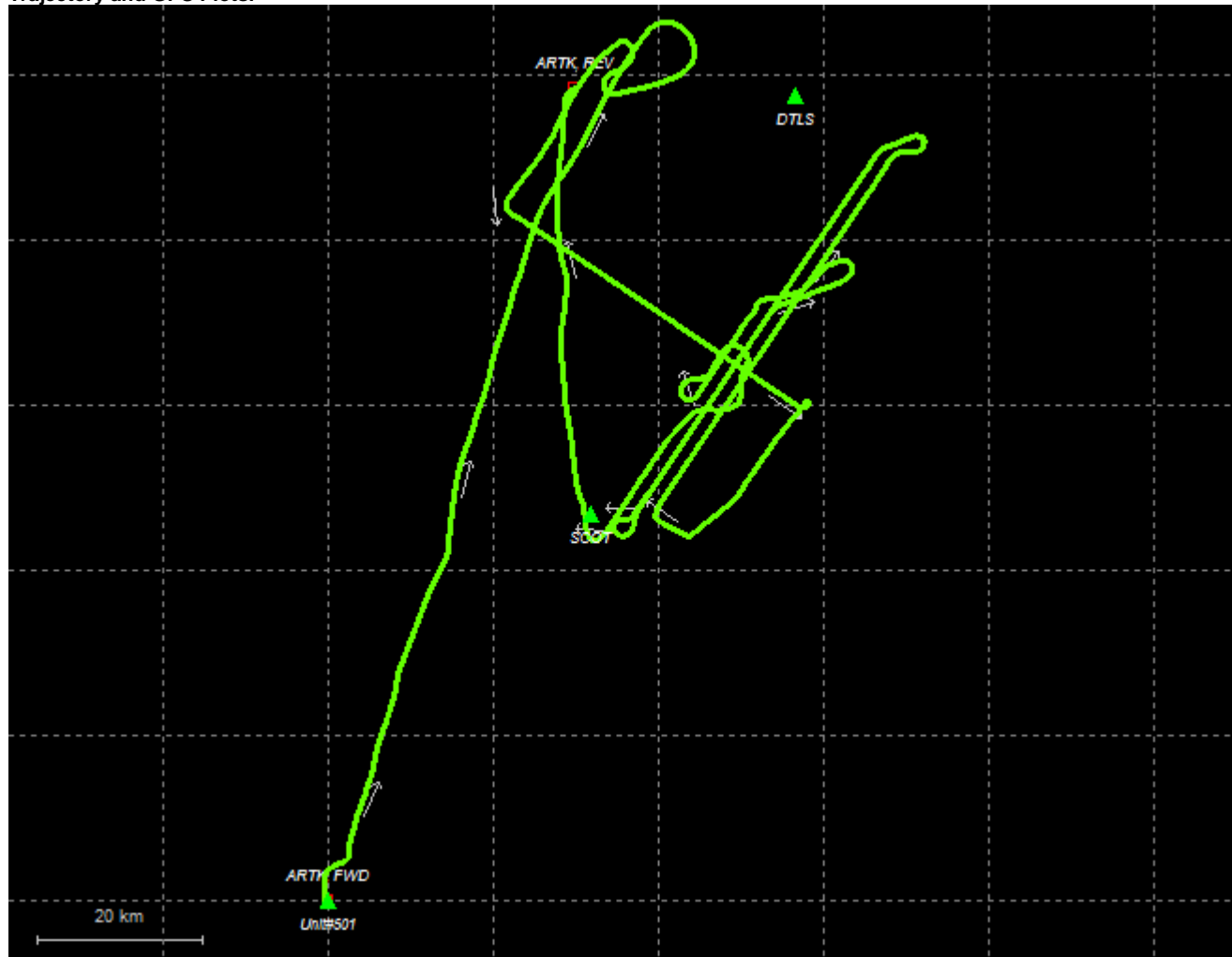


SVs

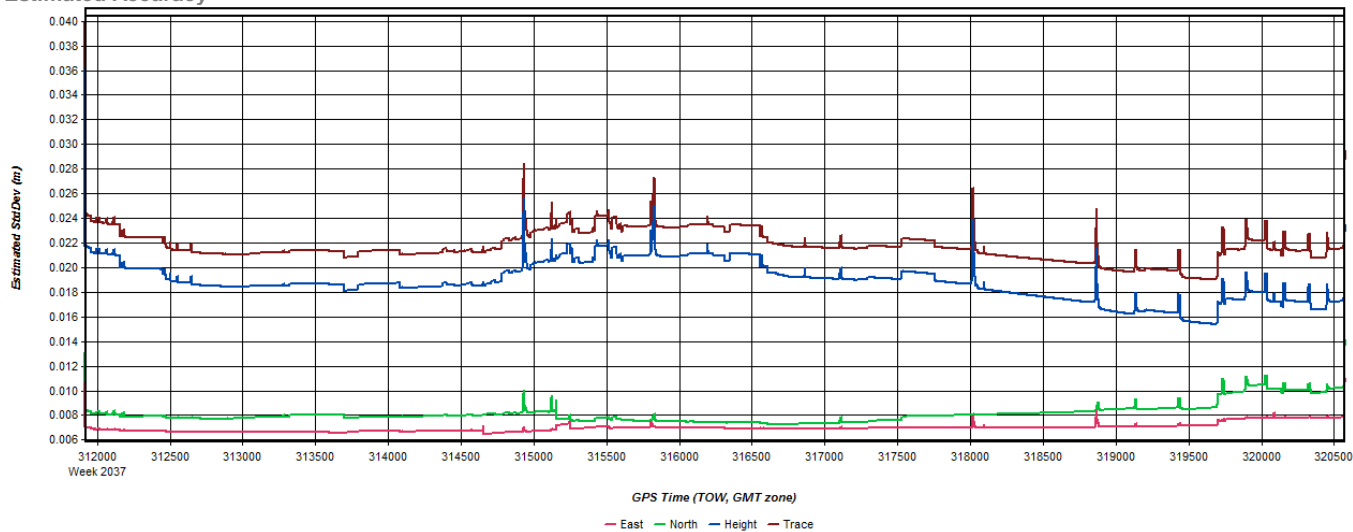




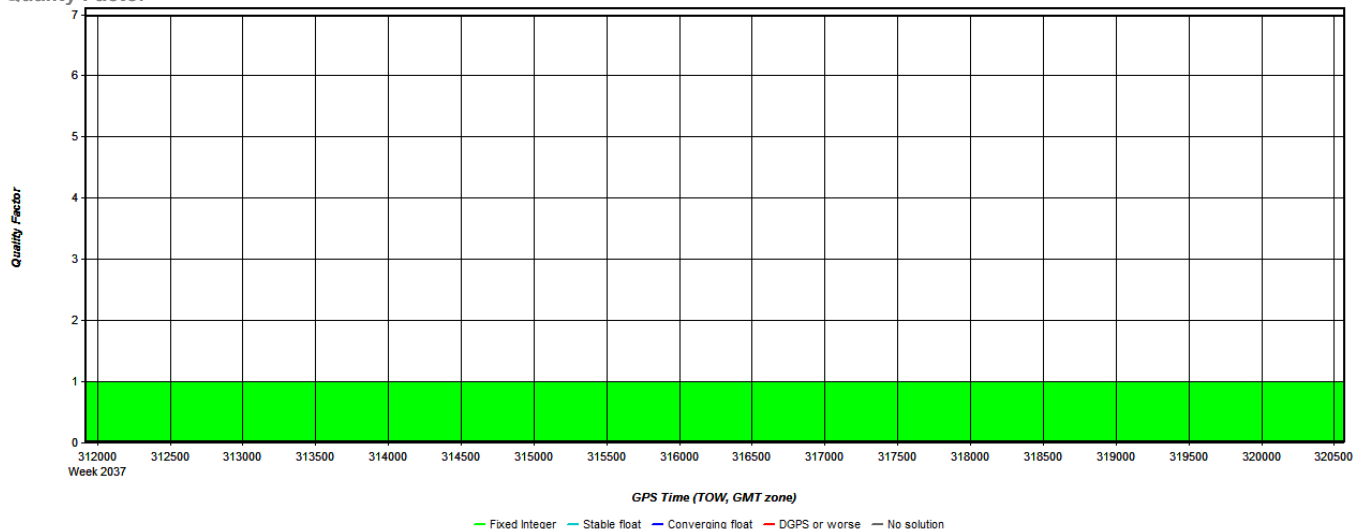
Trajectory and GPS Plots:



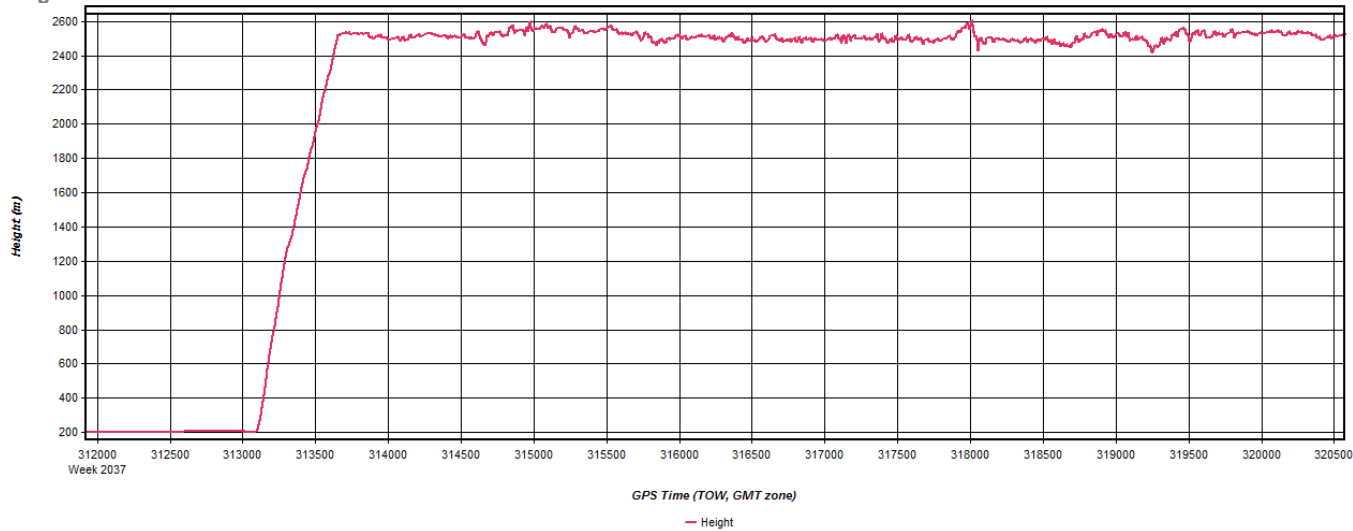
Estimated Accuracy



Quality Factor

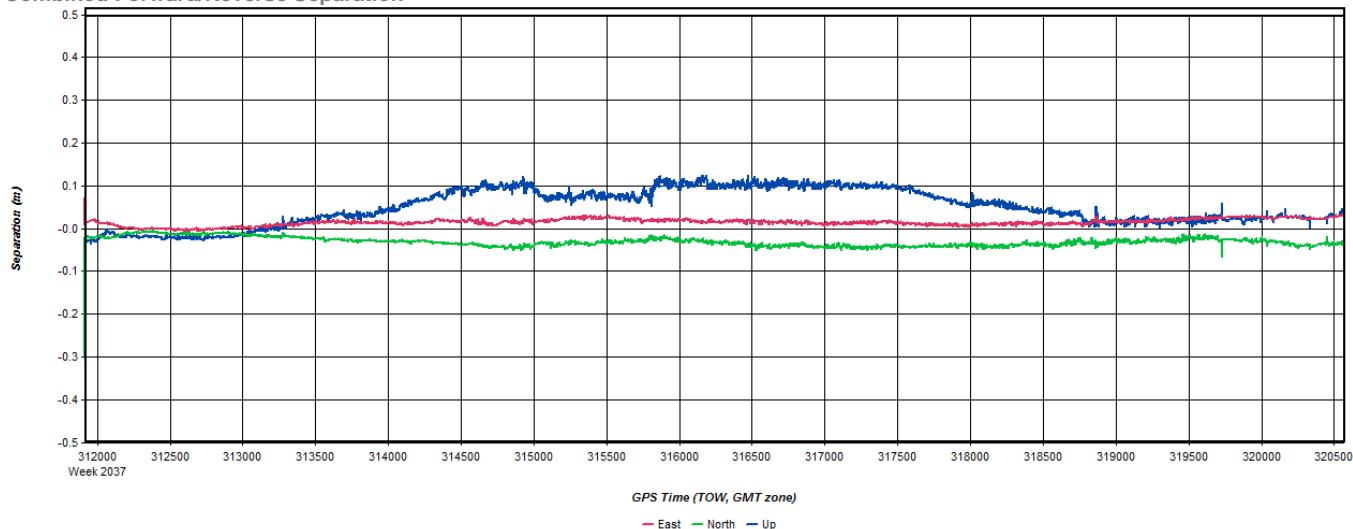


Height

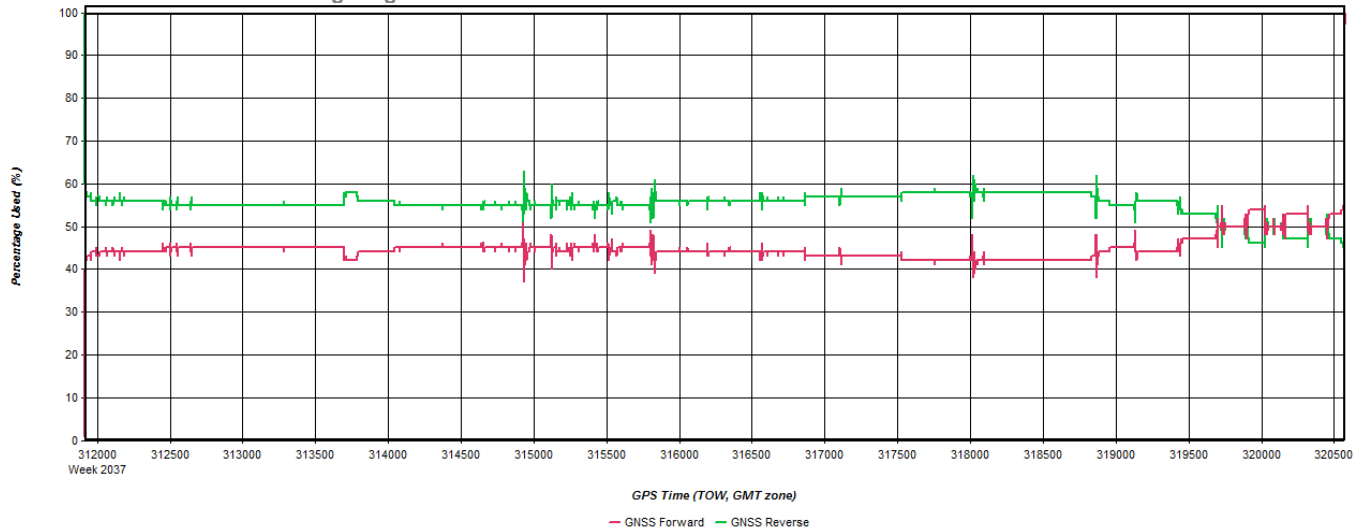




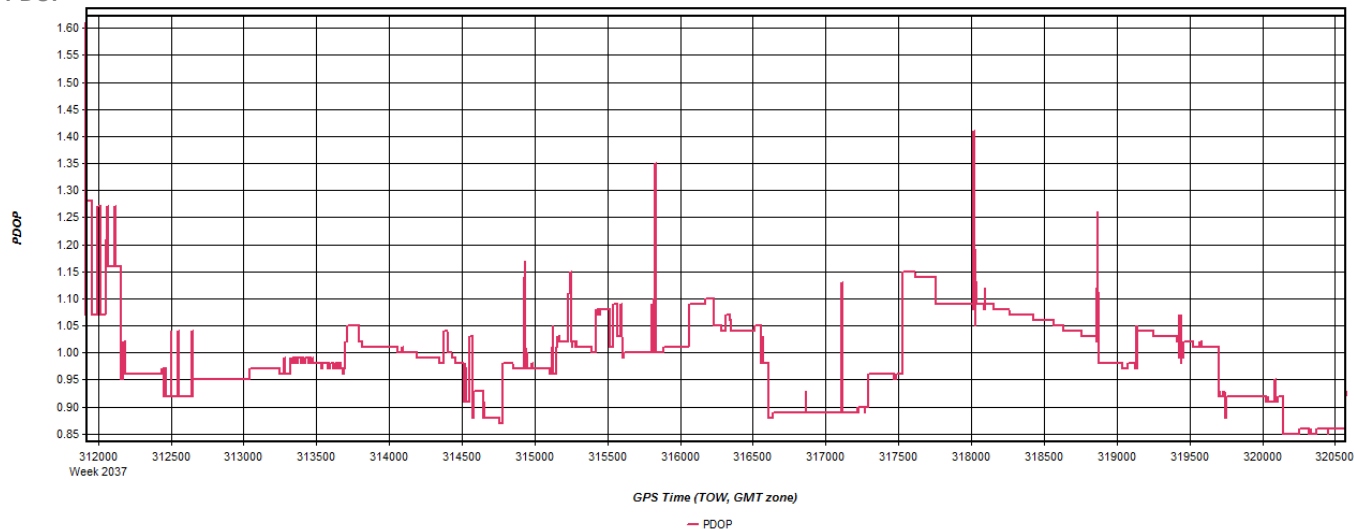
Combined Forward/Reverse Separation



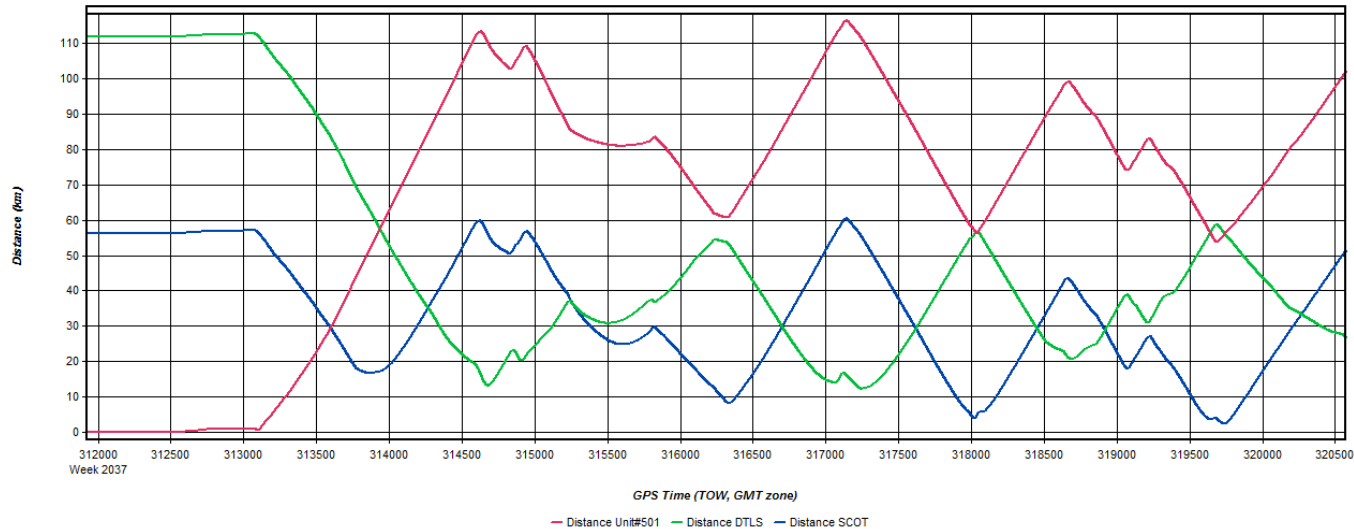
Combined Forward/Reverse Weighting



PDOP

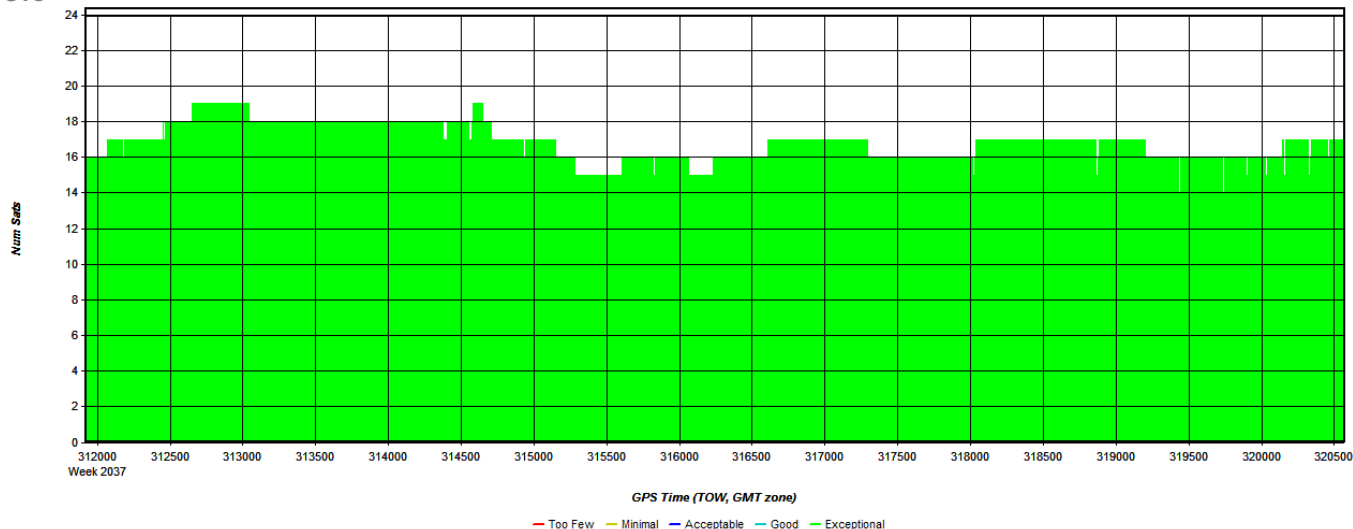


Distance from Base





SVs



USGS  
COLLECTION REPORT



Acquisition and Processing details ----- (January 23, 2019)

Log: 190123\_118\_33780084\_13b

 <b>Fugro USA Land, Inc.</b>	Menu										 <b>ALS</b> Flight Log AC80-44-00-02	
	Lift Begin		Lift End		Fit	Fit	Hobbs	Activity				
	Port	Chocks	Hobbs	Airport	Chocks	Hobbs	Duration	Hrs	Hrs			
	1	KGTU	14:33	2969.2	KACT	19:15	2973.4	4:42	4.75	4.2		0900-Production

FGI Job # <b>33780084</b>	Project Name <b>Hurricane Harvey ALS80</b>		System <b>ALS80</b>	Unit <b>118</b>	IMU <b>uIRS</b>	PIA <b>4</b>	SW1 <b>-</b>	SW2-Gain <b>-</b>	Aper <b>60°</b>	AutoScan <b>Yes</b>	Ground Temp °C <b>1.0 4.0</b>		Min Range Gate <b>2232m</b>	Data Logger Drive <b>MM70-06</b>	
Flight Date <b>23-Jan-19</b>	GPS Day <b>19-023</b>	Lift <b>13</b>	Sun°		Solar Times (UTC)		Laser Power <b>96%</b>	Pattern <b>Triangle</b>	Flying Temp °C <b>-4.0 -4.0</b>		Max Range Gate <b>2691m</b>	Download Drive <b>NS1TB-53</b>			
Mission ID (yyymmdd_Sen_Job_Lift) <b>190123_118_33780084_13b</b>		Aircraft <b>N8131</b>	Airport ID <b>KGTU</b>	FMS <b>CCNS 4</b>	UTC <b>-6</b>	AMT (ft) <b>7,900</b>	Speed <b>150</b>	Scan Hz <b>34.0</b>	Pulse Rate <b>442,600</b>	FOV <b>46</b>	km/WPT <b>1.448</b>	AltM Setting <b>30.22 30.19</b>	Shipping Track <b>7851 0792 3663</b>		
Pilot #1 <b>Wayne Manning</b>		Pilot #2		Operator #1 <b>Chris Acuña</b>		Operator #2									

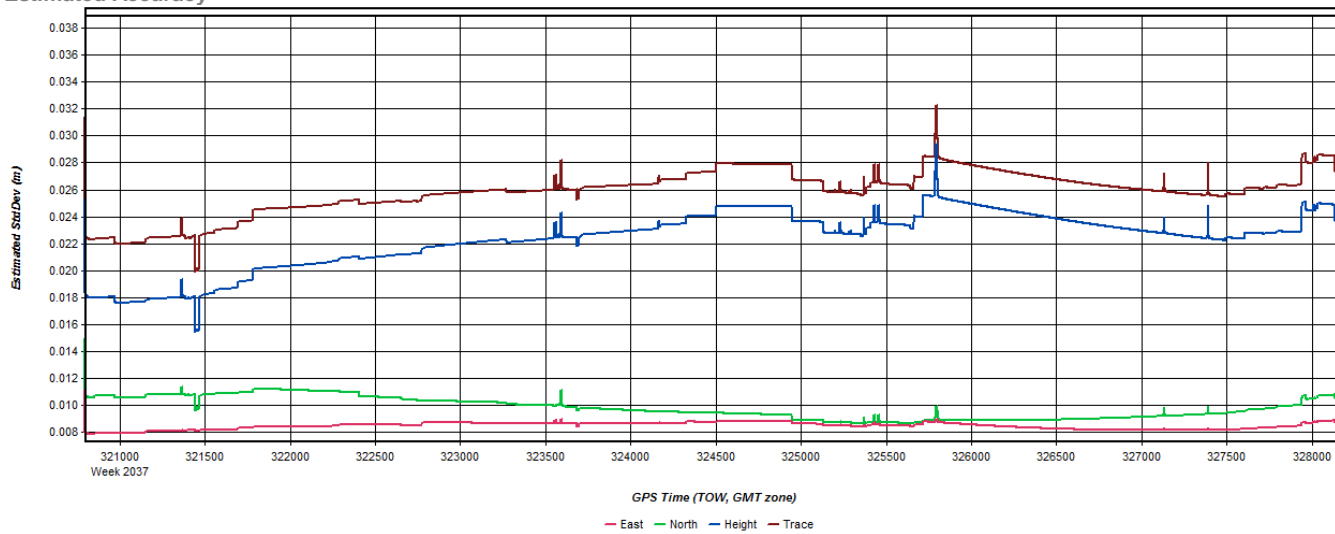
Base 1 ID <b>FEDI 1115</b>	Location <b>KFTU</b>	Rec ID <b>GR3#5</b>	Ant ID <b>GR3#5</b>	ARP (m) <b>1.8</b>	Start Time (UTC) <b>23-Jan-19 13:39</b>	Stop Time (UTC) <b>23-Jan-19 21:57</b>	GPS Filename <b>Unit#50123n</b>	Operator <b>Chris Acuña</b>	Data <b>With AB</b>
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Area	Flight #		Wpt		Distance		UTC		Fit	Altitude (GPS)	Speed (knots)	Scan Rate	Comments and Conditions	SVs	PDOP
	FGI	Client's	From	To	Begin	End	Start	End							
							17:08:58	17:13:58					5 Min acquisition of CORS TXMR	21	1.0
							17:14:23	17:16:23					S-Turn in flight alignment	20	1.1
	17		1	12	0	15.9	17:27:14	17:30:32	120	8360	149	-	Partial Crossing line	20	1.1
	1		1	9	0	11.6	17:43:40	17:46:42	30	8630	129	-		19	1.4
	2		15	1	20.3	0	17:54:29	17:59:31	210	8280	142	-		18	1.4
	2		1	13	0	17.4	18:05:04	18:09:05	27	8600	133	-	Calibration line	18	1.4
	3		1	16	0	21.7	18:21:37	18:27:05	29	8510	137	-		17	1.2
	4		16	1	21.7	0	18:32:03	18:36:58	208	8460	149	-		17	1.2
							18:37:18	18:39:09					S-Turn in flight alignment	15	1.6
							18:42:04	18:47:04					5 Min acquisition of CORS TXMR	15	1.5
													Non static shut down at KACT		

Trajectory and GPS Plots:

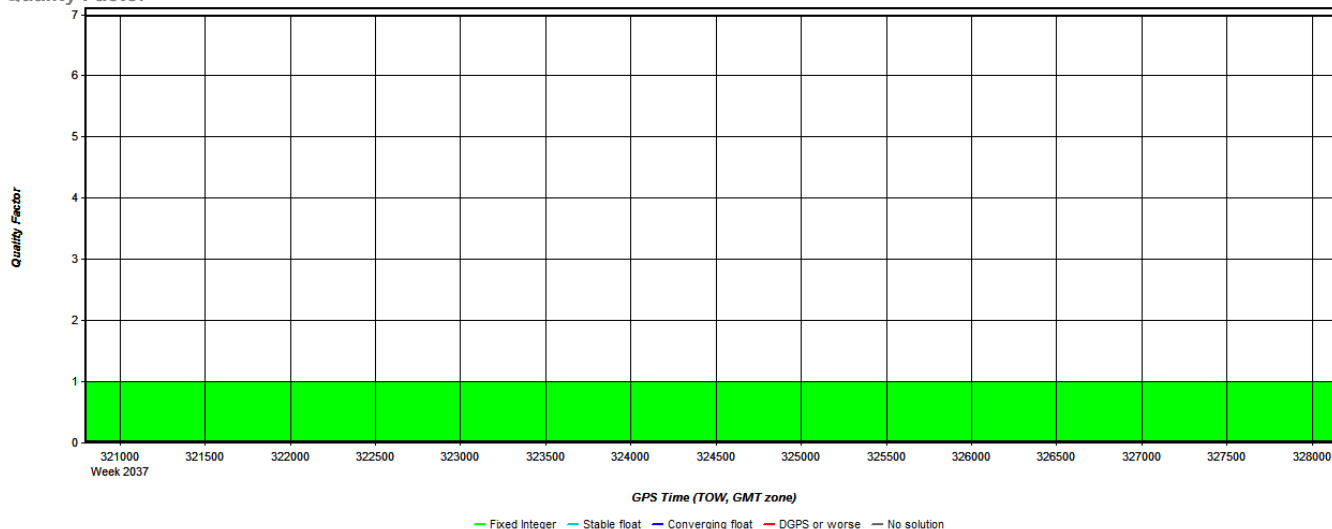


Estimated Accuracy

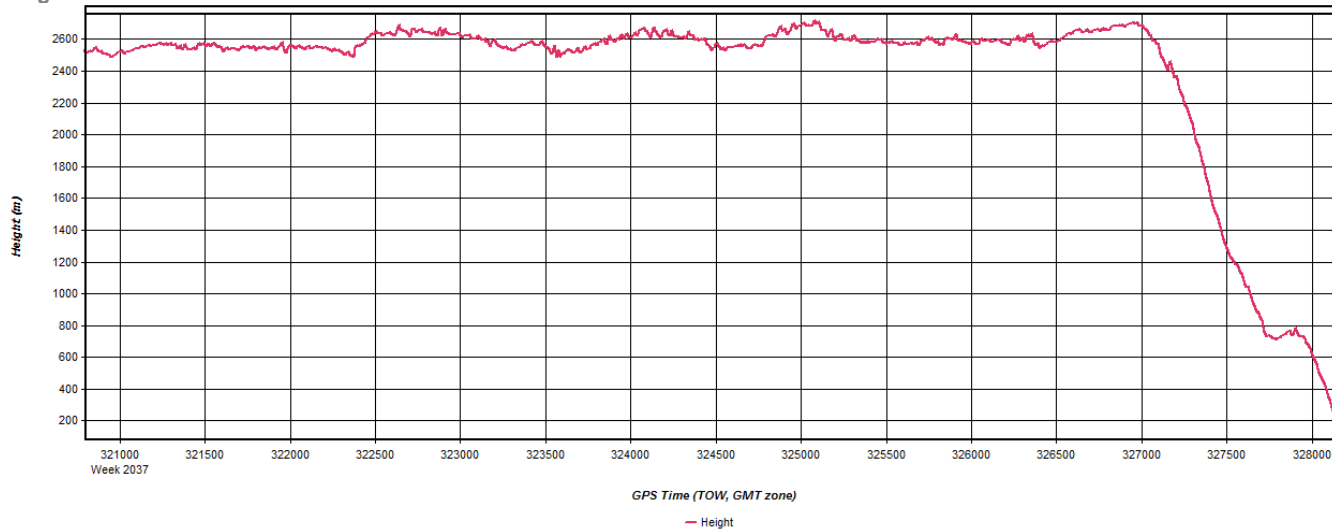




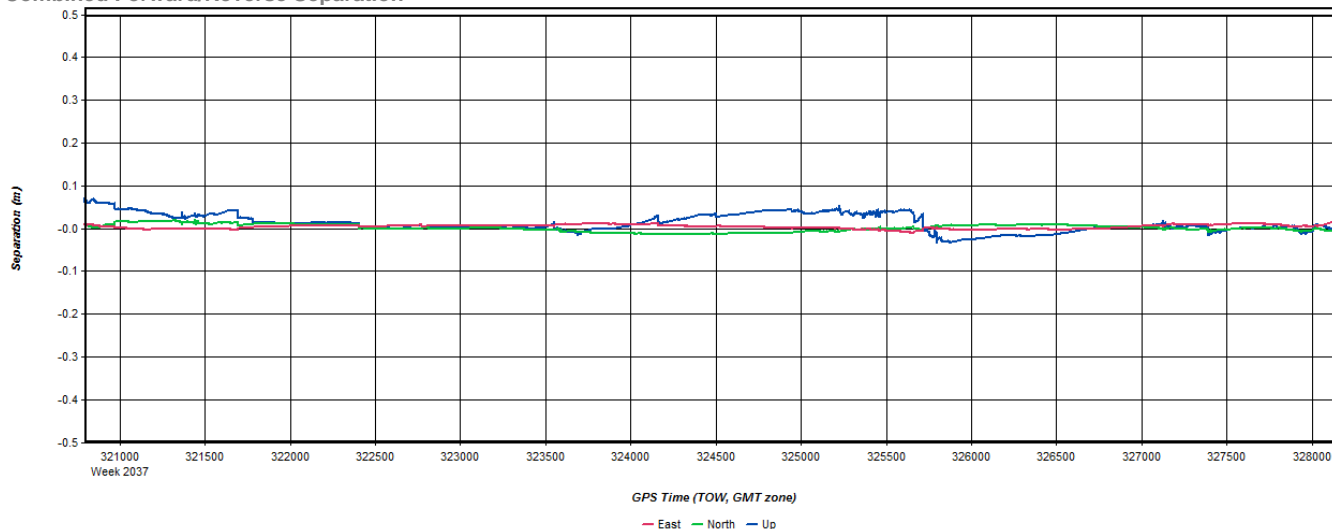
Quality Factor



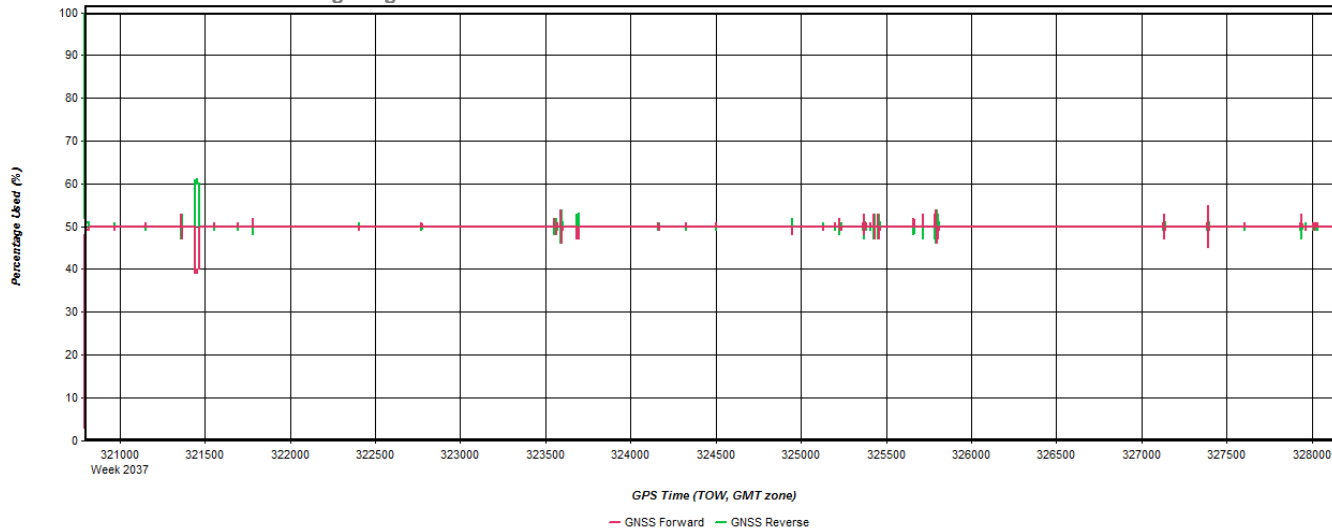
Height



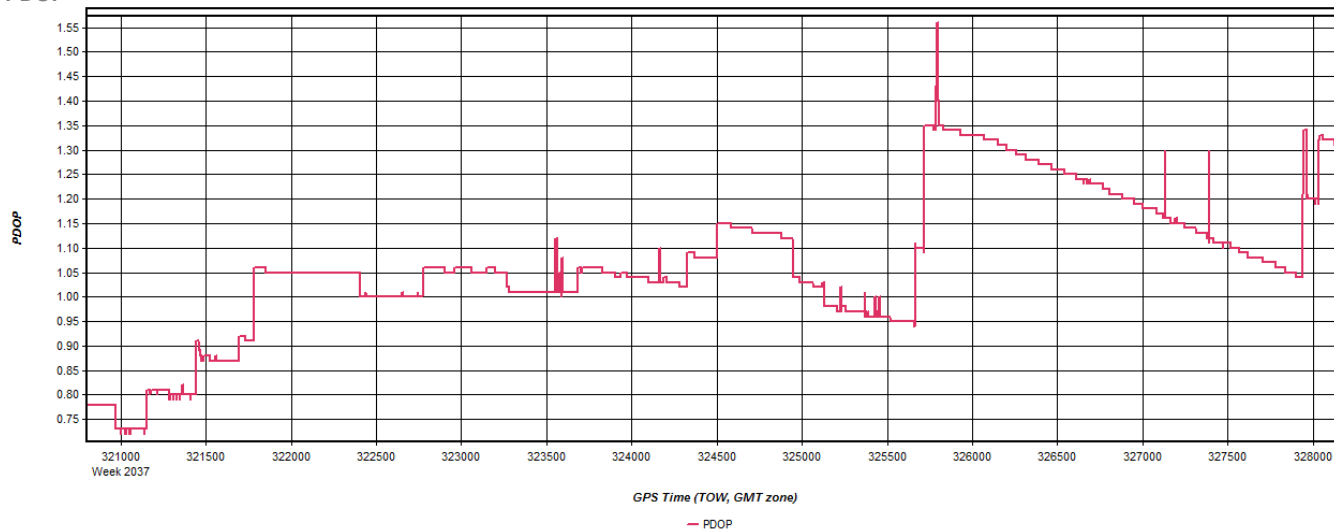
Combined Forward/Reverse Separation



Combined Forward/Reverse Weighting

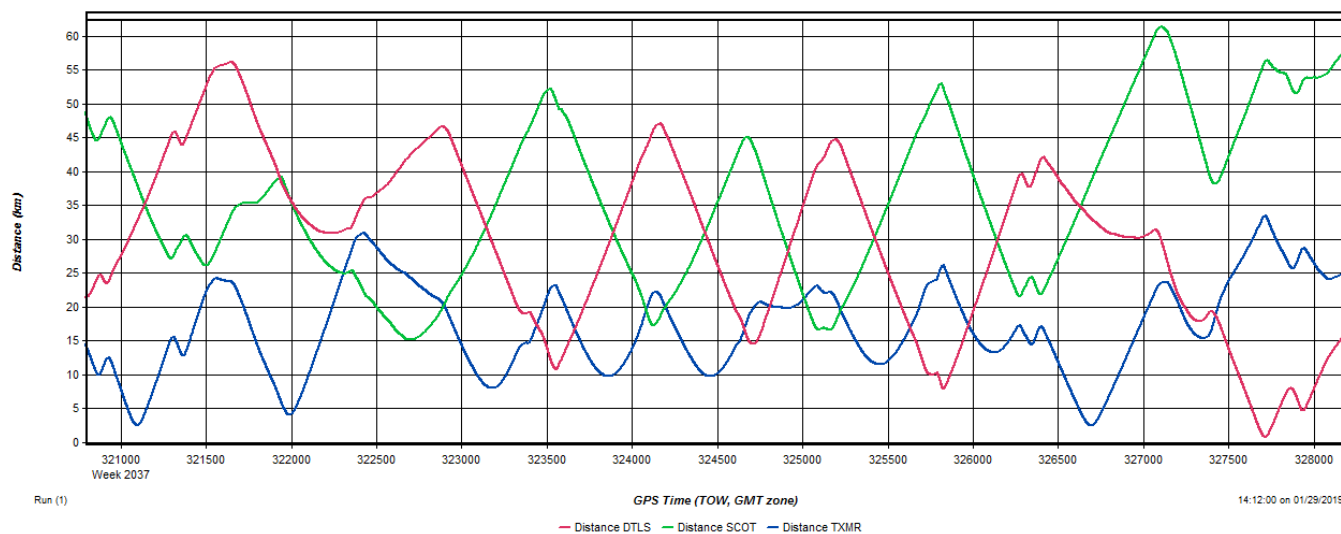


PDOP



Distance from Base

190123\_118\_33780084\_13b [Forward] - MB Distance to Base

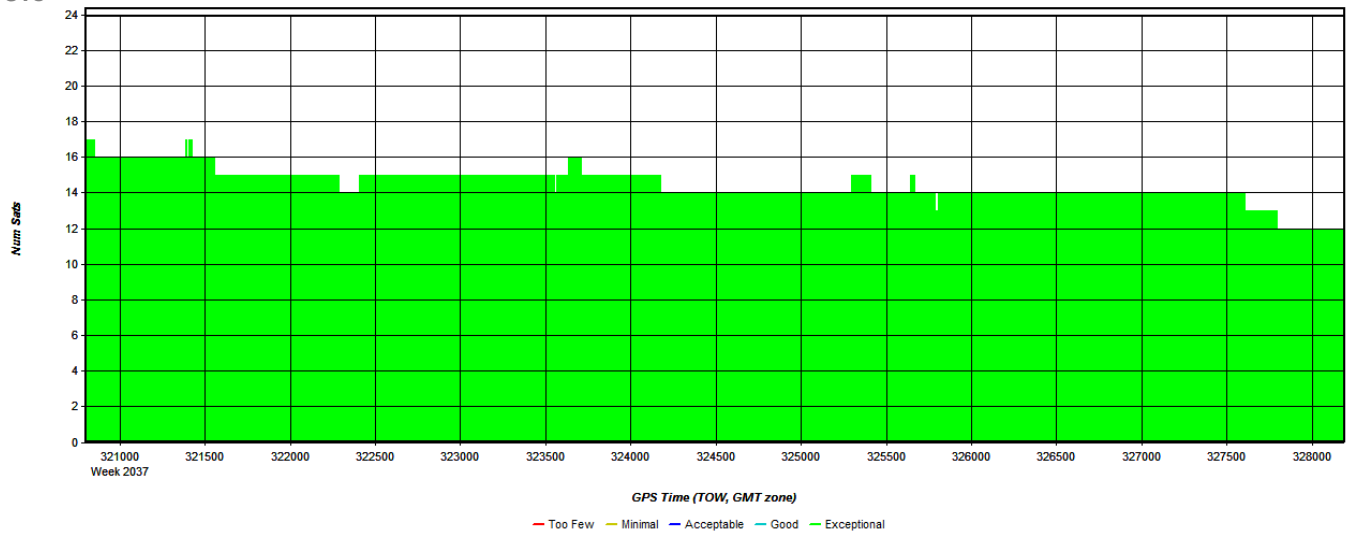


Run (1)

14:12:00 on 01/29/2019



SVs



USGS  
COLLECTION REPORT



Acquisition and Processing details ----- (January 23, 2019)

Log: 190123\_118\_33780084\_14

 <b>Fugro USA Land, Inc.</b>	Menu	18.165	Lift Begin			Lift End			Fit	Fit	Hobbs	 <b>ALS</b> Flight Log AC80-44-00-02	
			Airport	Chocks	Hobbs	Airport	Chocks	Hobbs	Duration	Hrs	Hrs		Activity
	1		KACT	19:55	2973.4	KG TU	21:53	2975.0	1:58	2.00	1.6		0900-Production
	2												

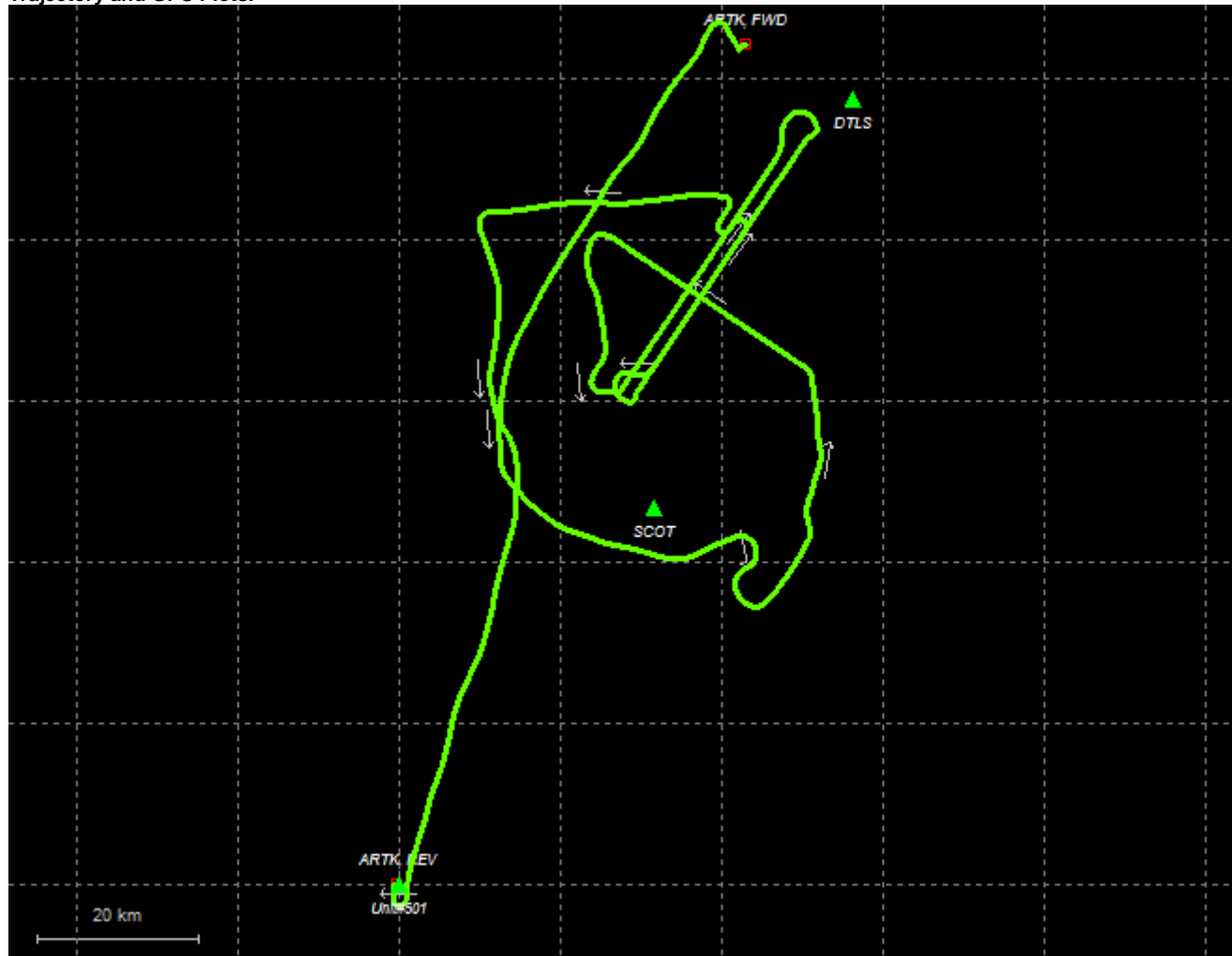
FGI Job # <b>33780084</b>	Project Name <b>Hurricane Harvey ALS80</b>		System <b>ALS80</b>	Unit <b>118</b>	IMU <b>uRS</b>	PIA <b>4</b>	SW1 <b>-</b>	SW2-Gain <b>-</b>	Aper <b>60°</b>	AutoScan <b>Yes</b>	Ground Temp °C <b>9.0 12.0</b>	Min Range Gate <b>2232m</b>	Data Logger Drive <b>MM70-06</b>
Flight Date <b>23-Jan-19</b>	GPS Day <b>19-023</b>	Lift <b>14</b>		Sun° <b>-</b>	Solar Times (UTC) <b>-</b>	Laser Power <b>96%</b>	Pattern <b>Triangle</b>	Flying Temp °C <b>-2.0 -3.0</b>	Max Range Gate <b>2691m</b>	Download Drive <b>NS1TB-53</b>			
Mission ID (yyymmdd_Sen_Job_Lift) <b>190123_118_33780084_14</b>	Aircraft <b>N8131</b>	Airport ID <b>KG TU</b>	FMS <b>CCNS 4</b>	UTC <b>-6</b>	AMT (ft) <b>7,900</b>	Speed <b>150</b>	Scan Hz <b>34.0</b>	Pulse Rate <b>442,600</b>	FOV <b>46</b>	km/WPT <b>1.448</b>	Altm Setting <b>30.13 30.13</b>		Shipping Track <b>7851 0792 3663</b>

Pilot #1 <b>Wayne Manning</b>	Pilot #2	Operator #1 <b>Chris Acufia</b>	Operator #2
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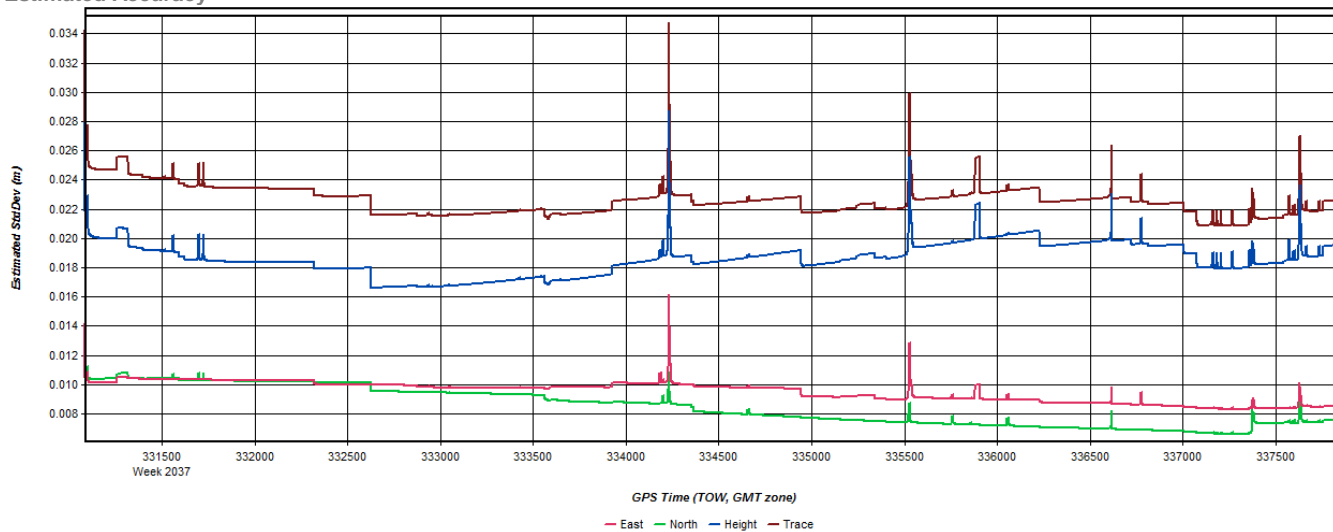
Base 1 ID <b>FEDI 1115</b>	Location <b>KFTU</b>	Rec ID <b>GR3#5</b>	Ant ID <b>GR3#5</b>	ARP (m) <b>1.8</b>	Start Time (UTC) <b>23-Jan-19 13:39</b>	Stop Time (UTC) <b>23-Jan-19 21:57</b>	GPS Filename <b>Unit#50123n</b>	Operator <b>Chris Acufia</b>	Data <b>With AB</b>
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Area	Flight #		Wpt		Distance		UTC		Fit	Altitude (GPS)	Speed (knots)	Scan Rate	Comments and Conditions	SVs	PDOP
	FGI	Client's	From	To	Begin	End	Start	End							
													Aspen GPS Tracker is "off"		
							20:14:24	20:19:24					5 Min acquisition of CORS TXMR	17	1.2
							20:26:41	20:29:31					S-Turn in flight alignment	18	1.2
BLOCK_J	17		13	1	17.4	0	20:39:59	20:44:40	301	8320	129	-	Partial Crossing Line	19	1.3
	5		1	17	0	23.2	20:52:28	20:58:00	30	8415	143	-		21	1.2
	6		16	1	21.7	0	21:03:19	21:08:40	209	8330	144	-		20	1.3
	6		1	12	0	15.9	21:13:37	21:17:29	31	8325	139	-	Calibration Line	21	1.1
							21:17:41	21:19:32					S-Turn in flight alignment	20	1.1
							21:21:37	21:26:37					5 Min acquisition of CORS TXMR	20	1.1
							21:47:54	21:50:54					3 Min GND static alignment at KG TU	20	1.2

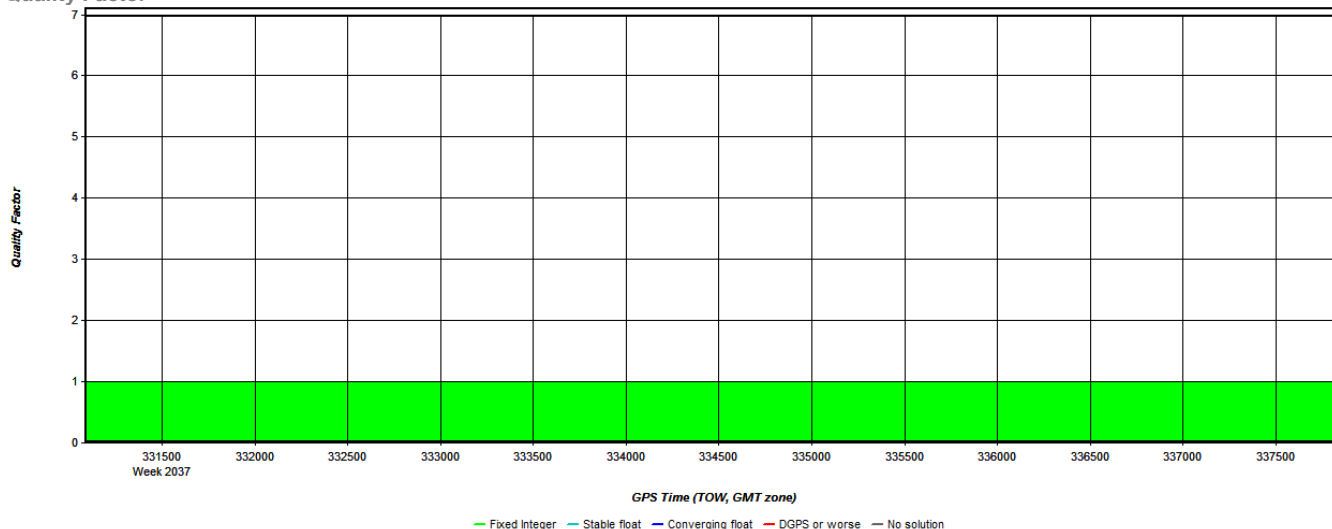
Trajectory and GPS Plots:



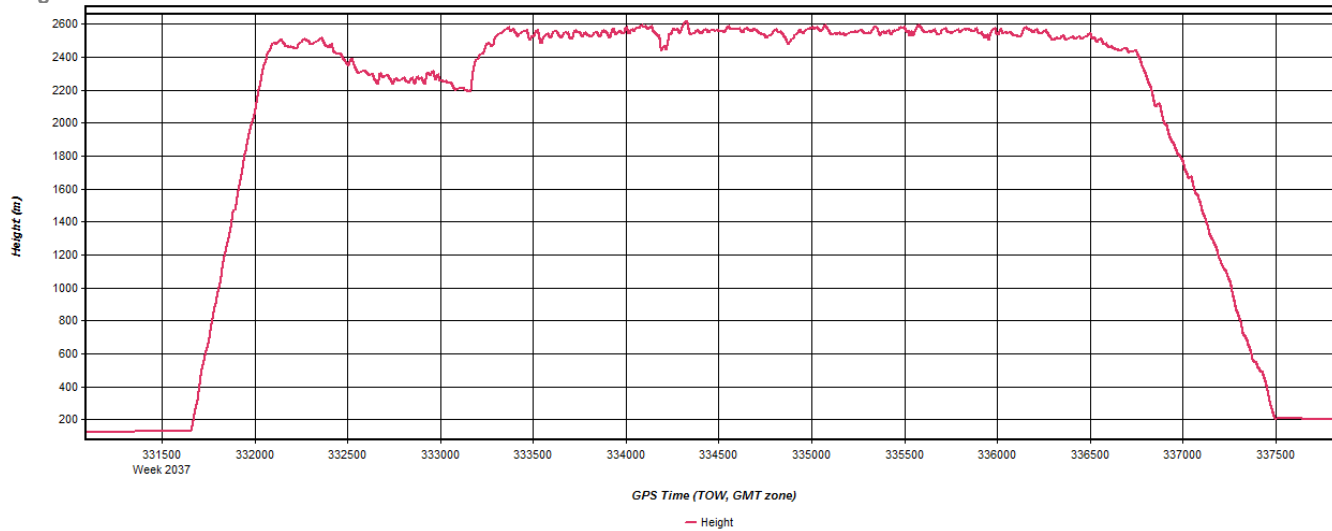
Estimated Accuracy



Quality Factor

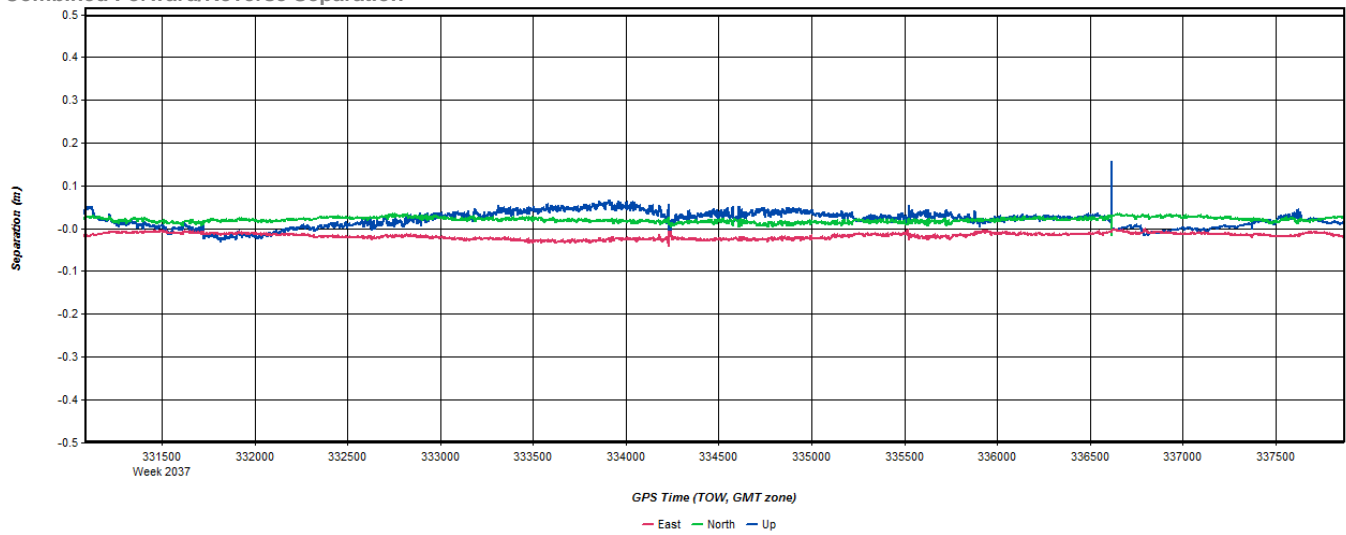


Height

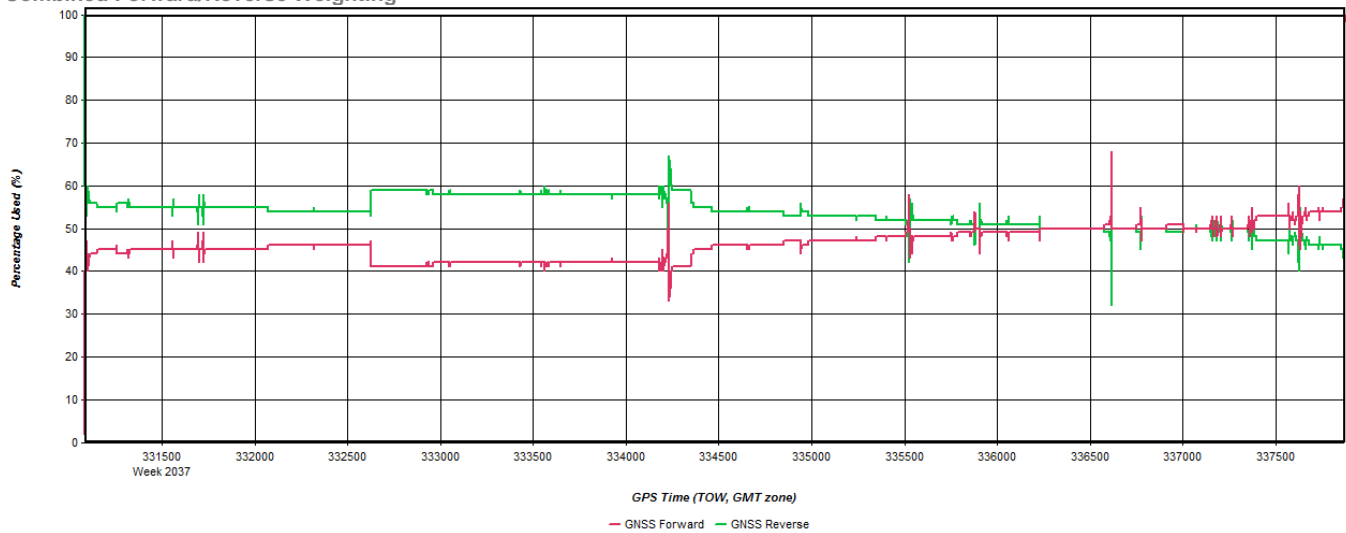


# USGS COLLECTION REPORT

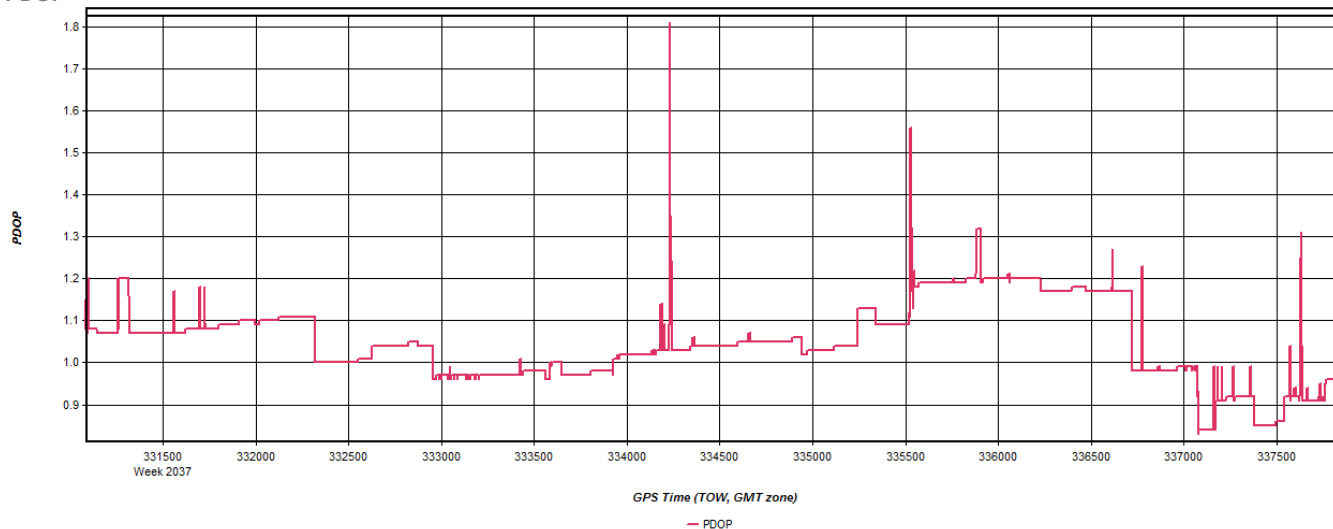
## Combined Forward/Reverse Separation



## Combined Forward/Reverse Weighting

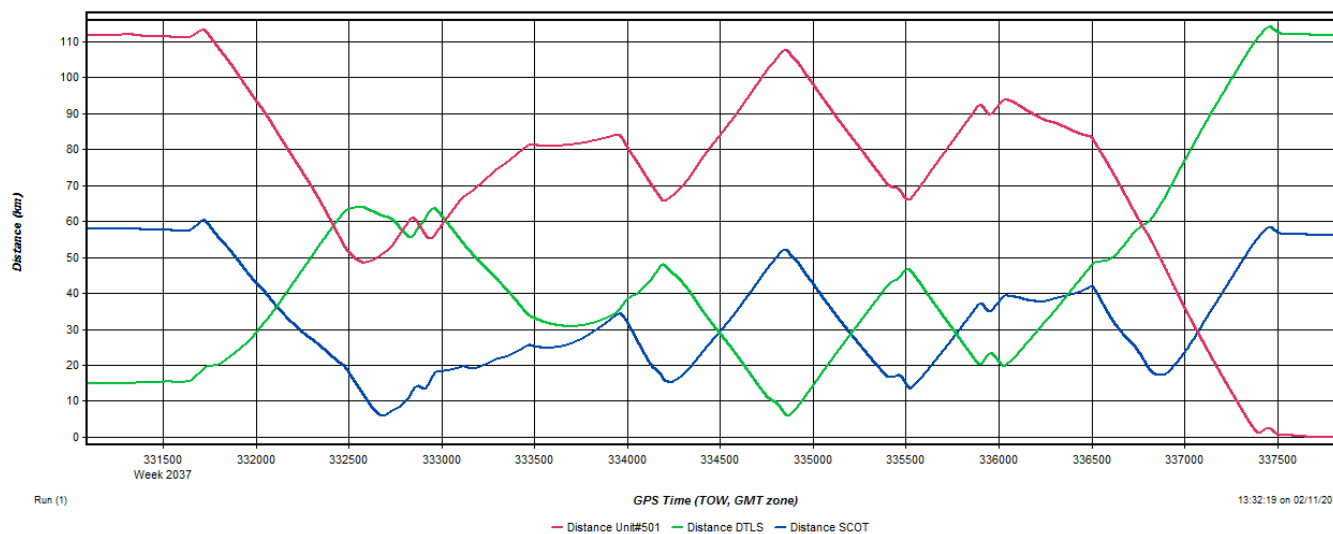


PDOP



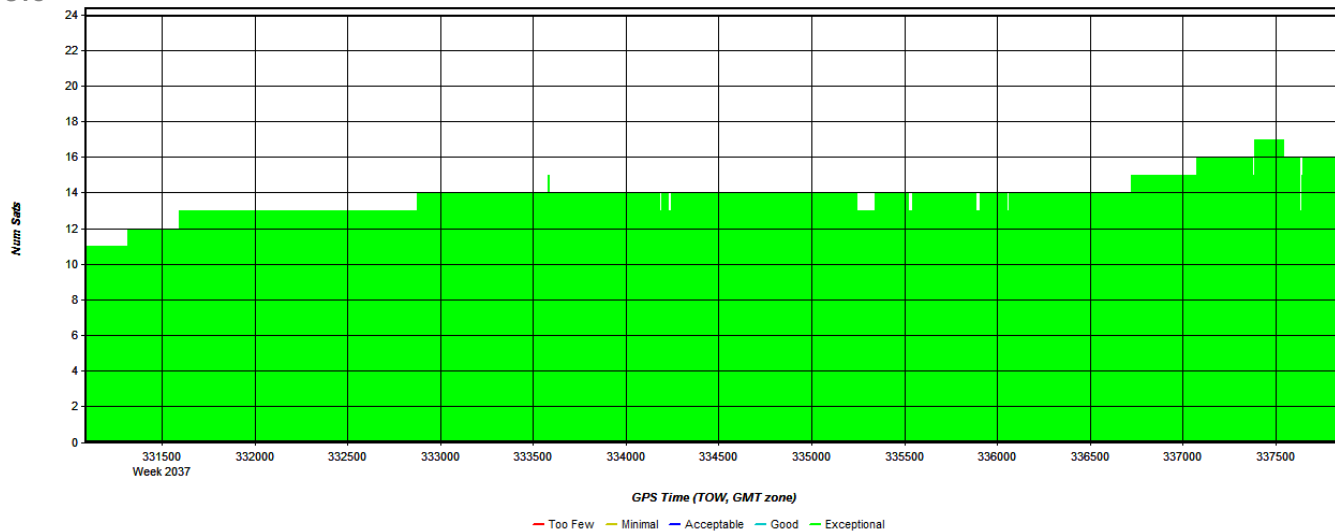
Distance from Base

190123\_118\_33780084\_14 [Forward] - MB Distance to Base





SVs



USGS  
COLLECTION REPORT



Acquisition and Processing details ----- (January 23, 2019)

Log: 190123\_130\_33780084\_10

Menu
18.165

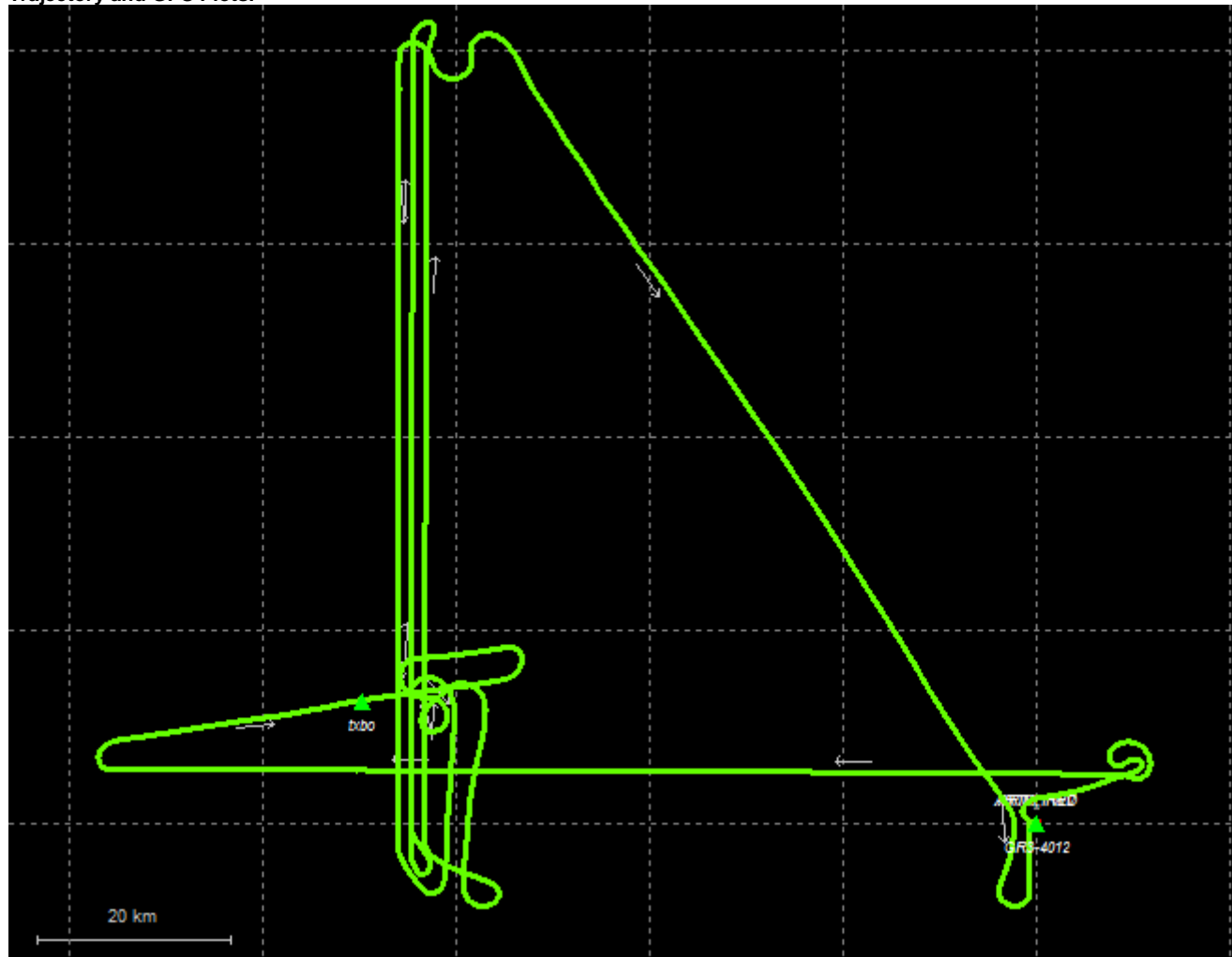
**ALS**  
Flight Log  
AC80-44-00-02

	Lift Begin			Lift End			Fit Duration	Fit Hrs	Hobbs Hrs	Activity
	Airport	Chocks	Hobbs	Airport	Chocks	Hobbs				
1	KBAZ	15:52	1353.5	KBAZ	18:48	1356.0	2:55	3.00	2.5	0900-Production
2										
3										

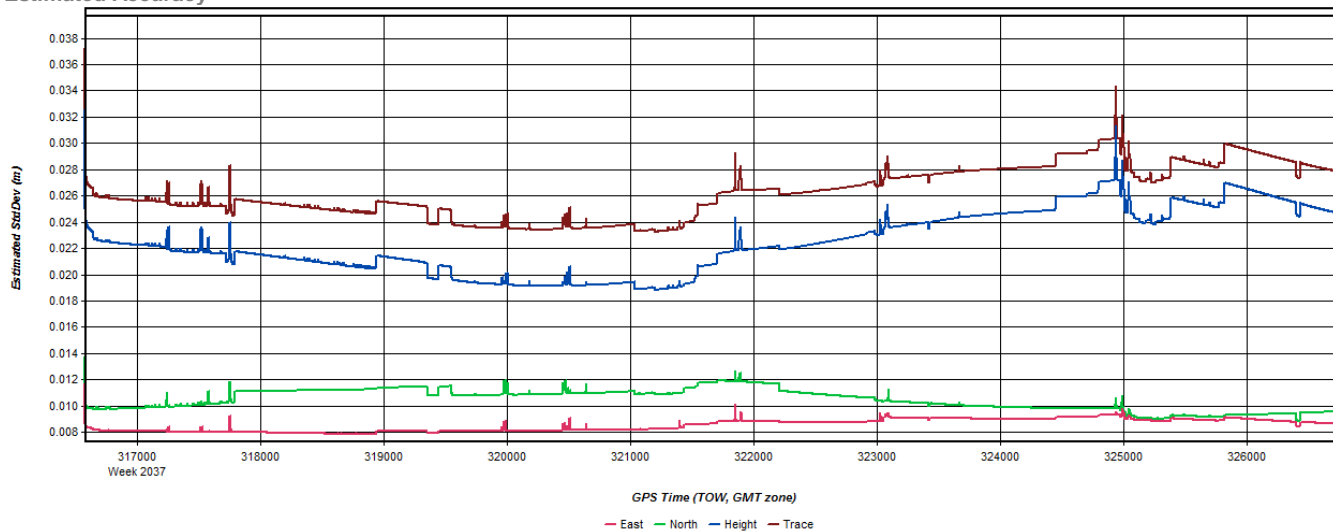
FGI Job # <b>33780084</b>		Project Name <b>Hurricane Harvey</b>				System <b>ALS80</b>		Unit <b>130</b>		IMU <b>uRS</b>		PIA <b>3</b>		SW1 <b>SW2-Gain</b>		Aper <b>AutoScan</b>		Ground Temp °C <b>4.0 10.0</b>		Min Range Gate <b>1903</b>		Data Logger Drive <b>LG101</b>					
Flight Date <b>23-Jan-19</b>		GPS Day <b>19-023</b>		Lift <b>10</b>		Sun°		Solar Times (UTC)		Laser Power <b>100%</b>		Pattern <b>Triangle</b>		Flying Temp °C <b>-4.0 -4.0</b>		Max Range Gate <b>2537</b>		Download Drive <b>NS1TB-59</b>									
Mission ID (ymmdd_Sen_Job_Lift) <b>190123_130_33780084_10</b>				Aircraft <b>N97HC</b>		Airport ID <b>KBAZ</b>		FMS <b>CCNS 8</b>		UTC <b>-6</b>		AMT (ft) <b>7,550</b>		Speed <b>150</b>		Scan Hz <b>35.0</b>		Pulse Rate <b>352,000</b>		FOV <b>42</b>		km/WPT <b>1.384</b>		Altm Setting <b>30.23 30.22</b>		Shipping Track <b>7742 9314 6693</b>	
Pilot #1 <b>Grant Cassell</b>			Pilot #2			Operator #1 <b>David Verhey</b>			Operator #2																		
Base 1 ID <b>FGI 8003</b>		Location <b>KBAZ</b>		Rec ID <b>Unit 4</b>		Ant ID <b>U4</b>		ARP (m) <b>1.8</b>		Start Time (UTC) <b>23-Jan-19 14:36</b>		Stop Time (UTC) <b>24-Jan-19 00:42</b>		GPS Filename <b>GR3_40123o</b>			Operator <b>Adam Mueller</b>		Data <b>FTP</b>								
Base 2 ID <b>TXBO</b>		Location <b>Boerne, TX</b>		Rec ID		Ant ID		ARP (m)		Start Time (UTC)		Stop Time (UTC)		GPS Filename			Operator <b>CORS</b>		Data								
Area	Flight #		Wpt		Distance		UTC		Fit Dir	Altitude (GPS)	Speed (knots)	Scan Rate	Comments and Conditions				SVs	PDOP									
	FGI	Client's	From	To	Begin	End	Start	End																			
													Ground Static at KBAZ				21	1.1									
													S-turn				20	1.2									
BLOCK_F	74		68	1	92.7	0	16:17:58	16:39:44	266.6	8125	138		Tie line in entirety				20	1.1									
							16:42:37	16:47:37					Overflight of CORS at TXBO				20	1.1									
	23		1	57	0	77.5	17:04:41	17:23:00	355.9	8702	138						21	1.1									
	22		57	1	77.5	0	17:25:09	17:43:15	175.9	8730	142						22	1.1									
	22		1	10	0	12.5	17:45:59	17:49:03	355.9	8727	135		Calibration Line				20	1.4									
	21		1	57	0	77.5	17:56:17	18:14:37	355.9	8725	137						19	1.4									
							18:14:43	18:16:48					S-Turn				20	1.1									
							18:41:12	18:46:12					Ground Static at KBAZ				16	1.5									



Trajectory and GPS Plots:

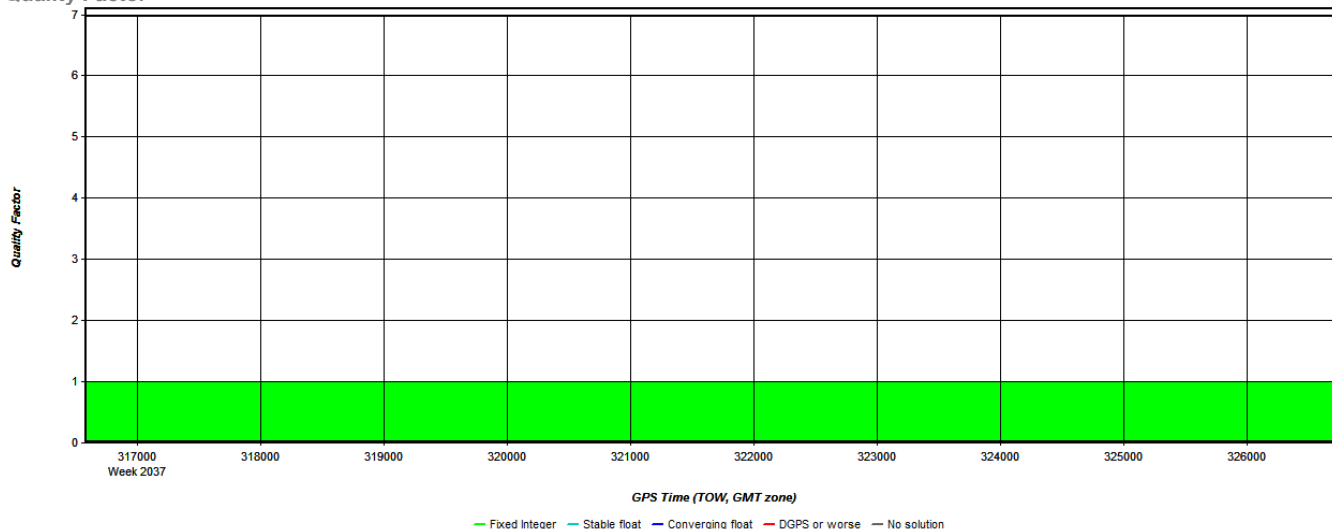


Estimated Accuracy

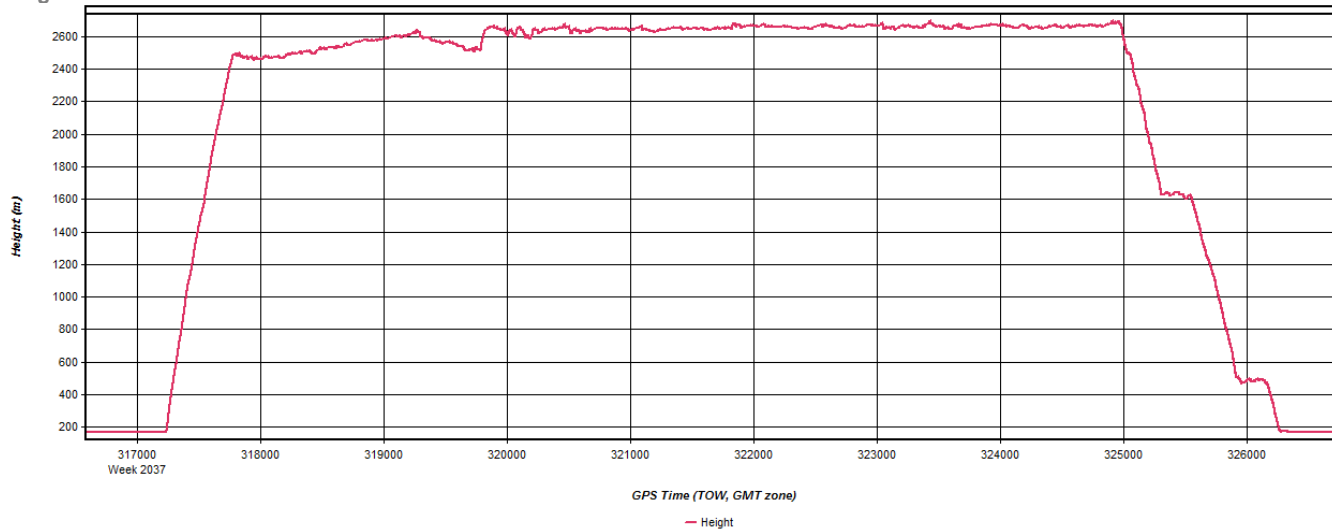




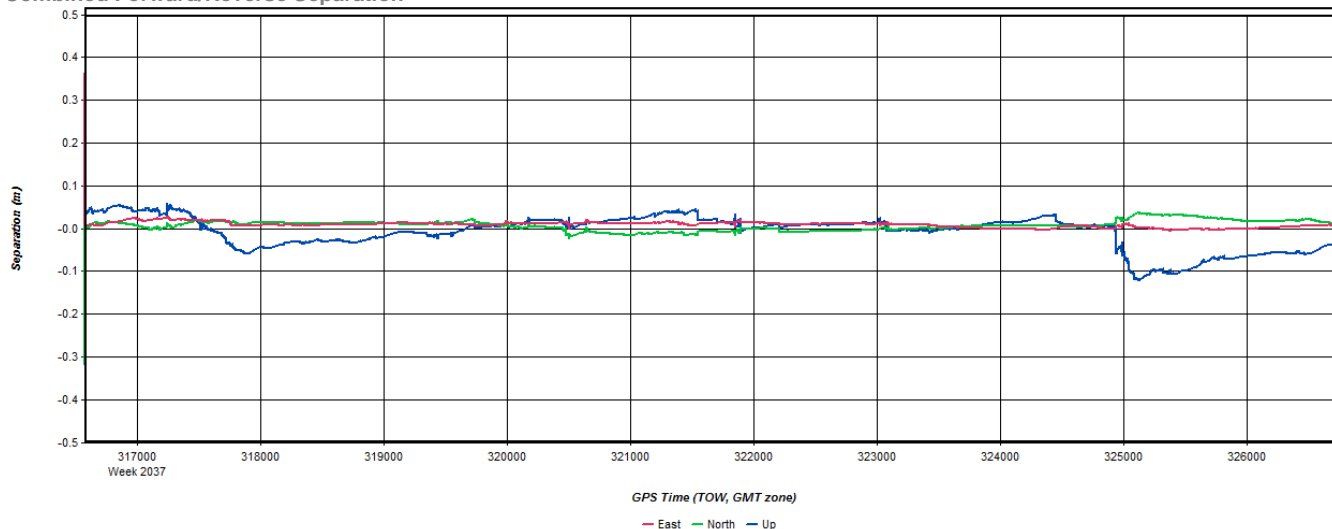
Quality Factor



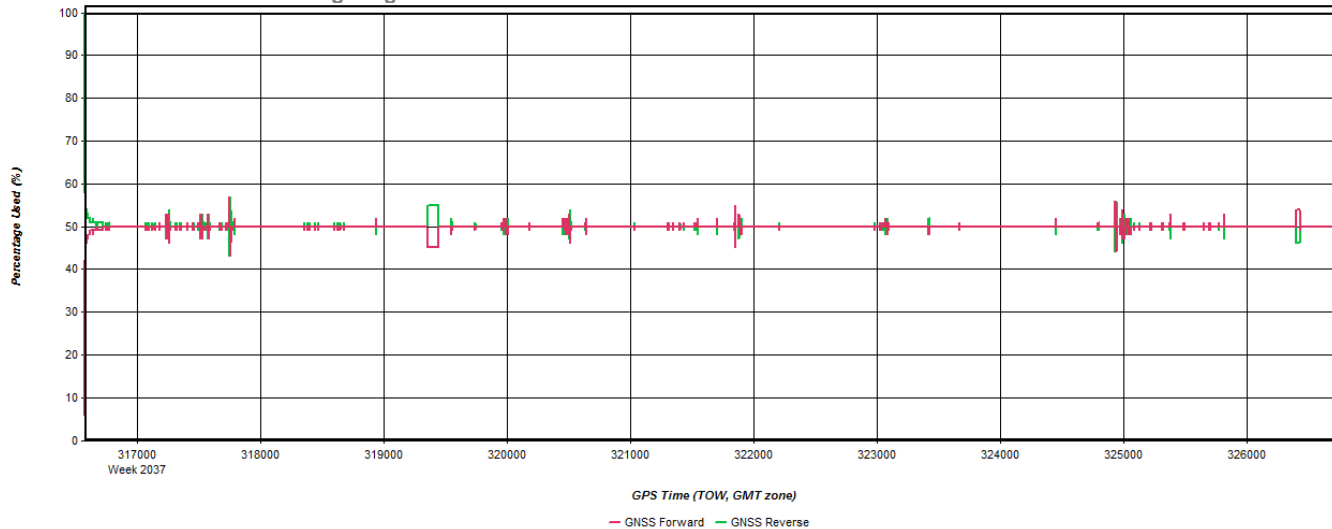
Height



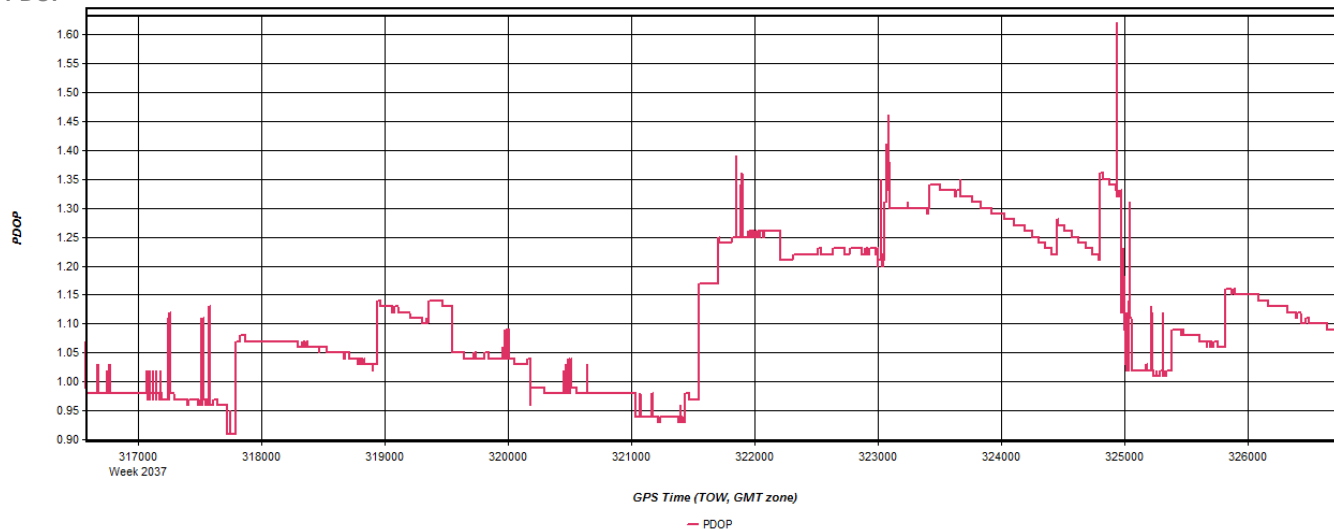
Combined Forward/Reverse Separation



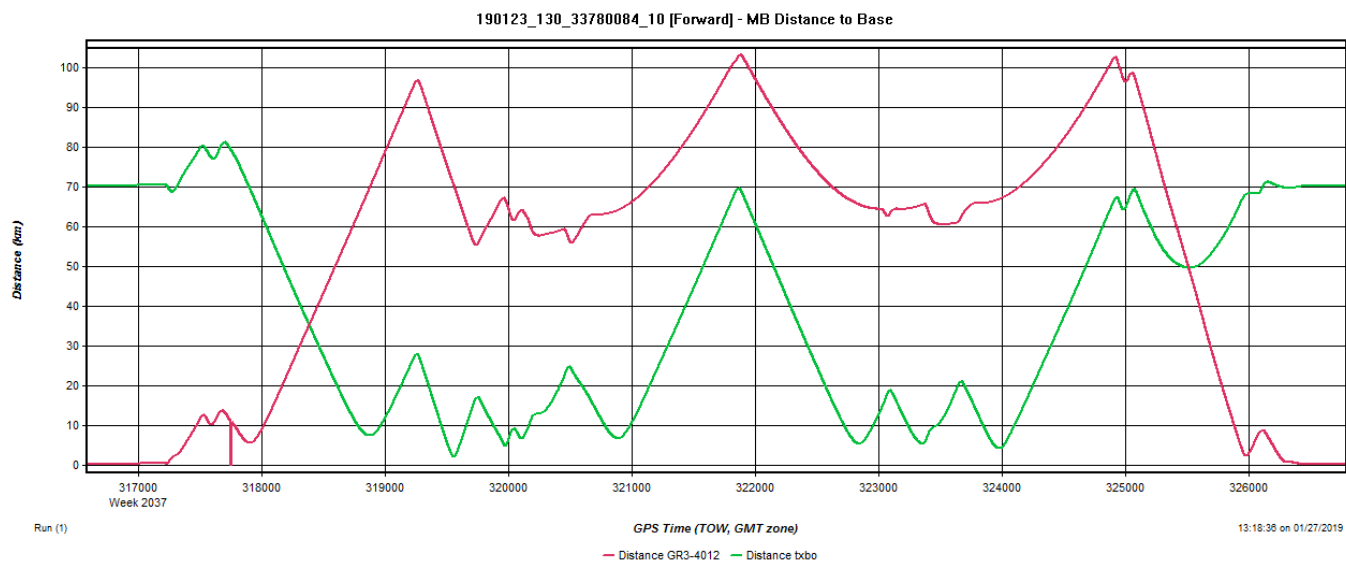
Combined Forward/Reverse Weighting



PDOP



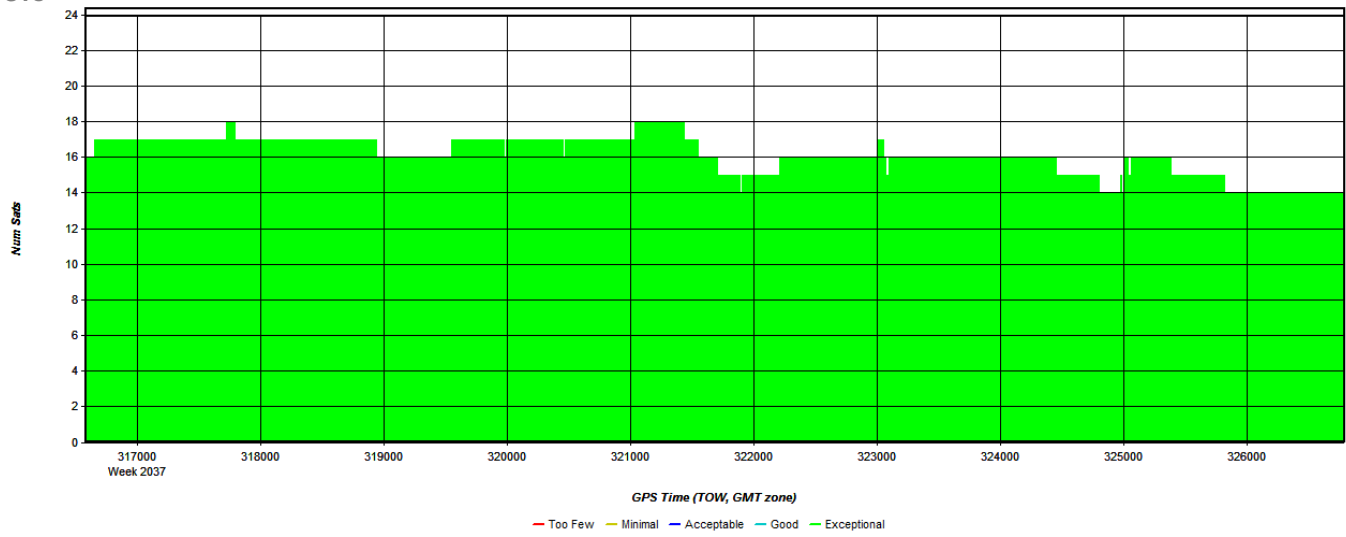
Distance from Base



USGS  
COLLECTION REPORT



SVs



USGS  
COLLECTION REPORT



Acquisition and Processing details ----- (January 23, 2019)

Log: 190123\_133\_33780084\_08

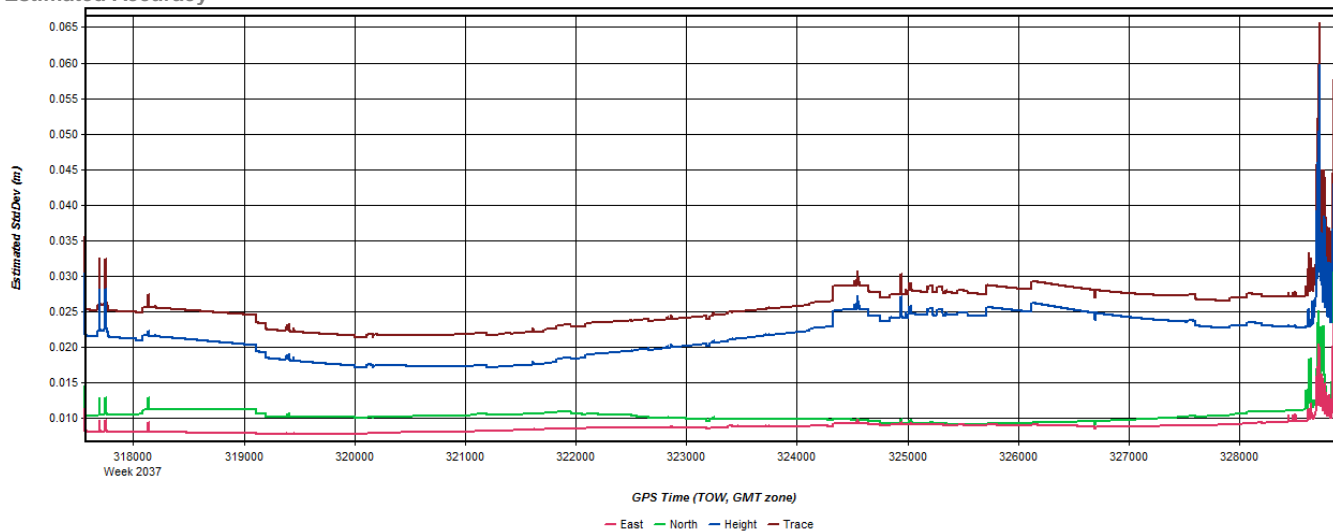
	Menu	18.165	Lift Begin			Lift End			Flt	Flt	Hobbs		
			Airport	Chocks	Hobbs	Airport	Chocks	Hobbs	Duration	Hrs	Hrs		Activity
	1		KBAZ	16:09	8145.8	KBAZ	19:55	8149.5	3:46	3.75	3.7		0900-Production
	2												
3													

<b>FGI Job #</b> 33780084		<b>Project Name</b> Hurricane Harvey ALS80				<b>System</b> ALS80	<b>Unit</b> 133	<b>IMU</b> uRS	<b>PIA</b> 3	<b>SW1</b> 	<b>SW2-Gain</b> 255	<b>Aper</b> 60°	<b>AutoScan</b> Yes	<b>Ground Temp °C</b> 5.0 13.9	<b>Min Range Gate</b> 7322	<b>Data Logger Drive</b> MM70-04	
<b>Flight Date</b> 23-Jan-19	<b>GPS Day</b> 19-023	<b>Lift</b> 8			<b>Sun°</b> NA	<b>Solar Times (UTC)</b> NA		<b>Laser Power</b> 100%	<b>Pattern</b> Triangle	<b>Flying Temp °C</b> -3.0 -3.0		<b>Max Range Gate</b> 8830	<b>Download Drive</b> NS1TB-46				
<b>Mission ID (ymmdd_Sen_Job_Lift)</b> 190123_133_33780084_08		<b>Aircraft</b> N76JN	<b>Airport ID</b> KBAZ	<b>FMS</b> FCMS	<b>UTC</b> 	<b>AMT (ft)</b> 7,550	<b>Speed</b> 150	<b>Scan Hz</b> 35.0	<b>Pulse Rate</b> 352,000	<b>FOV</b> 42	<b>km/WPT</b> 1.384	<b>Altm Setting</b> 30.23 30.15		<b>Shipping Track</b> 774293146693			
<b>Pilot #1</b> Randy Green		<b>Pilot #2</b> Maison Collins		<b>Operator #1</b> Adam Mueller			<b>Operator #2</b>										
<b>Base 1 ID</b> FGI 8003	<b>Location</b> KBAZ	<b>Rec ID</b> GR3-1	<b>Ant ID</b> GR3-1	<b>ARP (m)</b> 1.8	<b>Start Time (UTC)</b> 23-Jan-19 14:36		<b>Stop Time (UTC)</b> 24-Jan-19 00:42		<b>GPS Filename</b> GR3_40123o			<b>Operator</b> Adam Mueller		<b>Data</b> FTP			
<b>Base 2 ID</b>	<b>Location</b>	<b>Rec ID</b>	<b>Ant ID</b>	<b>ARP (m)</b>	<b>Start Time (UTC)</b>		<b>Stop Time (UTC)</b>		<b>GPS Filename</b>			<b>Operator</b>		<b>Data</b>			
Area	Flight #		Wpt		Distance		UTC		Dir	Altitude (GPS)	Speed (knots)	Scan Rate	Comments and Conditions			SVs	PDOP
	FGI	Client's	From	To	Begin	End	Start	End									
							16:13:40	16:18:40					Ground Static at KBAZ			19	1.2
							16:41:41	16:43:56					S Turn			20	1.1
Block_F	75		52	1	70.6	0	16:47:31	17:04:08	W	8622	140	35.0	Cross line			20	1.1
	43		59	1	80.3	0	17:20:53	17:39:04	S	8372	150	35.0				20	1.1
	42		1	59	0	80.3	17:41:58	18:00:25	N	8422	140	35.0	little turbulence			19	1.4
	42		59	49	80.3	66.4	18:04:24	18:08:14	S	8422	150	35.0	Calibration line			18	1.4
	41		57	1	77.5	0	18:16:59	18:34:47	S	8471	145	35.0	little turbulence			20	1.1
	40		1	57	0	77.5	18:38:20	18:55:55	N	8448	145	35.0	little turbulence; Km 49 drift off line; km 66 drift off line			15	1.6
	39		57	1	77.5	0	18:58:00	19:18:51	S	8471	145	35.0	warning pps error			16	1.3
	38		1		0		19:19:03		N	8471		35.0	Stop line at start due to error				
							19:22:58	19:25:16					S Turn			16	1.3
							19:39:35	19:44:35					Ground Static at KBAZ			17	1.4

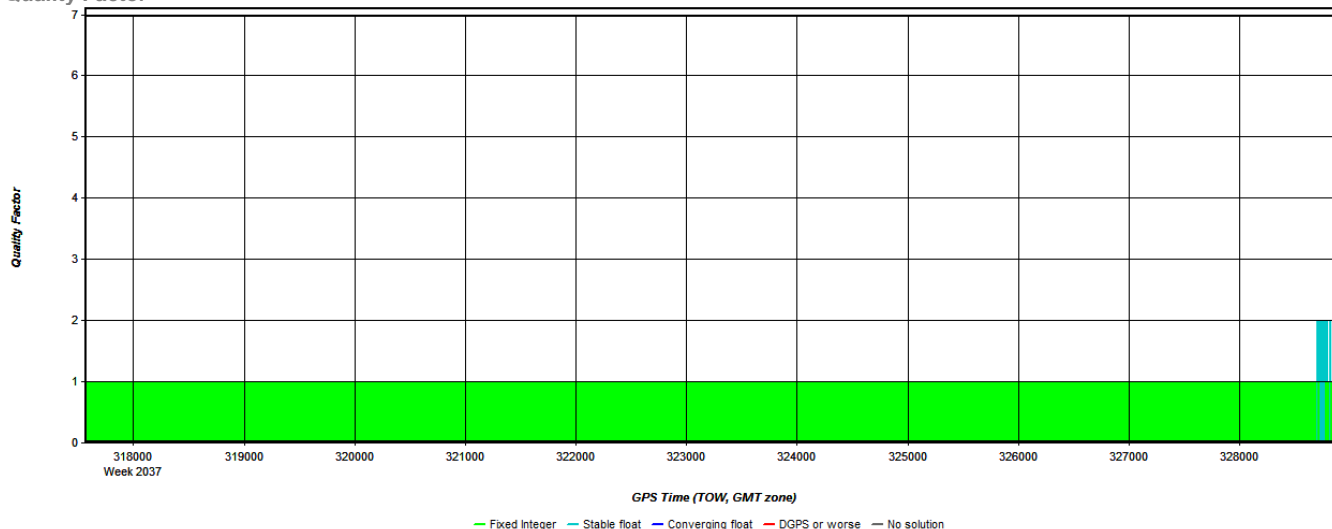
Trajectory and GPS Plots:



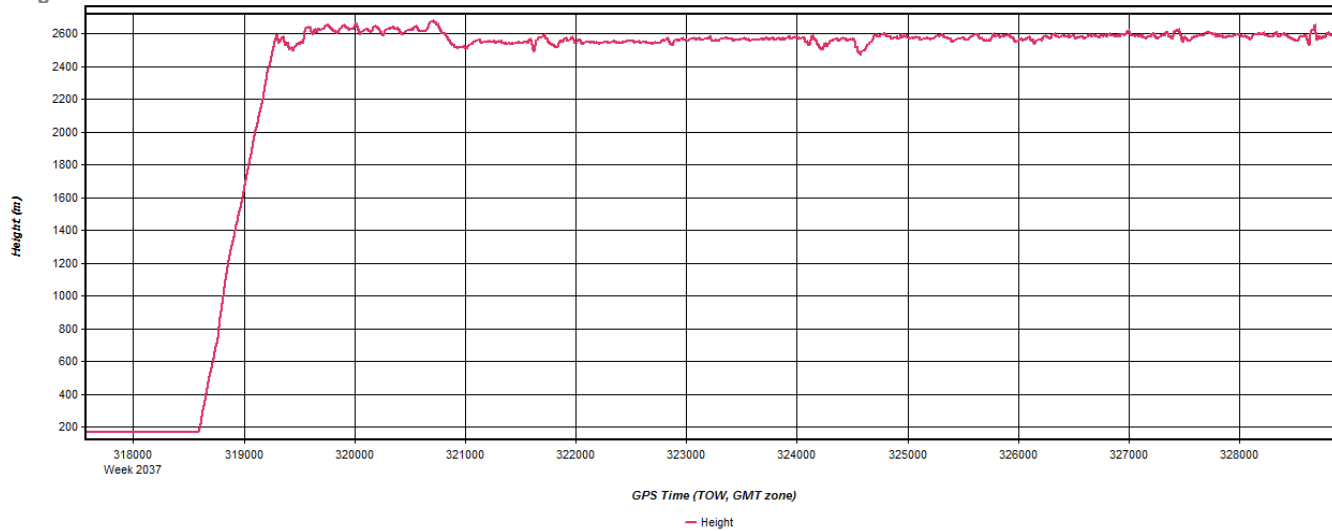
Estimated Accuracy



Quality Factor

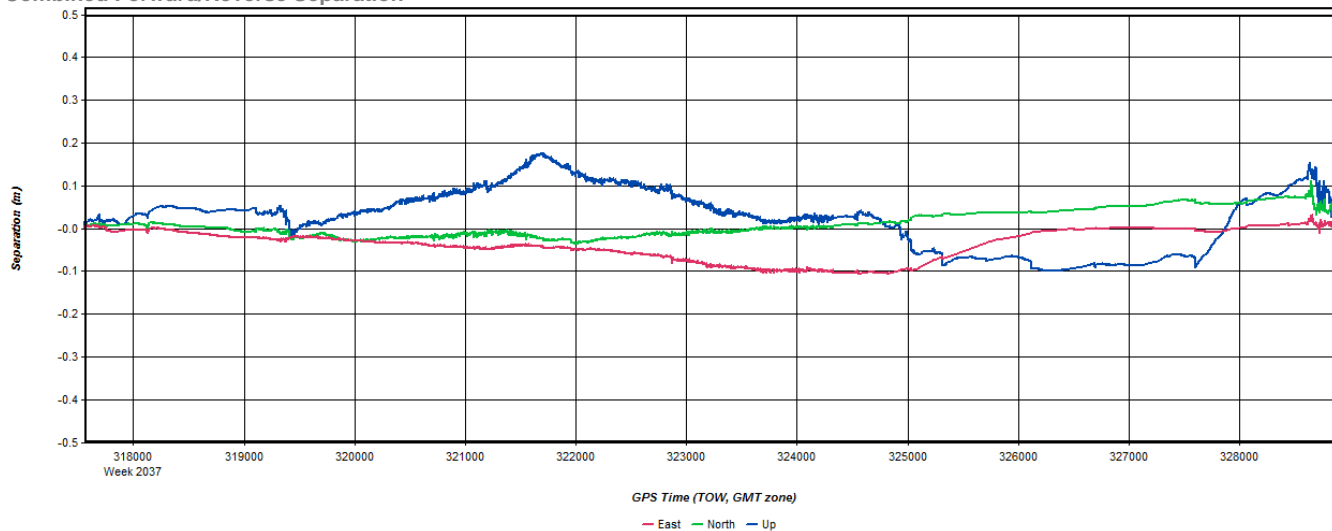


Height

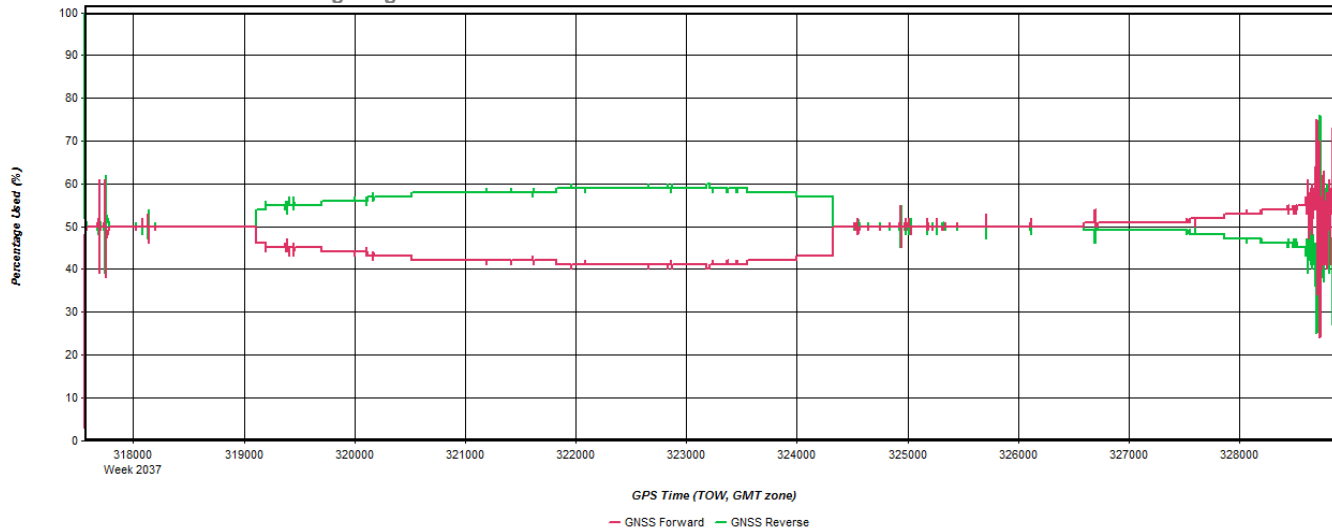




Combined Forward/Reverse Separation

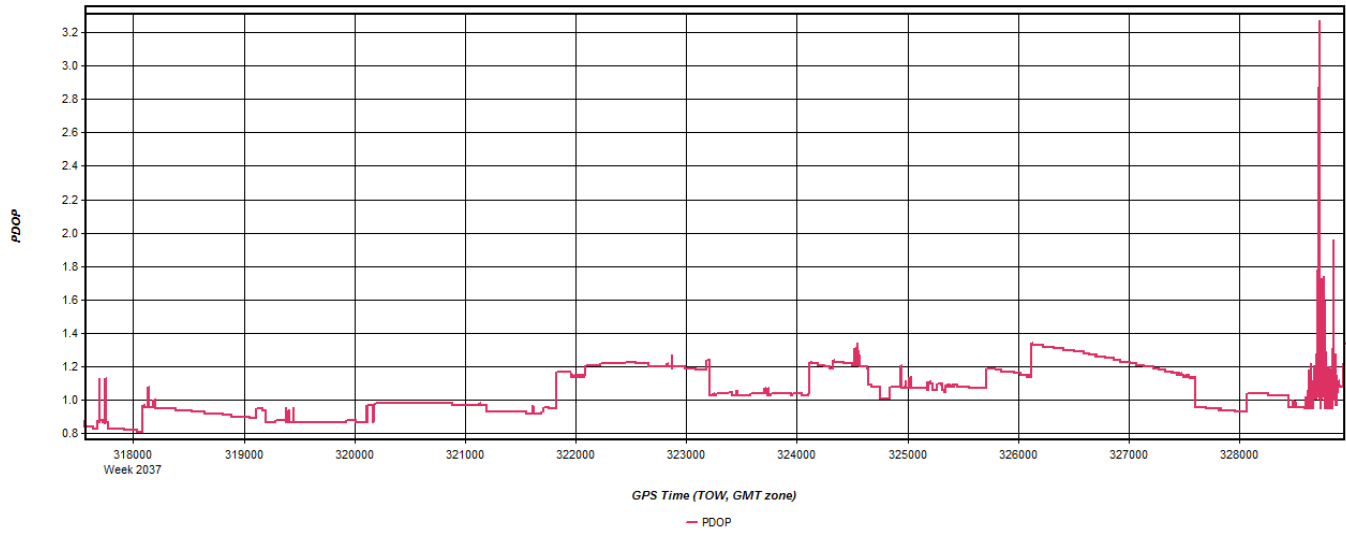


Combined Forward/Reverse Weighting



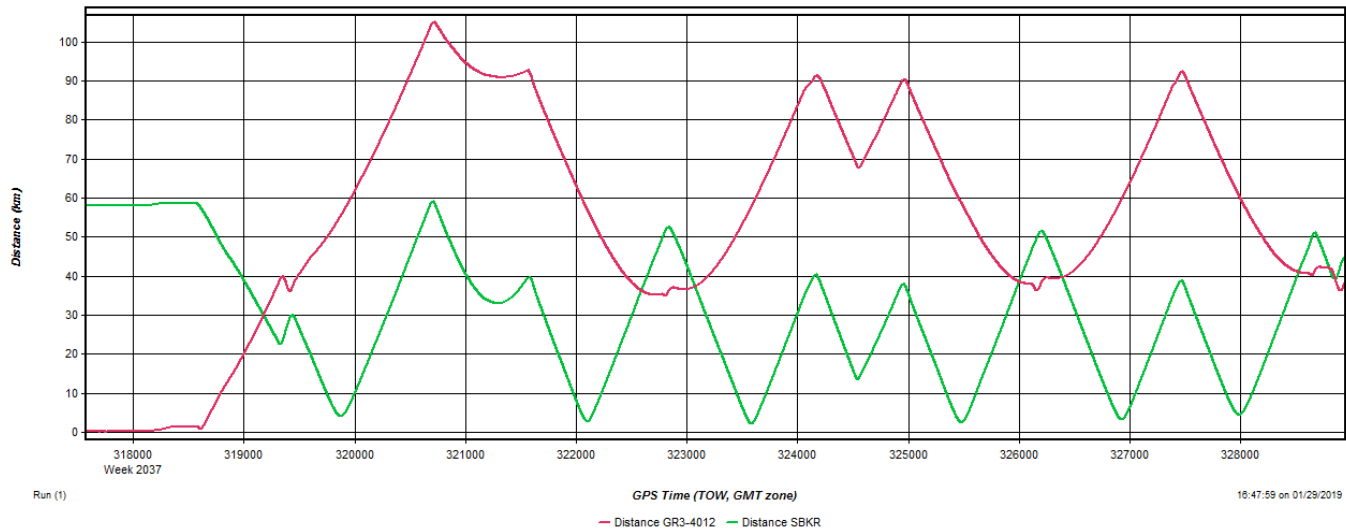
# USGS COLLECTION REPORT

## PDOP



## Distance from Base

190123\_133\_33780084\_08 [Forward] - MB Distance to Base

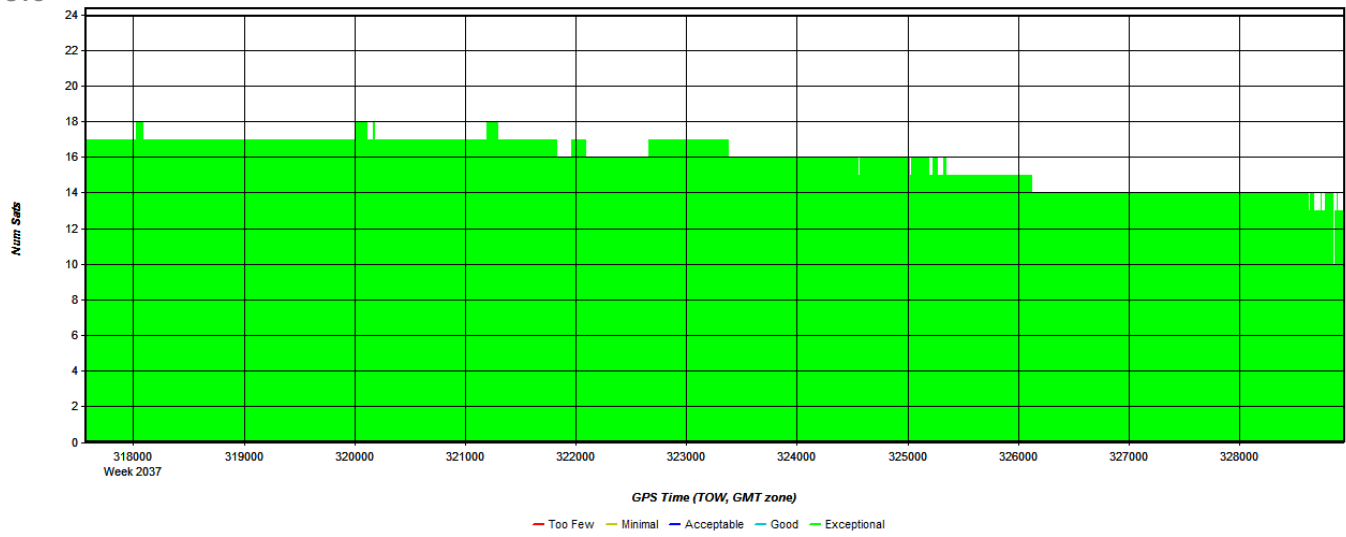


Run (1)

16:47:59 on 01/29/2019



SVs



USGS  
COLLECTION REPORT



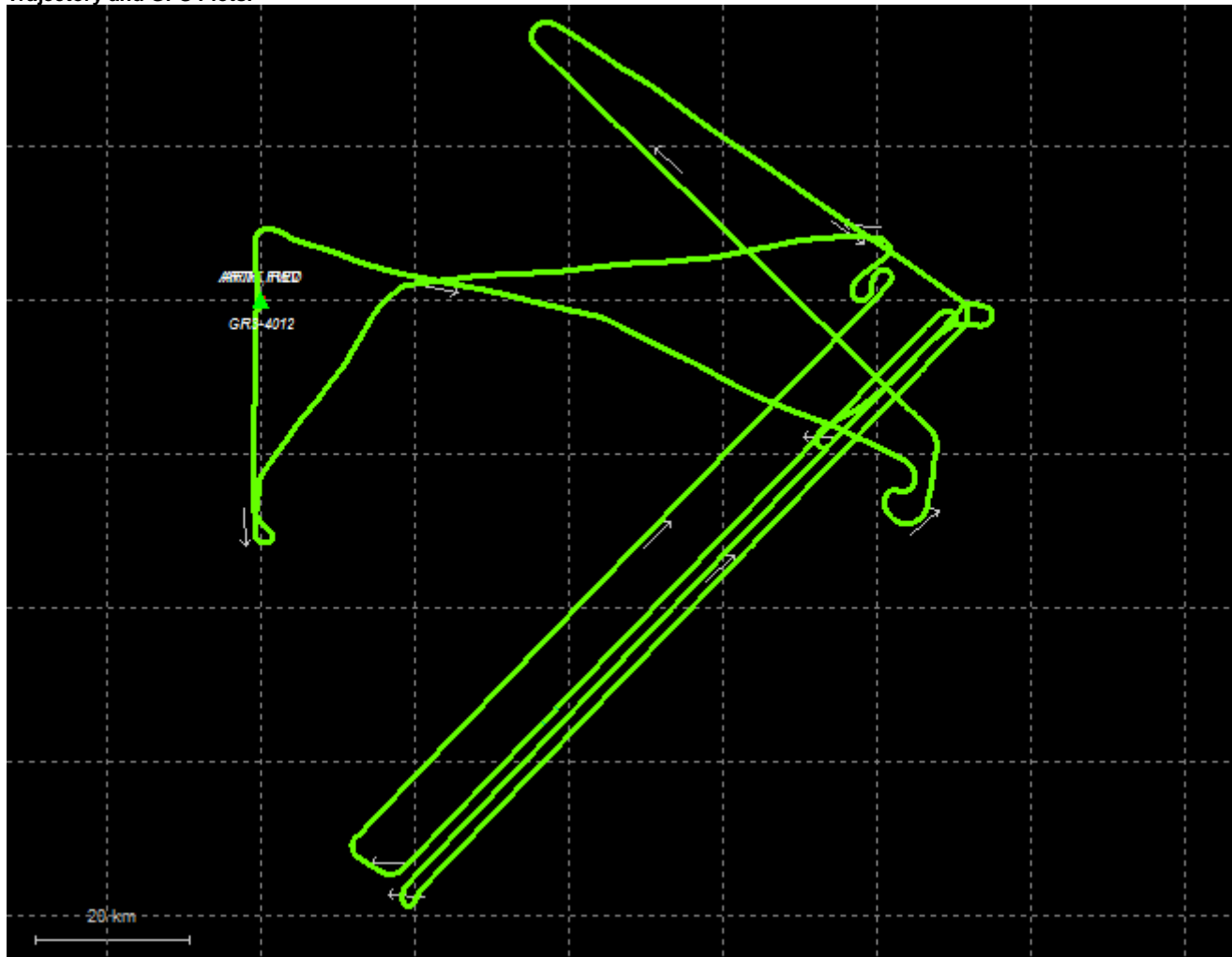
Acquisition and Processing details ----- (January 23, 2019)

Log: 190123\_133\_33780084\_09

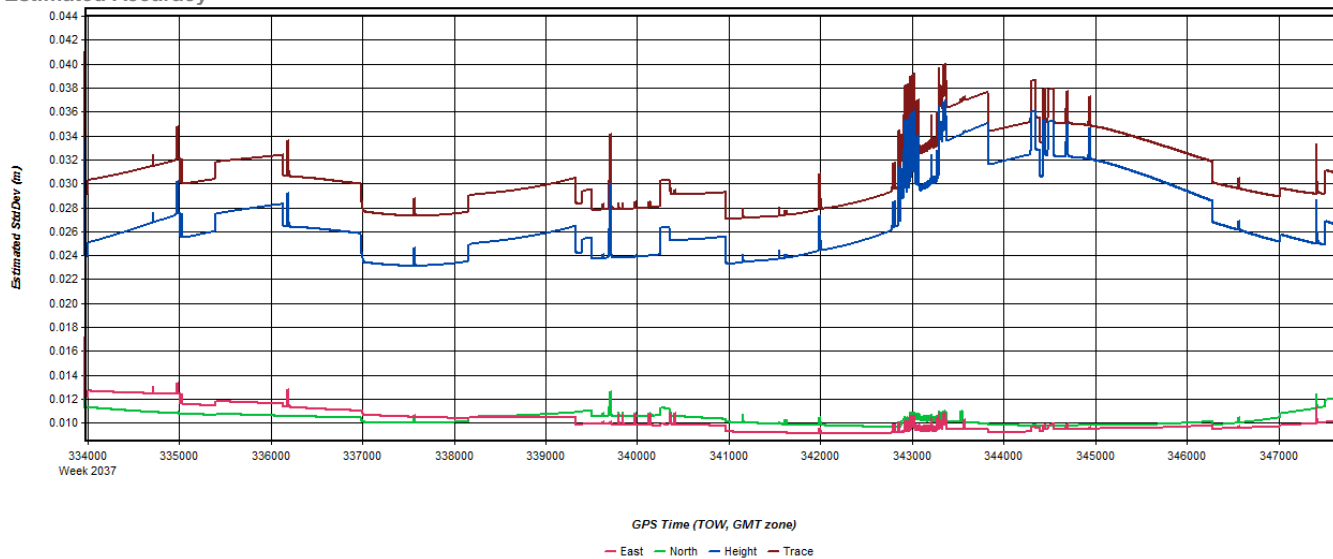
 <b>Fugro USA Land, Inc.</b>	Menu	18.165	Lift Begin			Lift End			Flt	Flt	Hobbs	 <b>ALS</b> <b>Flight Log</b> AC80-44-00-02	
			Airport	Chocks	Hobbs	Airport	Chocks	Hobbs	Duration	Hrs	Hrs		Activity
	1		KBAZ	20:41	8149.5	KBAZ	0:38	8153.5	3:56	4.00	4.0		0900-Production
	2												
3													

FGI Job # <b>33780084</b>	Project Name <b>Hurricane Harvey ALS80</b>		System <b>ALS80</b>	Unit <b>133</b>	IMU <b>uRS</b>	PIA <b>4</b>	SW1 <b>255</b>	SW2-Gain <b>60°</b>	Aper <b>Yes</b>	AutoScan <b>Yes</b>	Ground Temp °C <b>13.9 11.0</b>	Min Range Gate <b>7322</b>	Data Logger Drive <b>MM70-04</b>			
Flight Date <b>23-Jan-19</b>	GPS Day <b>19-023</b>	Lift <b>9</b>	Sun° <b>NA</b>	Solar Times (UTC) <b>NA</b>		Laser Power <b>100%</b>	Pattern <b>Triangle</b>	Flying Temp °C <b>-3.0 0.0</b>	Max Range Gate <b>8830</b>	Download Drive <b>NS1TB-46</b>						
Mission ID (ymmdd_Sen_Job_Lift) <b>190123_133_33780084_09</b>		Aircraft <b>N76JN</b>	Airport ID <b>KBAZ</b>	FMS <b>FCMS</b>	UTC <b>7,900</b>	AMT (ft) <b>150</b>	Speed <b>34.0</b>	Scan Hz <b>442,600</b>	FOV <b>46</b>	km/WPT <b>1.448</b>	Altm Setting <b>30.15 30.12</b>	Shipping Track <b>774293146693</b>				
Pilot #1 <b>Randy Green</b>		Pilot #2 <b>Maison Collins</b>		Operator #1 <b>Adam Mueller</b>		Operator #2										
Base 1 ID <b>FGI 8003</b>	Location <b>KBAZ</b>	Rec ID <b>Unit-4</b>	Ant ID <b>Unit-4</b>	ARP (m) <b>1.8</b>	Start Time (UTC) <b>23-Jan-19 14:36</b>	Stop Time (UTC) <b>24-Jan-19 00:42</b>	GPS Filename <b>GR3-40123o</b>	Operator <b>Adam Mueller</b>	Data <b>FTP</b>							
Base 2 ID	Location	Rec ID	Ant ID	ARP (m)	Start Time (UTC)	Stop Time (UTC)	GPS Filename	Operator	Data							
Area	Flight #		Wpt		Distance		UTC		Dir	Altitude (GPS)	Speed (knots)	Scan Rate	Comments and Conditions	SVs	PDOP	
	FGI	Client's	From	To	Begin	End	Start	End								
													Ground Static at KBAZ	18	1.3	
													S Turn	18	1.2	
Block_D	85		47	1	66.6	0	21:28:43	21:44:58	W	8113	130	34.0	little turbulence	18	1.3	
			53		66	1	21:58:36	22:20:31	S	8015	140	34.0		19	1.2	
			52		1	66	0	22:22:55	22:44:49	N	8015	140	34.0		22	1.0
			52		66	56	22:49:44	22:53:42	S	8015	145	34.0	Calibration Line	20	1.2	
			51		66	1	23:01:03	23:22:20	S	8015	145	34.0		20	1.1	
			47		1	66	0	23:25:42	23:46:52	N	8064	145	34.0		19	1.3
							23:47:15	23:49:57					S Turn	22	1.2	
							00:29:39	00:34:39					Ground Static at KBAZ	24	1.1	

Trajectory and GPS Plots:

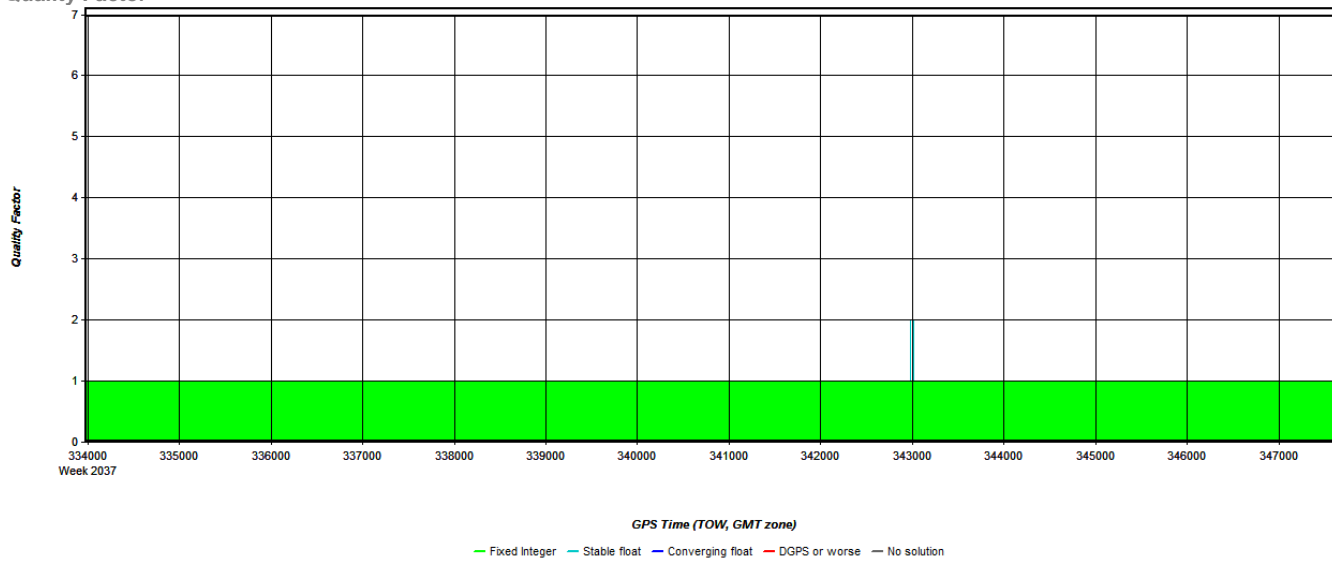


Estimated Accuracy

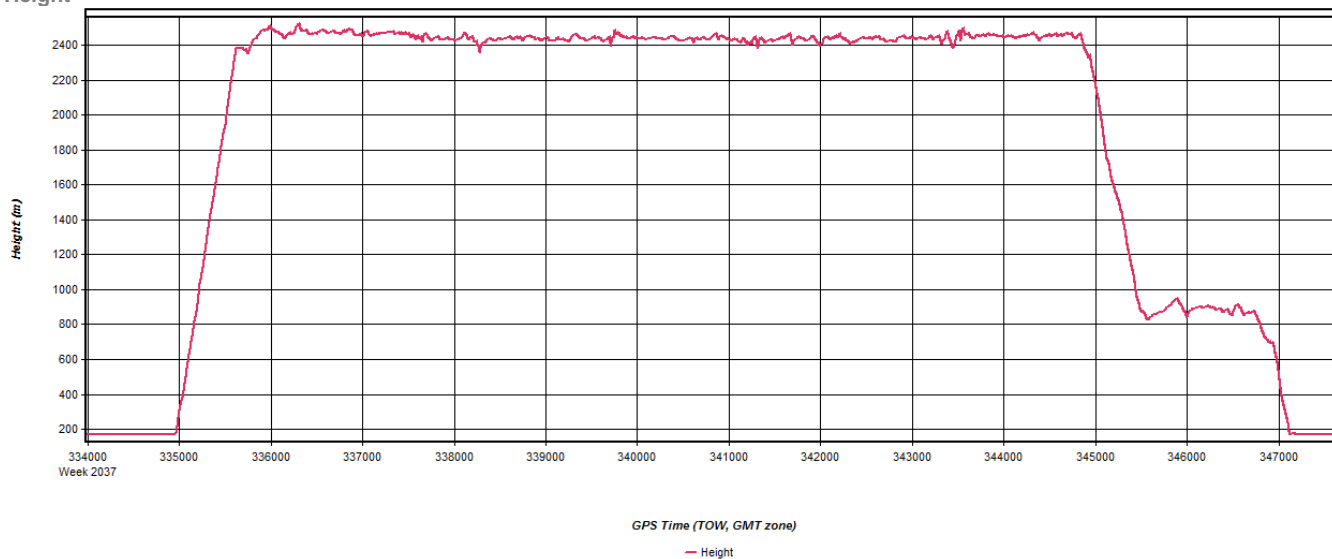




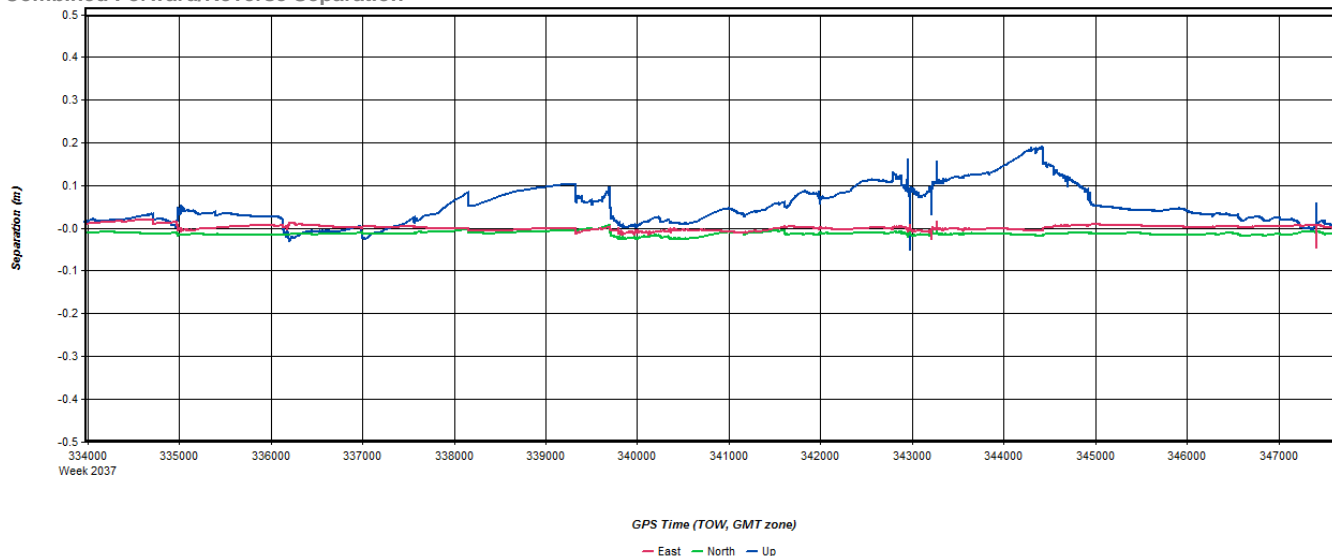
Quality Factor



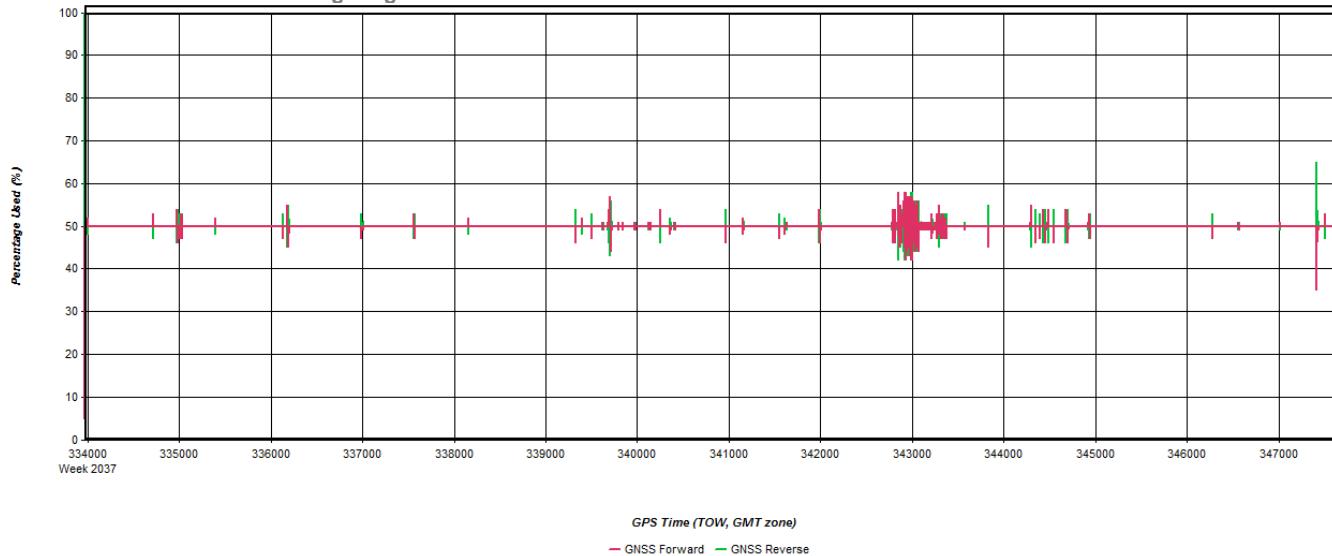
Height



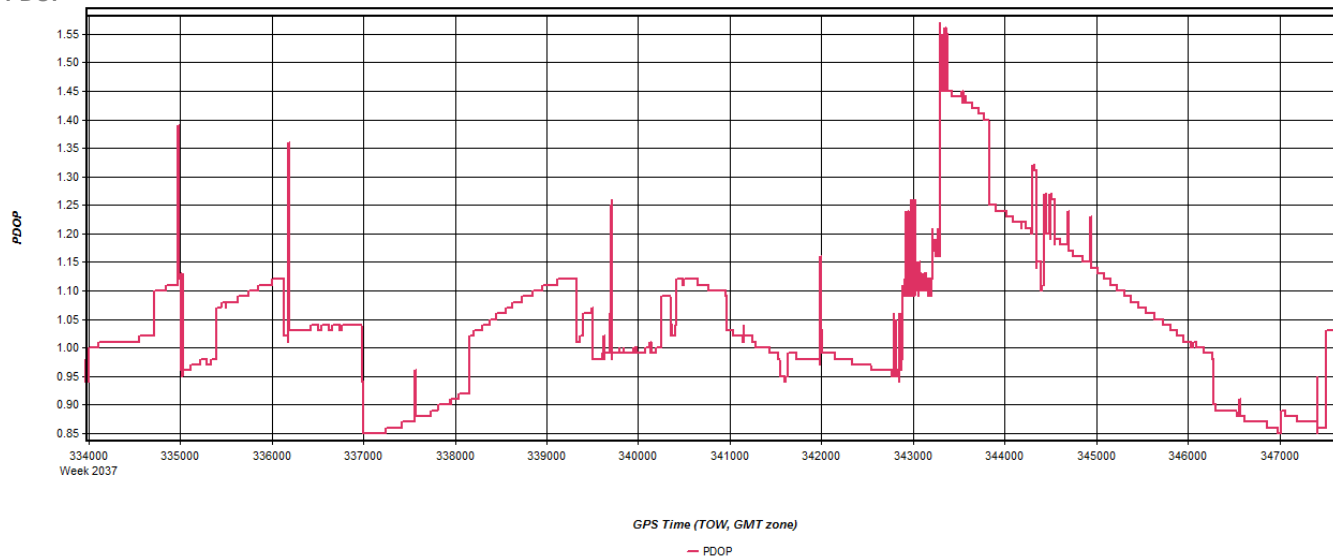
Combined Forward/Reverse Separation



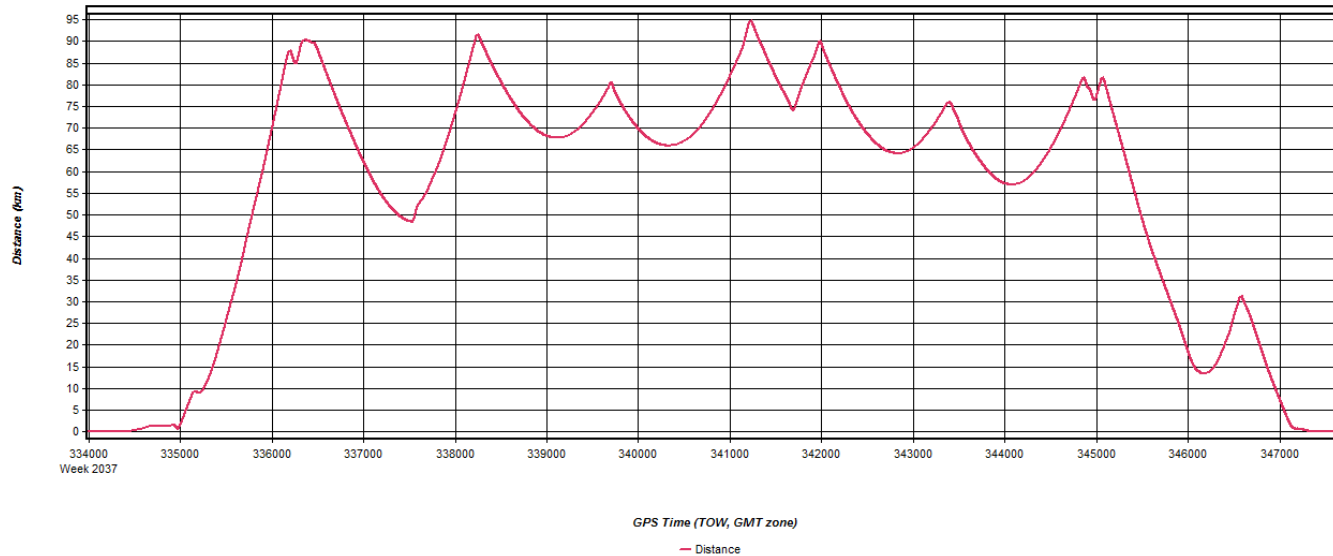
Combined Forward/Reverse Weighting



PDOP



Distance from Base

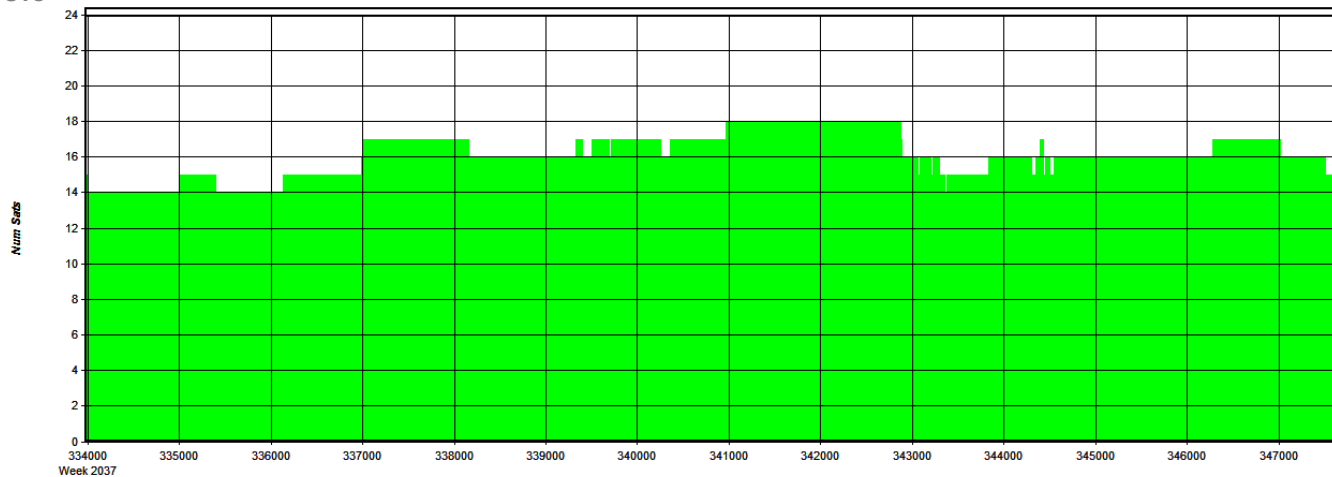




# USGS COLLECTION REPORT



SVs



GPS Time (TOW, GMT zone)

Too Few Minimal Acceptable Good Exceptional

USGS  
COLLECTION REPORT



Acquisition and Processing details ----- (January 24, 2019)

Log: 190124\_118\_33780084\_15

Menu
19.023

**ALS**  
Flight Log

Lift Begin		Lift End			Fit	Fit	Hobbs	Activity		
Airport	Chocks	Hobbs	Airport	Chocks	Hobbs	Duration	Hrs	Hrs		
1	KG TU	14:46	2975.0	KG TU	18:48	2978.5	4:02	4.00	3.5	0900-Production
2										
3										

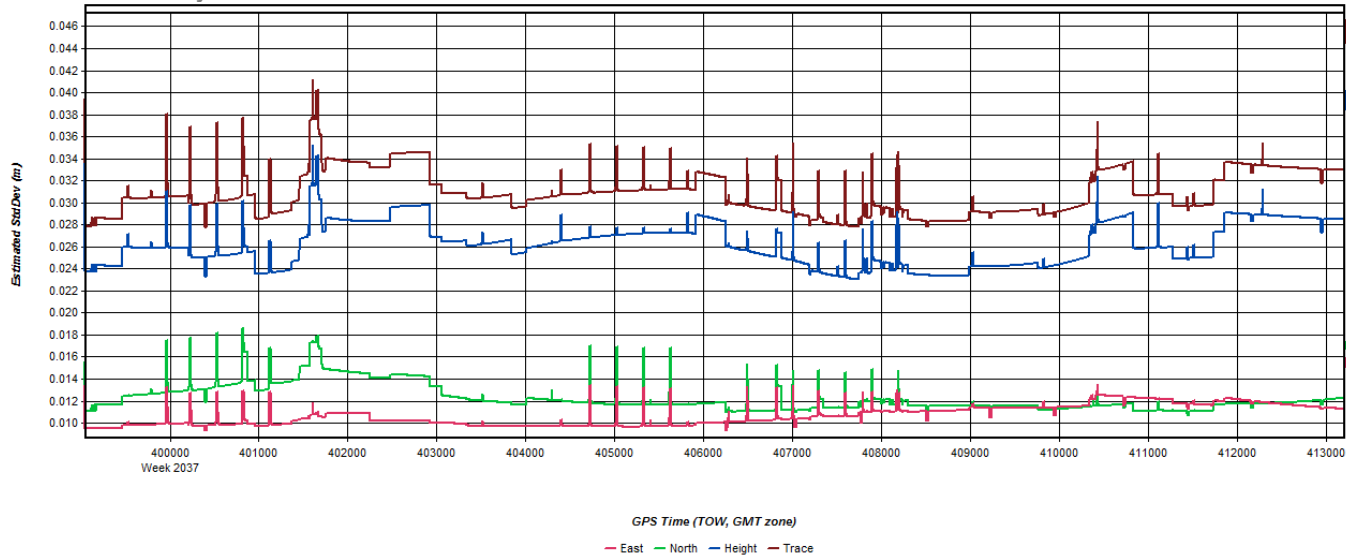
  

FGI Job # <b>33780084</b>	Project Name <b>Hurricane Harvey ALS80</b>		System <b>ALS80</b>	Unit <b>118</b>	IMU <b>uRS</b>	PIA <b>4</b>	SW1 <b>-</b>	SW2-Gain <b>-</b>	Aper <b>60°</b>	AutoScan <b>Yes</b>	Ground Temp °C <b>3.0 13.0</b>		Min Range Gate <b>2232m</b>	Data Logger Drive <b>MM70-07</b>	
Flight Date <b>24-Jan-19</b>	GPS Day <b>19-024</b>	Lift <b>15</b>		Sun° <b>-</b>	Solar Times (UTC) <b>-</b>		Laser Power <b>96%</b>	Pattern <b>Triangle</b>	Flying Temp °C <b>-2.0 -2.0</b>		Max Range Gate <b>2691m</b>	Download Drive <b>NS1TB-98</b>			
Mission ID (yyymmdd_Sen_Job_Lift) <b>190124_118_33780084_15</b>		Aircraft <b>N8131</b>	Airport ID <b>KG TU</b>	FMS <b>CCNS 4</b>	UTC <b>-6</b>	AMT (ft) <b>7,900</b>	Speed <b>150</b>	Scan Hz <b>34.0</b>	Pulse Rate <b>442,600</b>	FOV <b>46</b>	km/WPT <b>1.448</b>	Altm Setting <b>30.14 30.14</b>		Shipping Track	
Pilot #1 <b>Wayne Manning</b>		Pilot #2 <b>-</b>		Operator #1 <b>Chris Acuña</b>		Operator #2 <b>-</b>									
Base 1 ID <b>FEDI 1115</b>	Location <b>KG TU</b>	Rec ID <b>GR3#5</b>	Ant ID <b>GR3#5</b>	ARP (m) <b>1.8</b>	Start Time (UTC) <b>24-Jan-19 13:30</b>		Stop Time (UTC) <b>24-Jan-19 23:55</b>		GPS Filename <b>Unit#50124n</b>	Operator <b>Chris Acuña</b>		Data <b>FTP</b>			
Area	Flight #		Wpt		Distance		UTC		Fit	Altitude (GPS)	Speed (knots)	Scan Rate	Comments and Conditions	SVs	PDOP
	FGI	Client's	From	To	Begin	End	Start	End							
													Aspen GPS Tracker is "off"		
							14:51:01	14:56:01					5 Min GND static alignment at KG TU	21	1.2
							15:23:35	15:28:35					5 Min acquisition of CORS TXMR	24	1.0
							15:32:13	15:34:33					S-Turn in flight alignment	23	1.0
BLOCK_J	17	5	22	5.8	30.4	15:41:41	15:47:53	121	8285	136	-	Partial Crossing Line	25	1.0	
	13	1	27	0	37.6	16:07:31	16:16:14	31	8195	143	-		20	1.2	
	12	26	1	36.2	0	16:24:02	16:33:20	209	8280	135	-		19	1.4	
	12	1	13	0	17.4	16:38:43	16:42:25	31	8235	149	-	Calibration Line	21	1.2	
	11	1	23	0	31.9	16:52:35	17:00:20	31	8200	145	-		21	1.2	
	10	21	1	29	0	17:05:44	17:12:55	209	8220	140	-		23	1.1	
	9	-	-	-	-	-	-	-	-	-	-	Missed line for CCNS	-	-	
	9	1	20	0	27.5	17:24:40	17:31:21	31	8320	126	-		20	1.2	
	8	18	1	24.6	0	17:41:50	17:47:29	209	8315	147	-		20	1.2	
	7	1	16	0	21.7	17:51:54	17:57:03	31	8340	142	-		19	1.3	
						17:57:33	17:59:41					S-Turn in flight alignment	19	1.3	
						18:05:42	18:10:42					5 Min acquisition of CORS TXMR	21	1.1	
						18:40:31	18:45:31					5 Min GND static alignment at KG TU			
												Lift terminated for low fuel			

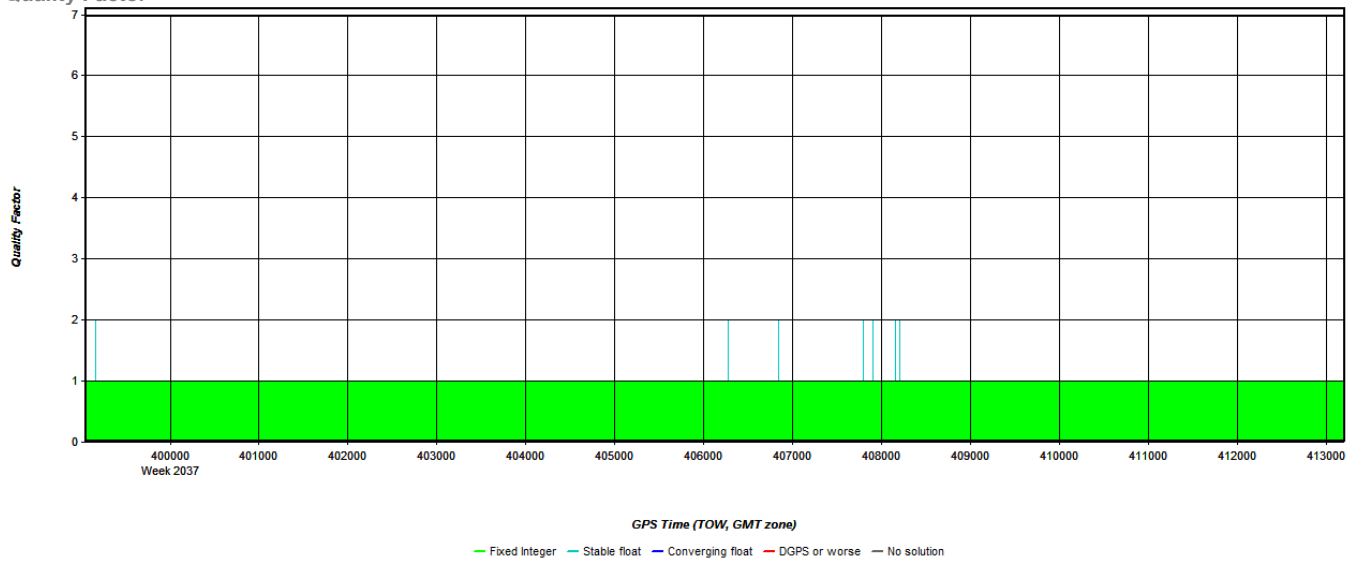
Trajectory and GPS Plots:



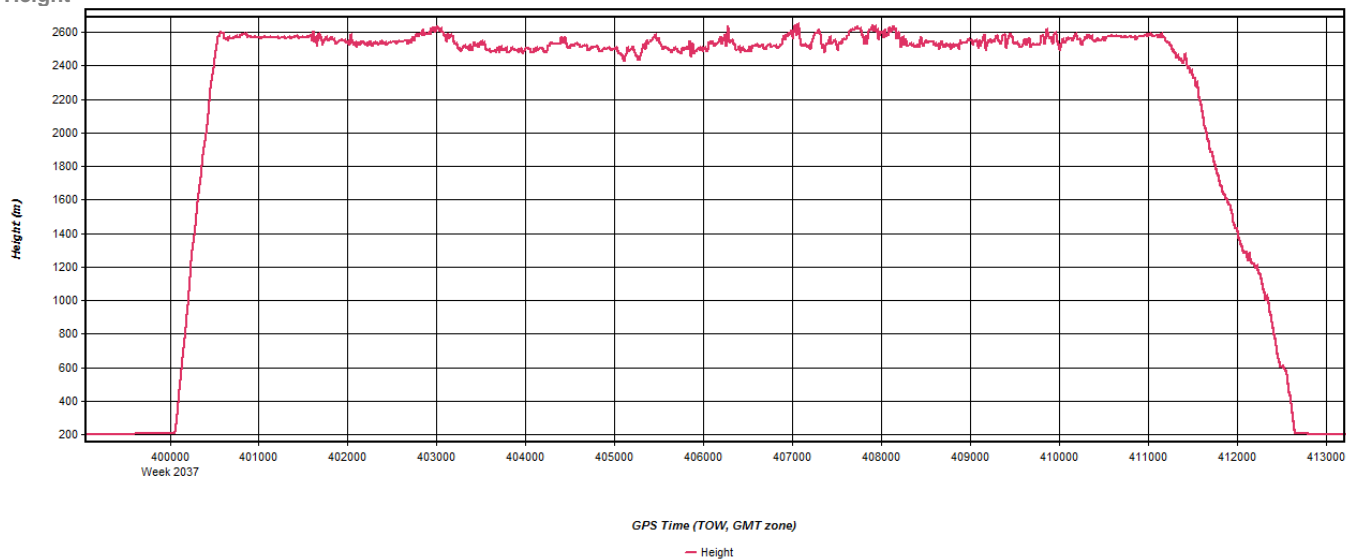
Estimated Accuracy



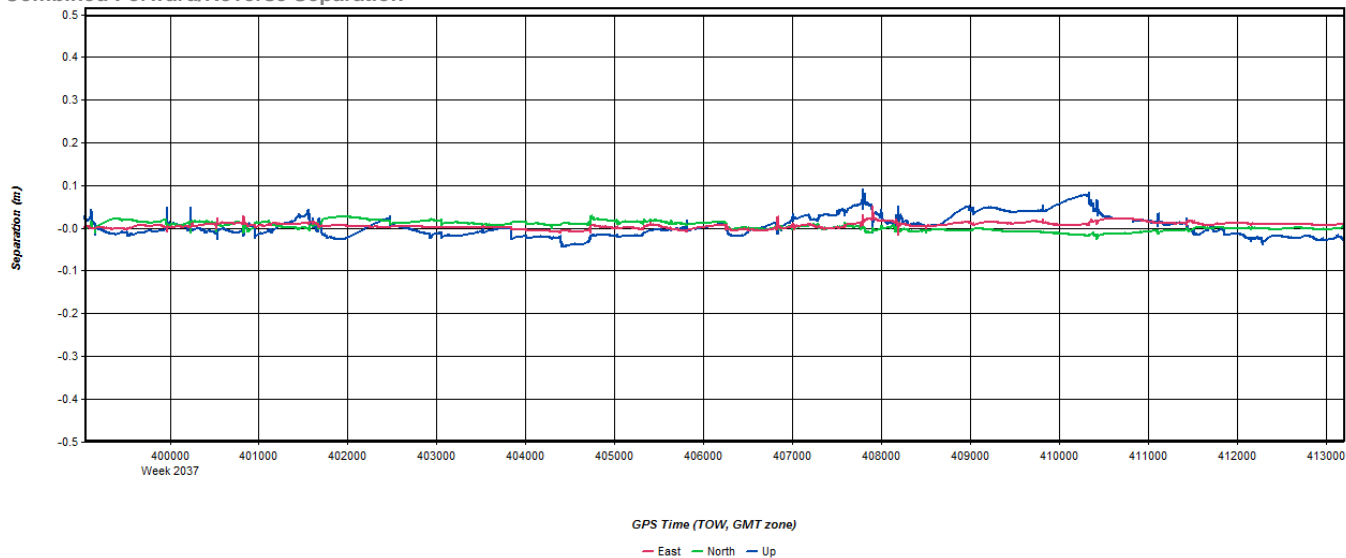
Quality Factor



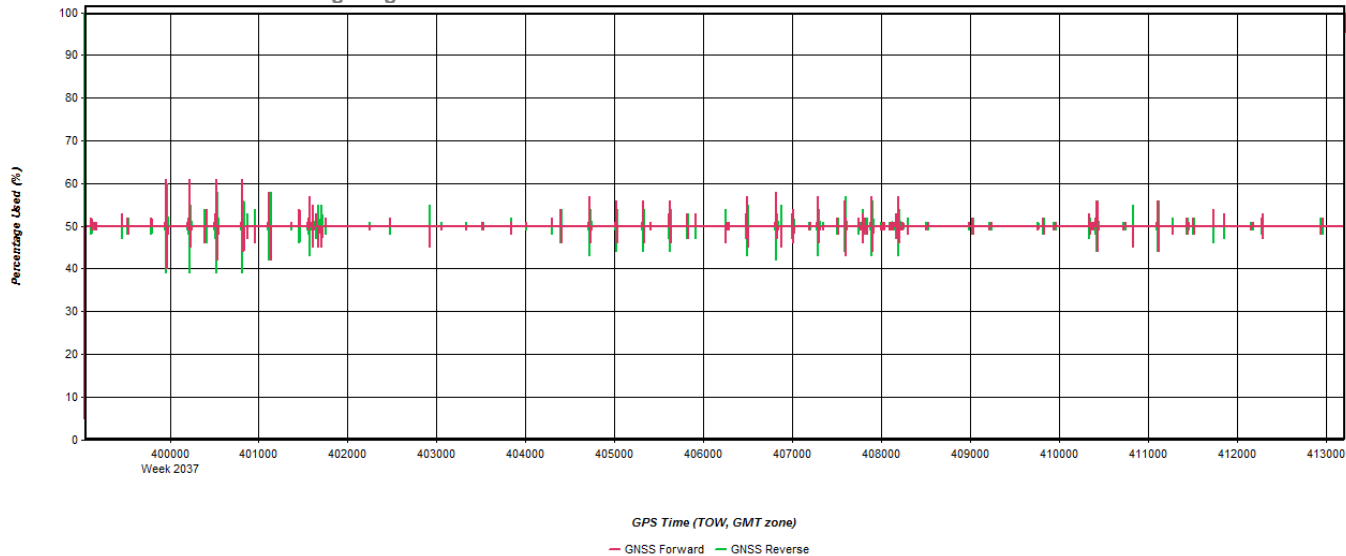
Height



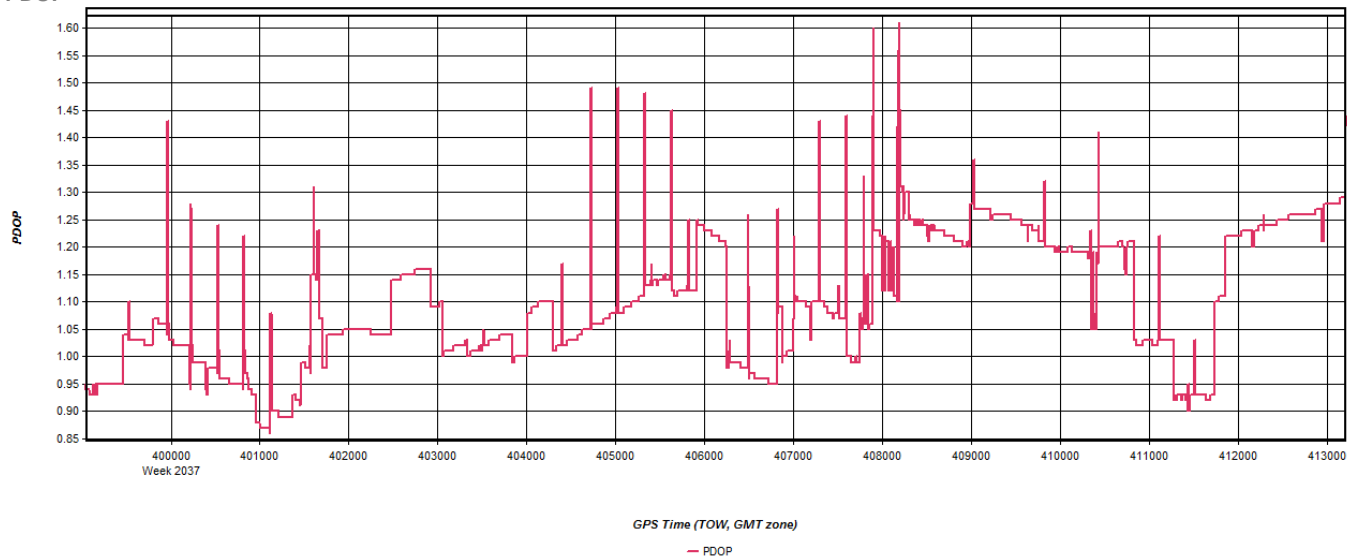
Combined Forward/Reverse Separation



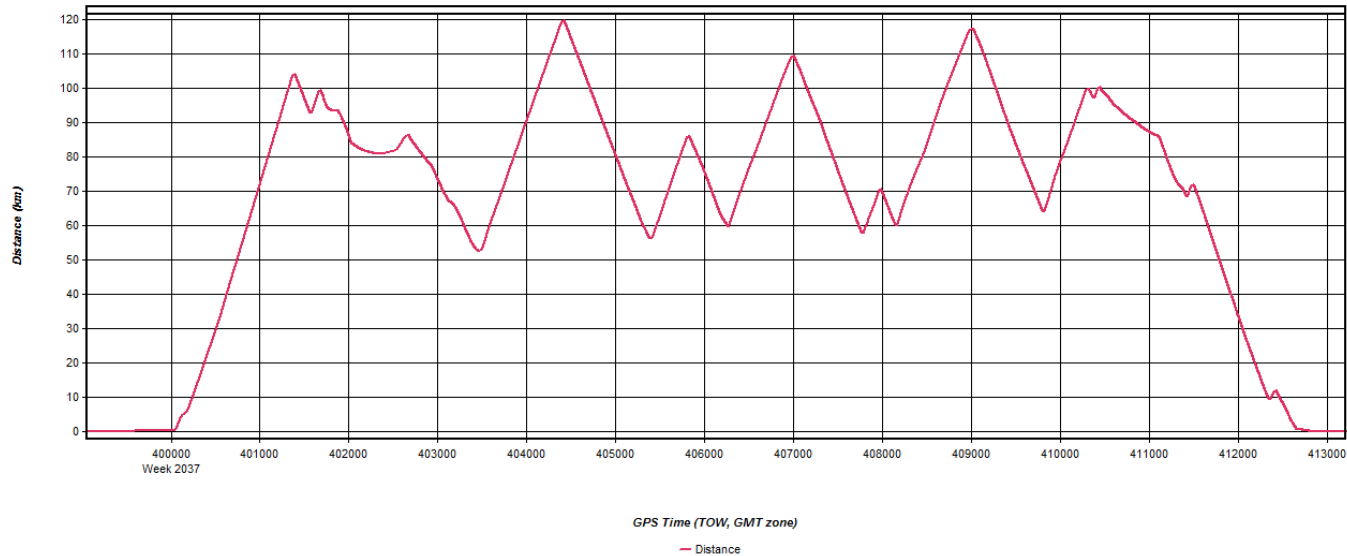
Combined Forward/Reverse Weighting



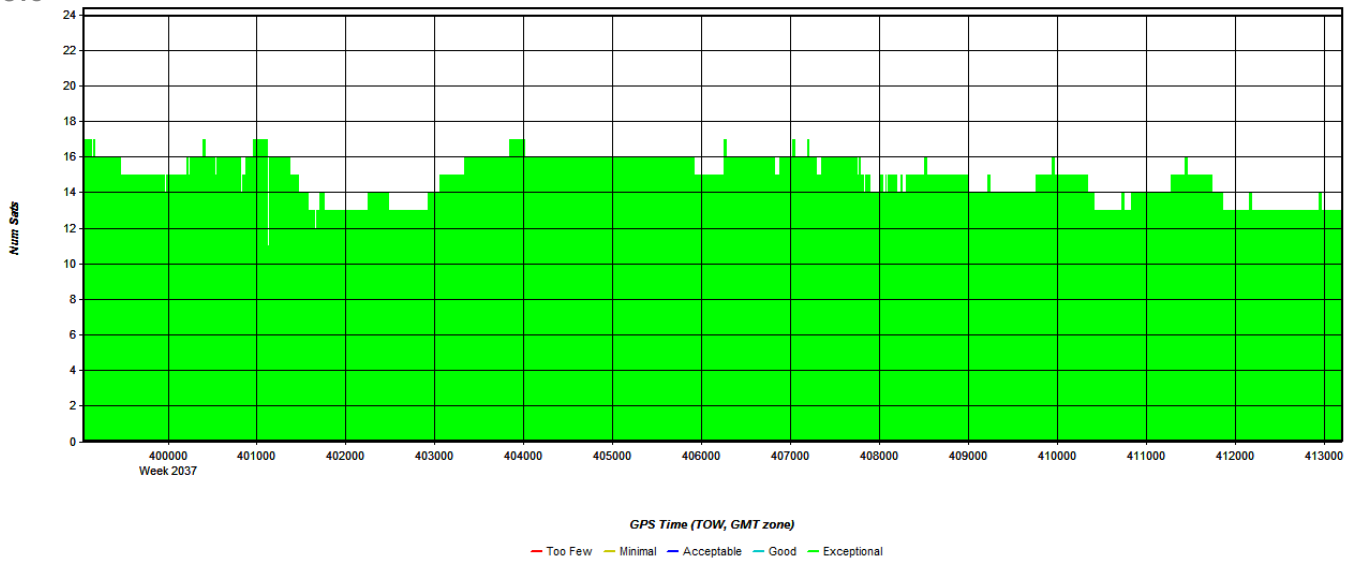
PDOP



Distance from Base



SVs



USGS  
COLLECTION REPORT



Acquisition and Processing details ----- (January 24, 2019)

Log: 190124\_118\_33780084\_16

	Menu	19.023	Lift Begin			Lift End			Flt	Flt	Hobbs		
			Airport	Chocks	Hobbs	Airport	Chocks	Hobbs	Duration	Hrs	Hrs		Activity
	1		KGTU	19:54	2978.5	KGTU	23:49	2981.9	3:55	4:00	3:4		0900-Production
	2												
3													

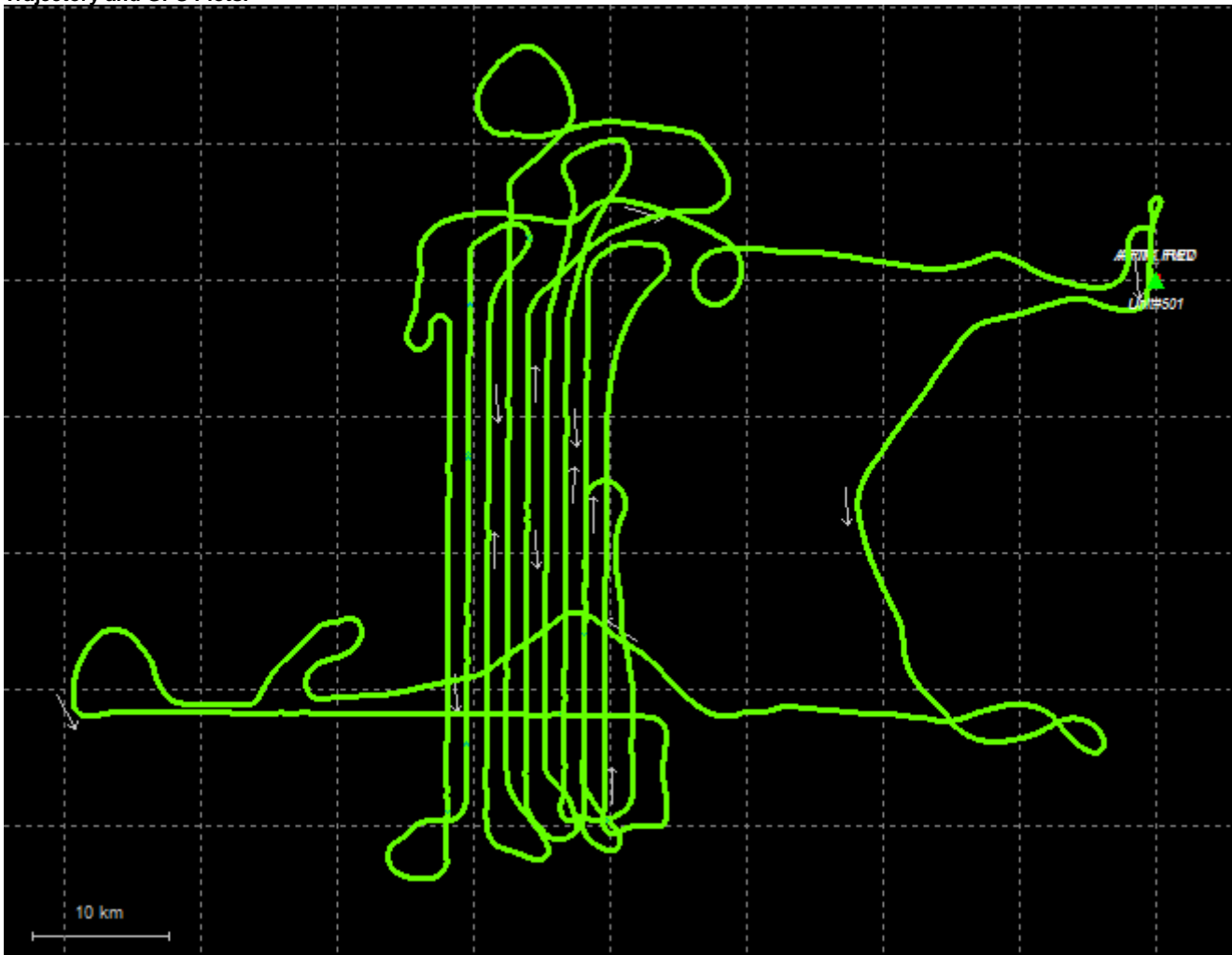
AC80-44-00-02

FGI Job # <b>33780084</b>	Project Name <b>Hurricane Harvey ALS80</b>		System <b>ALS80</b>	Unit <b>118</b>	IMU <b>uRS</b>	PIA <b>3</b>	SW1 <b>-</b>	SW2-Gain <b>-</b>	Aper <b>60°</b>	AutoScan <b>Yes</b>	Ground Temp °C <b>15.0 16.0</b>		Min Range Gate <b>1903m</b>	Data Logger Drive <b>MM70-07</b>	
Flight Date <b>24-Jan-19</b>	GPS Day <b>19-024</b>	Lift <b>16</b>		Sun° <b>-</b>	Solar Times (UTC) <b>-</b>		Laser Power <b>100%</b>	Pattern <b>Triangle</b>	Flying Temp °C <b>-3.0 -3.0</b>		Max Range Gate <b>2537m</b>	Download Drive <b>NS1TB-98</b>			
Mission ID (yyymmdd_Sen_Job_Lift) <b>190124_118_33780084_16</b>		Aircraft <b>N8131</b>	Airport ID <b>KGTU</b>	FMS <b>CCNS 4</b>	UTC <b>-6</b>	AMT (ft) <b>7,550</b>	Speed <b>150</b>	Scan Hz <b>35.0</b>	Pulse Rate <b>352,000</b>	FOV <b>42</b>	km/WPT <b>1.384</b>	Altm Setting <b>30.08 30.11</b>	Shipping Track <b>-</b>		
Pilot #1 <b>Wayne Manning</b>		Pilot #2 <b>-</b>		Operator #1 <b>Chris Acuña</b>		Operator #2 <b>-</b>									
Base 1 ID <b>FEDI 1115</b>	Location <b>KGTU</b>	Rec ID <b>GR3#5</b>	Ant ID <b>GR3#5</b>	ARP (m) <b>1.8</b>	Start Time (UTC) <b>24-Jan-19 13:30</b>		Stop Time (UTC) <b>24-Jan-19 23:55</b>		GPS Filename <b>Unit#50124n</b>		Operator <b>Chris Acuña</b>		Data <b>FTP</b>		

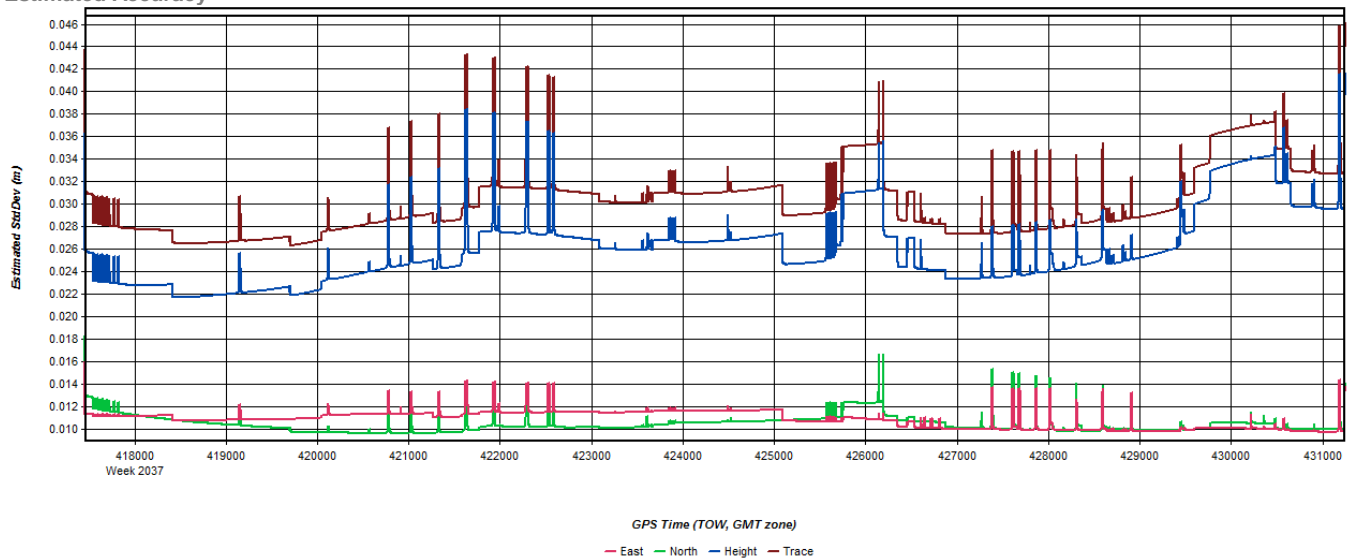
Area	Flight #		Wpt		Distance		UTC		Fit	Altitude (GPS)	Speed (knots)	Scan Rate	Comments and Conditions	SVs	PDOP
	FGI	Client's	From	To	Begin	End	Start	End							
													Aspen tracker is "off"		
							19:58:00	20:03:00					5 Min GND static at KGTU	17	1.2
							20:40:04	20:42:09					S-Turn in flight alignment	21	1.2
BLOCK_H	73		45	66	60.9	90	20:50:50	20:57:58	83	8540	137	-	Partial Crossing Line	22	1.3
	72		1	16	0	20.8	21:04:15	21:09:35	356	8185	136	-		22	1.3
	71		21	1	27.7	0	21:16:12	21:23:27	177	8160	141	-		22	1.3
	71		1	13	0	16.6	21:28:12	21:31:59	358	8190	136	-	Calibration Line	21	1.4
	70		1	21	0	27.7	21:41:41	21:49:16	355	8090	128	-		22	1.2
	69		21	1	27.7	0	21:57:33	22:04:41	177	8135	135	-	Lt Turb w/chop; 36 kt cross wind	23	1.1
	68		1	21	0	27.7	22:09:56	22:16:27	356	8150	146	-	Lt Turb w/chop	24	1.1
	67		21	1	27.7	0	22:32:20	22:38:47	175	8155	146	-	Lt Turb	26	1.1
	66		1	21	0	27.7	22:44:22	22:51:29	356	8290	128	-	Lt Turb	25	1.2
	65		21	1	27.7	0	22:56:24	23:02:49	177	8105	140	-	Lt Turb	25	1.2
	64		1	21	0	27.7	23:09:29	23:16:43	356	8225	121	-	Lt Turb; 30 kt head wind	26	1.2
							23:17:04	23:19:12					S-Turn in flight alignment	23	1.3
							23:41:55	23:46:55					5 Min GND static at KGTU	23	1.4
													Lift terminated for low fuel		



Trajectory and GPS Plots:

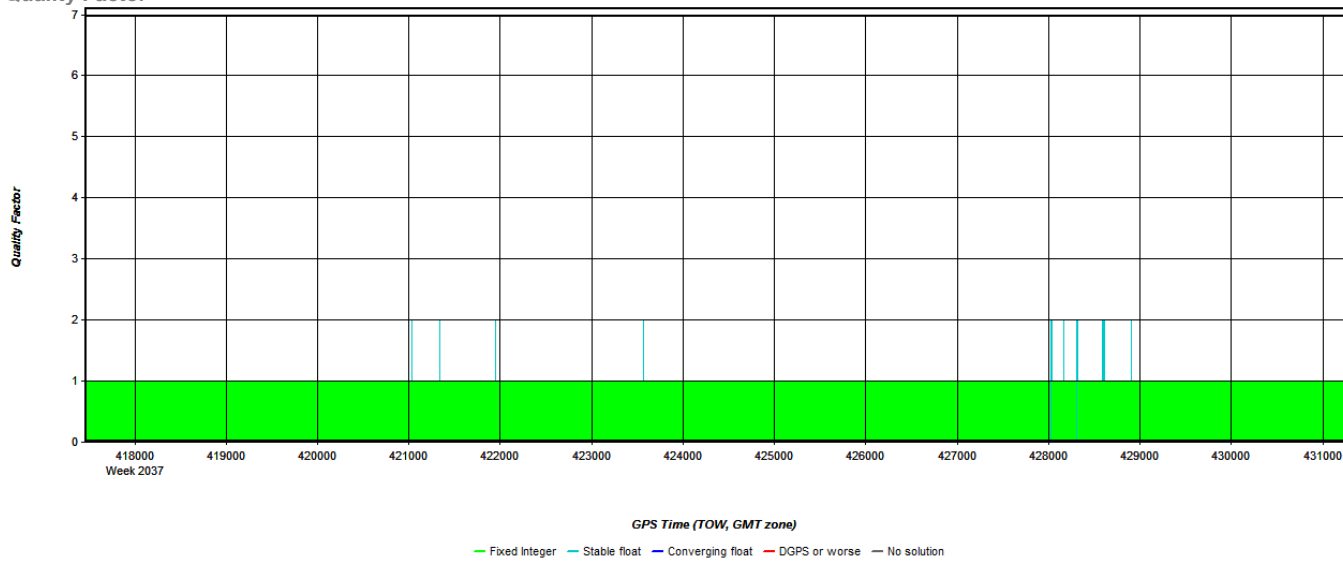


Estimated Accuracy

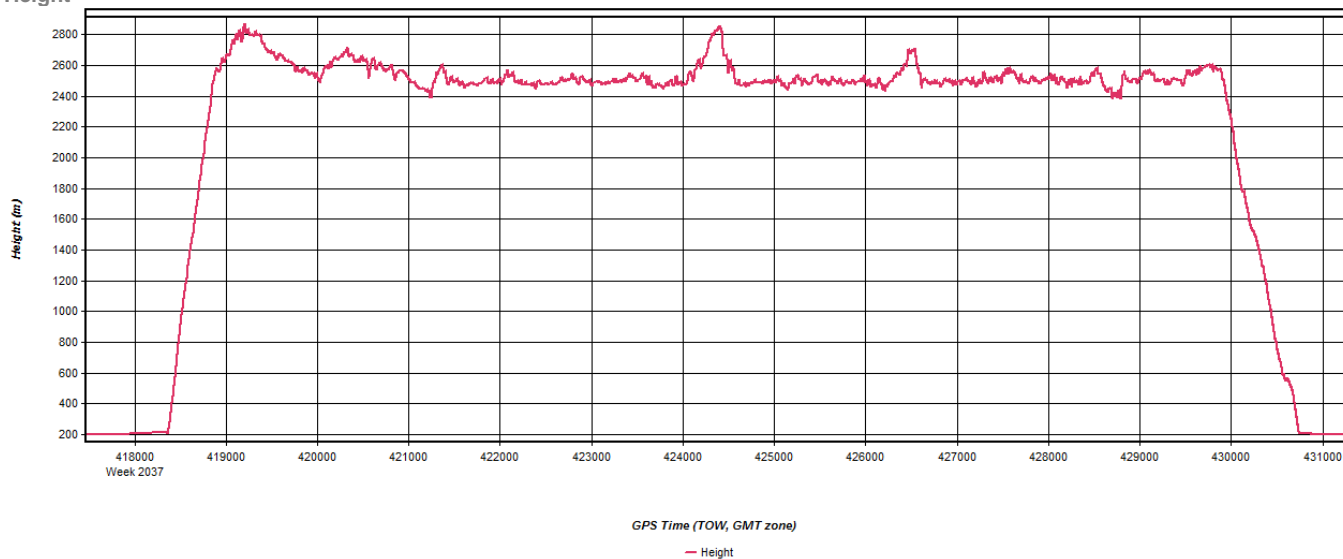




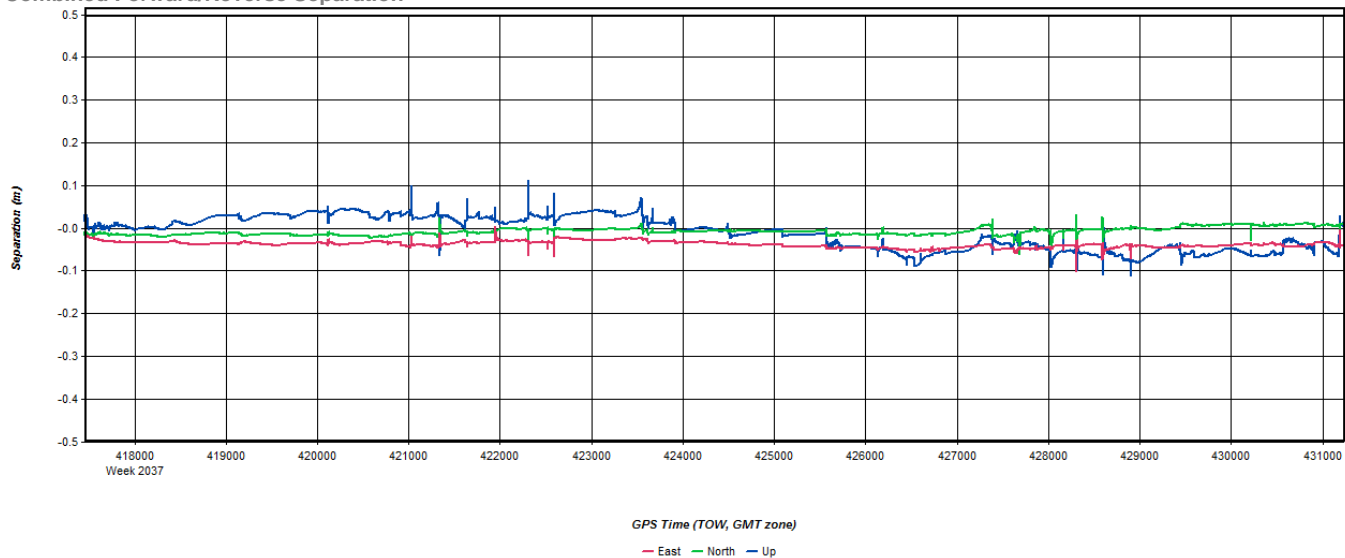
Quality Factor



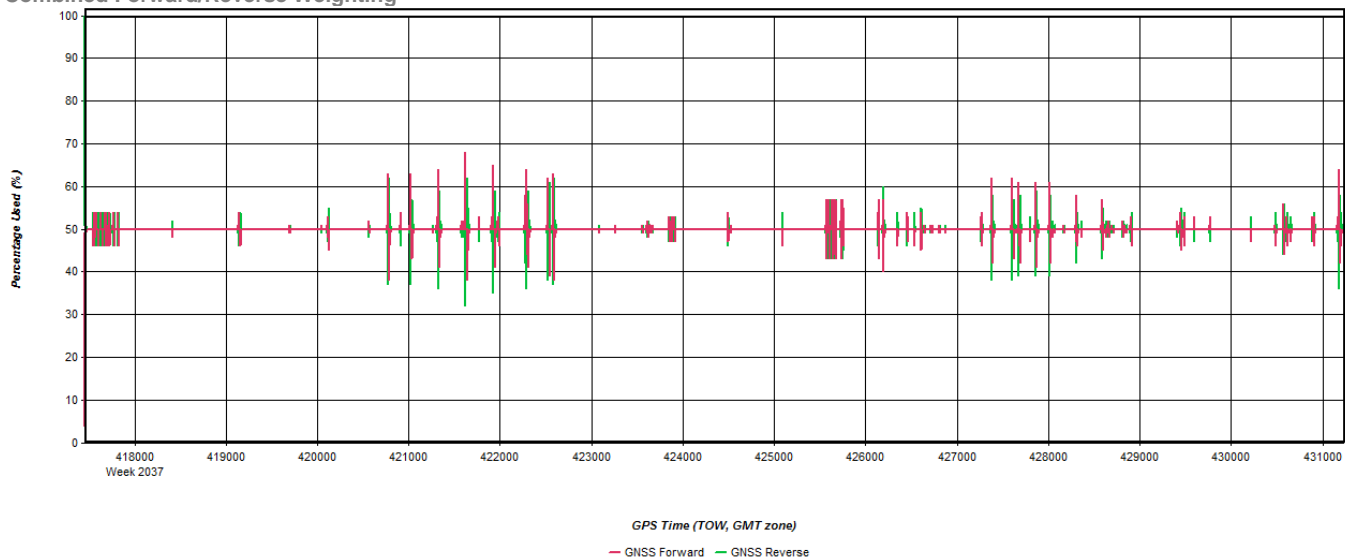
Height



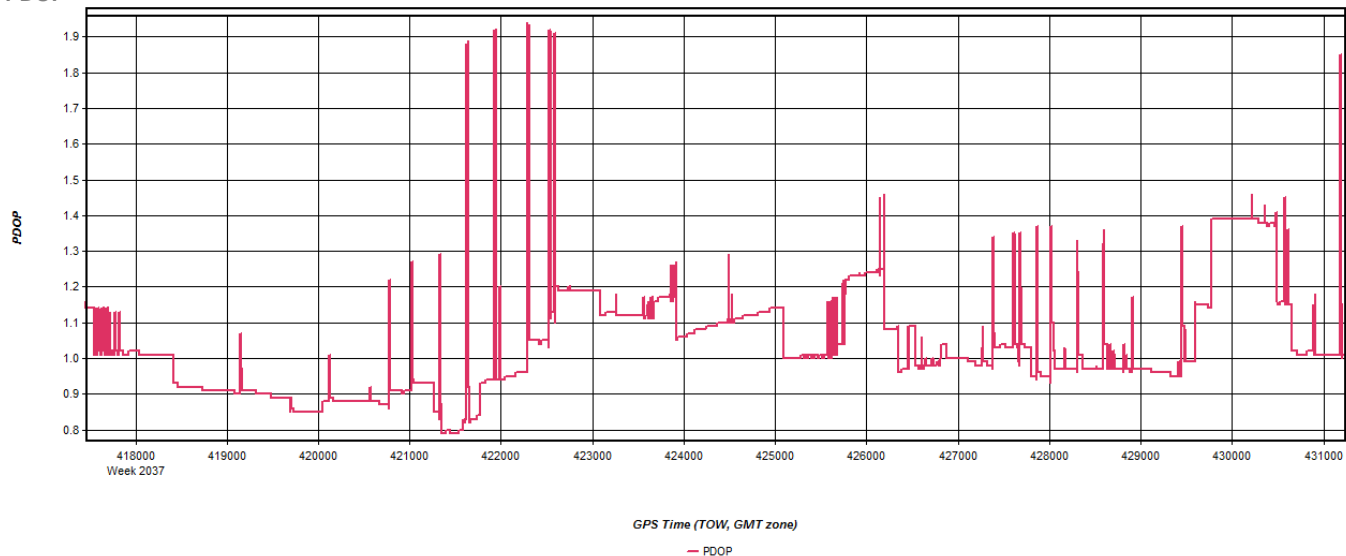
Combined Forward/Reverse Separation



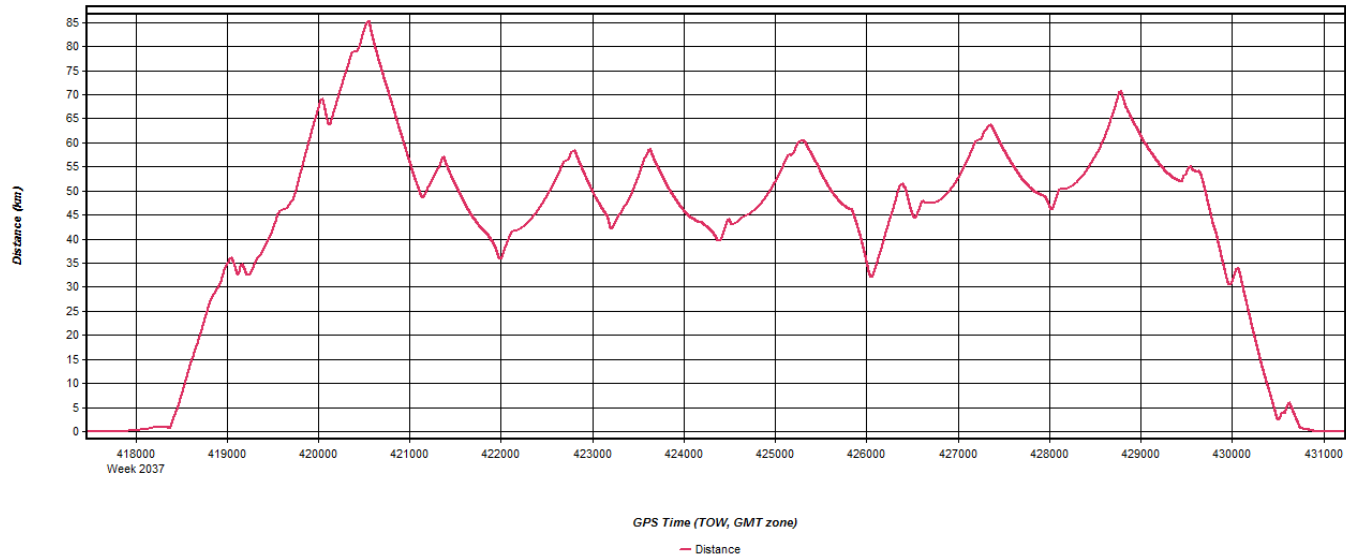
Combined Forward/Reverse Weighting



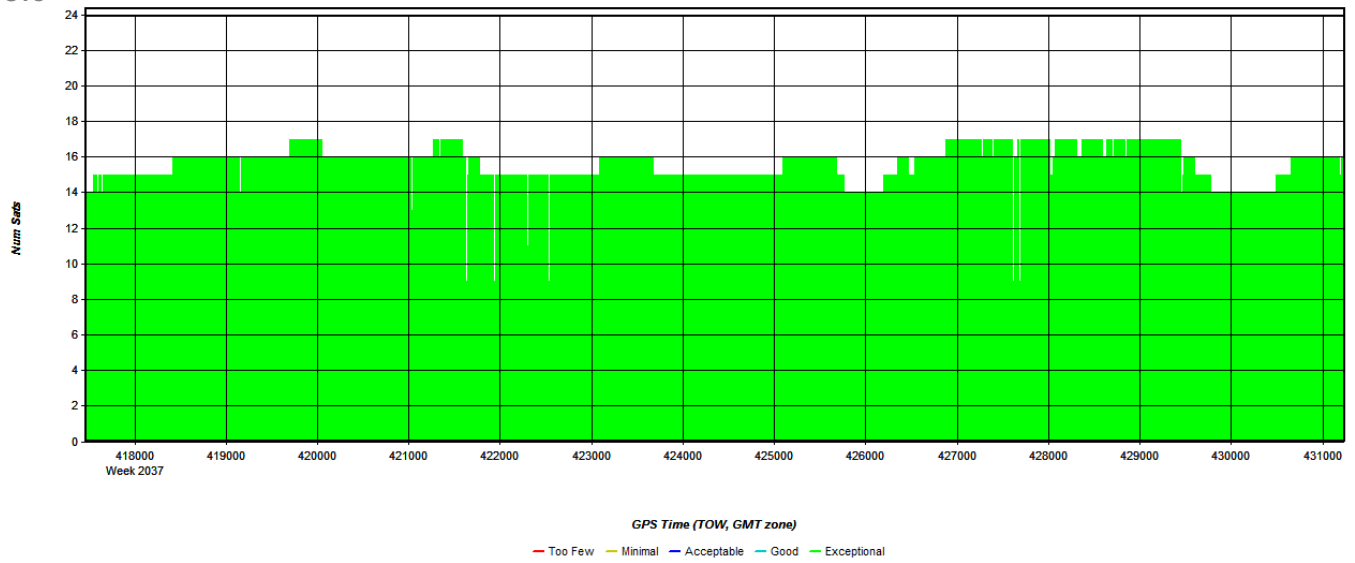
PDOP



Distance from Base



SVs



USGS  
COLLECTION REPORT



Acquisition and Processing details ----- (January 27, 2019)

Log: 190127\_118\_33780084\_17

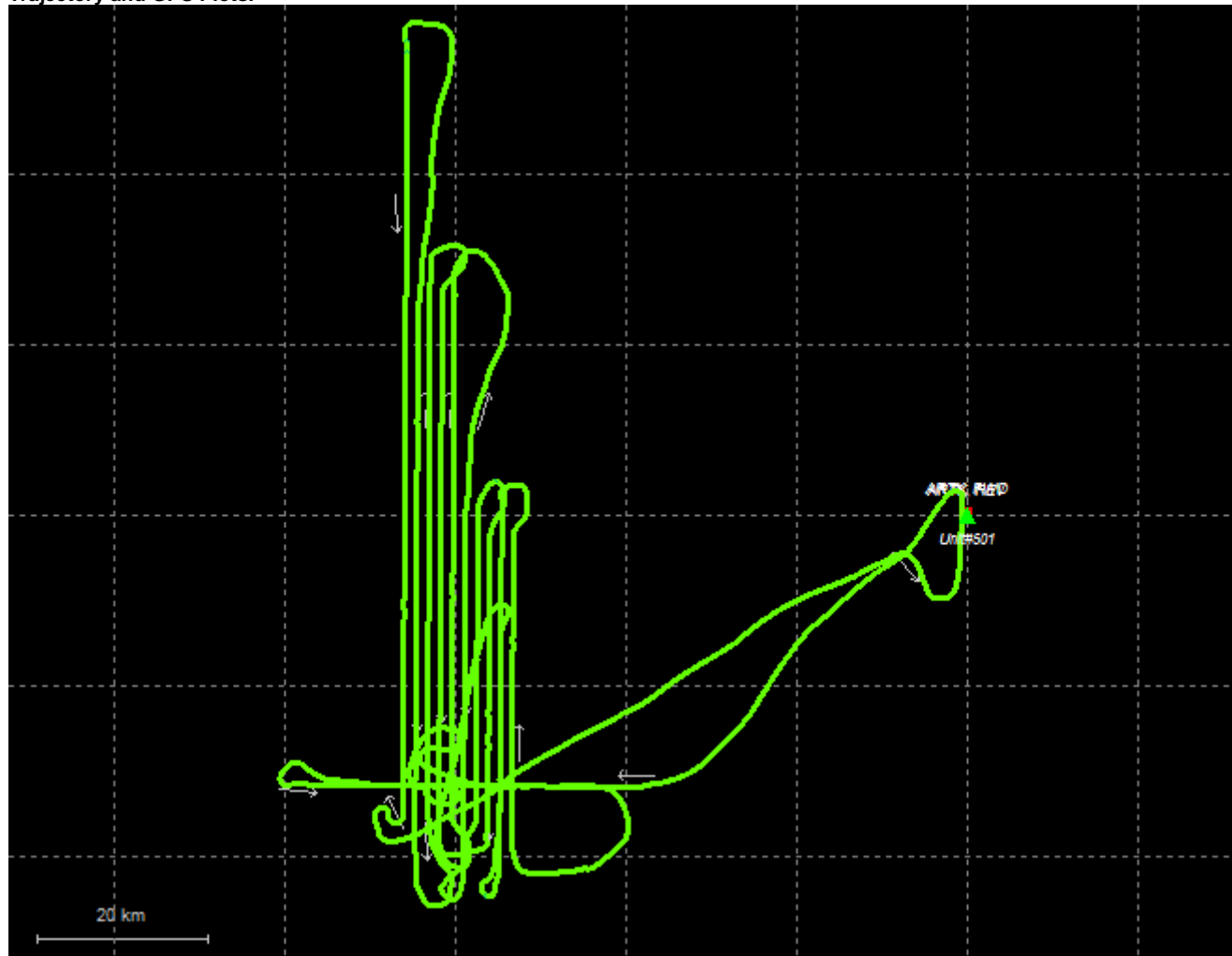
Menu
19.023
ALS Flight Log

	Lift Begin			Lift End			Fit Duration	Fit Hrs	Hobbs Hrs	Activity
	Airport	Chocks	Hobbs	Airport	Chocks	Hobbs				
1	KG TU	16:09	2981.9	KG TU	20:49	2986.0	4:39	4.75	4.1	0900-Production
2										
3										

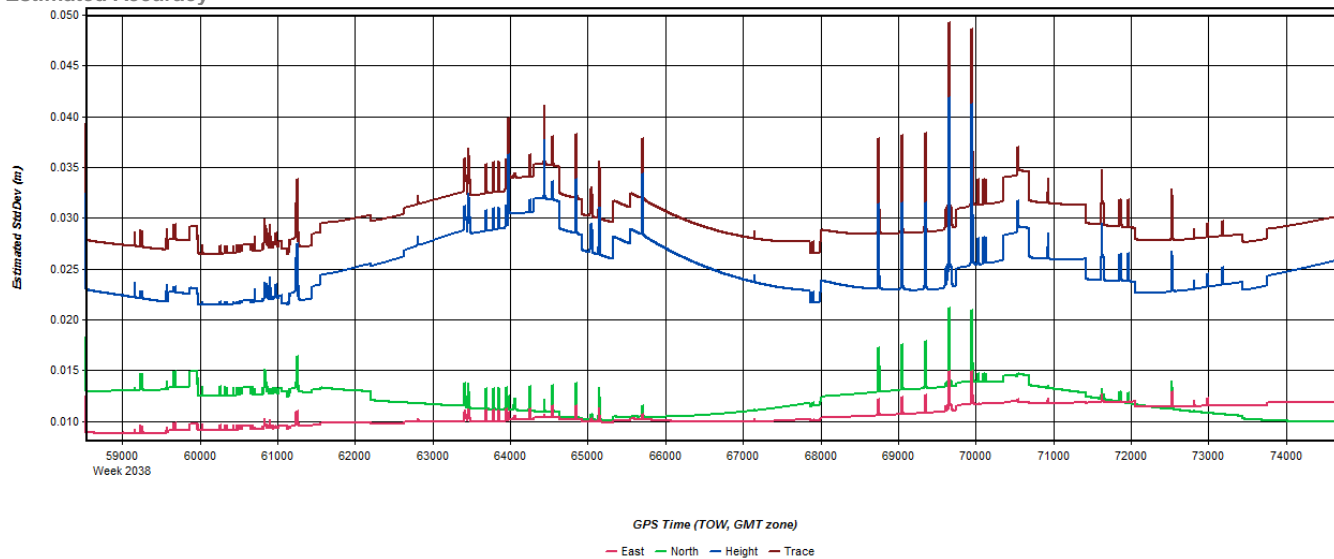
AC80-44-00-02

FGI Job #	Project Name		System	Unit	IMU	PIA	SW1	SW2-Gain	Aper	AutoScan	Ground Temp °C		Min Range Gate	Data Logger Drive		
33780084	Hurricane Harvey ALS80		ALS80	118	uRS	3	-	-	60°	Yes	11.0	17.0	1903m	MM70-08		
Flight Date	GPS Day	Lift	Sun°		Solar Times (UTC)		Laser Power		Pattern	Flying Temp °C		Max Range Gate	Download Drive			
27-Jan-19	19-027	17	-		-		100%		Triangle	0.0 2.0		2537m	NS1TB-94			
Mission ID (yyymmdd_Sen_Job_Lift)	Aircraft	Airport ID	FMS	UTC	AMT (ft)	Speed	Scan Hz	Pulse Rate	FOV	mi/WPT	Altitude Setting		Shipping Track			
190127_118_33780084_17	N8131	KG TU	CCNS 4	-6	7,550	150	35.0	352,000	42	1.384	30.24	30.15	7743 2052 7332			
Pilot #1		Pilot #2		Operator #1		Operator #2										
Wayne Manning		-		Chris Acuña		-										
Base 1 ID	Location	Rec ID	Ant ID	ARP (m)	Start Time (UTC)		Stop Time (UTC)		GPS Filename		Operator		Data			
FEDI 1115	KG TU	GR3#5	GR3#5	1.8	27-Jan-19 15:26		28-Jan-19 01:02		Unit#50127p		Chris Acuña		FTP			
Area	Flight #		Wpt		Distance		UTC		Fit	Altitude	Speed	Scan	Comments and Conditions		SVs	PDOP
	FGI	Client's	From	To	Begin	End	Start	End	Dir	(GPS)	(knots)	Rate				
													Aspen tracker is "off"			
							16:15:46	16:20:46					5 Min GND static alignment at KG TU		22	1.1
							16:49:35	16:51:43					S-Turn in flight alignment		23	1.1
BLOCK_H	73	41	61	55.4	83	17:01:37	17:07:59	85	8595	146	-	Partial Crossing Line		23	1.1	
	63	1	21	0	27.7	17:16:22	17:23:22	356	8210	138	-			21	1.4	
	62	21	1	27.7	0	17:27:54	17:34:26	176	8095	149	-			22	1.3	
	62	1	13	0	16.6	17:40:52	17:44:30	355	8415	144	-	Calibration Line		21	1.4	
	61	1	21	0	27.7	17:54:49	18:01:29	356	8455	139	-			24	1.1	
	60	21	1	27.7	0	18:05:33	18:11:55	176	8230	148	-			23	1.1	
	59	1	21	0	27.7	18:18:39	18:25:12	356	8270	144	-			19	1.3	
	58	41	1	55.4	0	18:35:54	18:49:04	175	8450	149	-			18	1.3	
	57	1	41	0	55.4	18:54:13	19:07:13	356	8470	147	-	21 km cloud		20	1.1	
	56	41	1	55.4	0	19:11:28	19:24:02	177	8170	149	-			18	1.3	
	55	1	41	0	55.4	19:30:35	19:44:14	357	8210	140	-	9 & 11 km cloud		21	1.1	
	54	61	1	83	0	19:54:43	20:14:04	176	8270	148	-	4 km cloud		21	1.2	
						20:14:33	20:16:26					S-Turn in flight alignment		22	1.2	
						20:40:45	20:45:45					5 Min GND static alignment at KG TU		20	1.3	

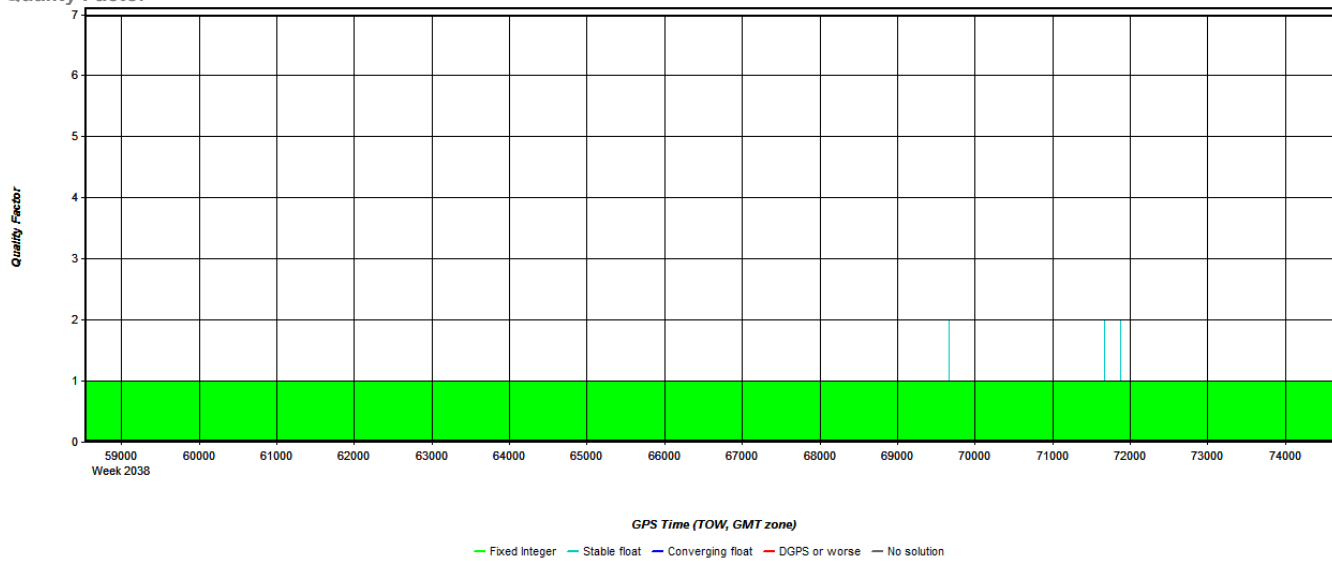
Trajectory and GPS Plots:



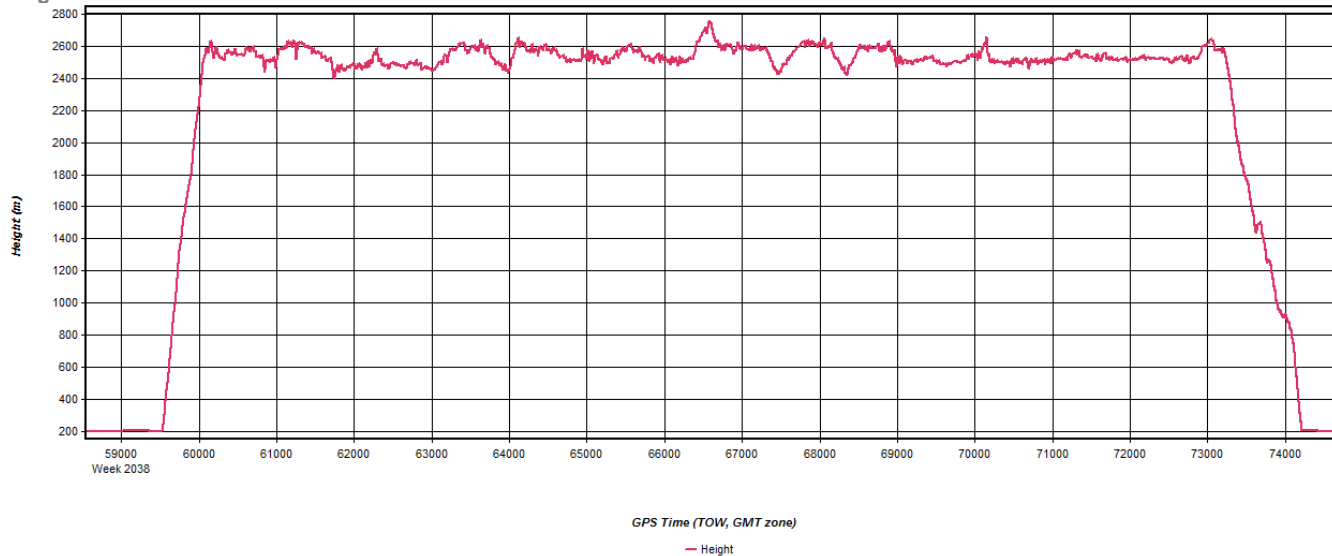
Estimated Accuracy



Quality Factor

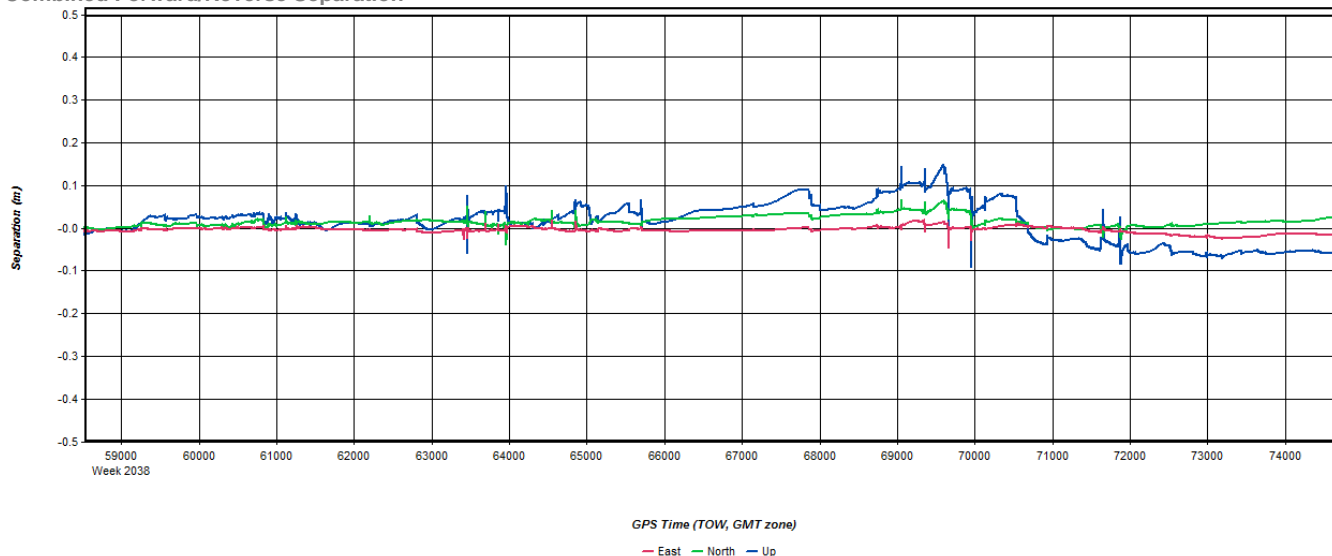


Height

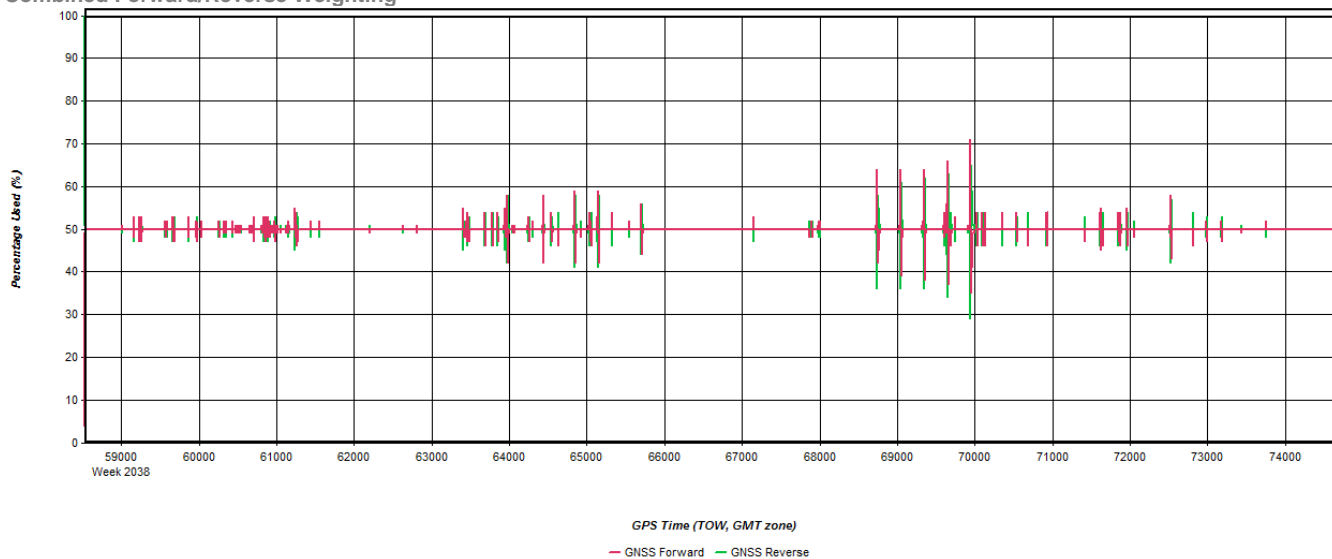




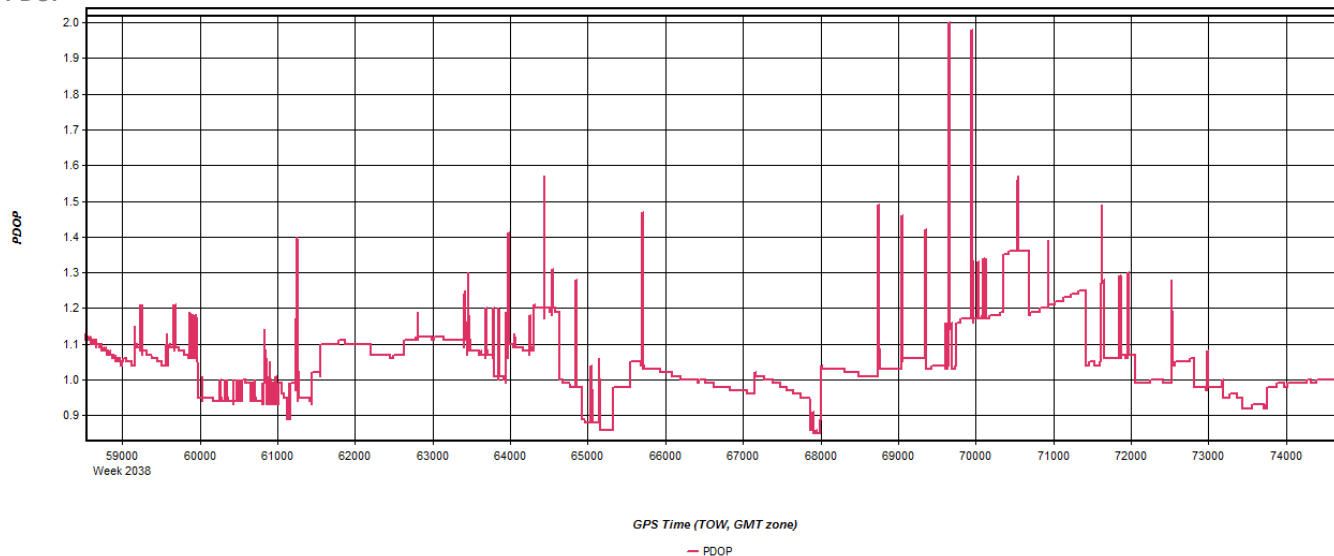
Combined Forward/Reverse Separation



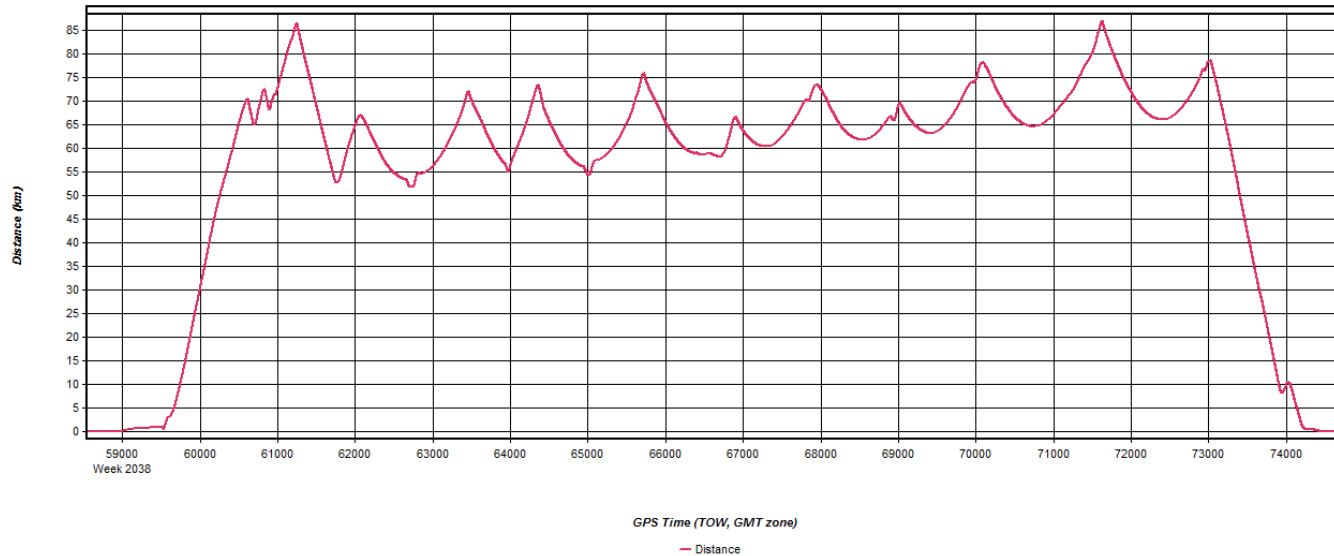
Combined Forward/Reverse Weighting



PDOP

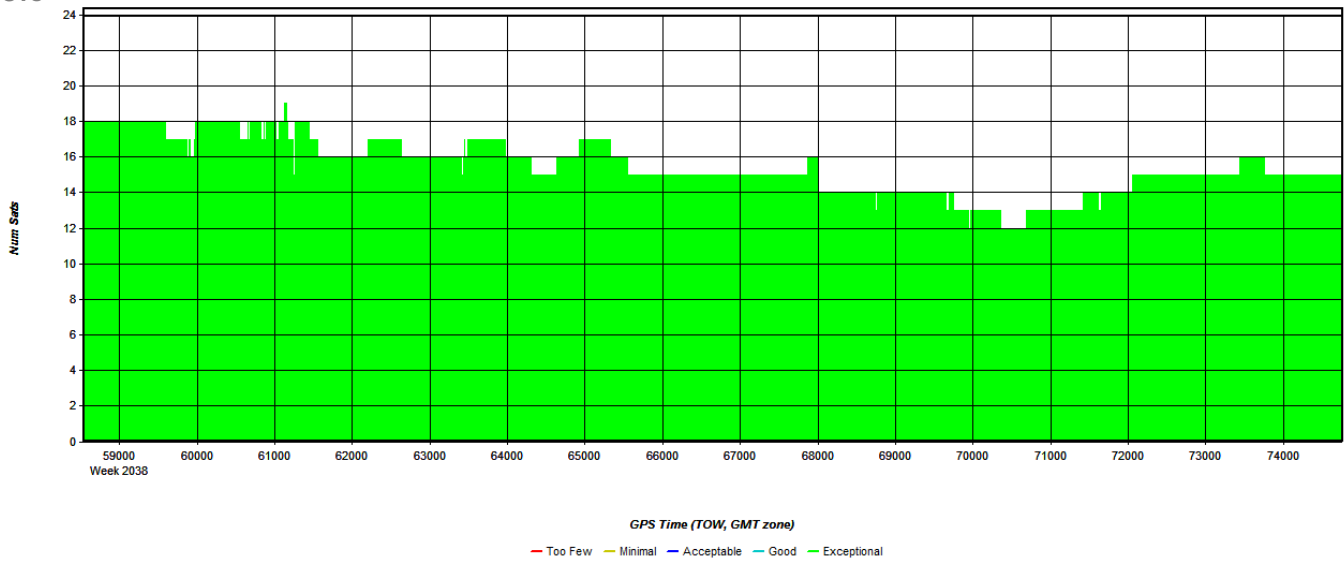


Distance from Base





SVs



USGS  
COLLECTION REPORT



Acquisition and Processing details ----- (January 27, 2019)

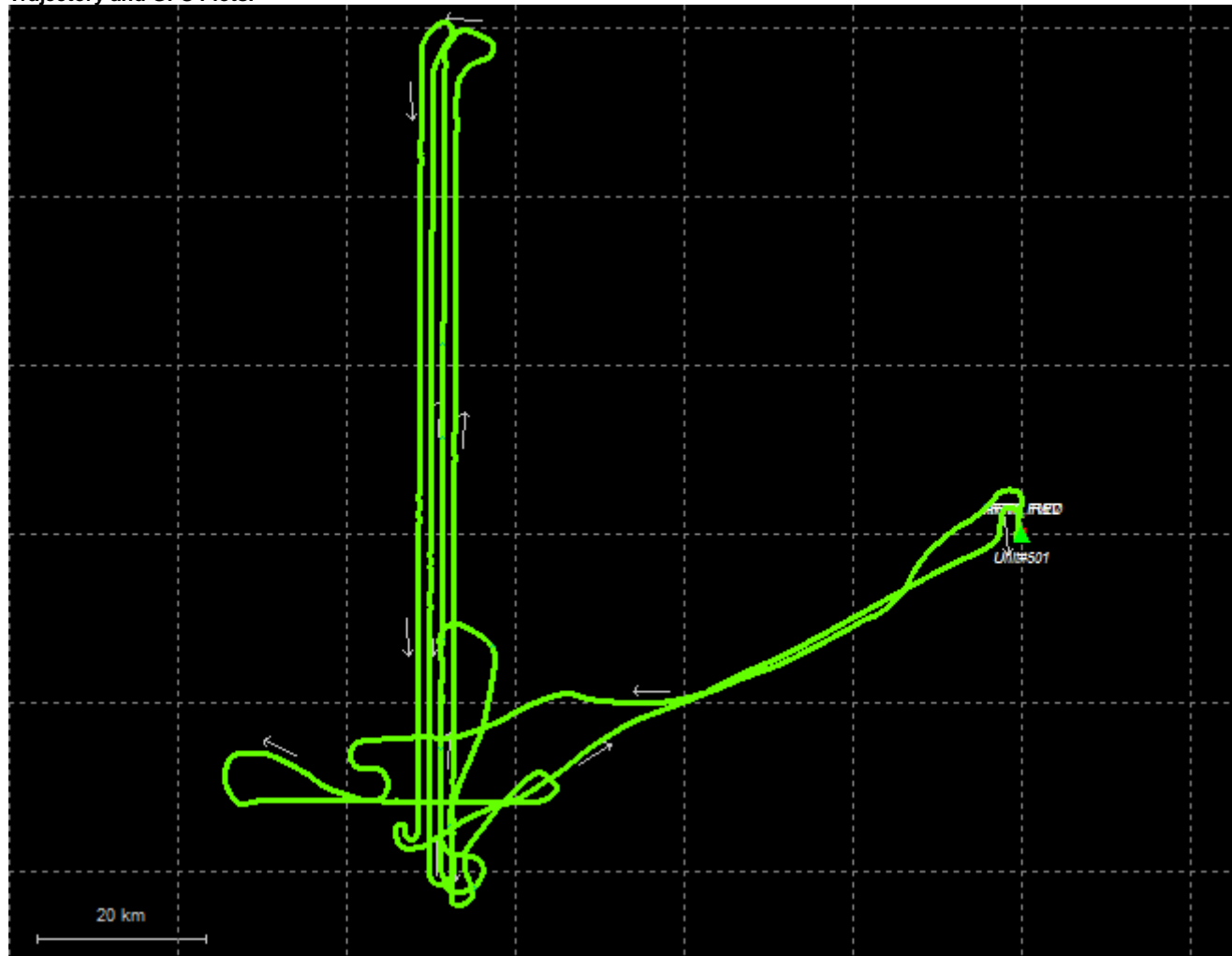
Log: 190127\_118\_33780084\_18

Menu
19.023
ALS  
Flight Log  
AC80-44-00-02

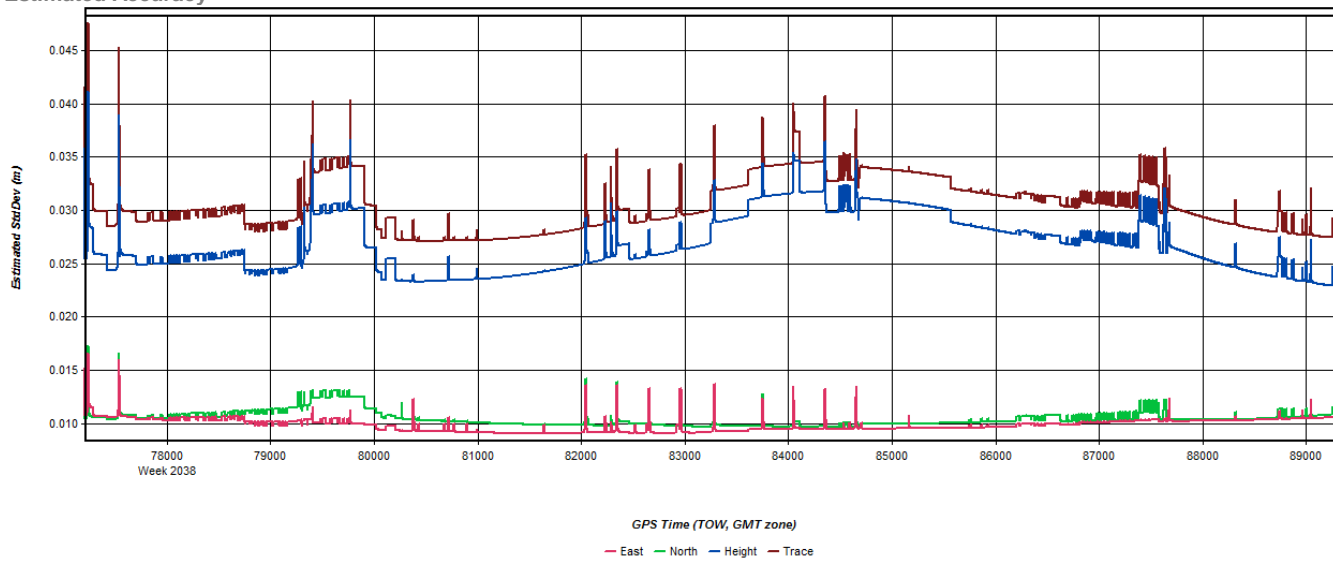
Lift Begin			Lift End			Fit	Fit	Hobbs	Activity	
Airport	Chocks	Hobbs	Airport	Chocks	Hobbs	Duration	Hrs	Hrs		
1	KG TU	21:22	2986.0	KG TU	0:51	2989.0	3:29	3.50	3.0	0900-Production
2										
3										

FGI Job #	Project Name				System	Unit	IMU	PIA	SW1	SW2-Gain	Aper	AutoScan	Ground Temp °C		Min Range Gate	Data Logger Drive
33780084	Hurricane Harvey ALS80				ALS80	118	uRS	3	-	-	60°	Yes	17.0	14.0	1903m	MM70-08
Flight Date	GPS Day	Lift			Sun°	Solar Times (UTC)		Laser Power		Pattern	Flying Temp °C		Max Range Gate	Download Drive		
27-Jan-19	19-027	18			-	-		100%		Triangle	2.0 2.0		2537m	NS1TB-94		
Mission ID (yyymmdd_Sen_Job_Lift)		Aircraft	Airport ID	FMS	UTC	AMT (ft)	Speed	Scan Hz	Pulse Rate	FOV	km/WPT	Altitude Setting		Shipping Track		
190127_118_33780084_18		N8131	KG TU	CCNS 4	-6	7,550	150	35.0	352,000	42	1.384	30.12 30.06		7743 2052 7332		
Pilot #1		Pilot #2		Operator #1		Operator #2										
Wayne Manning				Chris Acuña												
Base 1 ID	Location	Rec ID	Ant ID	ARP (m)	Start Time (UTC)		Stop Time (UTC)		GPS Filename		Operator		Data			
FEDI 1115	KG TU	GR3#5	GR3#5	1.8	27-Jan-19 15:26		28-Jan-19 01:02		Unit#50127p		Chris Acuña		FTP			
Area	Flight #		Wpt		Distance		UTC		Fit	Altitude	Speed	Scan	Comments and Conditions		SVs	PDOP
	FGI	Client's	From	To	Begin	End	Start	End	Dir	(GPS)	(knots)	Rate				
													Aspen tracker is "off"			
							21:27:47	21:32:47					5 Min GND static alignment at KG TU		-	-
							22:02:45	22:05:21					S-Turn in flight alignment		24	1.1
BLOCK_H	73		32	51	42.9	69.2	22:11:25	22:17:53	86	8750	144	-	Partial Crossing Line		23	1.1
							22:27:24	22:47:56	356	8660	147	-			21	1.2
							22:53:28	23:12:39	175	8500	140	-			22	1.2
							23:18:45	23:22:28	355	8670	133	-	Calibration Line		21	1.3
							23:34:33	23:54:19	355	8280	143	-			22	1.3
							23:58:57	00:18:39	175	8275	149	-			23	1.4
							00:19:06	00:20:44					S-Turn in flight alignment		24	1.2
							00:44:13	00:49:13					5 Min GND static alignment at KG TU		20	1.3
													Lift terminated for end of pilot's flight day			

Trajectory and GPS Plots:

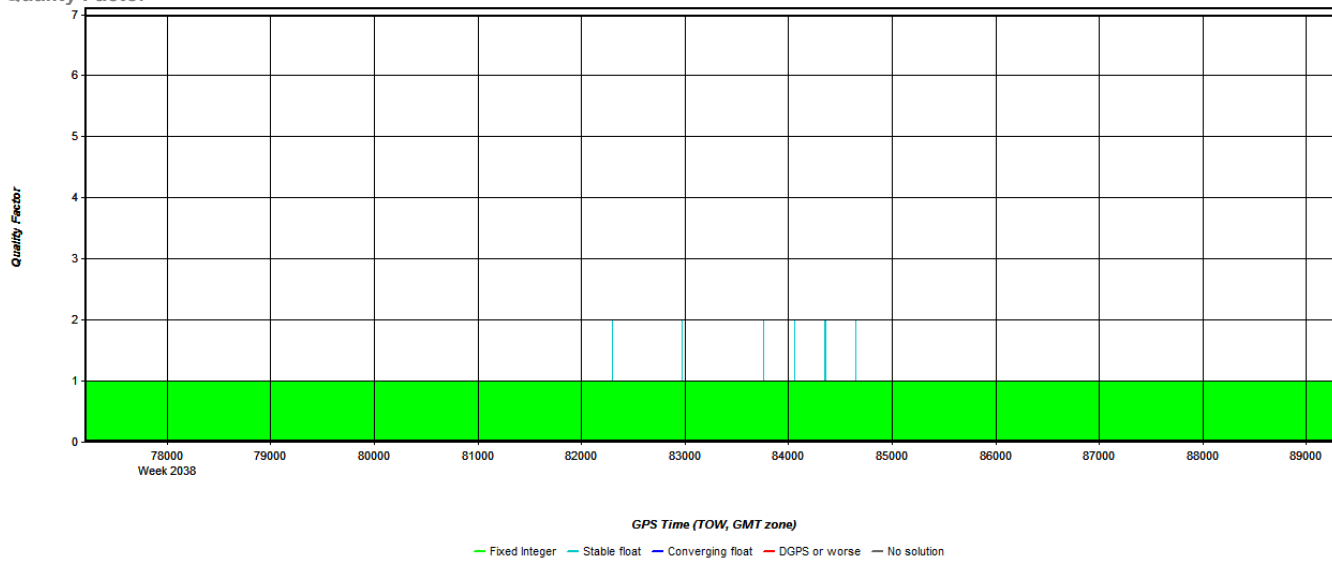


Estimated Accuracy

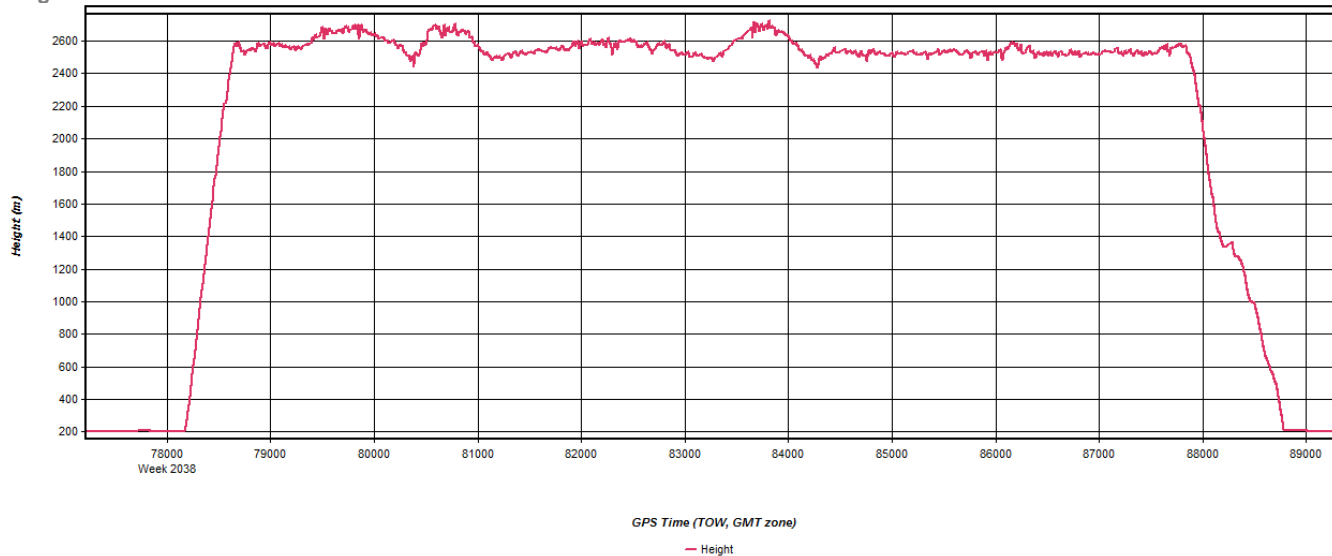




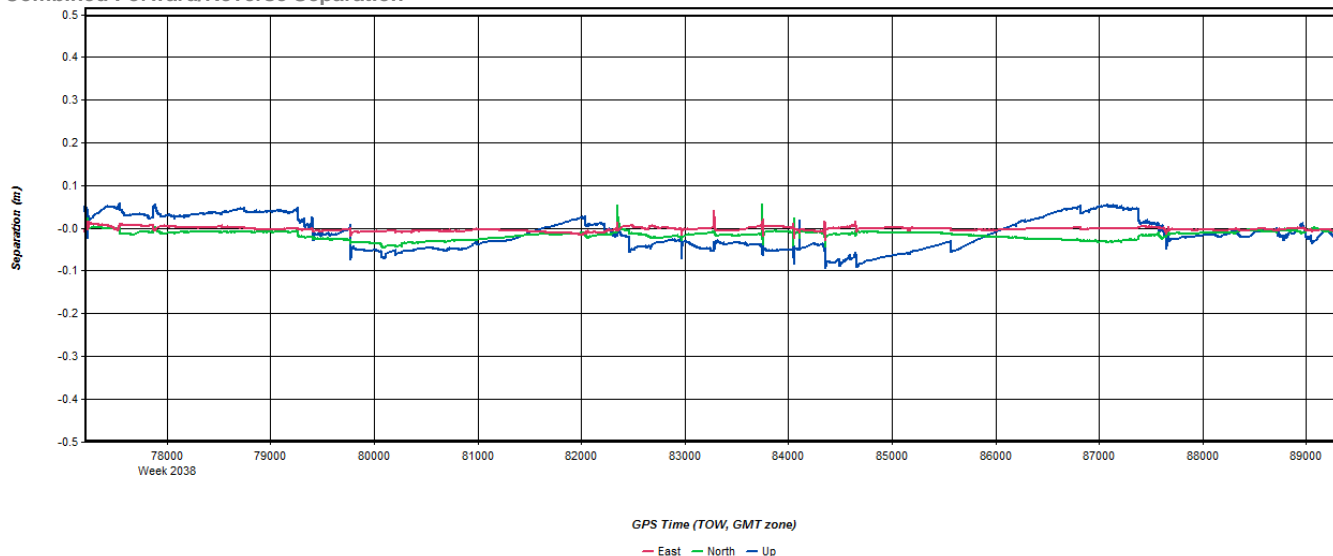
Quality Factor



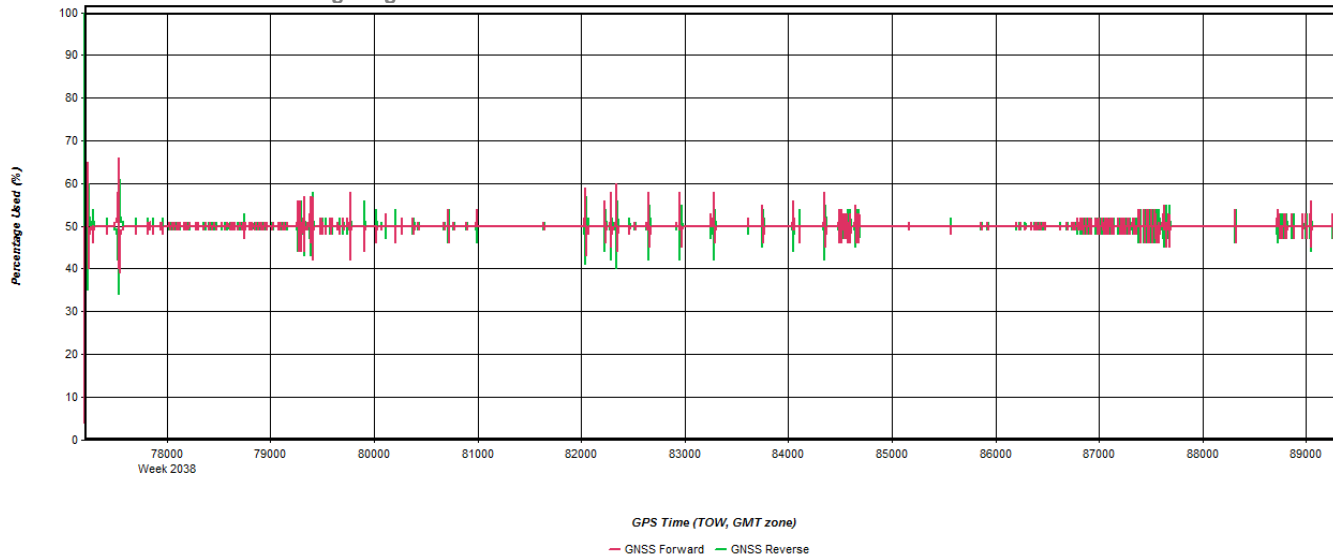
Height



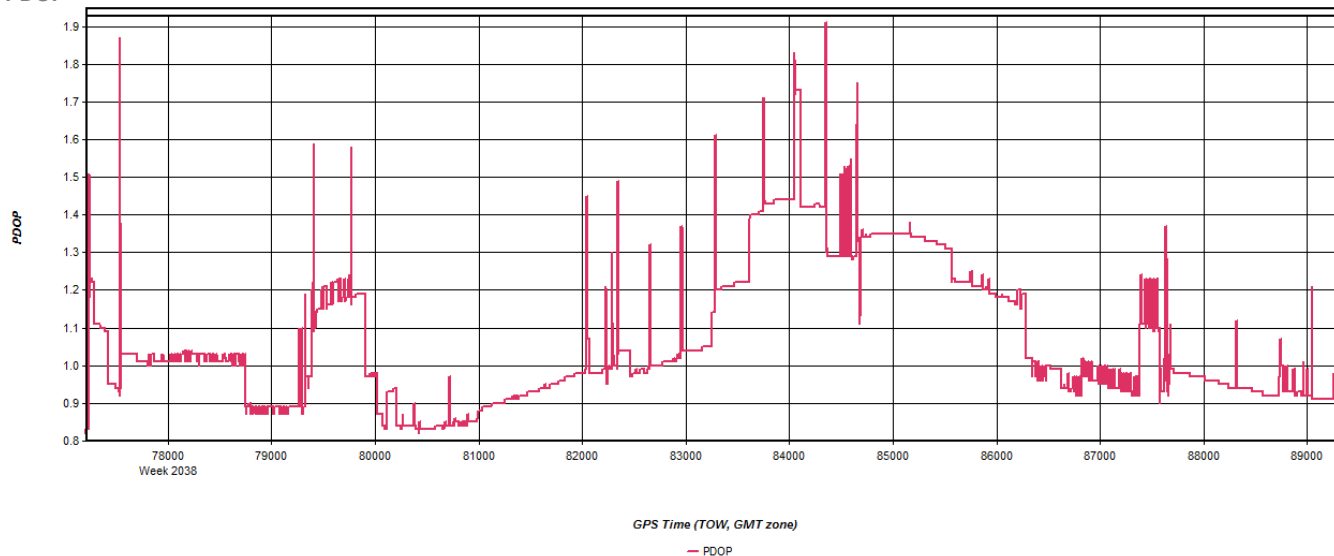
Combined Forward/Reverse Separation



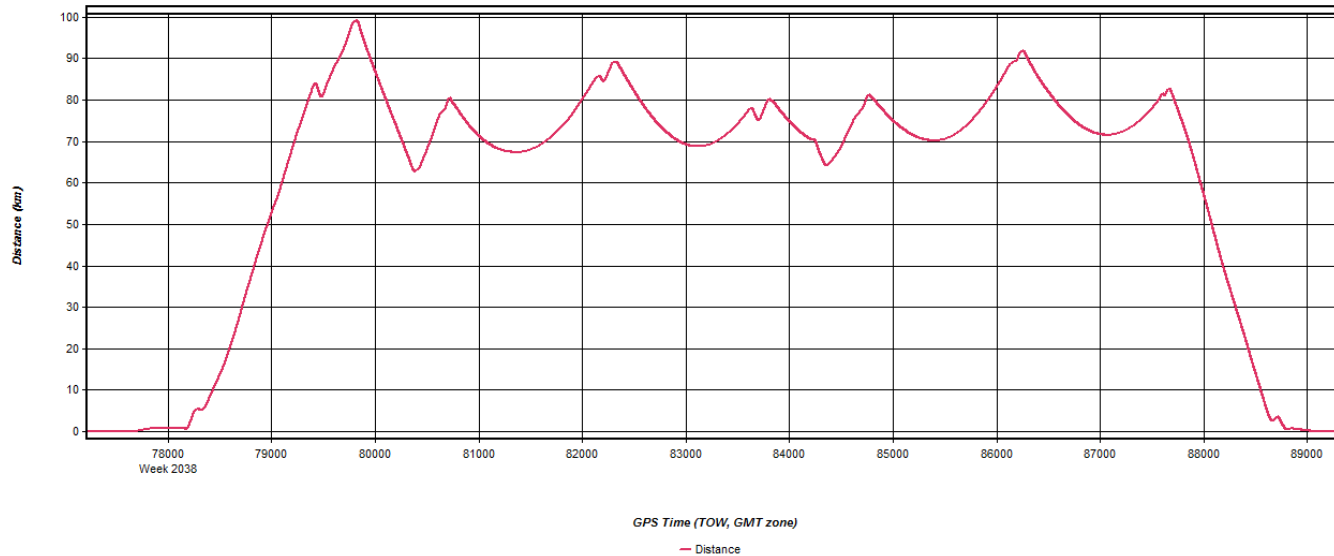
Combined Forward/Reverse Weighting



PDOP

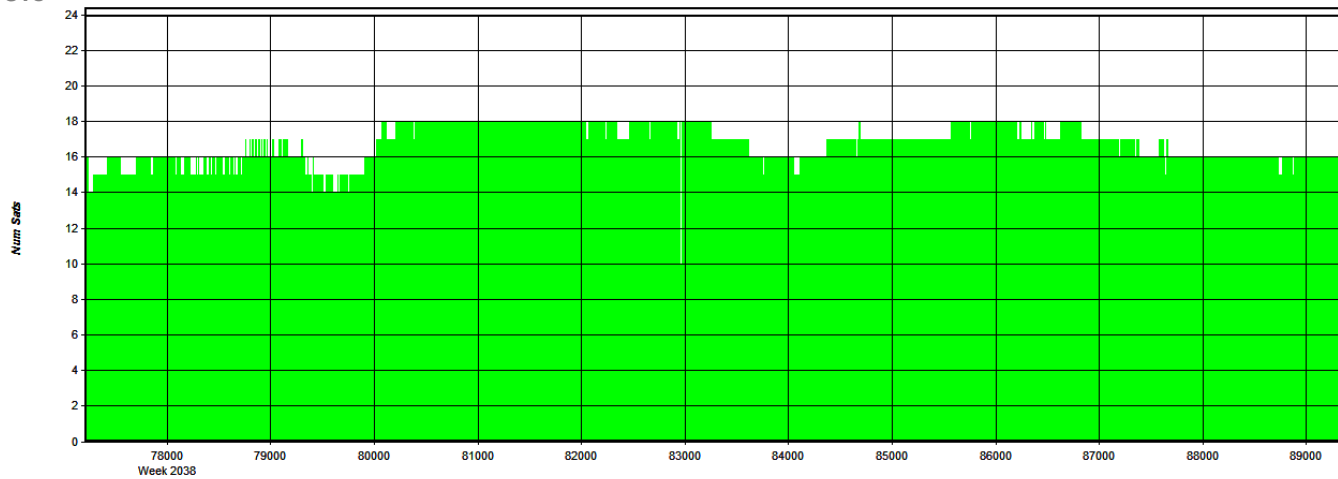


Distance from Base





SVs



USGS  
COLLECTION REPORT



Acquisition and Processing details ----- (January 27, 2019)

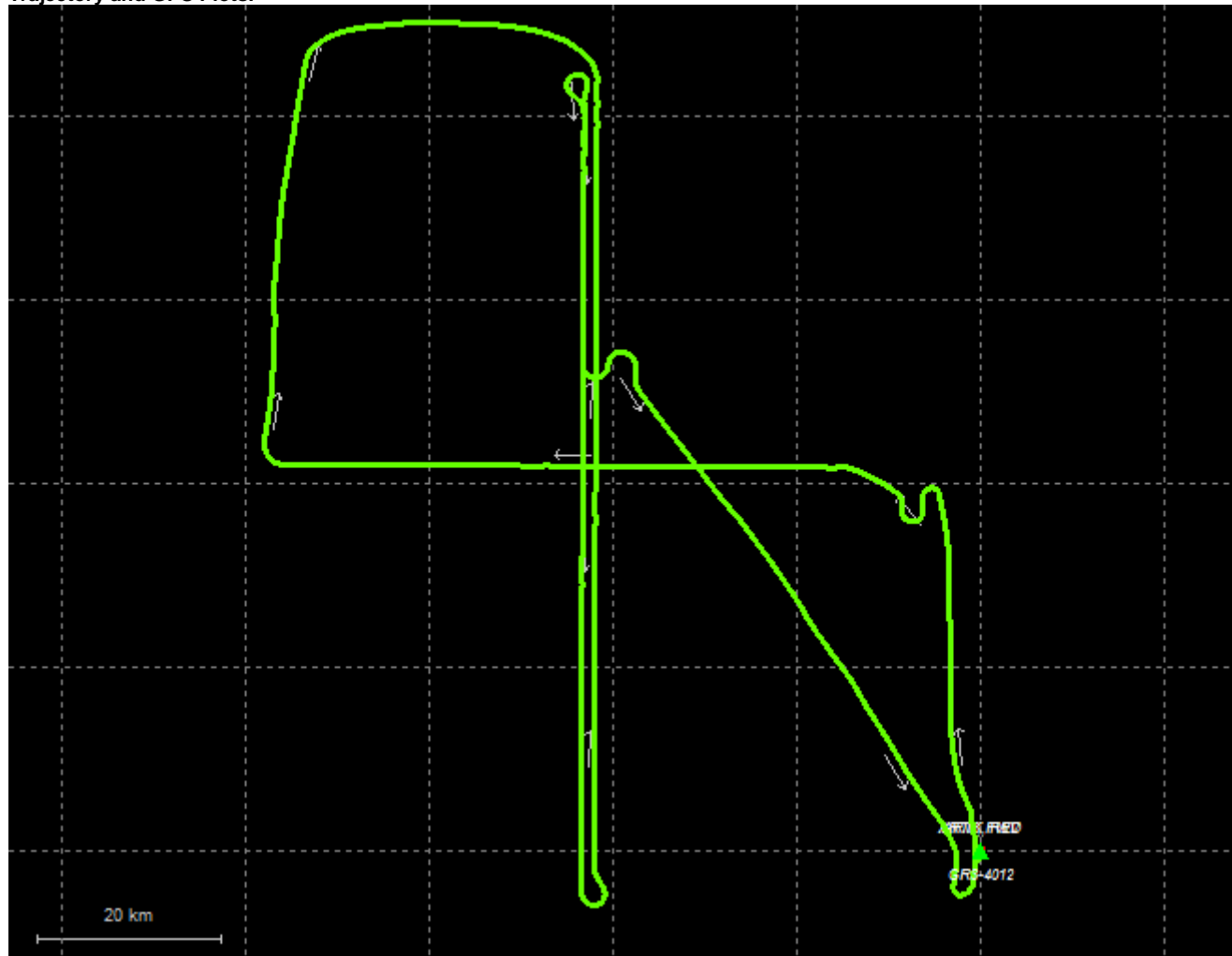
Log: 190127\_133\_33780084\_10

Menu
19.023
ALS  
Flight Log

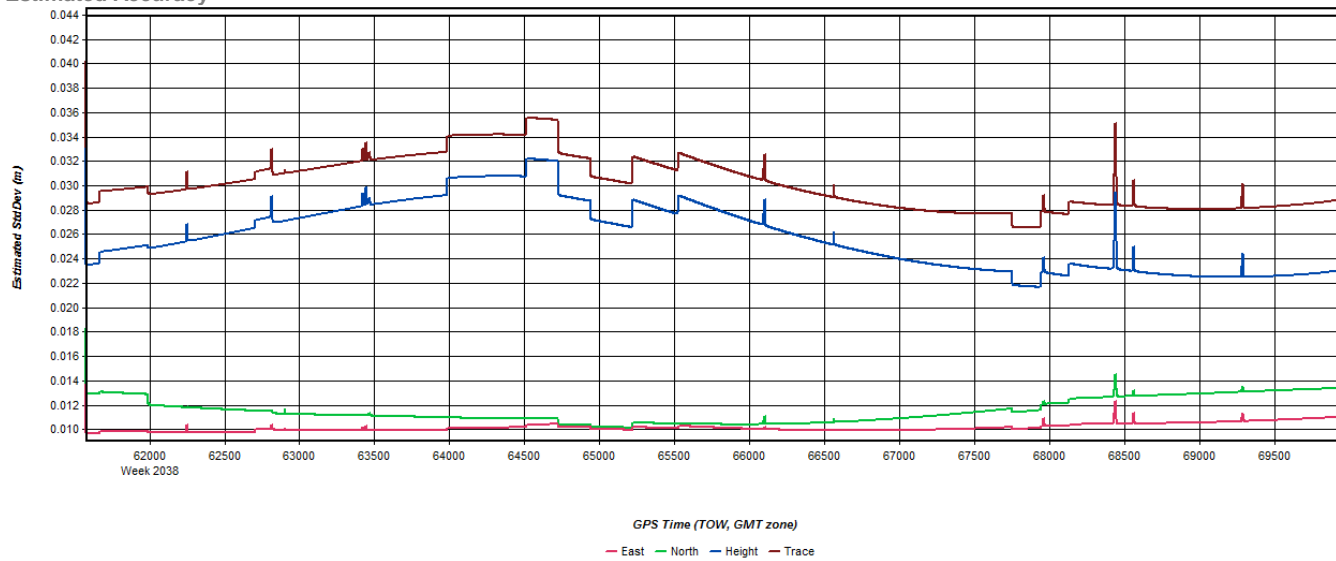
	Lift Begin			Lift End			Fit Duration	Fit Hrs	Hobbs Hrs	Activity
	Airport	Chocks	Hobbs	Airport	Chocks	Hobbs				
1	KBAZ	17:01	8163.8	KBAZ	19:29	8166.2	2:28	2.50	2.4	0900-Production
2										
3										

FGI Job # <b>33780084</b>		Project Name <b>USGS Disaster Recovery Harvey</b>				System <b>ALS80</b>	Unit <b>133</b>	IMU <b>uRS</b>	PIA <b>3</b>	SW1 <b>255</b>	SW2-Gain <b>60°</b>	Aper <b>Yes</b>	AutoScan <b>Yes</b>	Ground Temp °C <b>15.6 18.9</b>	Min Range Gate <b>7322</b>	Data Logger Drive <b>MM70-04</b>	
Flight Date <b>27-Jan-19</b>	GPS Day <b>19-027</b>	Lift <b>10</b>			Sun° <b>NA</b>	Solar Times (UTC) <b>NA</b>		Laser Power <b>100%</b>	Pattern <b>Triangle</b>	Flying Temp °C <b>-1.0 -1.0</b>	Max Range Gate <b>8830</b>	Download Drive <b>NS1TB-105</b>		Shipping Track			
Mission ID (ymmdd_Sen_Job_Lift) <b>190127_133_33780084_10</b>		Aircraft <b>N76JN</b>	Airport ID <b>KBAZ</b>	FMS <b>FCMS</b>	UTC <b>7,550</b>	AMT (ft) <b>150</b>	Speed <b>35.0</b>	Scan Hz <b>352,000</b>	Pulse Rate <b>1.384</b>	FOV <b>30.22</b>	km/WPT <b>30.12</b>	Altitude Setting					
Pilot #1 <b>Randy Green</b>		Pilot #2 <b>Maison Collins</b>		Operator #1 <b>Adam Mueller</b>		Operator #2											
Base 1 ID <b>FGI 8003</b>	Location <b>KBAZ</b>	Rec ID <b>Unit 4</b>	Ant ID <b>Unit 4</b>	ARP (m) <b>1.8</b>	Start Time (UTC) <b>27-Jan-19 16:44</b>	Stop Time (UTC) <b>27-Jan-19 19:52</b>	GPS Filename <b>GR3-40127q</b>	Operator <b>Adam Mueller</b>	Data <b>With AB</b>								
Base 2 ID	Location	Rec ID	Ant ID	ARP (m)	Start Time (UTC)	Stop Time (UTC)	GPS Filename	Operator	Data								
Area	Flight #		Wpt		Distance		UTC		Dir	Altitude (GPS)	Speed (knots)	Scan Rate	Comments and Conditions			SVs	PDOP
	FGI	Client's	From	To	Begin	End	Start	End									
							17:07:23	17:12:23					Ground Static at KBAZ			24	1.2
							17:36:06	17:38:07					S turn			22	1.3
Block_F	75		52	15	70.6	19.4	17:41:29	17:53:23	W	8622	145	35.0	Cross Line			21	1.4
	38		57	1	77.5	0	18:12:38	18:30:22	S	8471	145	35.0	Speed up to 155 at start; km 27 possible cloud			21	1.2
	37		1	57	0	77.5	18:33:24	18:51:22	N	8471	145	35.0	km 21-25 clouds; km 48 cloud; km 76 possible cloud			17	1.3
	37		57	47	77.5	63.7	18:54:28	18:59:23	S	8471	140	35.0	Calibration line			18	1.1
							19:00:09	19:02:11					S turn			17	1.3
							19:19:51	19:24:51					Ground Static at KBAZ			16	1.3

Trajectory and GPS Plots:

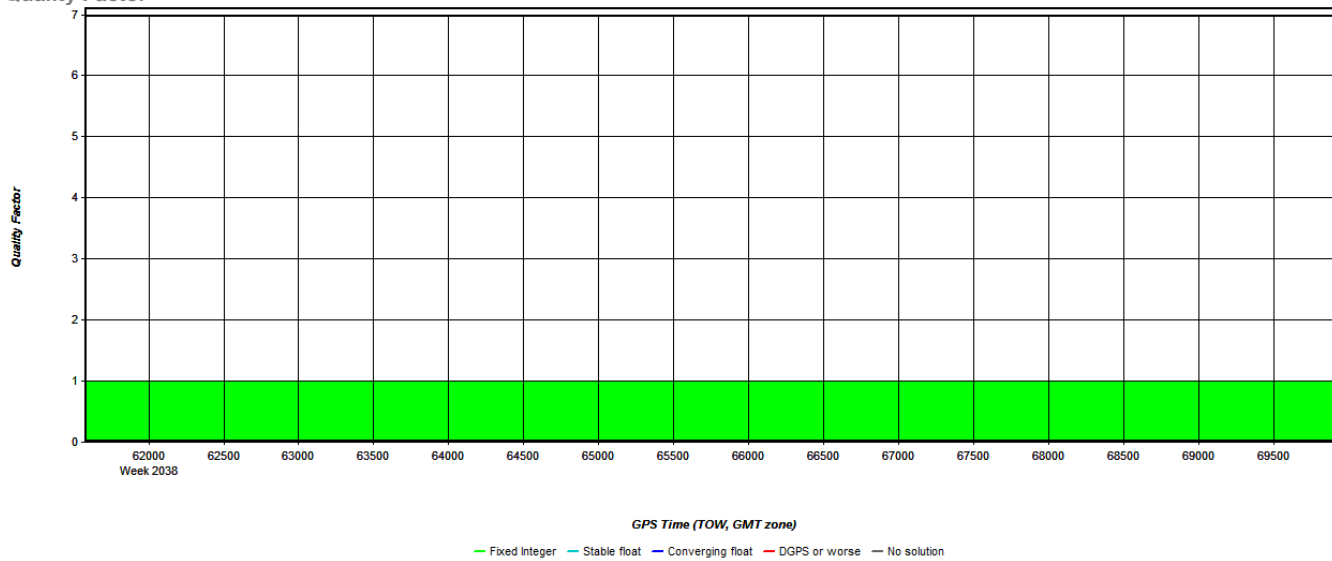


Estimated Accuracy

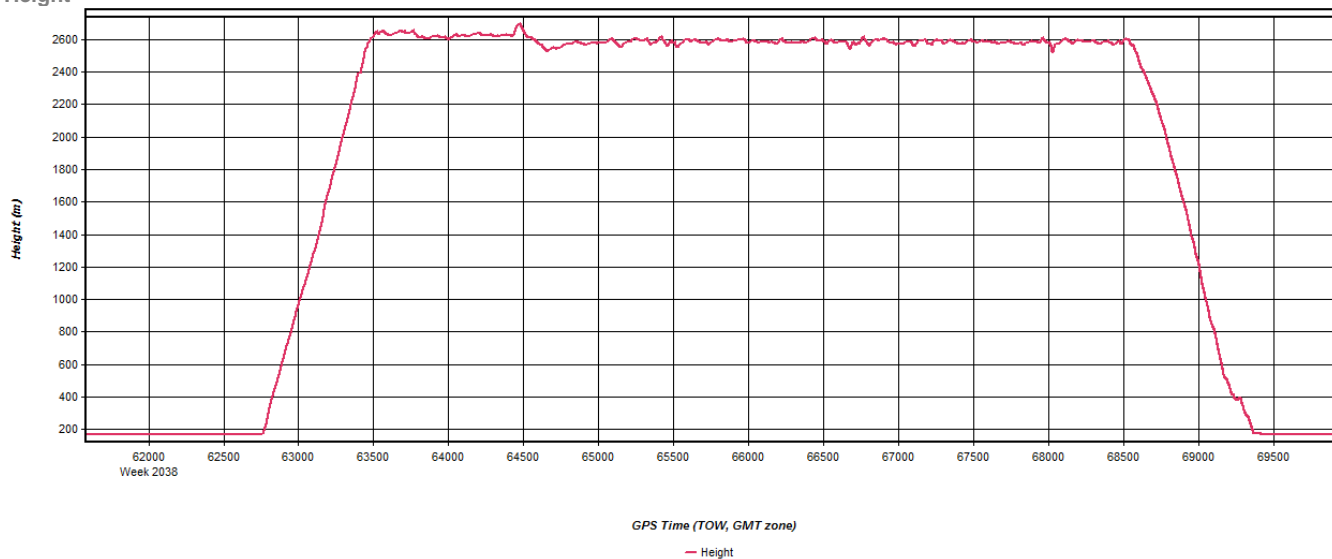




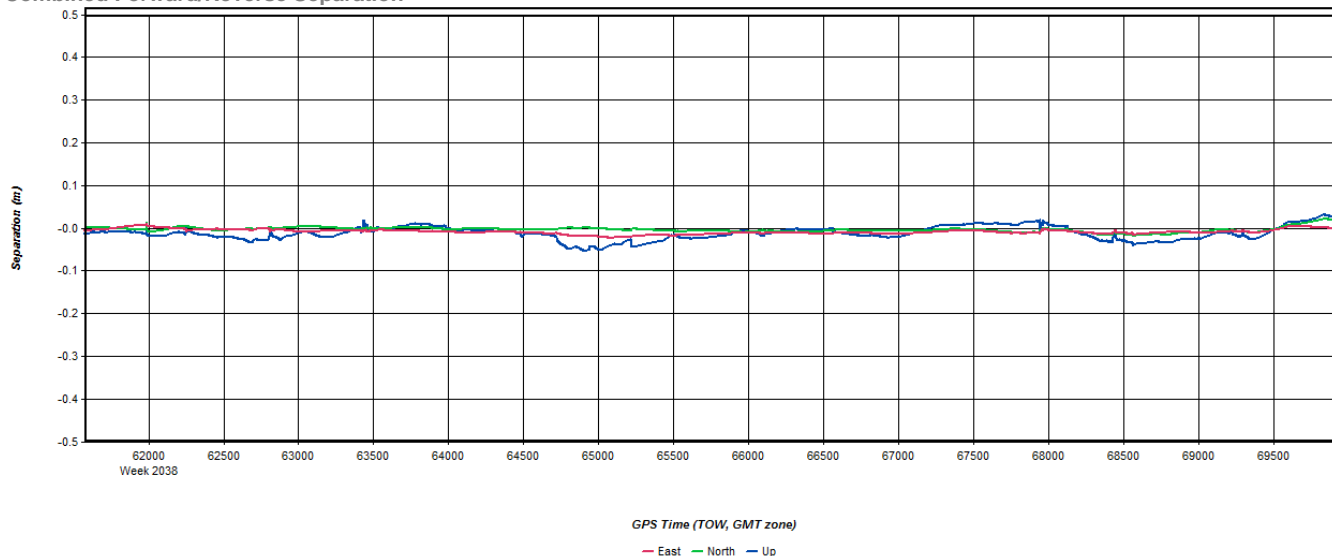
Quality Factor



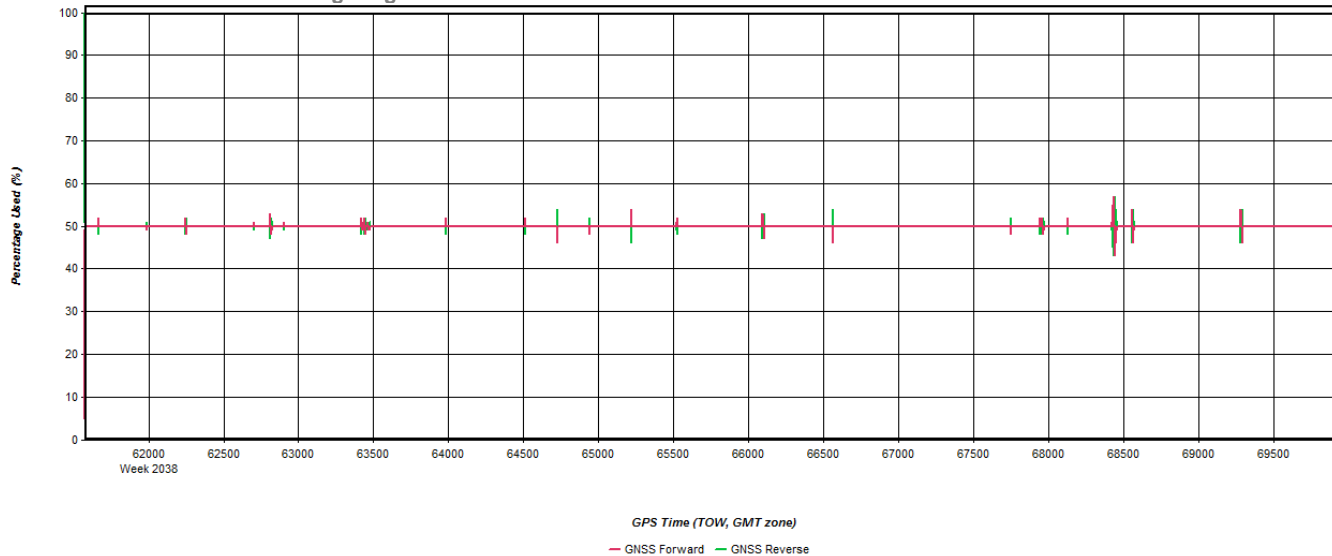
Height



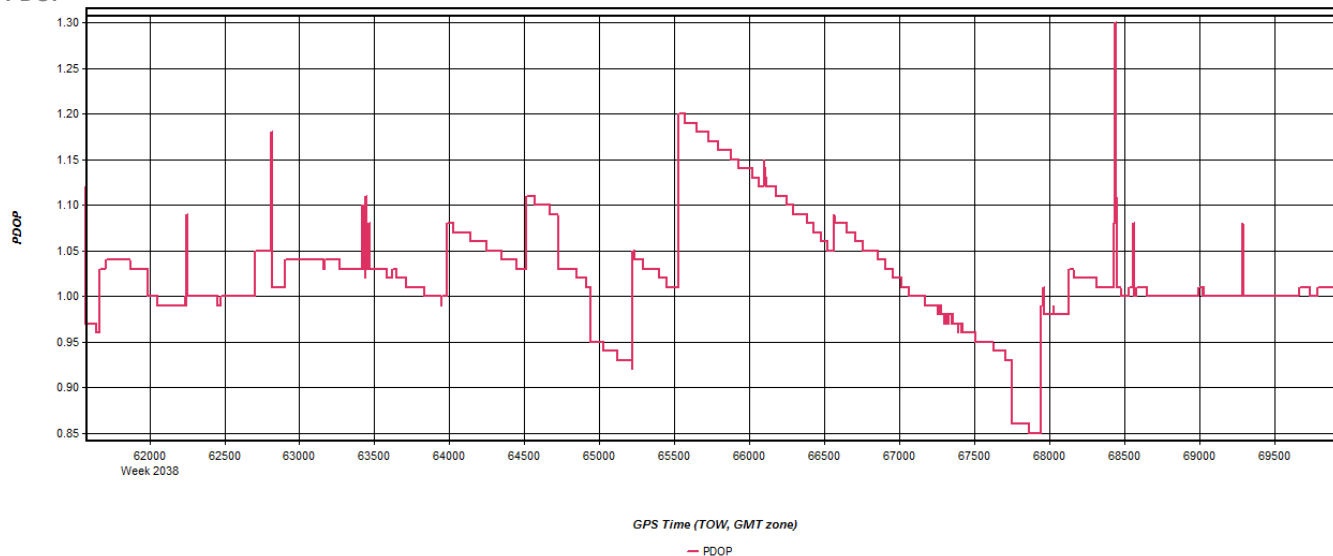
Combined Forward/Reverse Separation



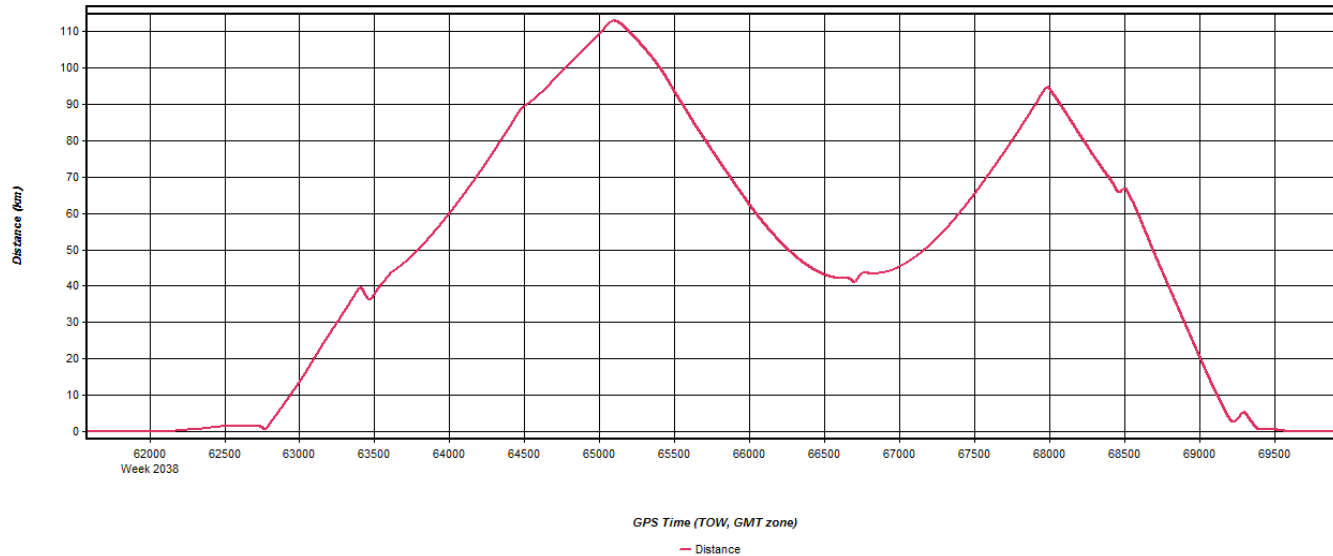
Combined Forward/Reverse Weighting



PDOP

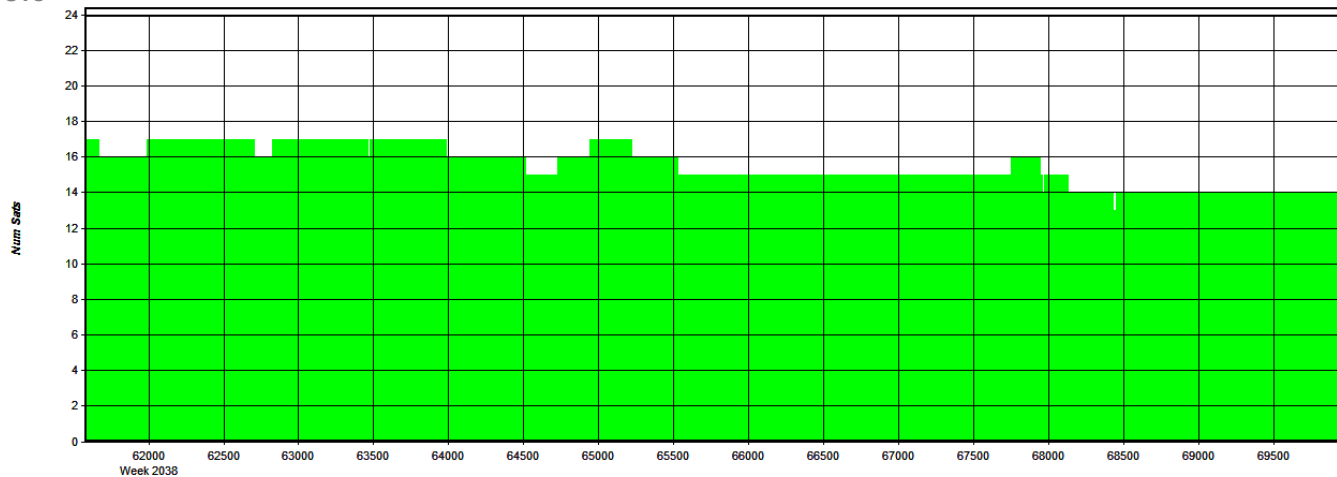


Distance from Base





SVs



GPS Time (TOW, GMT zone)  
- Too Few - Minimal - Acceptable - Good - Exceptional

USGS  
COLLECTION REPORT



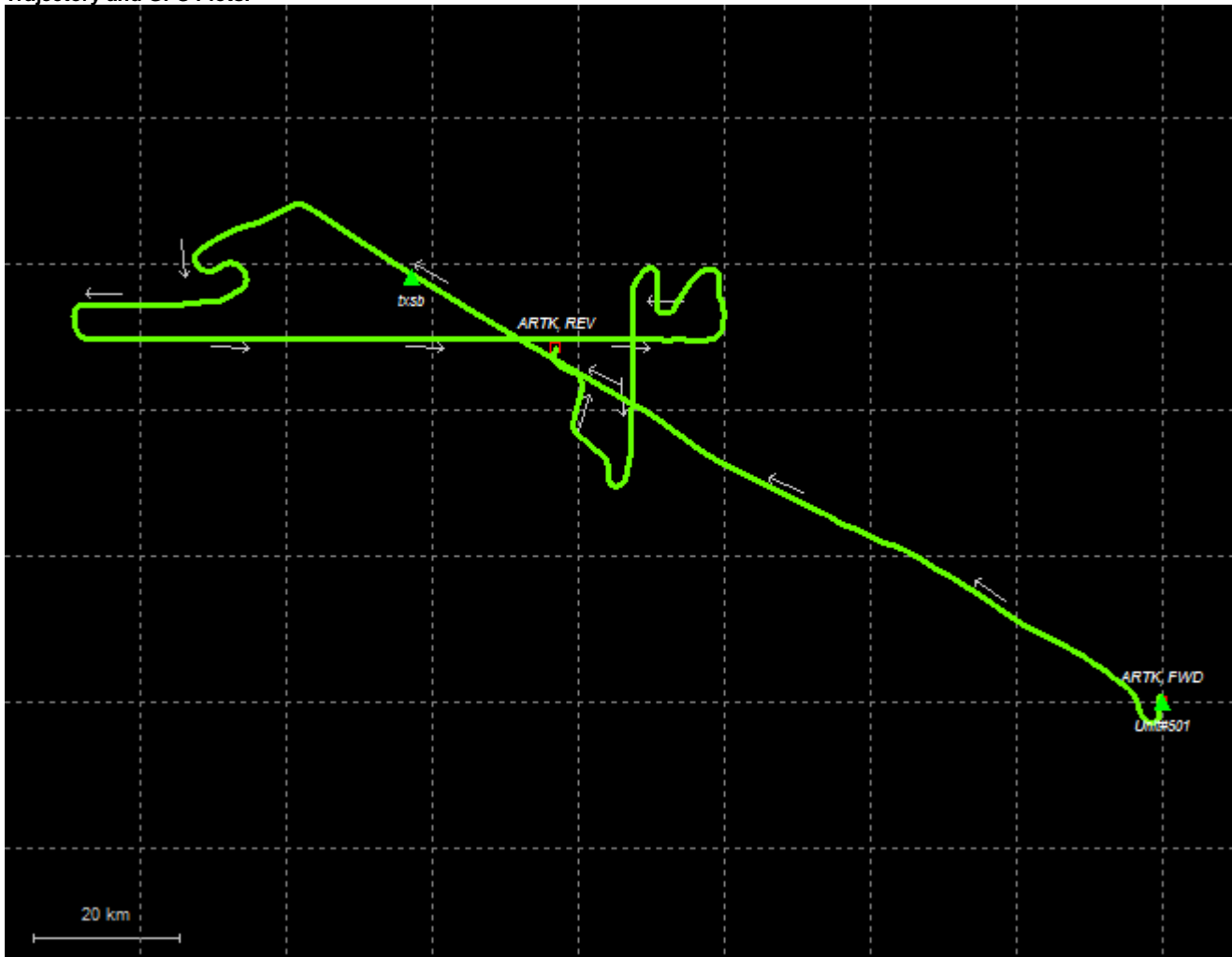
Acquisition and Processing details ----- (January 28, 2019)

Log: 190128\_118\_33780084\_19

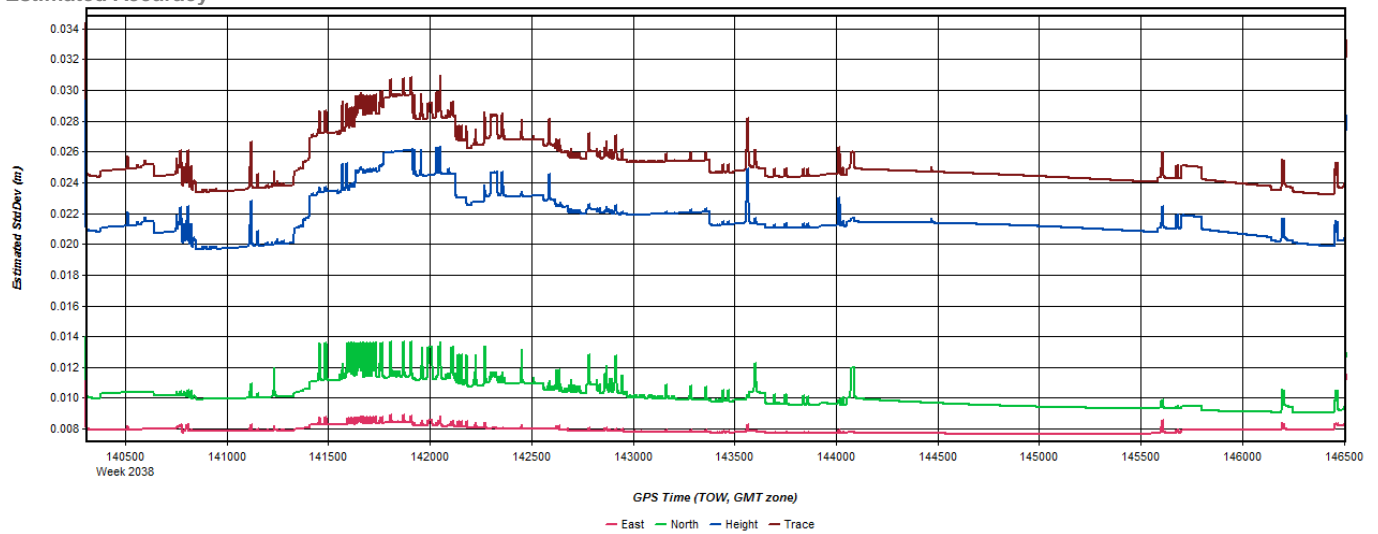
FUGRO		Menu										ALS							
		Lift Begin			Lift End			Fit	Fit	Hobbs	Activity								
		Port	Chocks	Hobbs	Airport	Chocks	Hobbs	Duration	Hrs	Hrs									
1		KGTU	14:54	2989.0	KGTU	16:46	2990.5	1:52	1.75	1.5	0900-Production								
2																			
3																			
FUGRO		Fugro USA Land, Inc.										AC80-44-00-02							
Flight Log																			
33780084		Hurricane Harvey ALS80			ALS80		118		uRS		3		- - 60° Yes		12.0 - 1903m		MM70-01		
28-Jan-19		19-028		19		-		-		-		100%		Triangle		- - 2537m		AP1TB#36	
190128_118_33780084_19		N8131		KGTU		CCNS 4		-6		7,550		150		35.0		352,000		42 1.384	
Wayne Manning		-		Chris Acuña		-		-		-		-		-		-		-	
FEDI 1115		KGTU		GR3#5		GR3#5		1.8		28-Jan-19 13:42		30-Jan-19 00:17		Unit#50128n		Chris Acuña		FTP	
Area	Flight #		Wpt		Distance		UTC		Dir	Altitude (GPS)	Speed (knots)	Scan Rate	Comments and Conditions				SVs	PDOP	
	FGI	Client's	From	To	Begin	End	Start	End											
													Aspen tracker is "off"						
							14:58:52	15:03:52					5 Min GND static alignment at KGTU				25	1.1	
							15:42:13	15:47:13					5 Min acquisition of CORS TXSB				23	1.2	
							15:52:14	15:54:52					S-Turn in flight alignment				22	1.2	
BLOCK_H	75		1	56	0	76.1	16:02:14	16:20:19	83	8500	141	-					23	1.2	
	49		61	1									Breaking off line for ALS warning-Corrupt encoder data. The encoder value is greater than 50 degrees.				23	1.1	
							16:41:22						Conducting an in flight reboot						
													Lift terminated for in flight reboot						



Trajectory and GPS Plots:

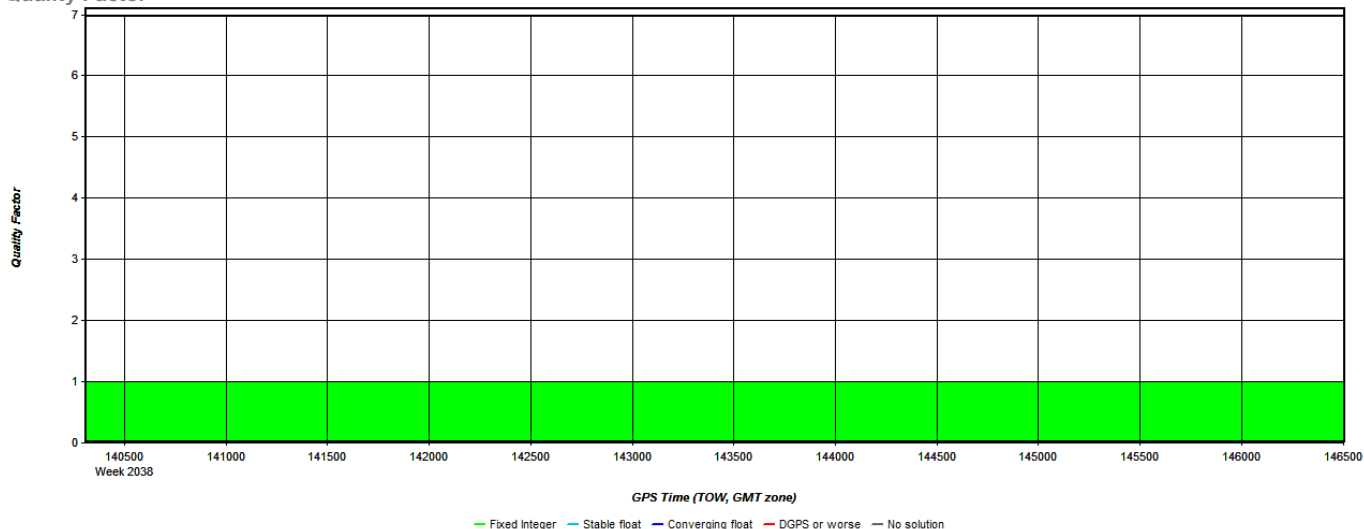


Estimated Accuracy

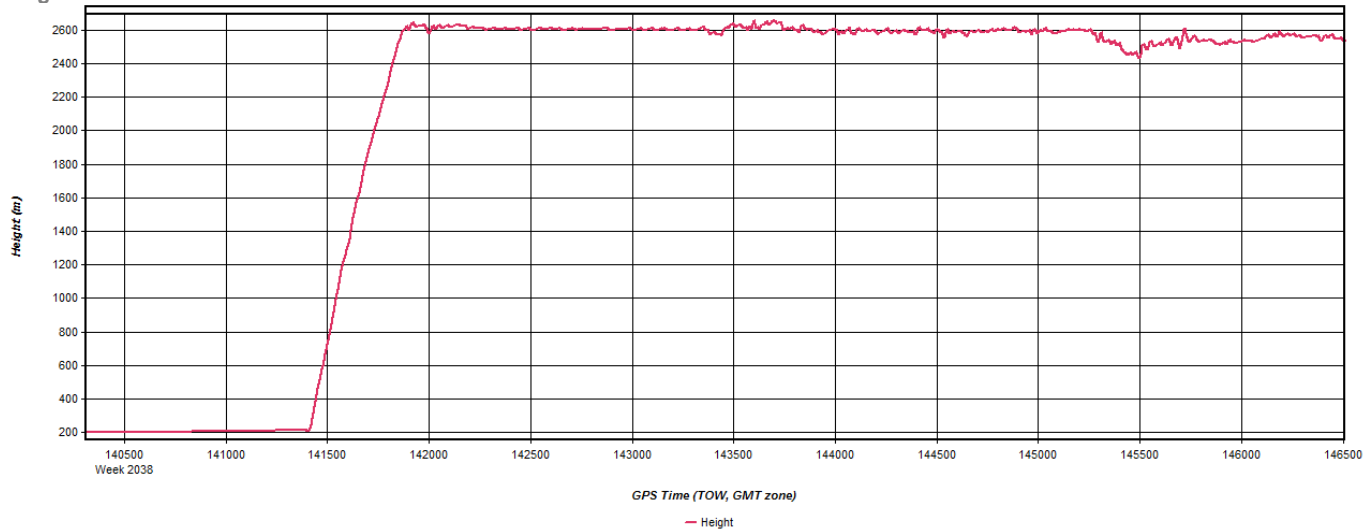




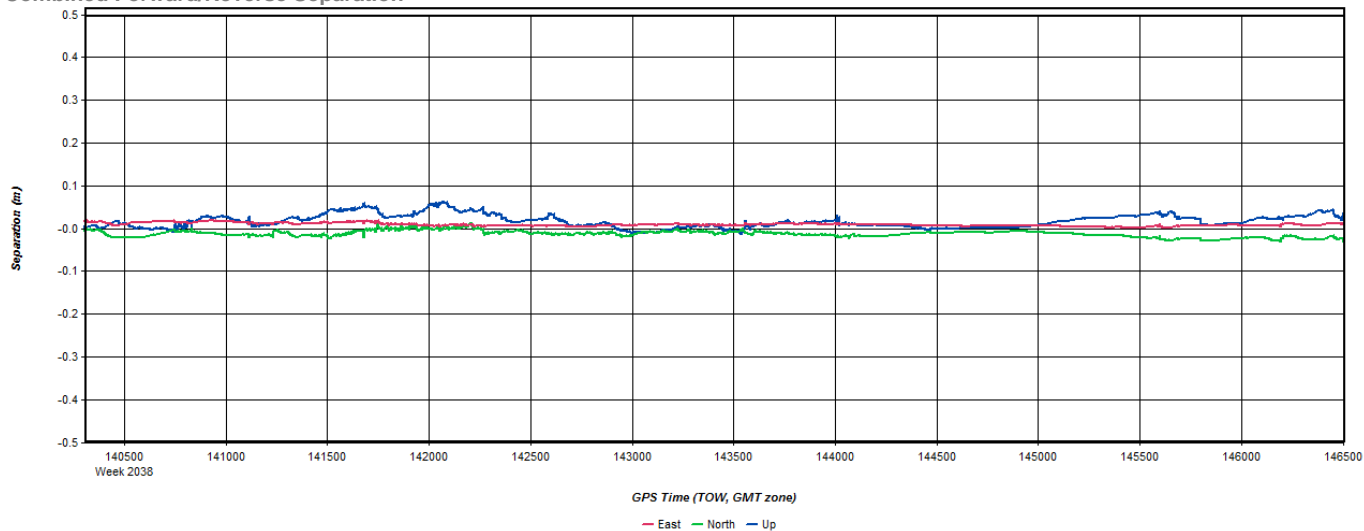
Quality Factor



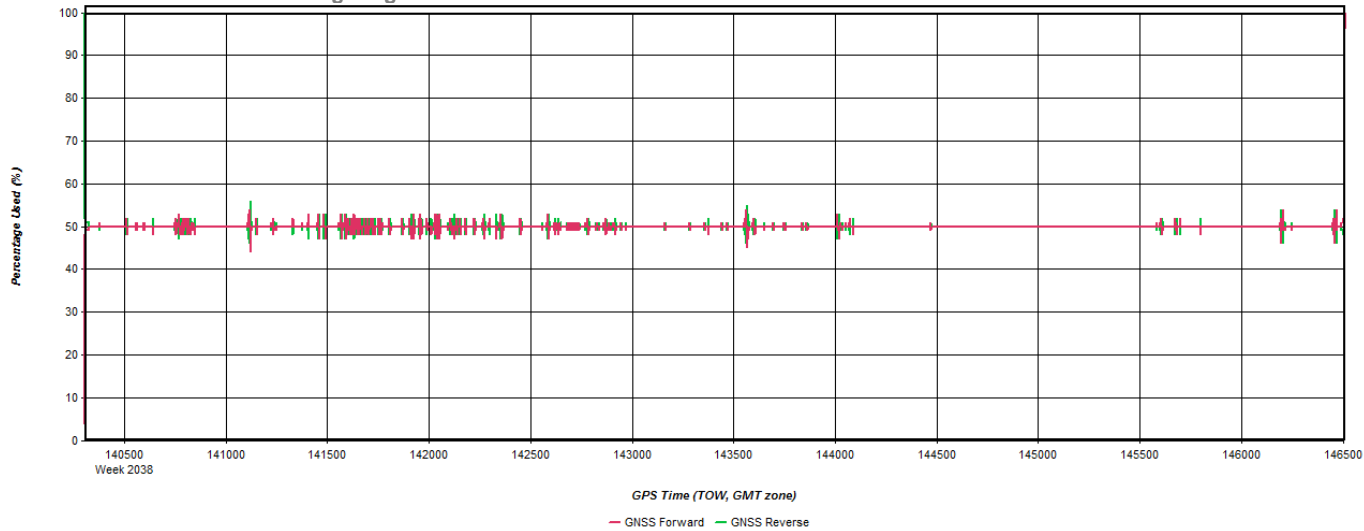
Height



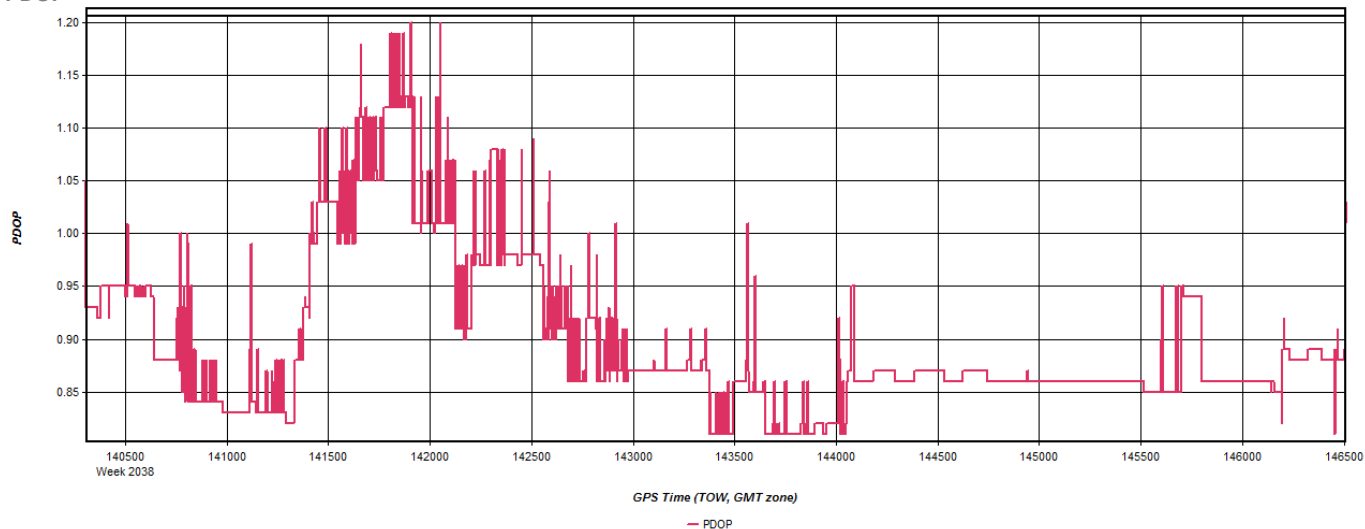
Combined Forward/Reverse Separation



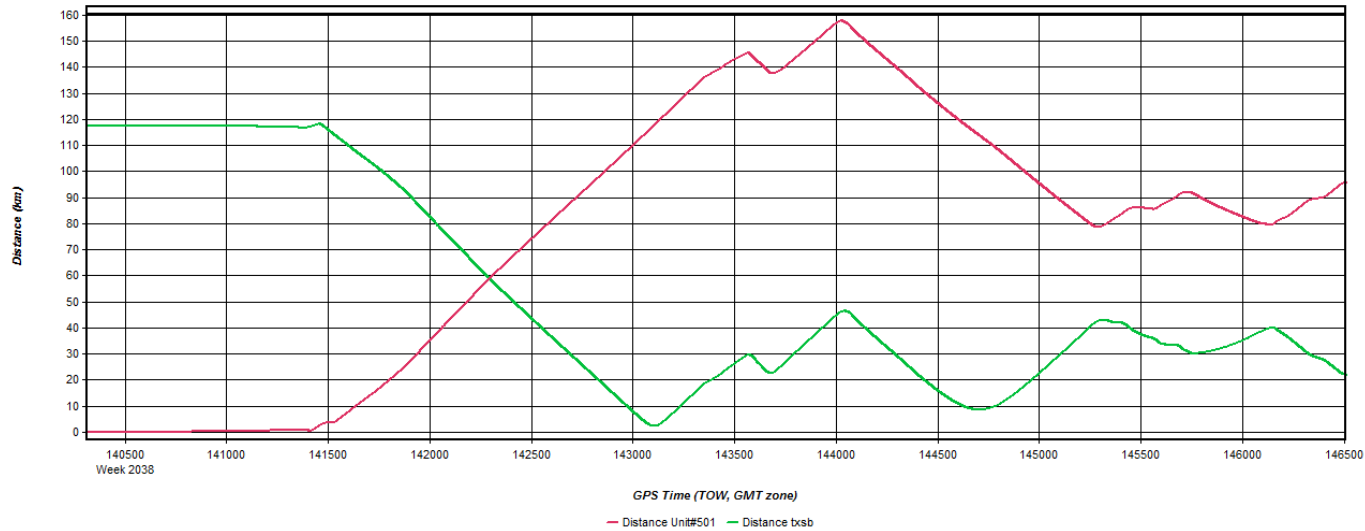
Combined Forward/Reverse Weighting



PDOP

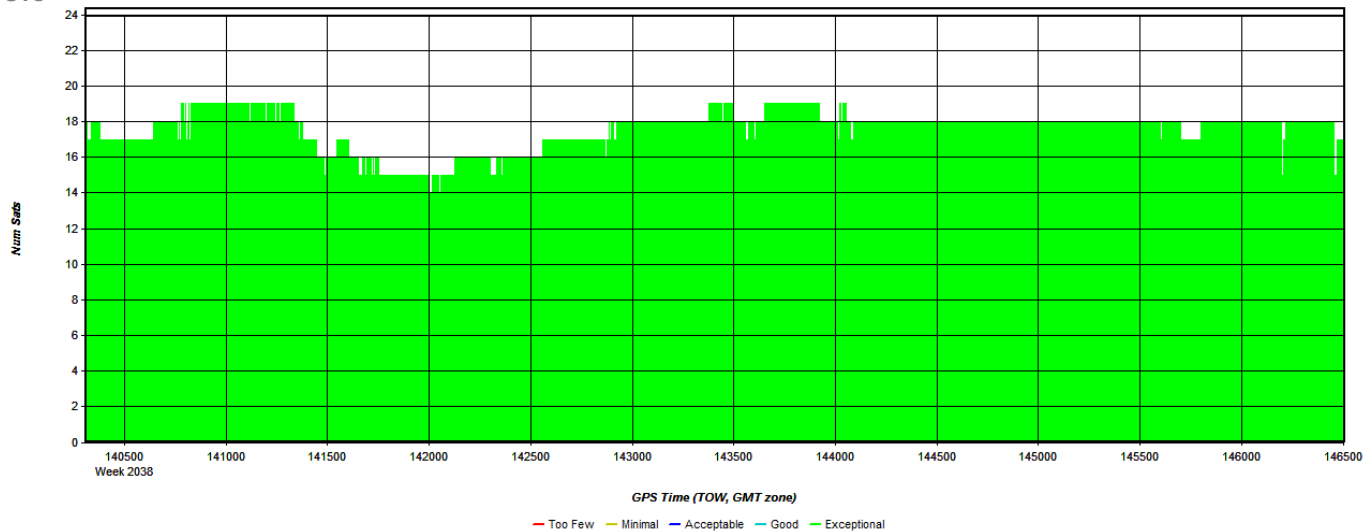


Distance from Base





SVs




**USGS  
COLLECTION REPORT**



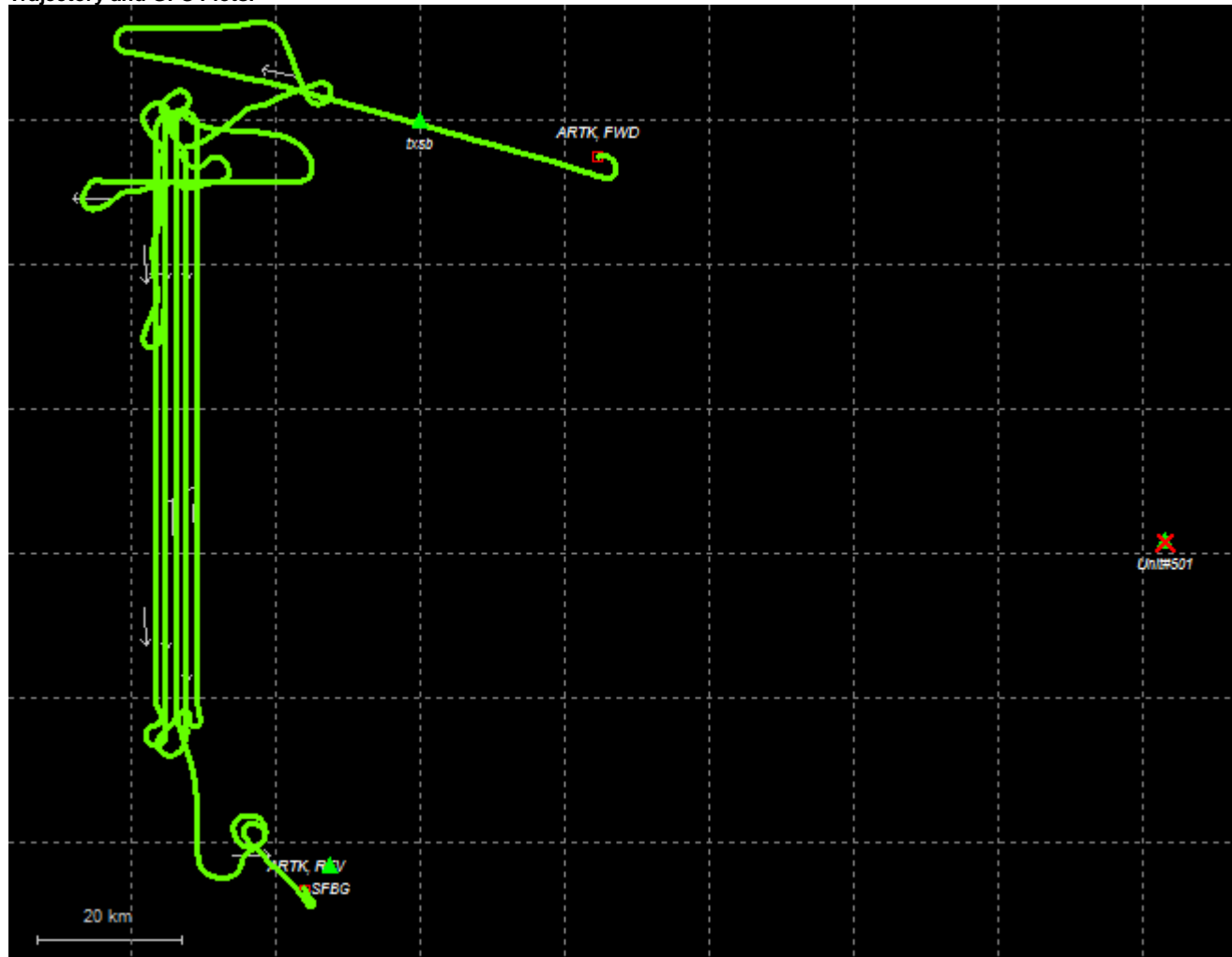
**Acquisition and Processing details ----- (January 28, 2019)**

Log: 190128\_118\_33780084\_20

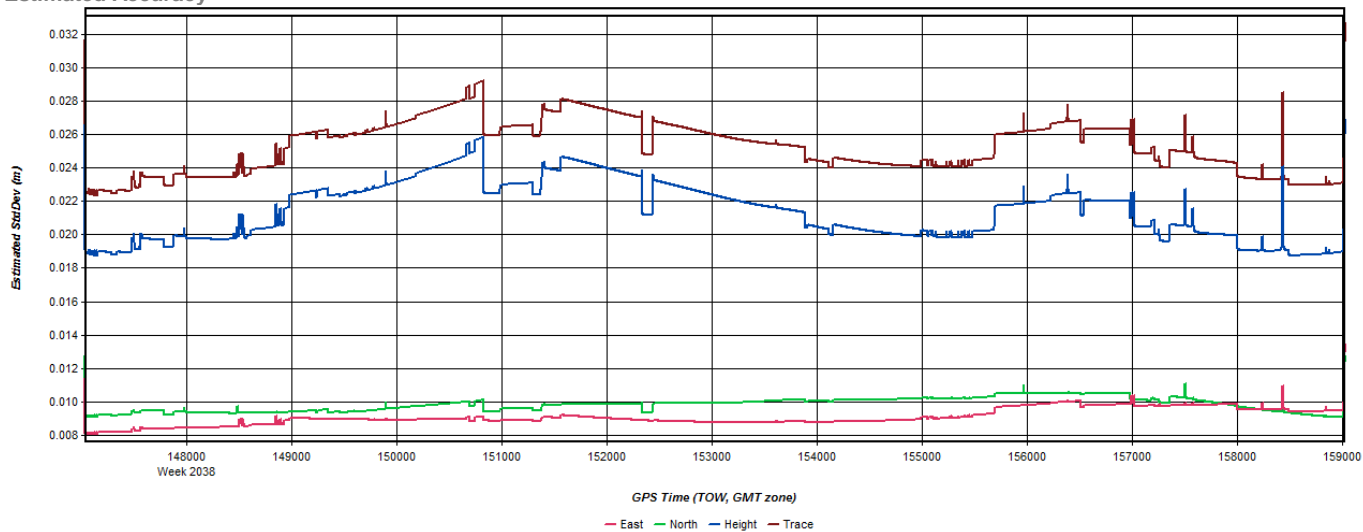

Menu
ALS  
Flight Log

FGI Job #		Project Name			System	Unit	IMU	PIA	SW1	SW2-Gain	Aper	AutoScan	Ground Temp °C		Min Range Gate	Data Logger Drive
33780084		Hurricane Harvey ALS80			ALS80	118	uRS	3	-	-	60°	Yes	12.0	19.0	1903m	MM70-01
Flight Date	GPS Day	Lift			Sun°	Solar Times (UTC)		Laser Power	Pattern	Flying Temp °C		Max Range Gate	Download Drive			
28-Jan-19	19-028	20			-			100%	Triangle	3.0	4.0	2537m	AP1TB#36			
Mission ID (yyymmdd_Sen_Job_Lift)		Aircraft	Airport ID	FMS	UTC	AMT (ft)	Speed	Scan Hz	Pulse Rate	FOV	km/WPT	Altitude Setting		Shipping Track		
190128_118_33780084_20		N8131	KG TU	CCNS 4	-6	7,550	150	35.0	352,000	42	1.384	29.89	29.82	-	7743 3257 0082	
Pilot #1		Pilot #2		Operator #1		Operator #2										
Wayne Manning				Chris Acuña												
Base 1 ID	Location		Rec ID	Ant ID	ARP (m)	Start Time (UTC)		Stop Time (UTC)		GPS Filename		Operator		Data		
FEDI 1115	KG TU		GR3#5	GR3#5	1.8	28-Jan-19 13:42		30-Jan-19 00:17		Unit#50128n		Chris Acuña		FTP		
Area	Flight #		Wpt		Distance		UTC		Fit	Altitude	Speed	Scan	Comments and Conditions		SVs	PDOP
	FGI	Client's	From	To	Begin	End	Start	End	Dir	(GPS)	(knots)	Rate				
													Aspen tracker is "off"			
							16:55:26	17:00:26					5 Min acquisition of CORS TXSB		24	1.1
							17:20:05	17:22:32					S-Turn in flight alignment		21	1.2
BLOCK_H	75		1	15	0	19.4	17:29:12	17:33:29	85	8545	148	-	Partial Crossing Line		23	1.1
	1		52	1	70.6	0	17:43:01	18:00:47	176	8705	143	-	24 kt crosswind		21	1.3
	2		1	52	0	70.6	18:05:29	18:22:27	354	8685	128	-			22	1.1
	2		52	39	70.6	52.6	18:27:17	18:31:28	177	8685	147	-	Crossing Line		18	1.4
	3		52	1	70.6	0	18:44:34	19:01:46	176	8670	145	-			18	1.3
	4		1	52	0	70.6	19:06:47	19:23:03	357	8665	143	-	60 km Turb		17	1.3
	5		52	1	70.6	0	-	19:43:35	175	8680	140	-			19	1.0
							19:44:28	19:46:31					S-Turn in flight alignment			
							20:04:50	20:09:50					5 Min GND static at airport KT82		20	1.1

Trajectory and GPS Plots:

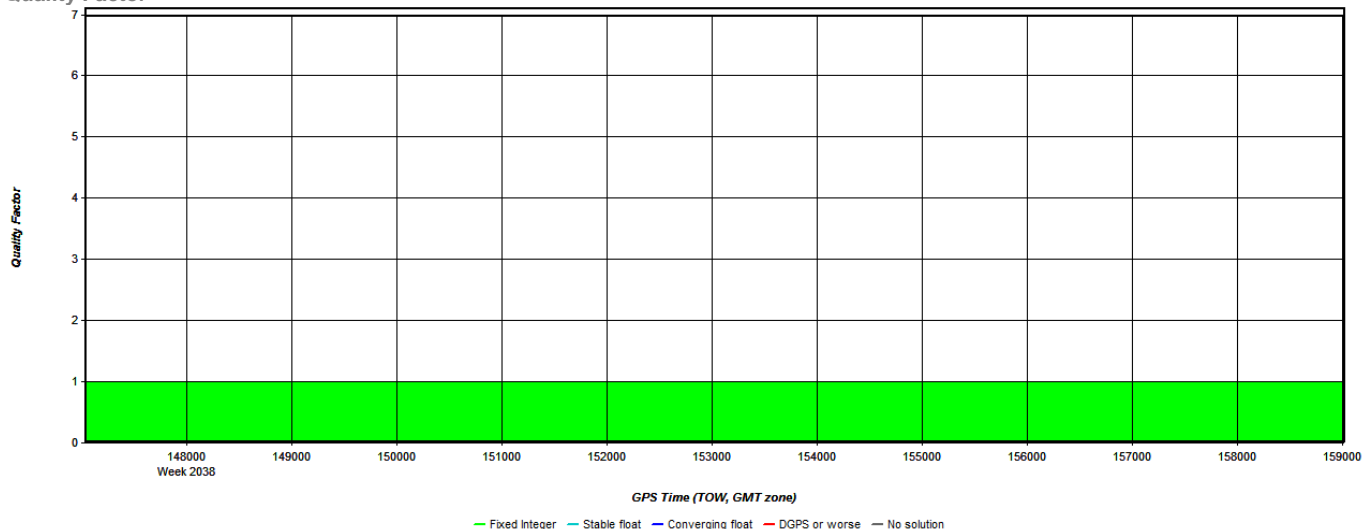


Estimated Accuracy

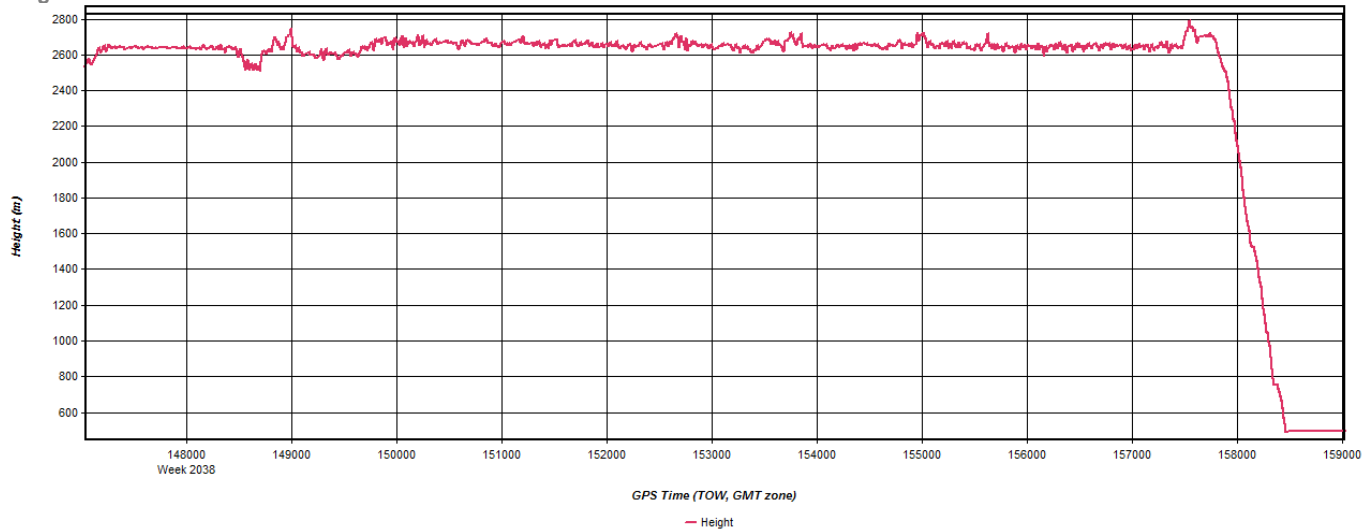




Quality Factor

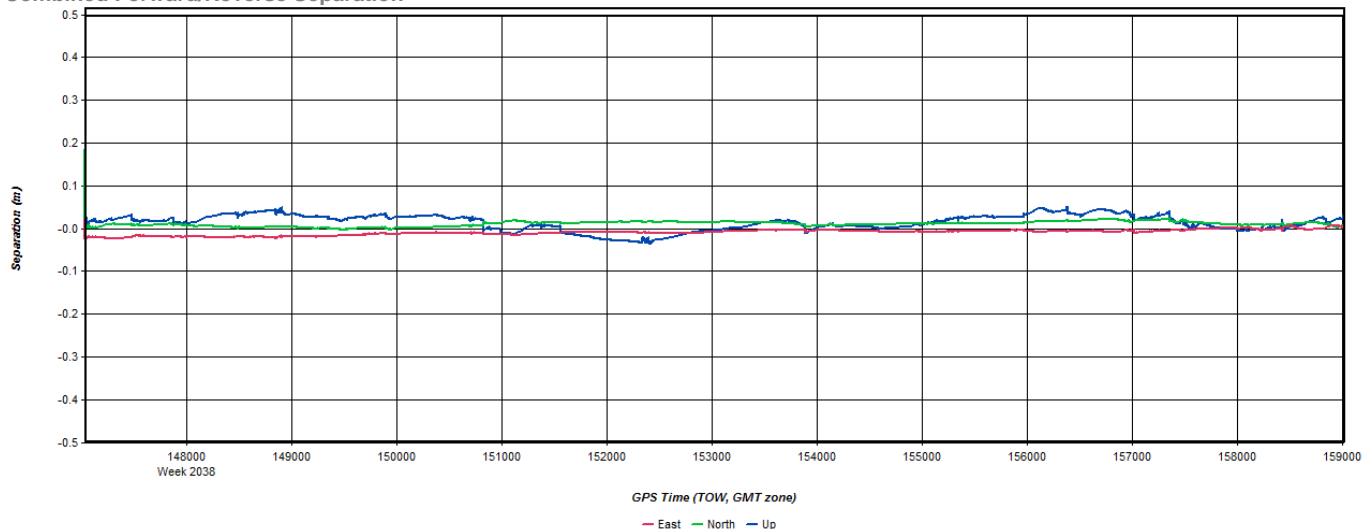


Height

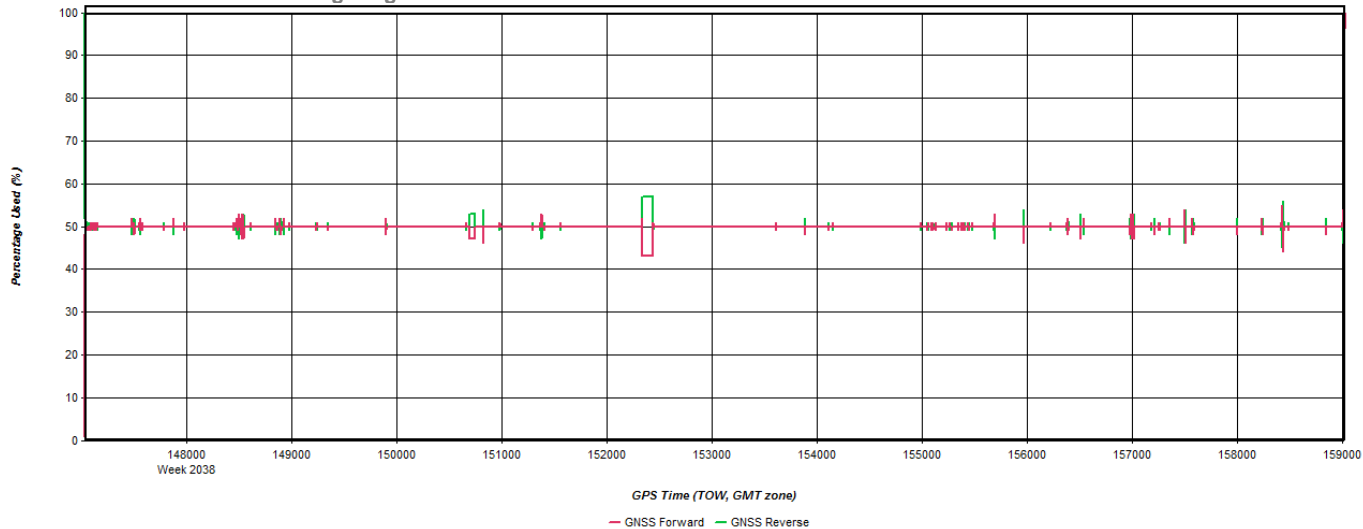




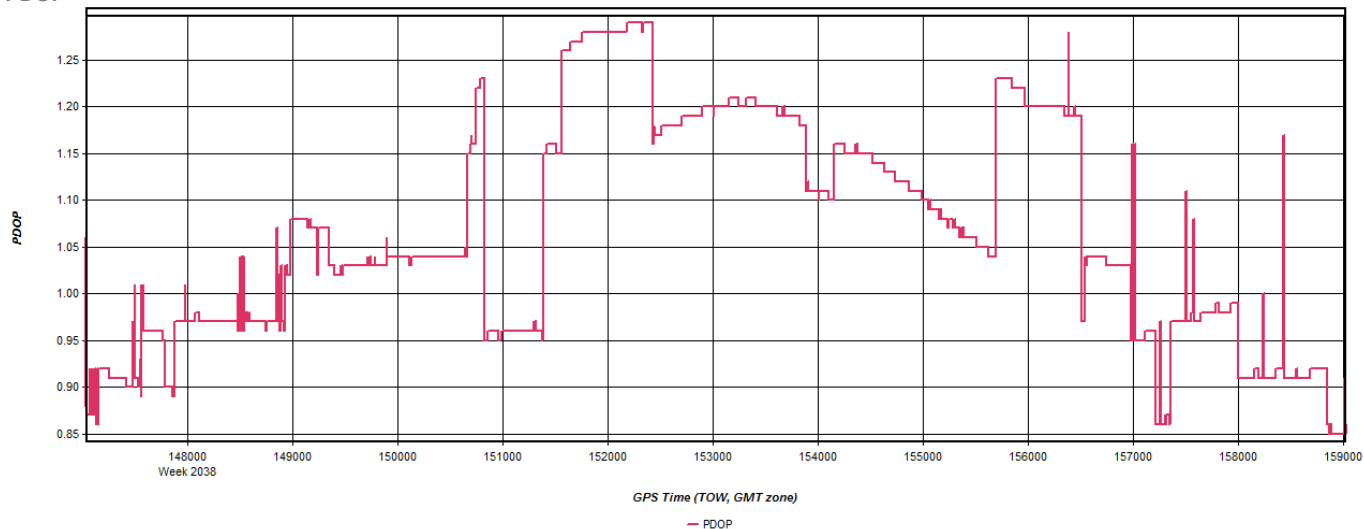
Combined Forward/Reverse Separation



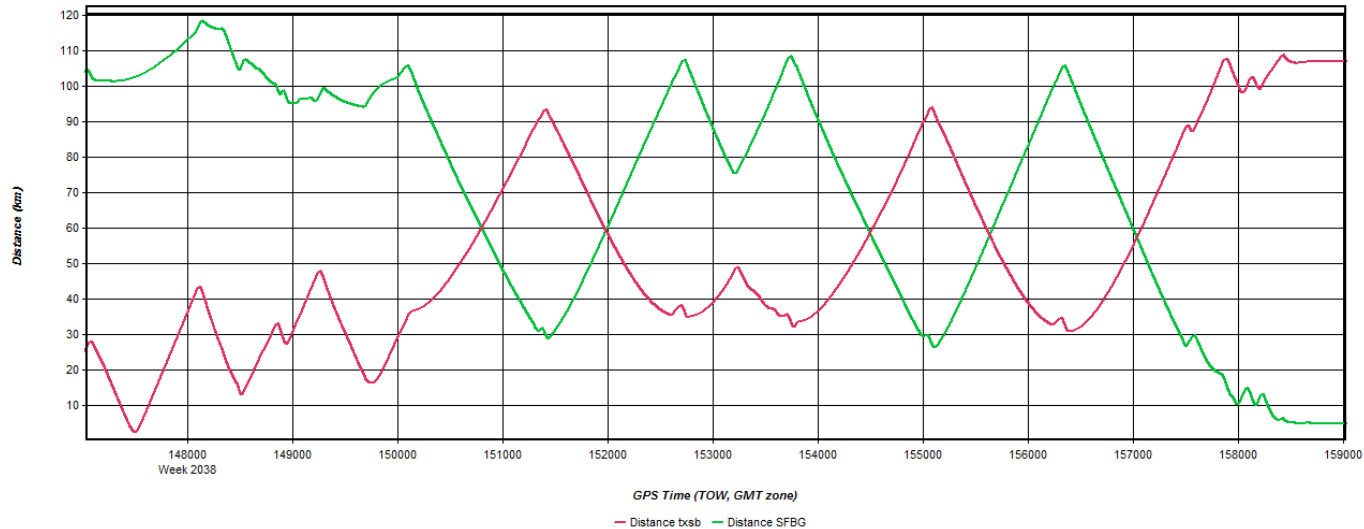
Combined Forward/Reverse Weighting



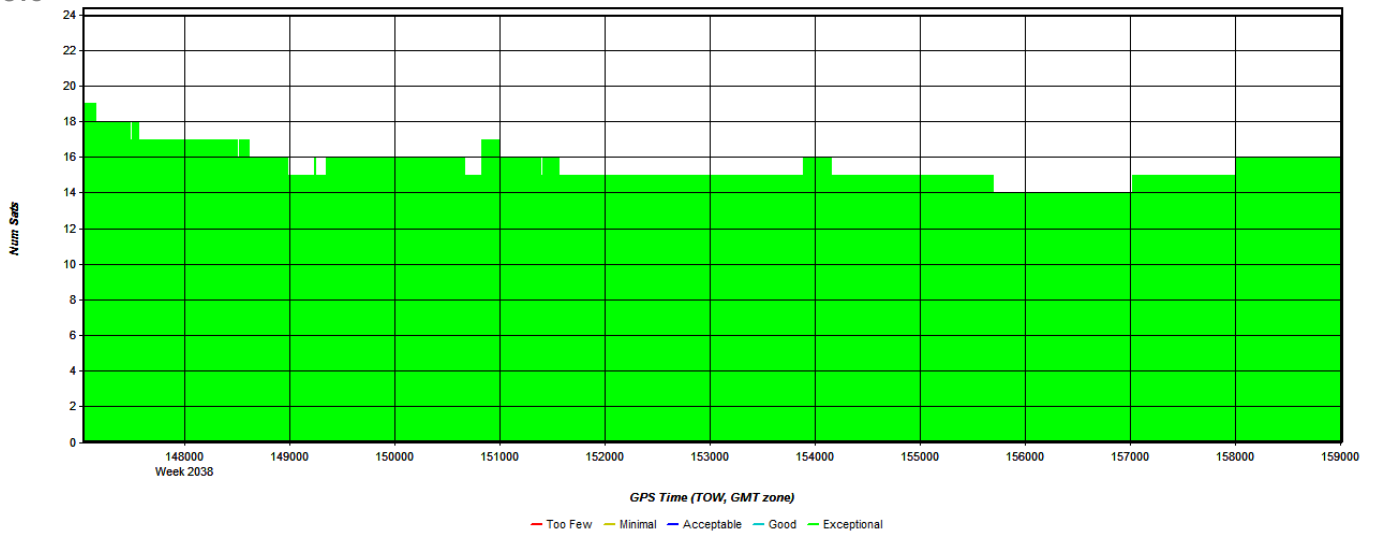
PDOP



Distance from Base



SVs



**USGS  
COLLECTION REPORT**



**Acquisition and Processing details ----- (January 28, 2019)**

Log: 190128\_118\_33780084\_21

Menu

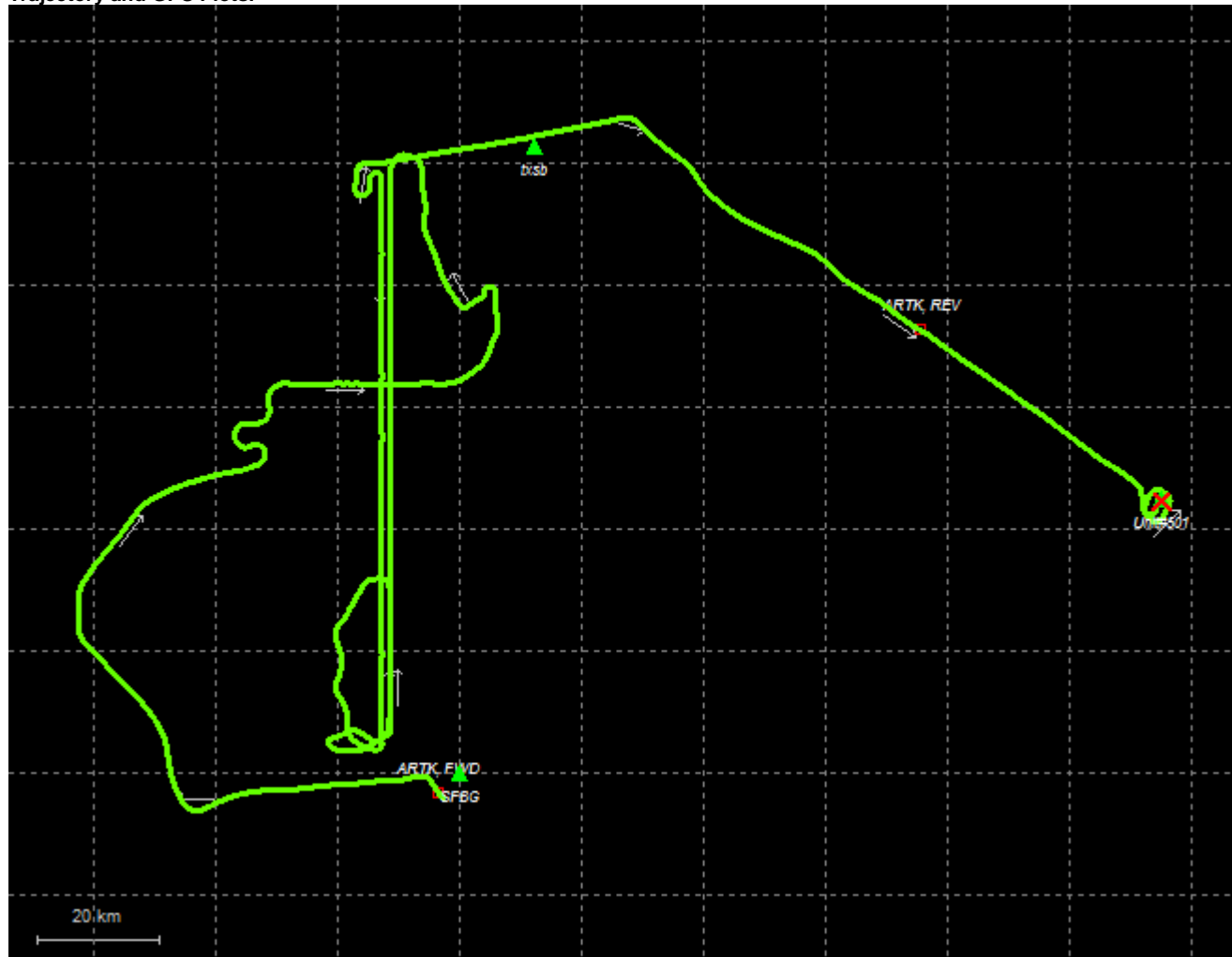
**Fugro USA Land, Inc.**

	Lift Begin			Lift End			Fit Duration	Fit Hrs	Hobbs Hrs	Activity
	Airport	Chocks	Hobbs	Airport	Chocks	Hobbs				
1	KT82	21:04	2993.7	KG TU	0:13	2996.4	3:09	3.25	2.7	0900-Production
2										
3										

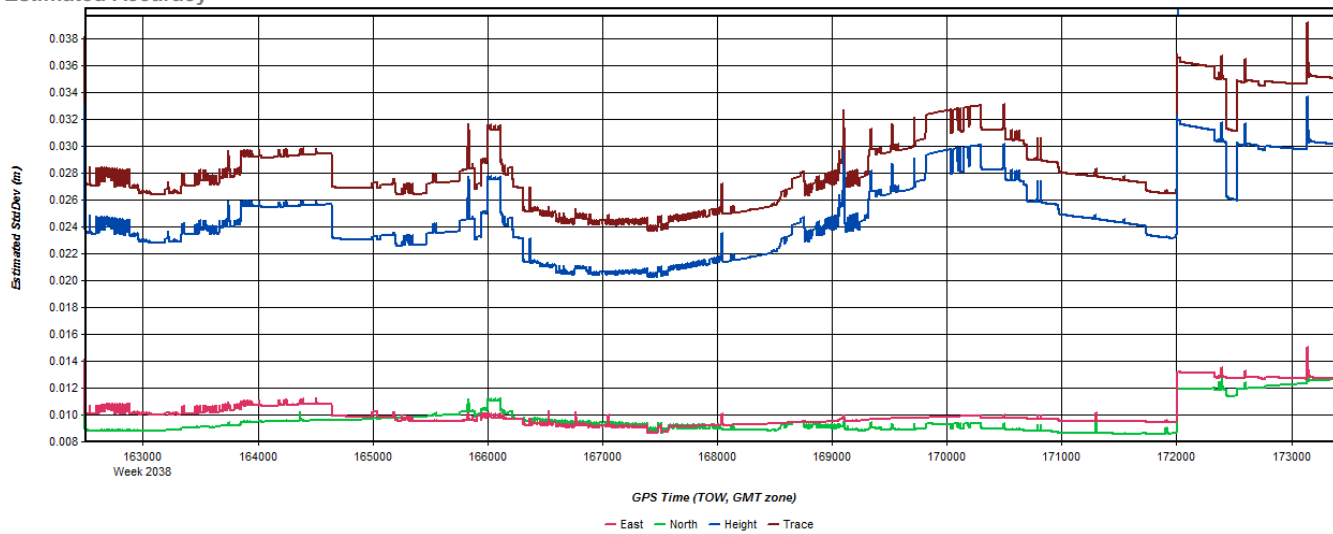
**ALS**  
 Flight Log  
 AC80-44-00-02

FGI Job #	Project Name				System	Unit	IMU	PIA	SW1	SW2-Gain	Aper	AutoScan	Ground Temp °C		Min Range Gate	Data Logger Drive
33780084	Hurricane Harvey ALS80				ALS80	118	uRS	3	-	-	60°	Yes	20.0	20.0	1903m	MM70-01
Flight Date	GPS Day	Lift			Sun°	Solar Times (UTC)		Laser Power		Pattern	Flying Temp °C		Max Range Gate	Download Drive		
28-Jan-19	19-028	21			-			100%		Triangle	1.0	0.0	2537m	AP1TB#36		
Mission ID (yyymmdd_Sen_Job_Lift)	Aircraft	Airport ID	FMS	UTC	AMT (ft)	Speed	Scan Hz	Pulse Rate	FOV	km/WPT	Altm Setting		Shipping Track			
190128_118_33780084_21	N8131	KG TU	CCNS 4	-6	7,550	150	35.0	352,000	42	1.384	29.83	29.86	7743 3257 0082			
Pilot #1		Pilot #2		Operator #1		Operator #2										
Wayne Manning				Chris Acufia												
Base 1 ID	Location	Rec ID	Ant ID	ARP (m)	Start Time (UTC)		Stop Time (UTC)		GPS Filename		Operator		Data			
FEDI 1115	KG TU	GR3#5	GR3#5	1.8	28-Jan-19 13:42		30-Jan-19 00:17		Unit#50128n		Chris Acufia		FTP			
Area	Flight #		Wpt		Distance		UTC		Fit Dir	Altitude (GPS)	Speed (knots)	Scan Rate	Comments and Conditions		SVs	PDOP
	FGI	Client's	From	To	Begin	End	Start	End								
														5 Min GND static alignment at airport KT82	20	1.3
														S-Turn in flight alignment	19	1.2
BLOCK_H	74		1	17	0	22.1	21:54:18	21:59:13	86	8475	145	-	Partial Crossing Line	21	1.1	
	10		61	1	83	0	22:15:03	22:35:44	176	8640	142	-		22	1.1	
	10		1	13	0	16.6	-	22:47:58	86	8625	144	-	Calibration Line	21	1.2	
	9		1	61	0	83	22:59:50	23:20:22	356	8615	136	-		21	1.3	
							23:20:55	23:23:33					S-Turn in flight alignment	20	1.4	
							23:28:14	23:33:14					5 Min acquisition of CORS TXSB	21	1.4	
							00:05:32	00:10:32					5 Min GND static alignment at KG TU	24	1.2	

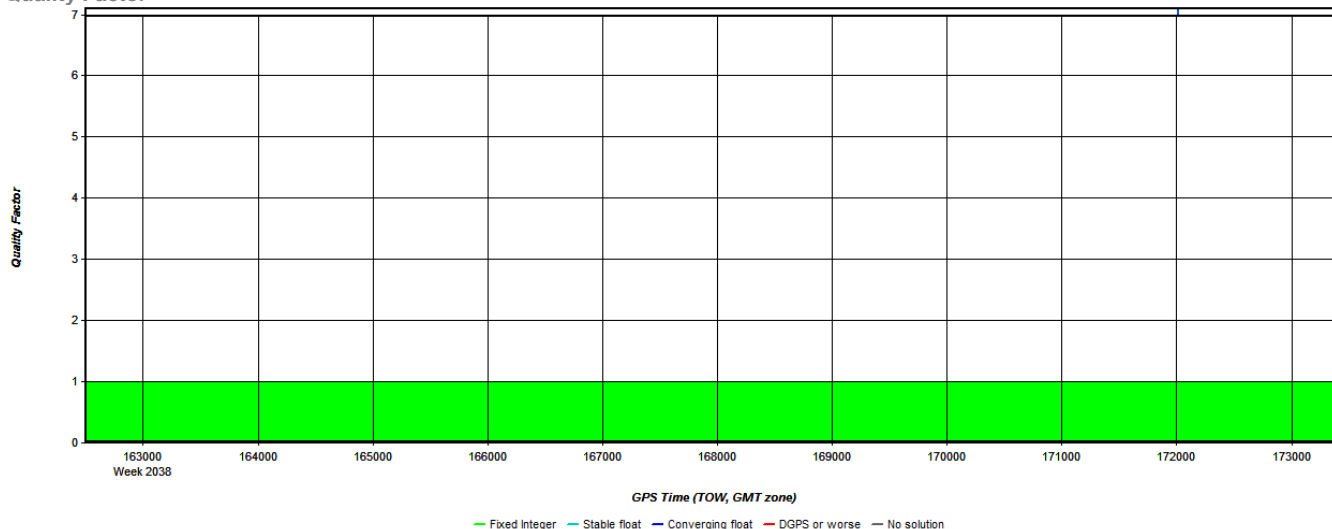
Trajectory and GPS Plots:



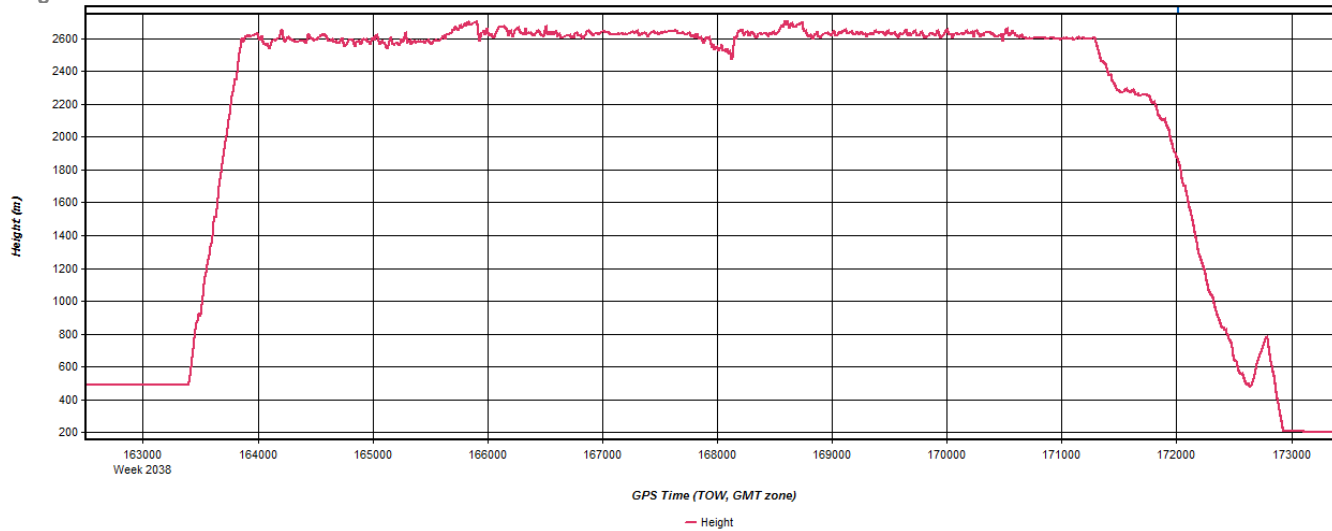
Estimated Accuracy



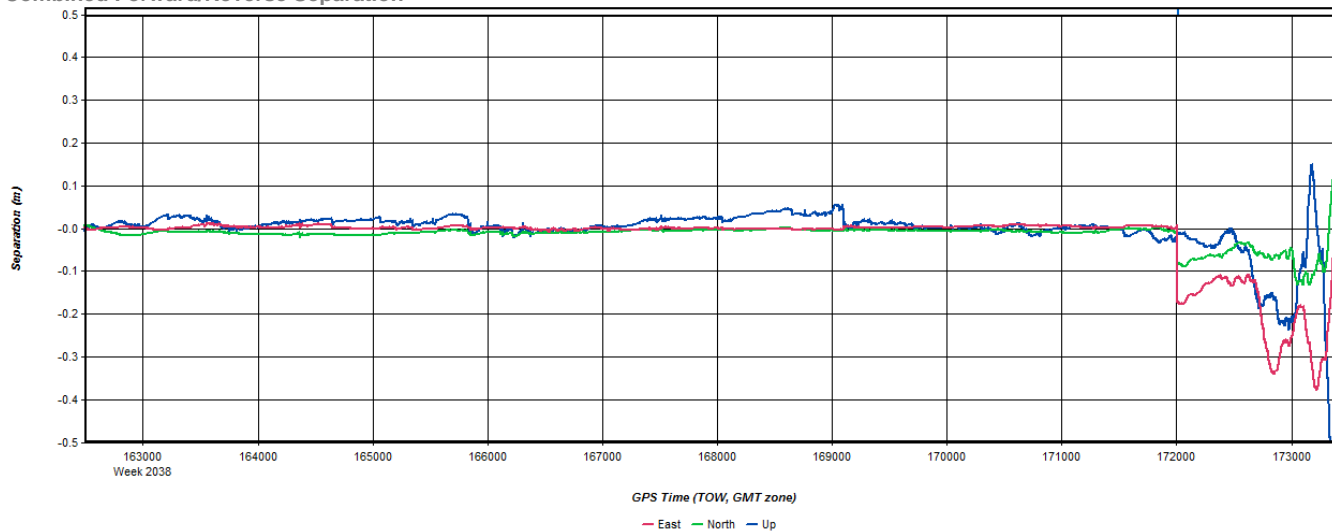
Quality Factor



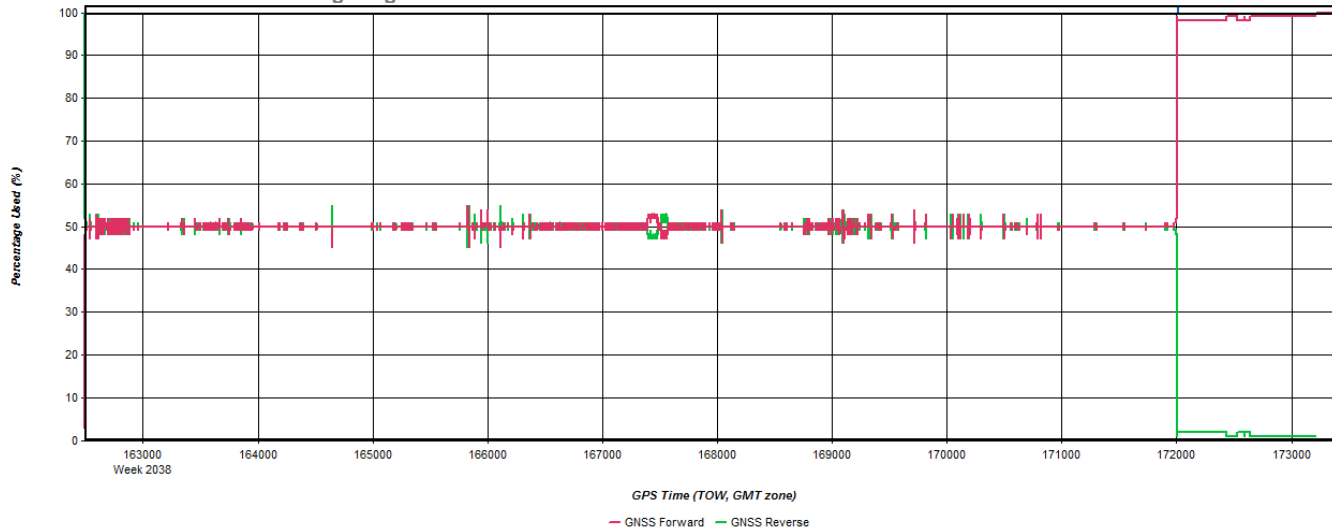
Height



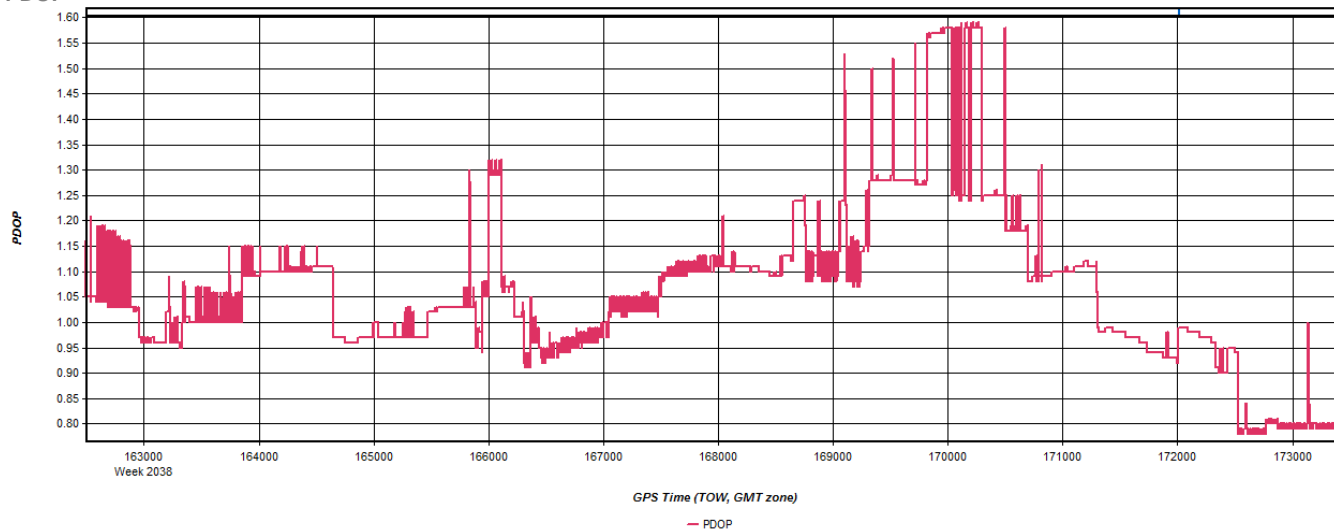
Combined Forward/Reverse Separation



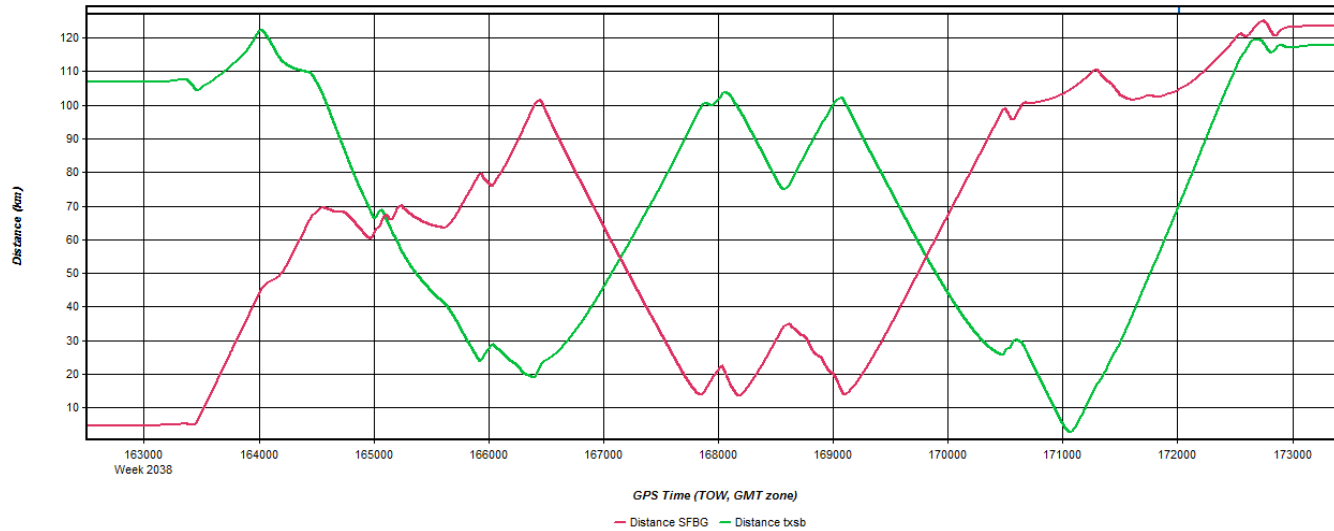
Combined Forward/Reverse Weighting



PDOP



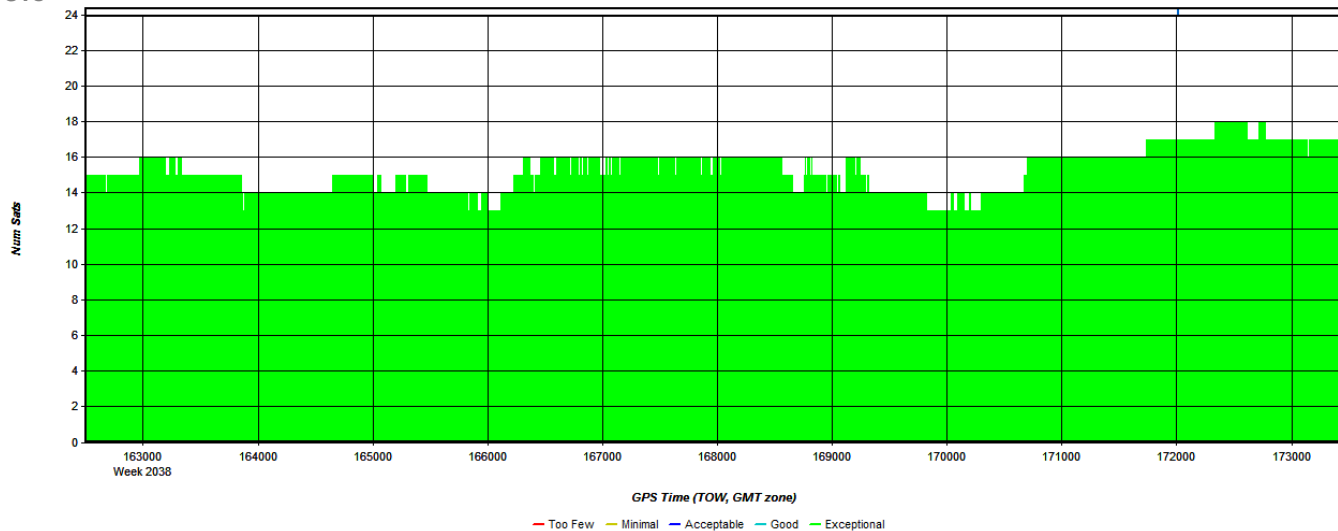
Distance from Base







SVs



USGS  
COLLECTION REPORT



Acquisition and Processing details ----- (January 28, 2019)

Log: 190128\_133\_33780084\_11

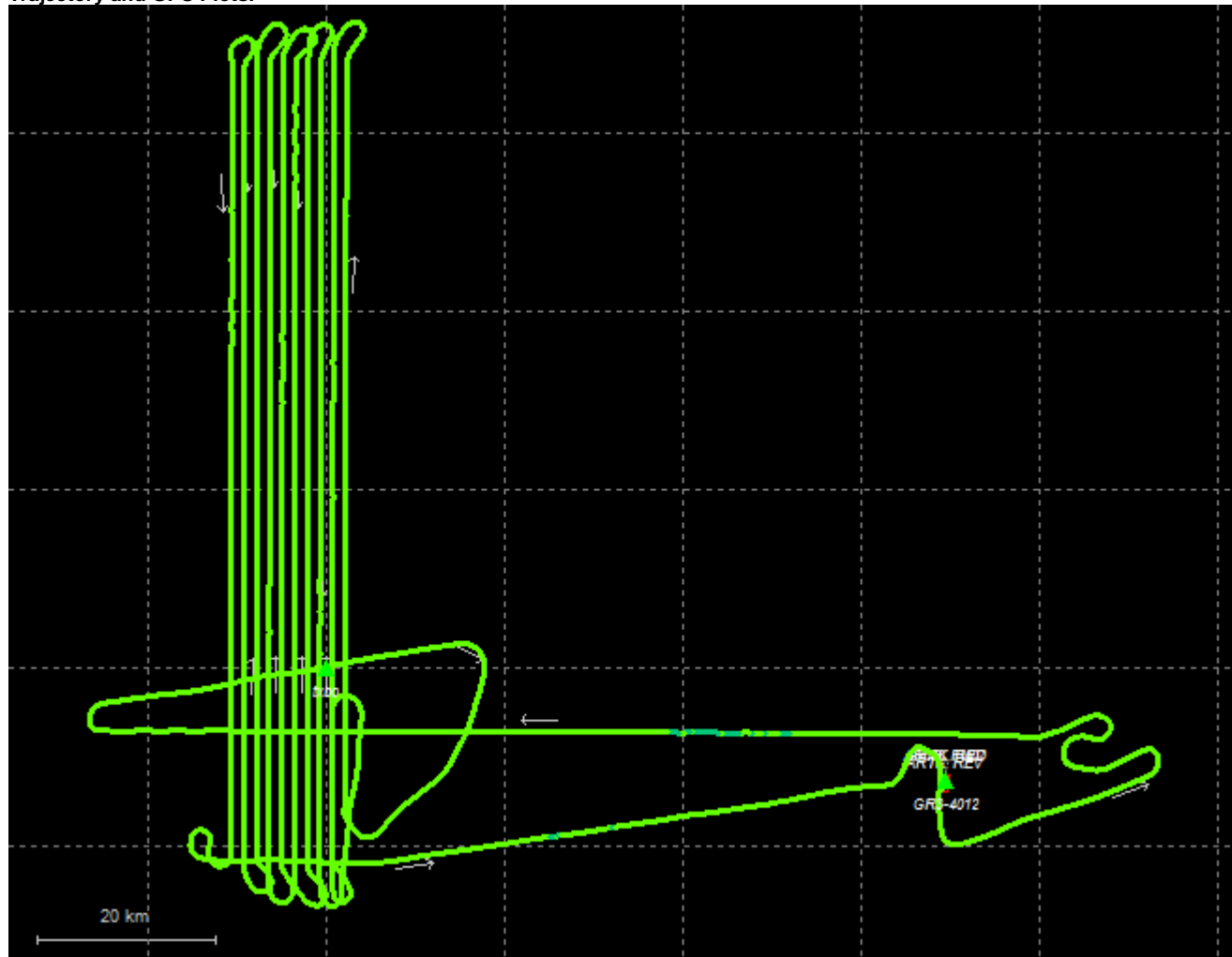
Menu 19.023

	Lift Begin			Lift End			Fit Duration	Fit Hrs	Hobbs Hrs	Activity
	Airport	Chocks	Hobbs	Airport	Chocks	Hobbs				
1	KBAZ	14:44	8166.2	KBAZ	20:20	8171.8	5:35	5.50	5.6	0900-Production
2										
3										

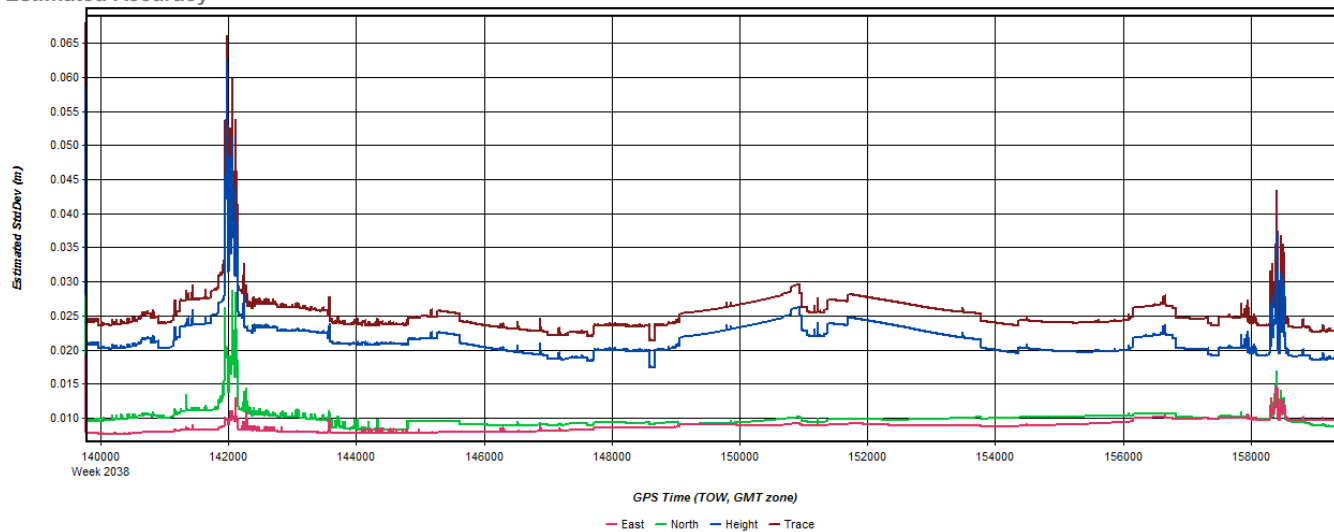
**ALS**  
Flight Log  
AC80-44-00-02

FGI Job # <b>33780084</b>		Project Name <b>USGS Disaster Recovery Harvey</b>				System <b>ALS80</b>	Unit <b>133</b>	IMU <b>uRS</b>	PIA <b>3</b>	SW1 <b>255</b>	SW2-Gain <b>60°</b>	Aper <b>Yes</b>	AutoScan <b>Yes</b>	Ground Temp °C <b>7.2 20.0</b>		Min Range Gate <b>7322</b>	Data Logger Drive <b>MM70-04</b>
Flight Date <b>28-Jan-19</b>		GPS Day <b>19-028</b>	Lift <b>11</b>	Sun° <b>NA</b>			Solar Times (UTC) <b>NA</b>		Laser Power <b>100%</b>	Pattern <b>Triangle</b>	Flying Temp °C <b>4.0 4.0</b>		Max Range Gate <b>8830</b>	Download Drive <b>NS1TB-105</b>			
Mission ID (ymmdd_Sen_Job_Lift) <b>190128_133_33780084_11</b>		Aircraft <b>N76JN</b>	Airport ID <b>KBAZ</b>	FMS <b>FCMS</b>	UTC <b>7,550</b>	AMT (ft) <b>150</b>	Speed <b>35.0</b>	Scan Hz <b>352,000</b>	FOV <b>42</b>	km/WPT <b>1.384</b>	AltM Setting <b>29.90 29.82</b>		Shipping Track <b>774332679196</b>				
Pilot #1 <b>Maison Collins</b>		Pilot #2		Operator #1 <b>Adam Mueller</b>		Operator #2											
Base 1 ID <b>FGI 8003</b>	Location <b>KBAZ</b>	Rec ID <b>Unit 4</b>	Ant ID <b>Unit 4</b>	ARP (m) <b>1.8</b>	Start Time (UTC) <b>28-Jan-19 14:07</b>		Stop Time (UTC) <b>28-Jan-19 23:57</b>		GPS Filename <b>GR3-40128o</b>		Operator <b>Adam Mueller</b>		Data <b>With AB</b>				
Base 2 ID <b>TXBO CORS</b>	Location <b>TX</b>	Rec ID	Ant ID	ARP (m)	Start Time (UTC) <b>CORS</b>		Stop Time (UTC)		GPS Filename		Operator <b>CORS</b>		Data				
Area	Flight #	Client's	Wpt	Distance	UTC		Fit	Altitude	Speed	Scan	Rate	Comments and Conditions		SVs	PDOP		
					Begin	End											
					14:50:45	14:55:45						Ground Static at KBAZ		21	1.1		
					15:15:25	15:17:38						S turn		25	1.0		
Block F	74		68 1	92.7 0	15:21:45	15:43:40	W	8284	144	35.0		Cross Line; little haze at start		23	1.0		
					15:46:59	15:51:59						Over Flight TXBO CORS		23	1.1		
	20		1 58	0 78.9	16:00:08	16:18:16	N	8720	145	35.0				23	1.2		
	19		62 1	84.4 0	16:21:22	16:40:25	S	8720	145	35.0		km 6 off line		23	1.1		
	19		1 10	0 12.5	16:43:45	16:46:48	N	8720	140	35.0		Calibration line		24	1.1		
	18		1 63	0 85.8	16:54:20	17:13:44	N	8720	145	35.0				24	1.1		
	17		63 1	85.8 0	17:16:33	17:36:01	S	8773	145	35.0				22	1.1		
	16		1 63	0 85.8	17:39:15	17:58:54	N	8773	145	35.0				20	1.4		
	15		63 1	85.8 0	18:01:54	18:21:29	S	8773	145	35.0				22	1.1		
	14		1 62	0 84.4	18:24:39	18:43:48	N	8773	140	35.0				18	1.5		
	13		62 1	84.4 0	18:46:55	19:06:04	S	8773	145	35.0				18	1.3		
	12		1 62	0 84.4	19:09:17	19:28:37	N	8822	145	35.0				17	1.3		
	11		62 1	84.4 0	19:30:53	19:49:59	S	8822	145	35.0				20	1.1		
					19:50:17	19:52:24						S turn		19	1.0		
					20:12:33	20:17:33						Ground Static at KBAZ		19	1.1		

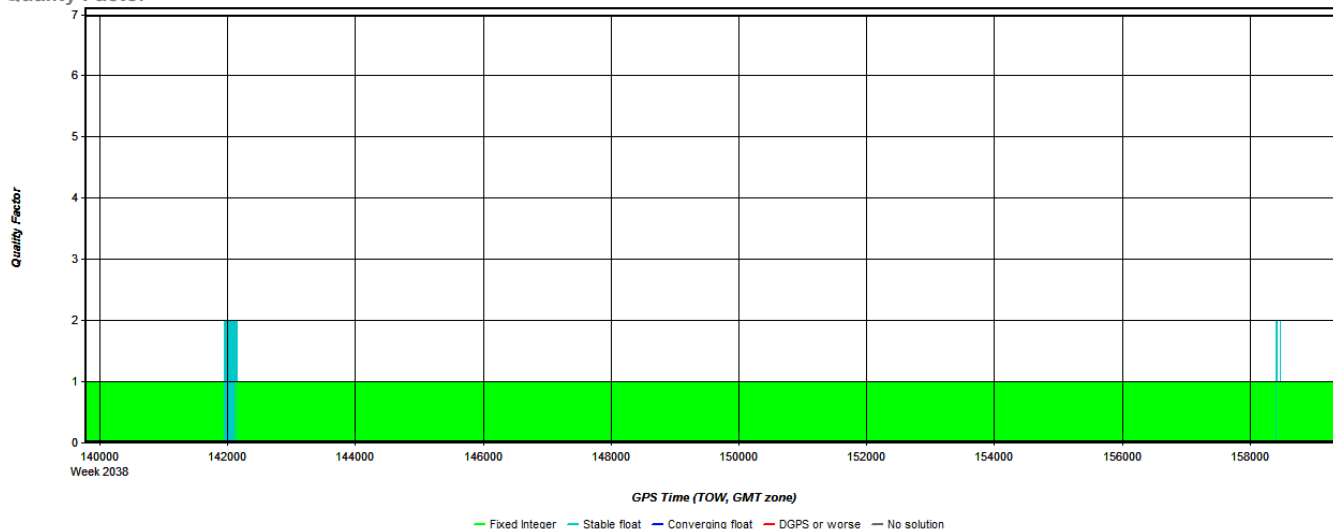
Trajectory and GPS Plots:



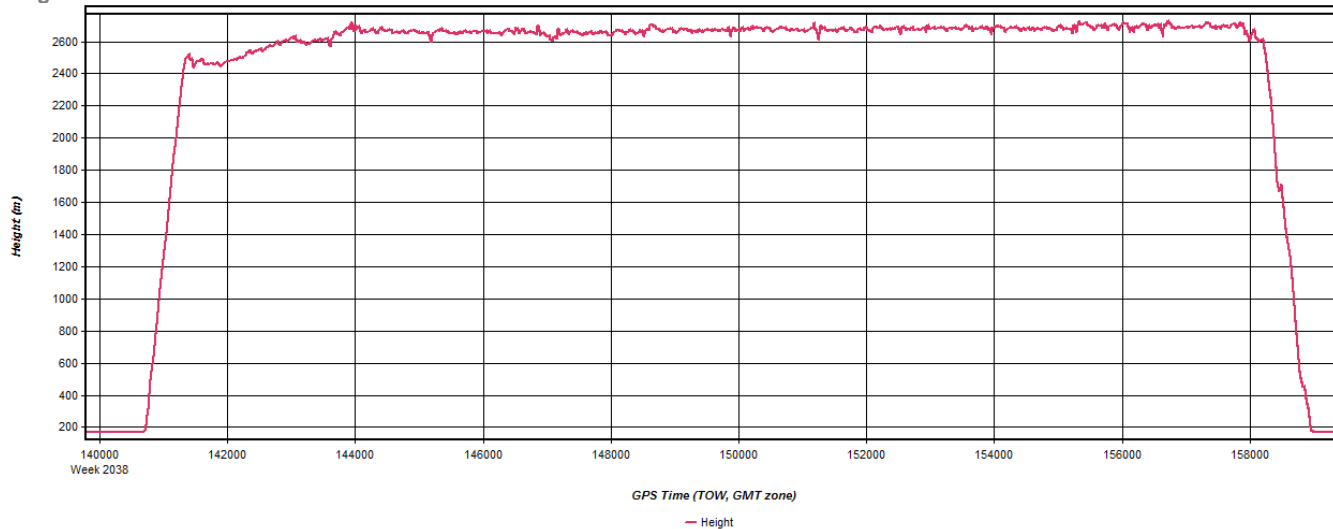
Estimated Accuracy



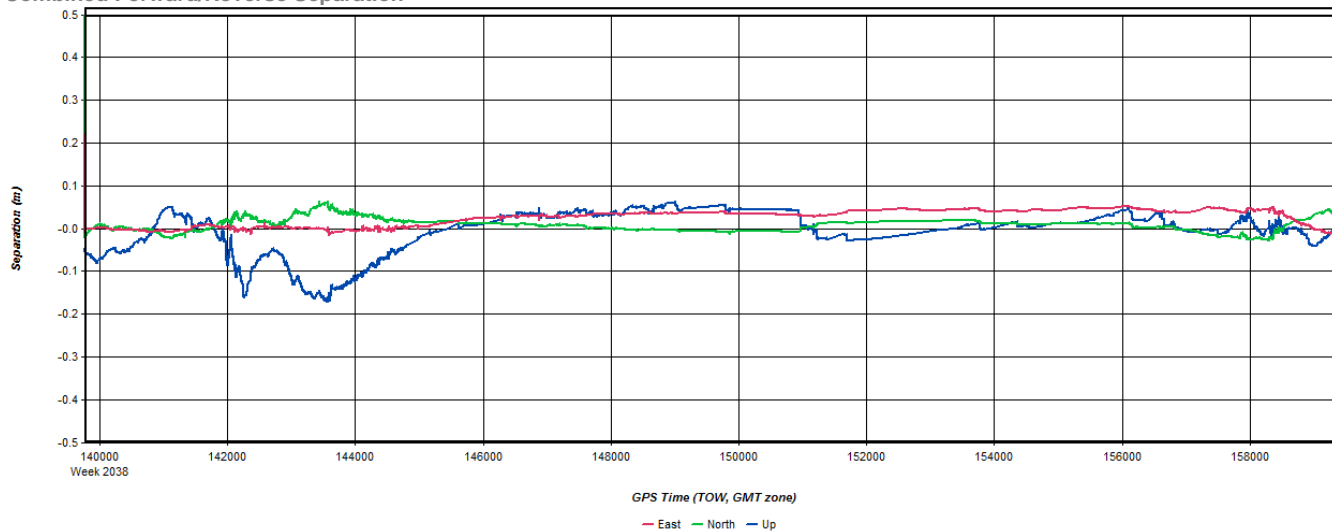
Quality Factor



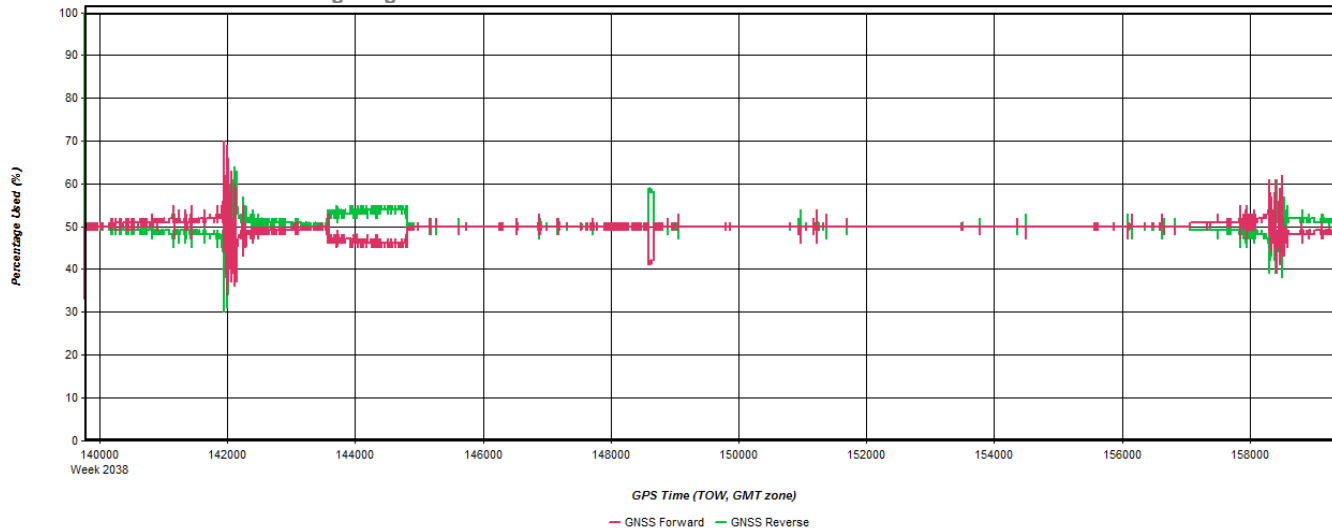
Height



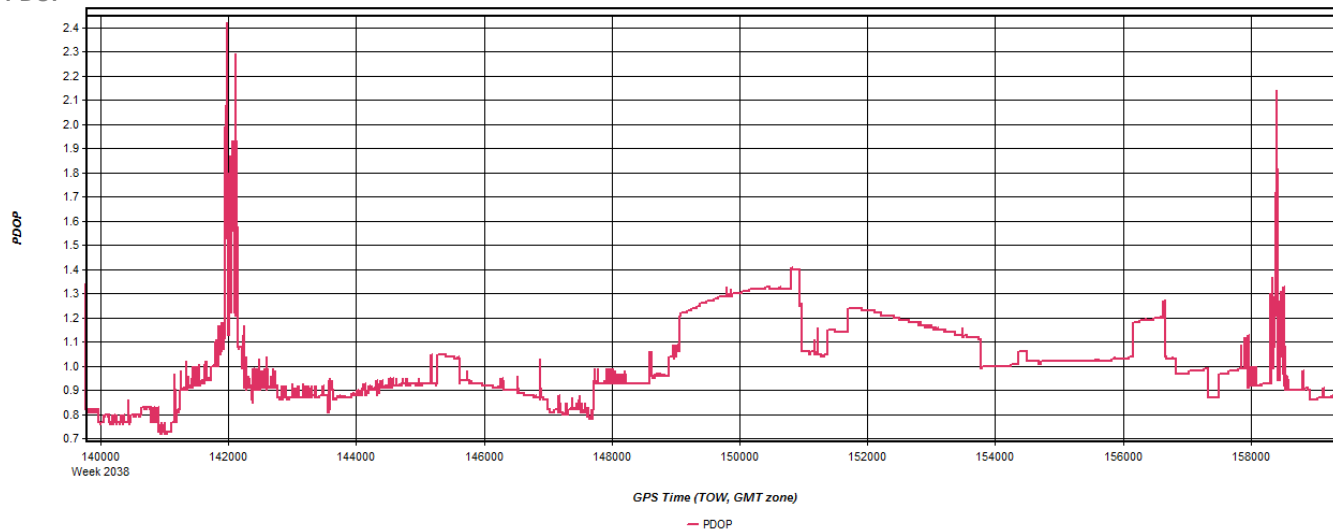
Combined Forward/Reverse Separation



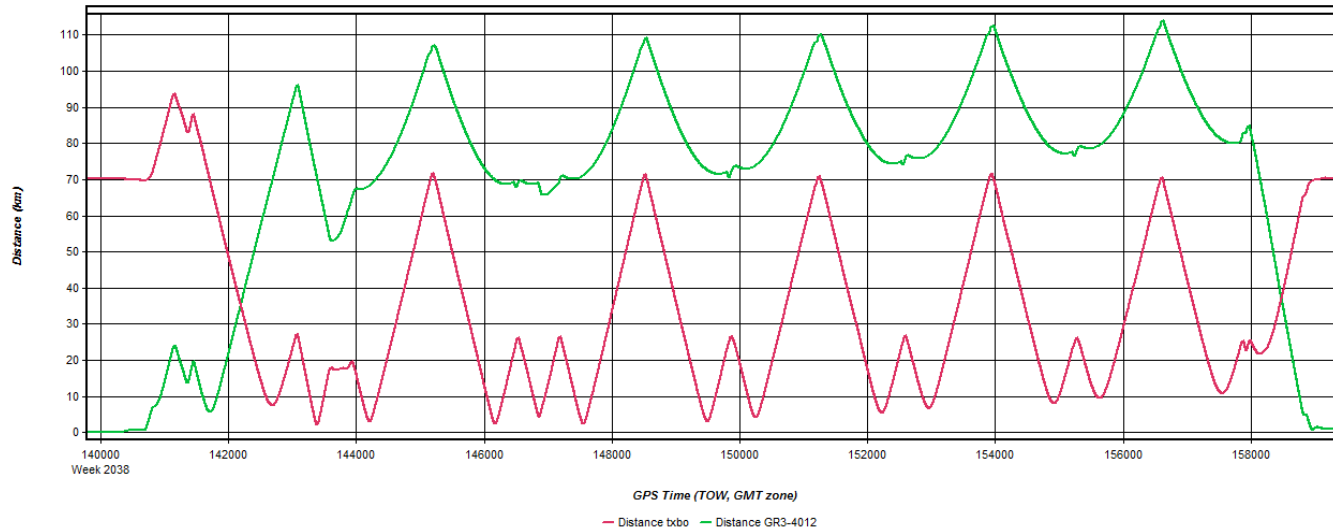
Combined Forward/Reverse Weighting



PDOP

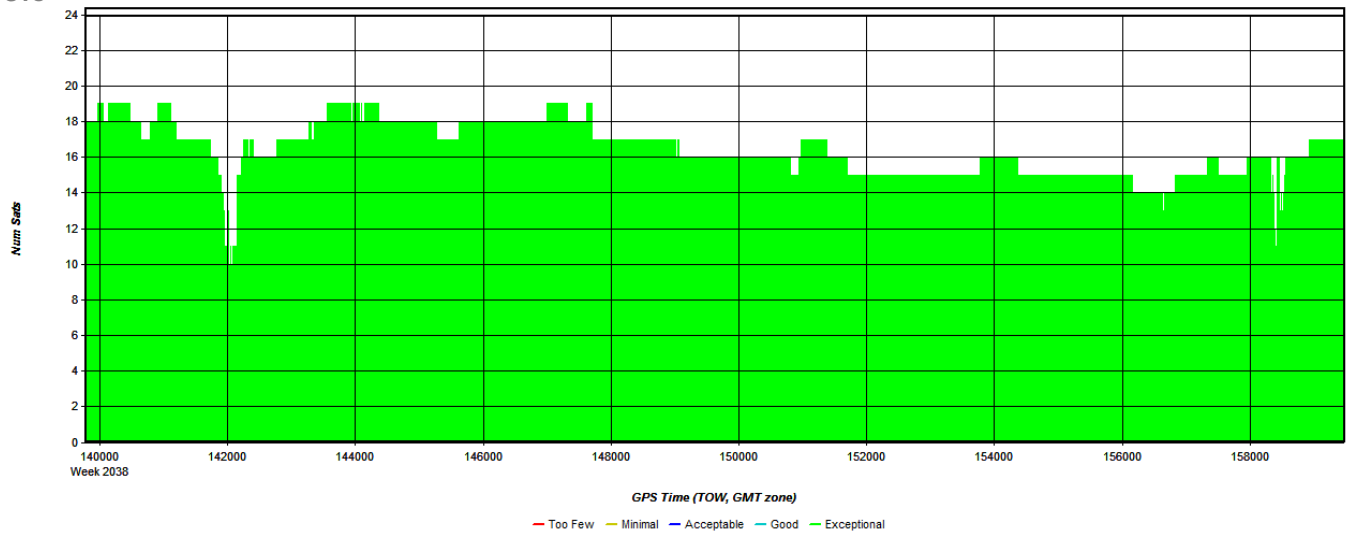


Distance from Base





SVs



**USGS  
COLLECTION REPORT**



**Acquisition and Processing details ----- (January 28, 2019)**

Log: 190128\_133\_33780084\_12

Menu
19.023

	Lift Begin			Lift End			Flt Duration	Flt Hrs	Hobbs Hrs	Activity
	Airport	Chocks	Hobbs	Airport	Chocks	Hobbs				
1	KBAZ	21:04	8171.8	KBAZ	23:48	8174.5	2:43	2.75	2.7	0900-Production
2										
3										

ALS  
Flight Log  
AC80-44-00-02

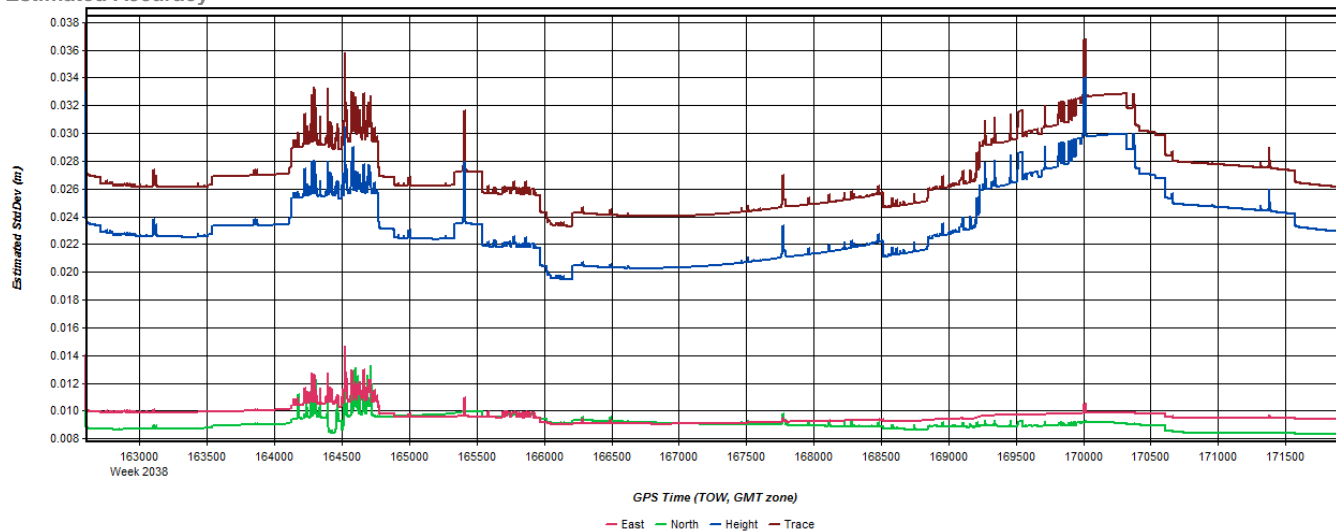
FGI Job #	Project Name			System	Unit	IMU	PIA	SW1	SW2-Gain	Aper	AutoScan	Ground Temp °C		Min Range Gate	Data Logger Drive	
<b>33780084</b>	<b>USGS Disaster Recovery Harvey</b>			<b>ALS80</b>	<b>133</b>	<b>uIRS</b>	<b>3</b>		<b>255</b>	<b>60°</b>	<b>Yes</b>	<b>20.6</b>	<b>21.1</b>	<b>7322</b>	<b>MM70-04</b>	
Flight Date	GPS Day	Lift		Sun°	Solar Times (UTC)		Laser Power	Pattern	Flying Temp °C	Max Range Gate	Data					
<b>28-Jan-19</b>	<b>19-028</b>	<b>12</b>		<b>NA</b>	<b>NA</b>		<b>100%</b>	<b>Triangle</b>	<b>5.0</b>	<b>5.0</b>	<b>8830</b>	<b>NS1TB-105</b>				
Mission ID (ymmdd_Sen_Job_Lift)			Aircraft	Airport ID	FMS	UTC	AMT (ft)	Speed	Scan Hz	Pulse Rate	FOV	km/WPT	Altm Setting	Shipping Track		
<b>190128_133_33780084_12</b>			<b>N76JN</b>	<b>KBAZ</b>	<b>FCMS</b>		<b>7,550</b>	<b>150</b>	<b>35.0</b>	<b>352,000</b>	<b>42</b>	<b>1.384</b>	<b>29.81</b>	<b>29.83</b>	<b>774332679196</b>	
Plot #1		Plot #2		Operator #1		Operator #2										
<b>Maison Collins</b>				<b>Adam Mueller</b>												
Base 1 ID	Location	Rec ID	Ant ID	ARP (m)	Start Time (UTC)		Stop Time (UTC)		GPS Filename	Operator	Data					
<b>FGI 8003</b>	<b>KBAZ</b>	<b>Unit 4</b>	<b>Unit 4</b>	<b>1.8</b>	<b>28-Jan-19 14:07</b>		<b>28-Jan-19 23:57</b>		<b>GR3-401280</b>	<b>Adam Mueller</b>	<b>With AB</b>					
Base 2 ID	Location	Rec ID	Ant ID	ARP (m)	Start Time (UTC)		Stop Time (UTC)		GPS Filename	Operator	Data					
<b>TXBO CORS</b>	<b>TX</b>				<b>CORS</b>					<b>CORS</b>						
Area	Flight #		Wpt		Distance		UTC		Flt Dir	Altitude (GPS)	Speed (knots)	Scan Rate	Comments and Conditions		SVs	PDOP
	FGI	Client's	From	To	Begin	End	Start	End								
							21:11:57	21:16:57					Ground Static at KBAZ		19	1.3
							21:40:51	21:43:08					S turn		19	1.2
Block_F	74		21	1	28.2	0	21:48:43	21:55:45	W	8284	140	35.0			20	1.2
							21:59:27	22:04:27					Over Flight TXBO CORS		22	1.1
	10		1	62	0	84.4	22:15:27	22:34:45	N	8874	145	35.0	km 36 drift off line; Some turbulence		22	1.1
	9		62	1	84.4	0	22:37:37	22:56:57	S	8815	145	35.0	km 28 turbulence		21	1.3
	9		1	10	0	12.5	23:00:47	23:04:12	N	9815	140	35.0	Calibration Line; Some turbulence		21	1.2
							23:12:04	23:14:11					S turn		21	1.4
							23:39:55	23:44:55					Ground Static at KBAZ		22	1.3



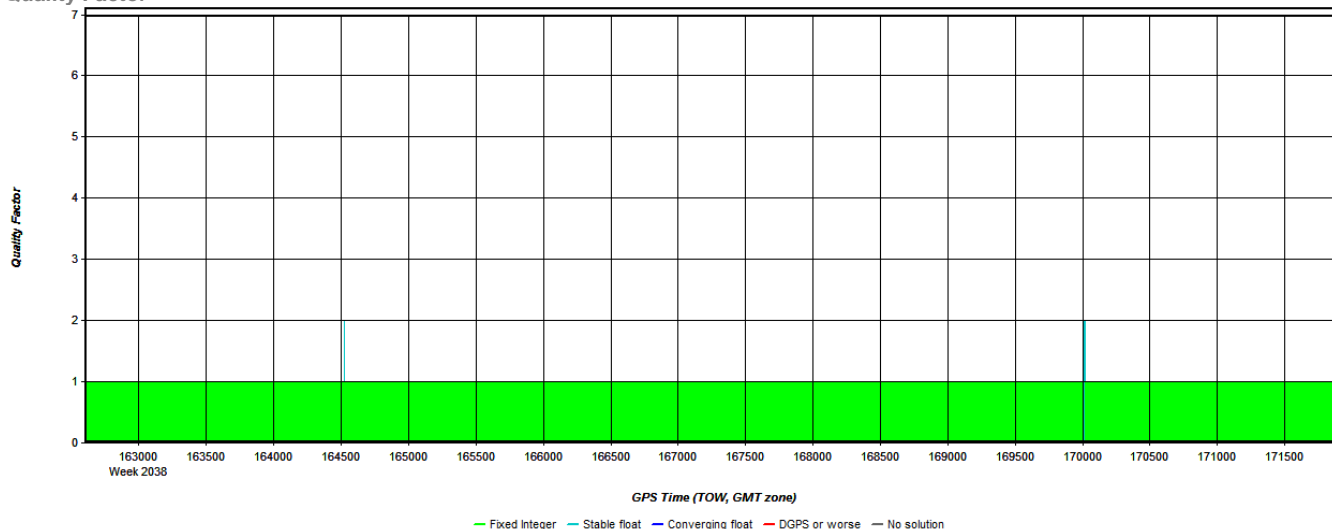
Trajectory and GPS Plots:



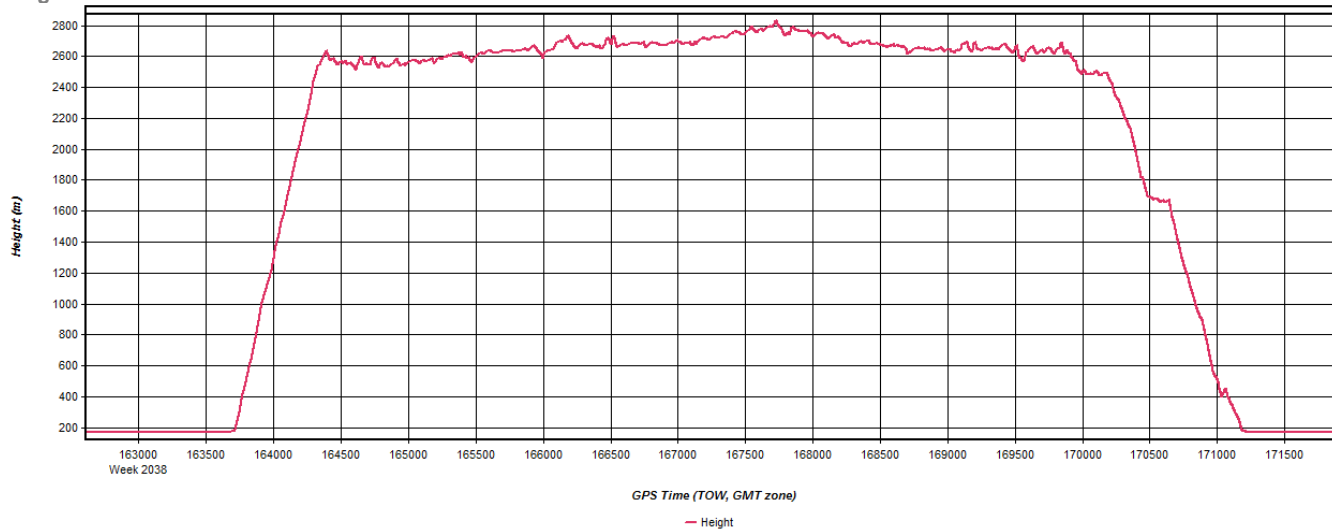
Estimated Accuracy



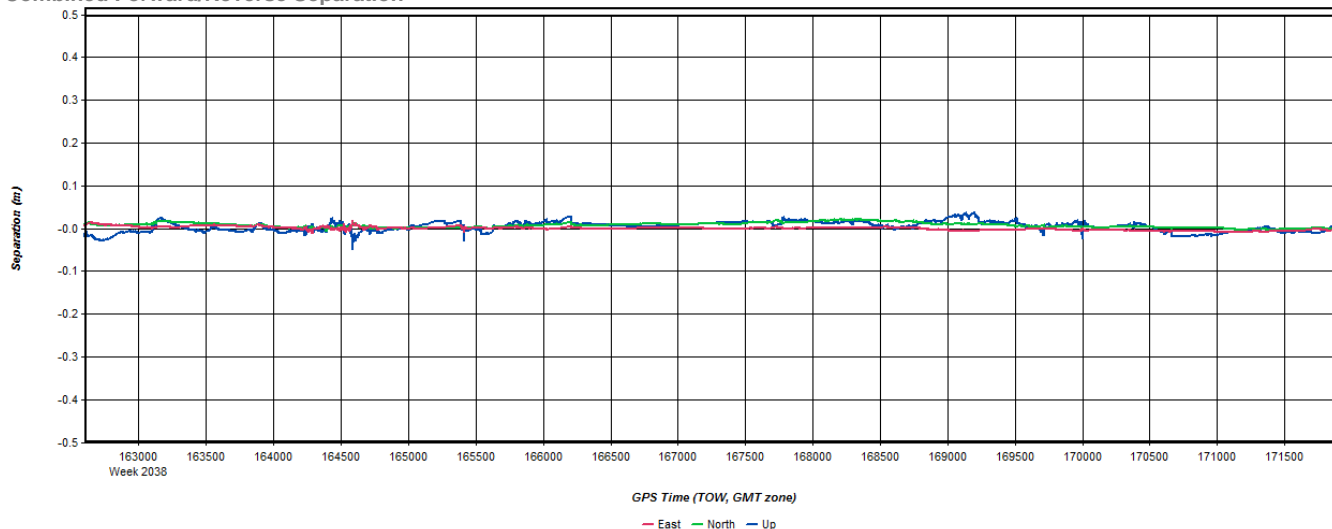
Quality Factor



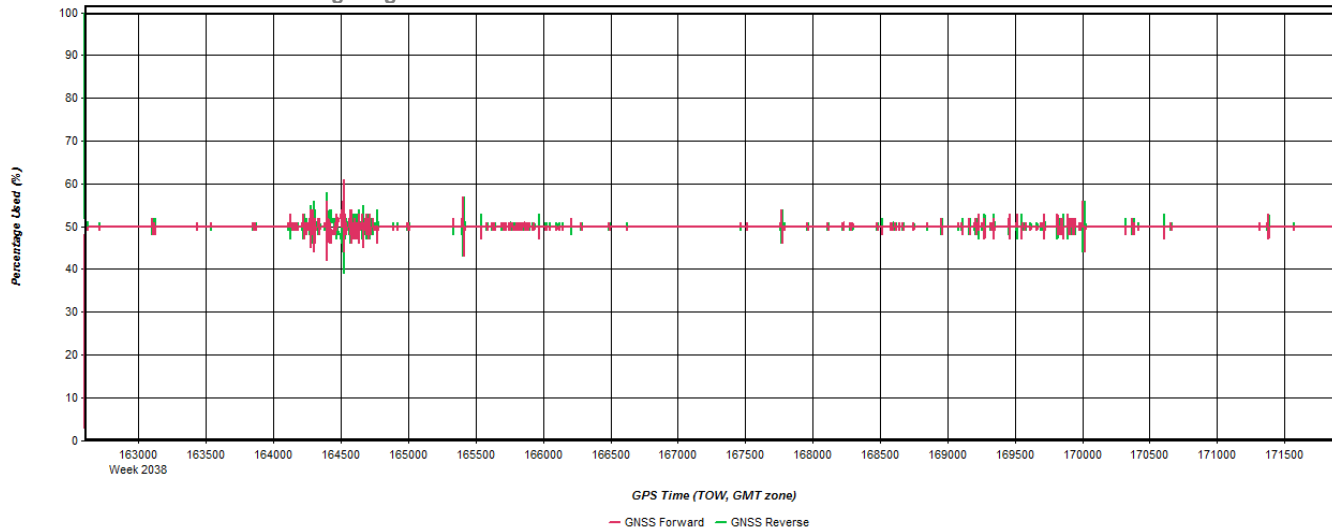
Height



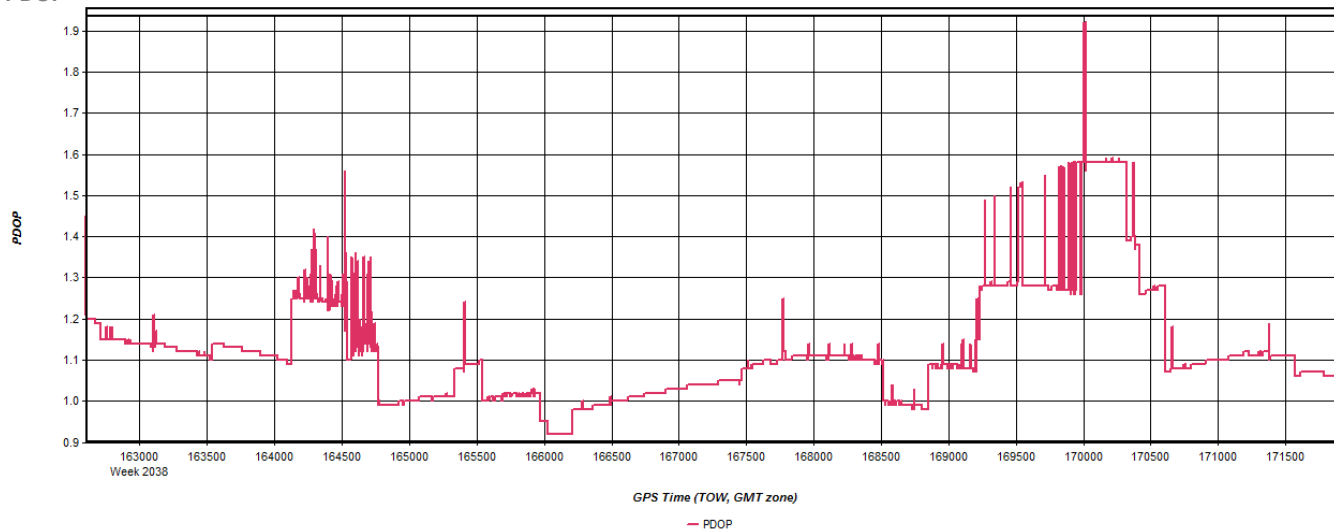
Combined Forward/Reverse Separation



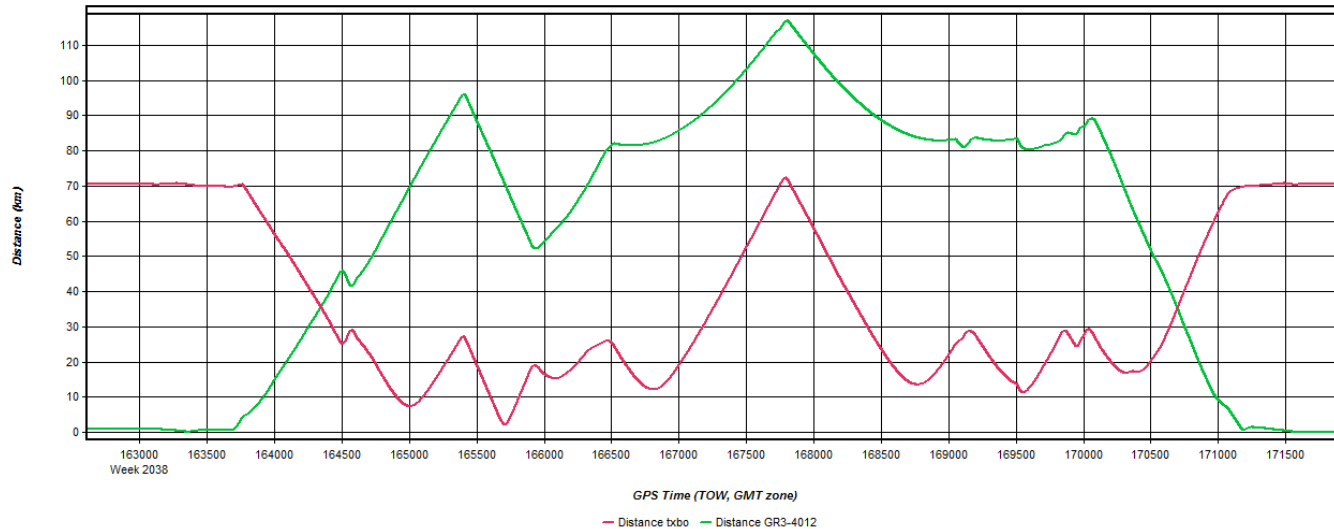
Combined Forward/Reverse Weighting



PDOP



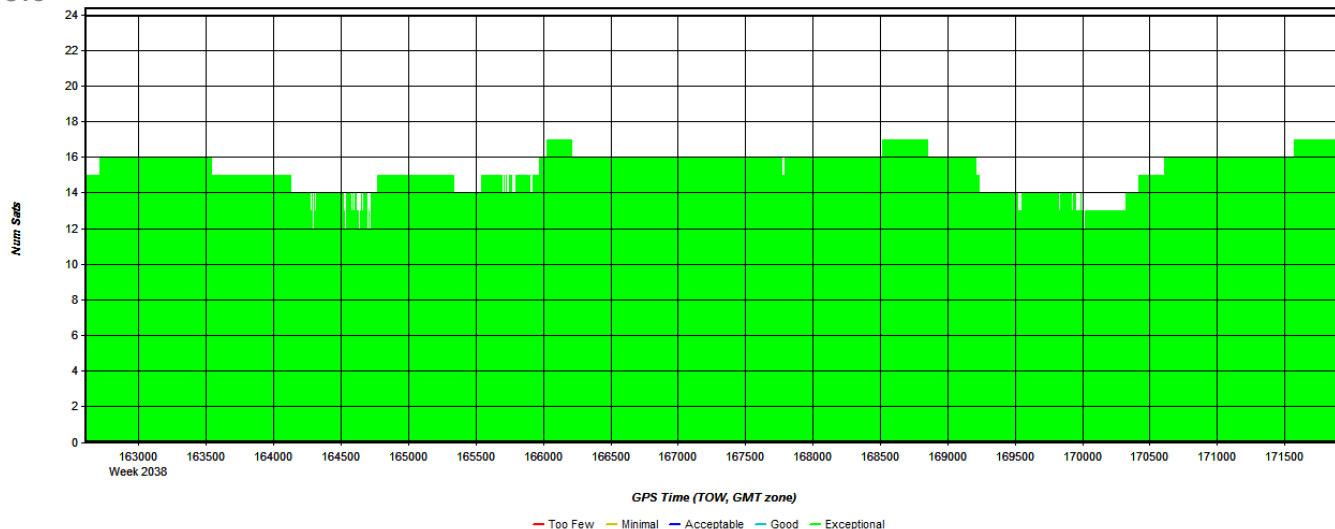
Distance from Base



**USGS  
COLLECTION REPORT**



SVs



USGS  
COLLECTION REPORT



Acquisition and Processing details ----- (January 29, 2019)

Log: 190129\_118\_33780084\_22

Menu
19.023
ALS  
Flight Log

Lift Begin			Lift End			Flt Duration	Flt Hrs	Hobbs Hrs	Activity	
Airport	Chocks	Hobbs	Airport	Chocks	Hobbs					
1	KG TU	14:43	2996.4	KG TU	17:33	2998.6	2:50	2.75	2.2	0900-Production
2										
3										

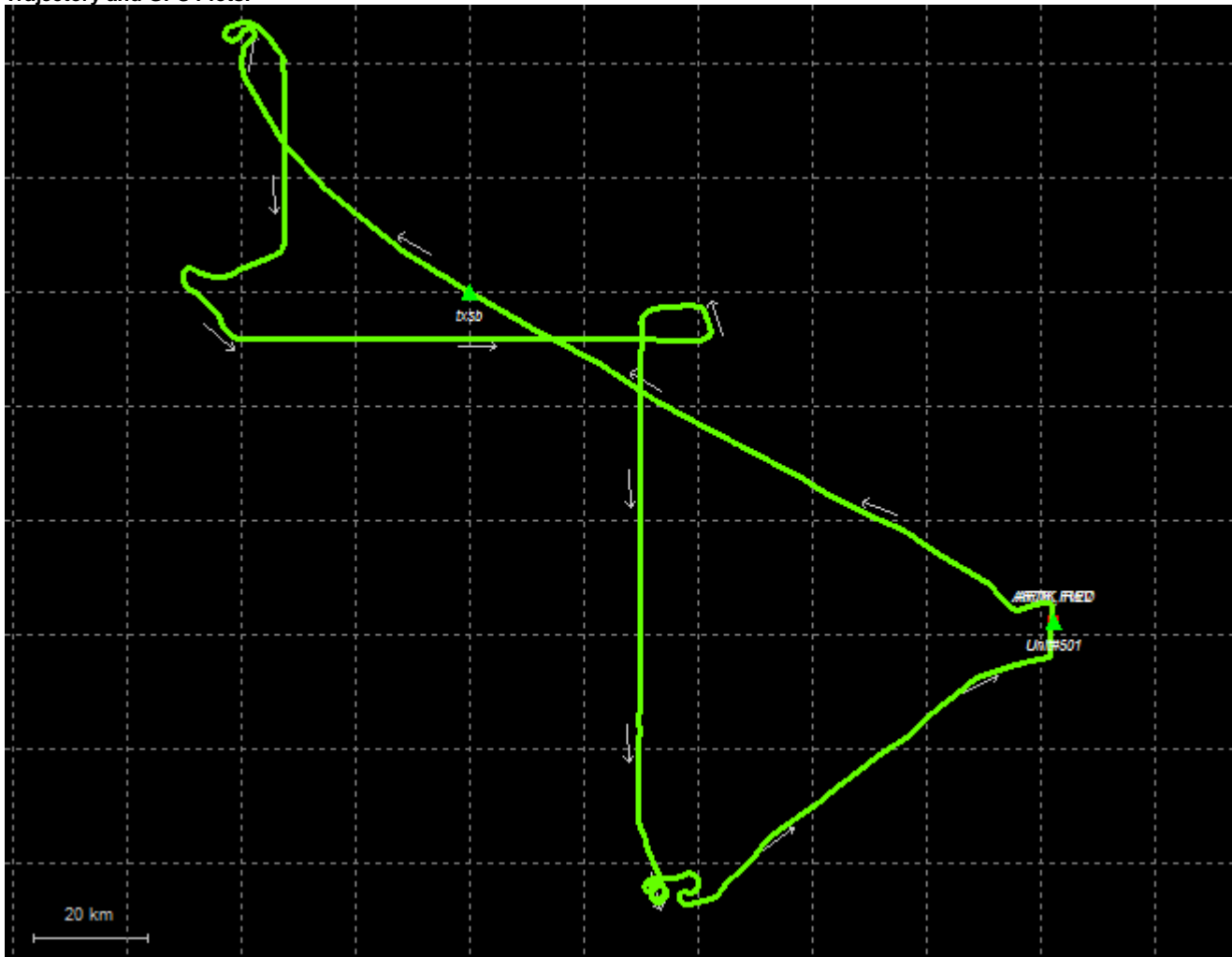
FGI Job # <b>33780084</b>		Project Name <b>Hurricane Harvey ALS80</b>			System <b>ALS80</b>	Unit <b>118</b>	IMU <b>uRS</b>	PIA <b>3</b>	SW1 <b>-</b>	SW2-Gain <b>-</b>	Aper <b>60°</b>	AutoScan <b>Yes</b>	Ground Temp °C <b>-1.0 5.0</b>	Min Range Gate <b>1903m</b>	Data Logger Drive <b>MM70-06</b>
Flight Date <b>29-Jan-19</b>	GPS Day <b>19-029</b>	Lift <b>22</b>			Sun° <b>-</b>	Solar Times (UTC) <b>-</b>	Laser Power <b>100%</b>	Pattern <b>Triangle</b>	Flying Temp °C <b>-4.0 -3.0</b>	Max Range Gate <b>2537m</b>	Download Drive <b>NS1TB-89</b>				
Mission ID (yyymmdd_Sen_Job_Lift) <b>190129_118_33780084_22</b>		Aircraft <b>N8131</b>	Airport ID <b>KG TU</b>	FMS <b>CCNS 4</b>	UTC <b>-6</b>	AMT (ft) <b>7,550</b>	Speed <b>150</b>	Scan Hz <b>35.0</b>	Pulse Rate <b>352,000</b>	FOV <b>42</b>	km/WPT <b>1.384</b>	AltM Setting <b>30.36 30.42</b>	Shipping Track <b>7743 4446 6390</b>		

Pilot #1 <b>Wayne Manning</b>		Pilot #2 <b>-</b>		Operator #1 <b>Chris Acuña</b>		Operator #2 <b>-</b>	
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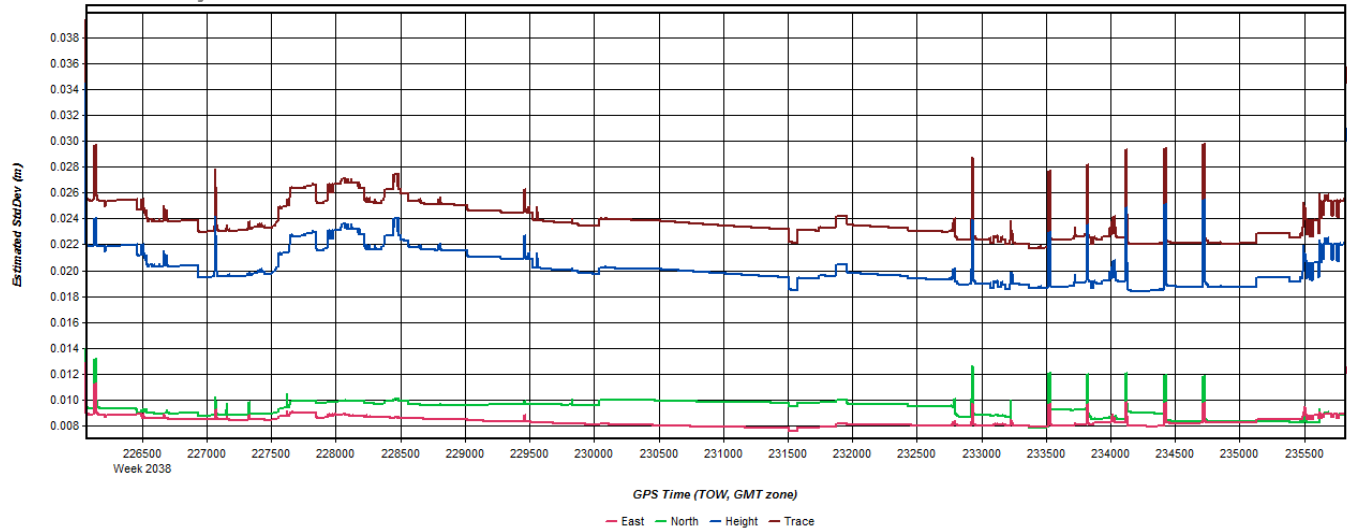
Base 1 ID <b>FEDI 1115</b>	Location <b>KG TU</b>	Rec ID <b>GR3#5</b>	Ant ID <b>GR3#5</b>	ARP (m) <b>1.8</b>	Start Time (UTC) <b>29-Jan-19 13:40</b>	Stop Time (UTC) <b>29-Jan-19 22:58</b>	GPS Filename <b>Unit#50129n</b>	Operator <b>Chris Acuña</b>	Data <b>FTP</b>
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Area	Flight #		Wpt		Distance		UTC		Fit	Altitude (GPS)	Speed (knots)	Scan Rate	Comments and Conditions	SVs	PDOP
	FGI	Client's	From	To	Begin	End	Start	End							
													Above shown log settings are for BLOCK_H		
													Aspen Tracker is "off"		
							14:48:13	14:53:13					5 Min GND static alignment at KG TU	23	1.5
							15:27:39	15:32:39					5 Min acquisition of CORS TXSB	26	10.0
							15:43:38	15:46:00					S-Turn in flight alignment	23	1.1
BLOCK_I	3		27	16	36	20.8	15:50:56	15:54:44	175	9095	146	-	Re-Fit Block I line 3 wpts 18-25, confirmed settings for BLOCK_I	23	1.1
BLOCK_H	75		1	56	0	76.1	16:04:26	16:22:11	87	8550	137	-	Full Crossing Line	22	1.2
	49		61	1	83	0	16:28:04	16:47:29	176	8270	146	-	ALS warning-AG & BG for river & lake	23	1.1
													<b>ALS warning-SOW is not being updated</b>		
							16:58:00	17:00:47					S-Turn in flight alignment	21	1.2
							17:24:53	17:29:53					5 Min GND static alignment at KG TU	21	1.2
													Lift terminated to reboot to clear ALS error and for fuel		

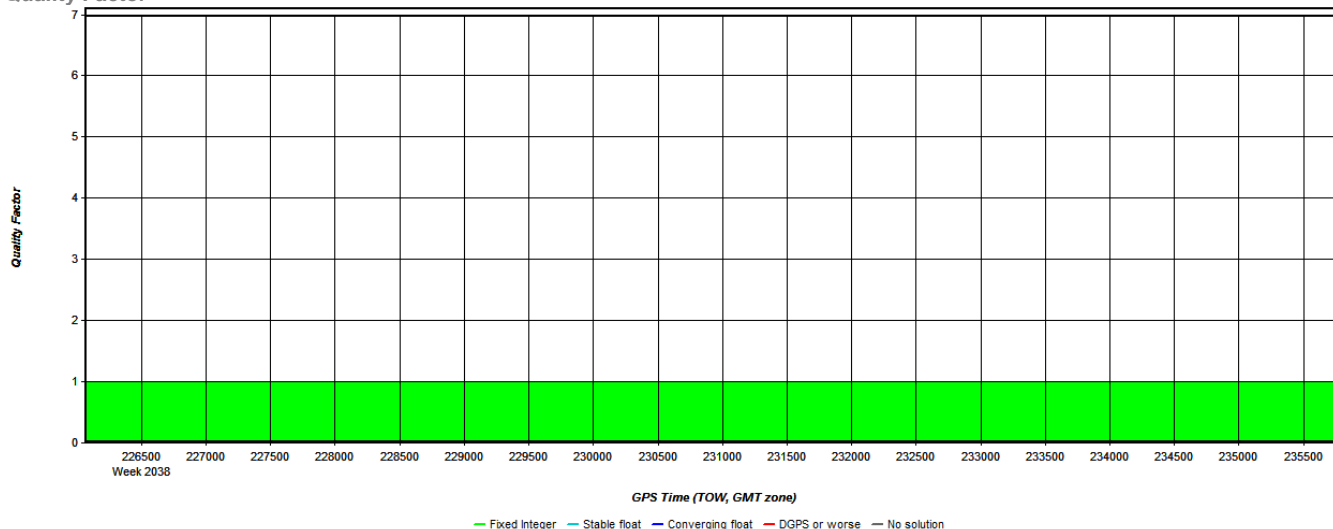
Trajectory and GPS Plots:



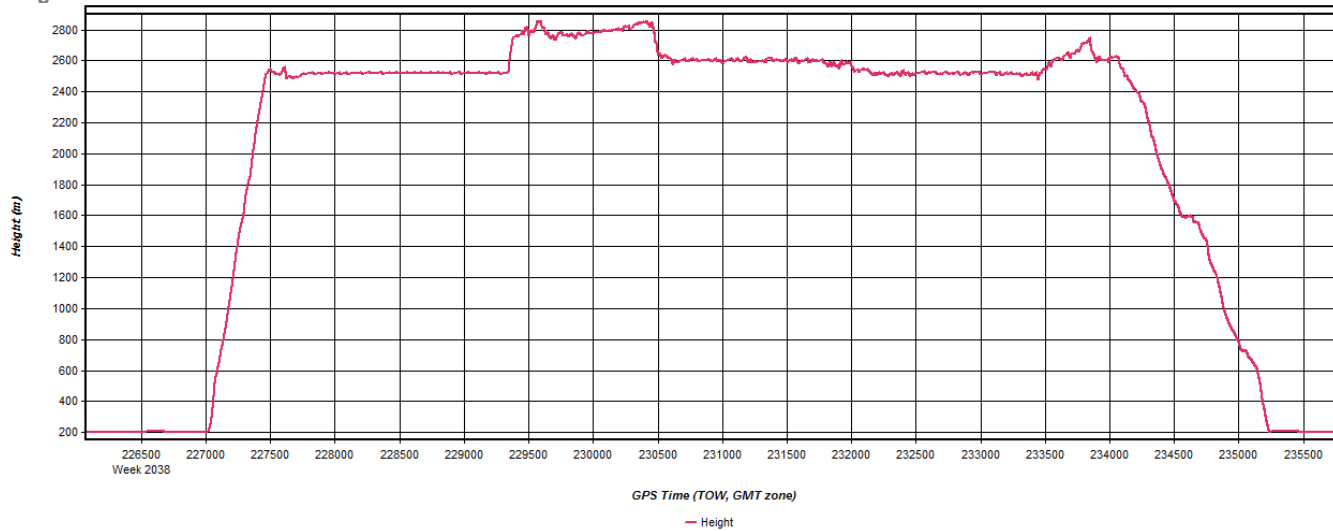
Estimated Accuracy



Quality Factor

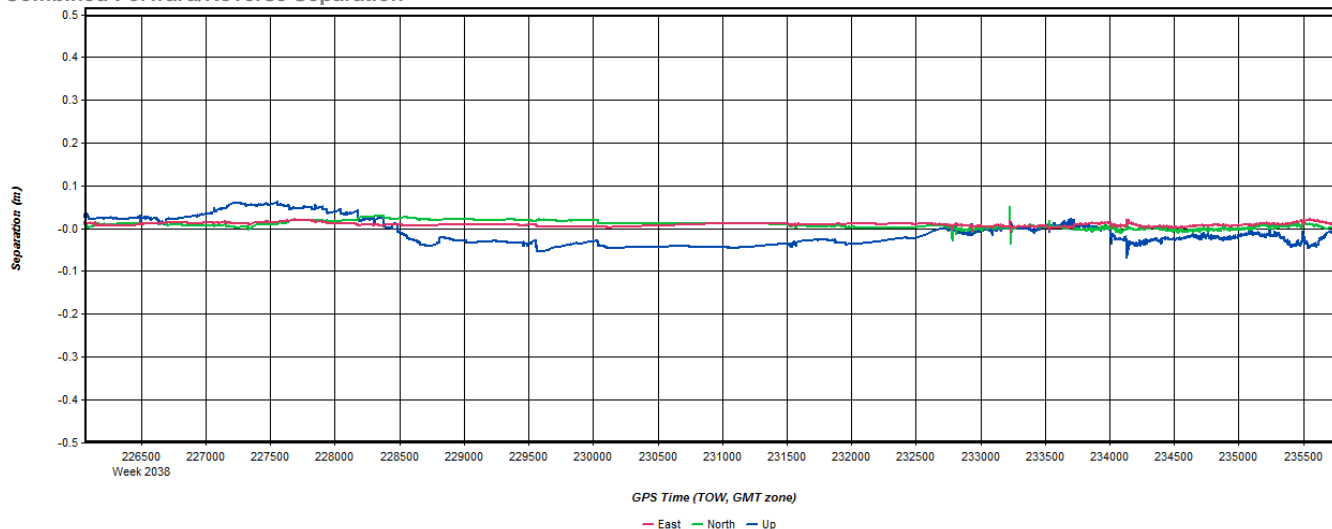


Height

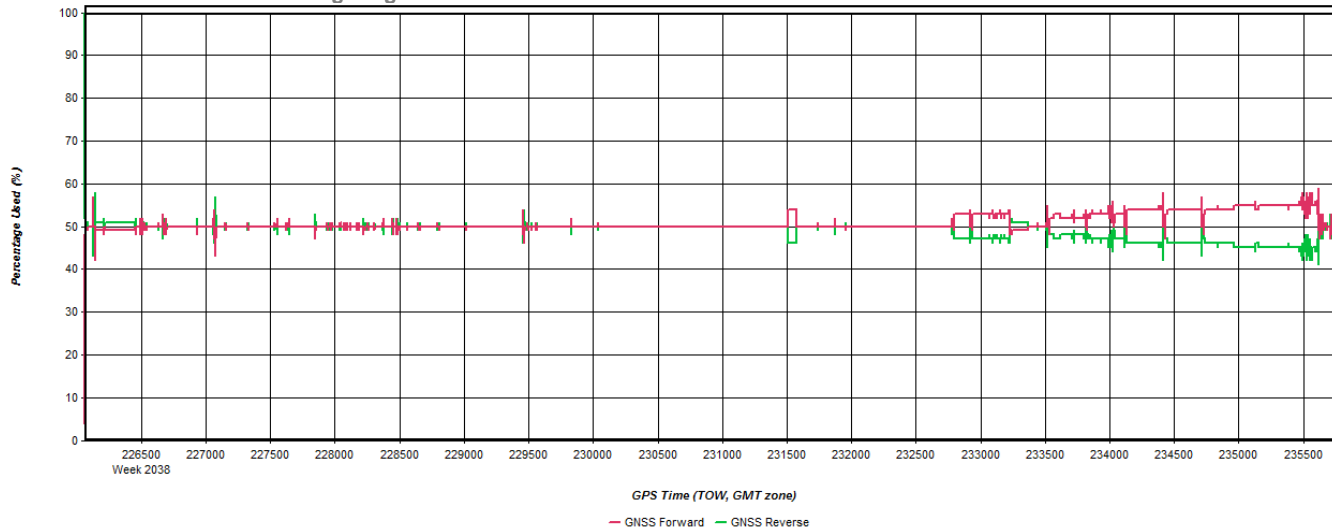




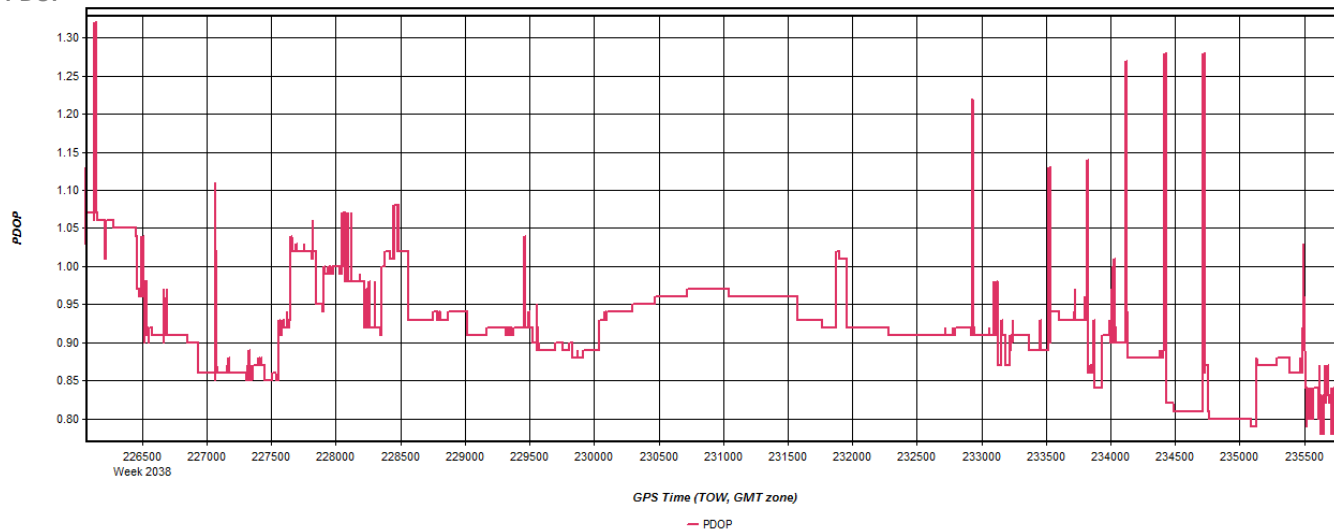
Combined Forward/Reverse Separation



Combined Forward/Reverse Weighting



PDOP

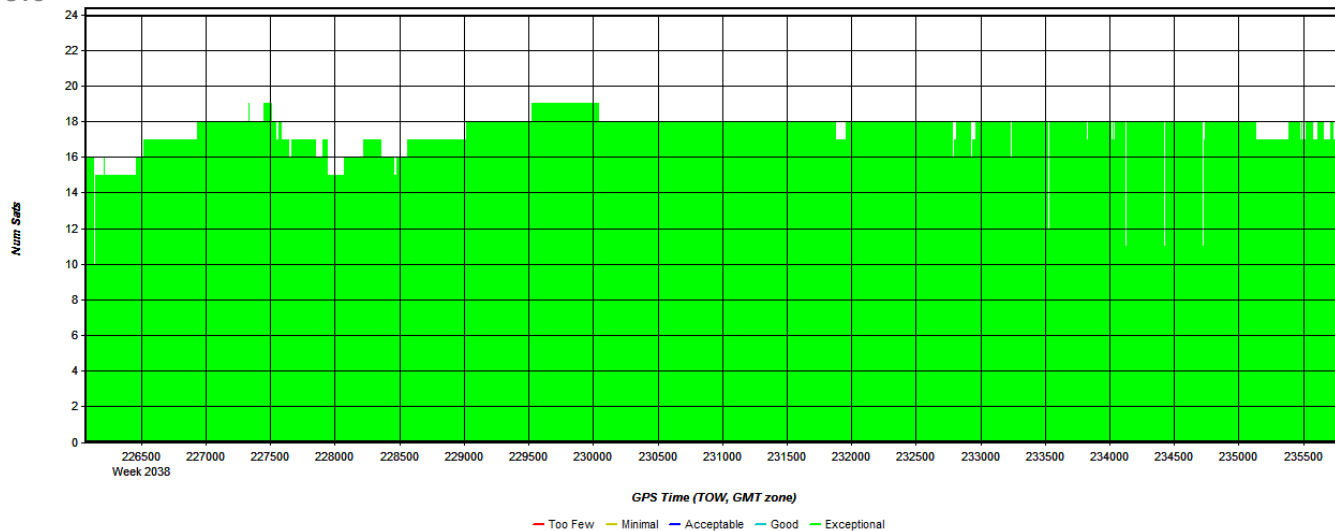


Distance from Base





SVs



USGS  
COLLECTION REPORT



Acquisition and Processing details ----- (January 29, 2019)

Log: 190129\_118\_33780084\_23

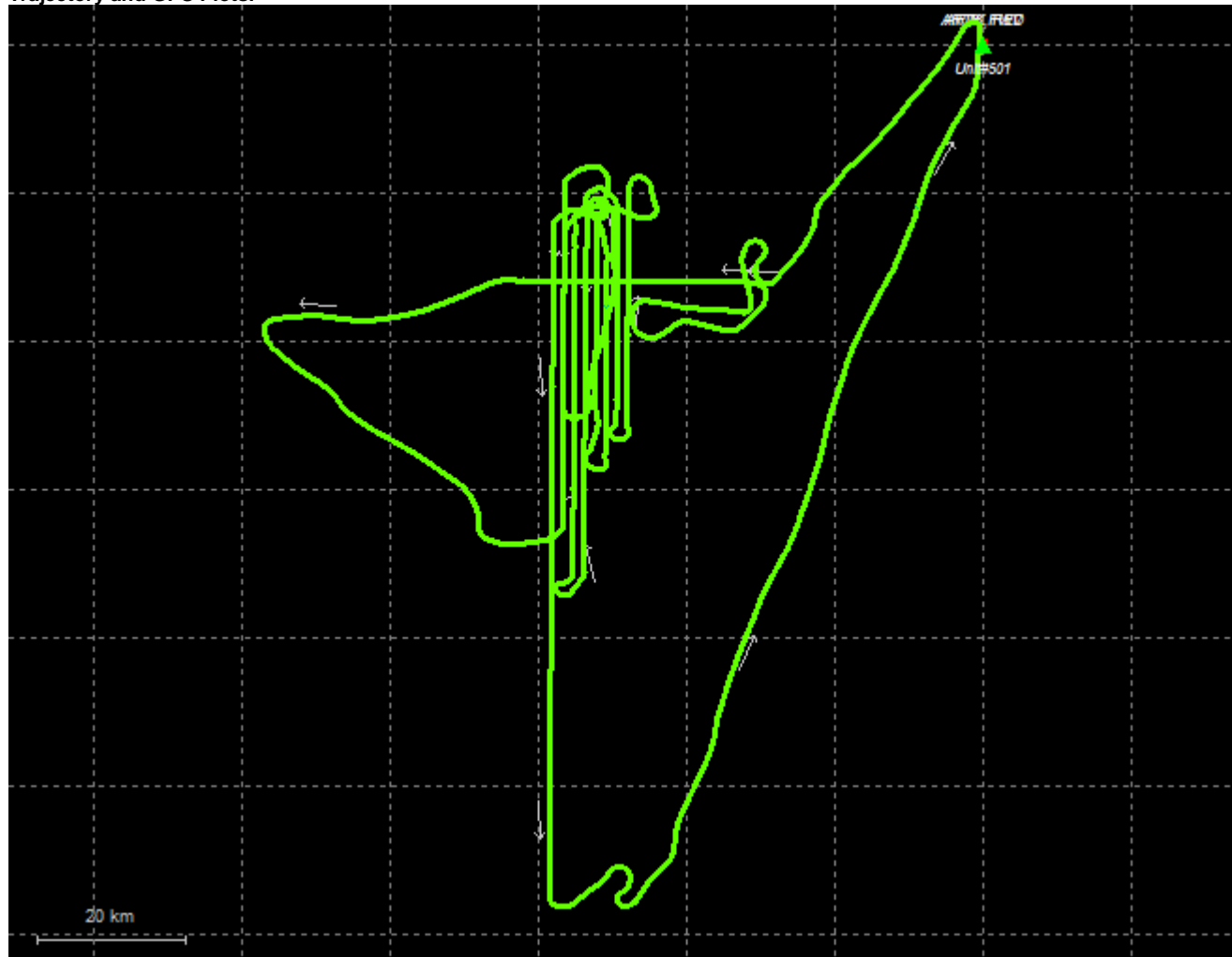
Menu
19.023
ALS  
Flight Log

	Lift Begin			Lift End			Fit Duration	Fit Hrs	Hobbs Hrs	Activity
	Airport	Chocks	Hobbs	Airport	Chocks	Hobbs				
1	KG TU	18:47	2998.6	KG TU	22:47	3002.0	4:00	4.00	3.4	0900-Production
2										
3										

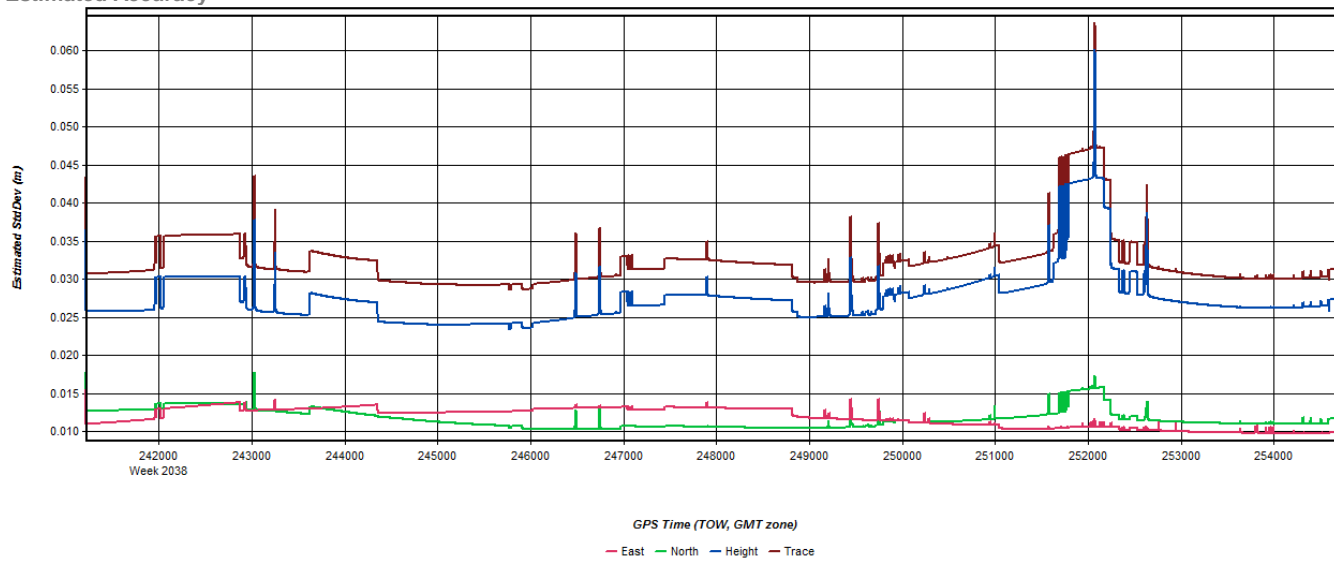
AC80-44-00-02

FGI Job #	Project Name		System	Unit	IMU	PIA	SW1	SW2-Gain	Aper	AutoScan	Ground Temp °C		Min Range Gate	Data Logger Drive		
33780084	Hurricane Harvey ALS80		ALS80	118	uRS	3	-	-	60°	Yes	7.0	9.0	1903m	MM70-06		
Flight Date	GPS Day	Lift	Sun°		Solar Times (UTC)		Laser Power		Pattern	Flying Temp °C		Max Range Gate	Download Drive			
29-Jan-19	19-029	23	-		-		100%		Triangle	-1.0 0.0		2537m	NS1TB-89			
Mission ID (yyymmdd_Sen_Job_Lift)	Aircraft	Airport ID	FMS	UTC	AMT (ft)	Speed	Scan Hz	Pulse Rate	FOV	km/WPT	AltM Setting	Shipping Track				
190129_118_33780084_23	N8131	KG TU	CCNS 4	-6	7,550	150	35.0	352,000	42	1.384	30.36 30.26	7743 4446 6390				
Pilot #1		Pilot #2		Operator #1		Operator #2										
Wayne Manning		-		Chris Acuña		-										
Base 1 ID	Location	Rec ID	Ant ID	ARP (m)	Start Time (UTC)		Stop Time (UTC)		GPS Filename		Operator		Data			
FEDI 1115	KG TU	GR3#5	GR3#5	1.8	29-Jan-19 13:40		29-Jan-19 22:58		Unit#50129n		Chris Acuña		FTP			
Area	Flight #		Wpt		Distance		UTC		Fit	Altitude	Speed	Scan	Comments and Conditions		SVs	PDOP
	FGI	Client's	From	To	Begin	End	Start	End	Dir	(GPS)	(knots)	Rate				
													1st start up: ALS warning-corrupt encoder data. Recycled pwr.			
													Aspen GPS Tracker is "off"			
							19:01:39	19:06:39					5 Min GND static alignment at KG TU		16	1.4
							19:26:18	19:28:27					S-Turn in flight alignment		20	1.1
BLOCK_H	73		66	50	90	67.8	19:42:17	19:47:50	266	8140	133	-	Partial Crossing Lline		19	1.1
BLOCK_F	53		1	18	0	23.5	20:11:18	20:16:54	355	8210	137	-	Delay on line start for CCNS		19	1.2
	53		18	5	23.5	5.5	20:24:30	20:28:18	176	8210	142	-	Calibration Line		19	1.3
	55		18	1	23.5	0	20:38:55	20:45:06	176	8260	130	-			20	1.2
	57		1	17	0	22.1	20:56:20	21:01:32	356	8200	144	-			18	1.3
	59		13	1	16.6	0	21:06:05	21:10:07	176	8140	137	-			20	1.3
	61		1	12	0	15.2	21:15:43	21:19:20	356	8115	147	-			20	1.3
	63		12	1	15.2	0	21:24:54	21:28:38	177	8140	135	-			20	1.2
	65		1	8	0	9.7	21:33:45	21:36:10	357	8075	142	-			20	1.2
	51		61	1	83	0	21:45:37	22:05:33	175	8240	141	-			20	1.2
							22:08:07	22:10:54					S-Turn in flight alignment		20	1.2
							22:40:41	22:45:41					5 Min GND static alignment at KG TU		19	1.3
													Lift terminated for time due on next maintenance cycle			

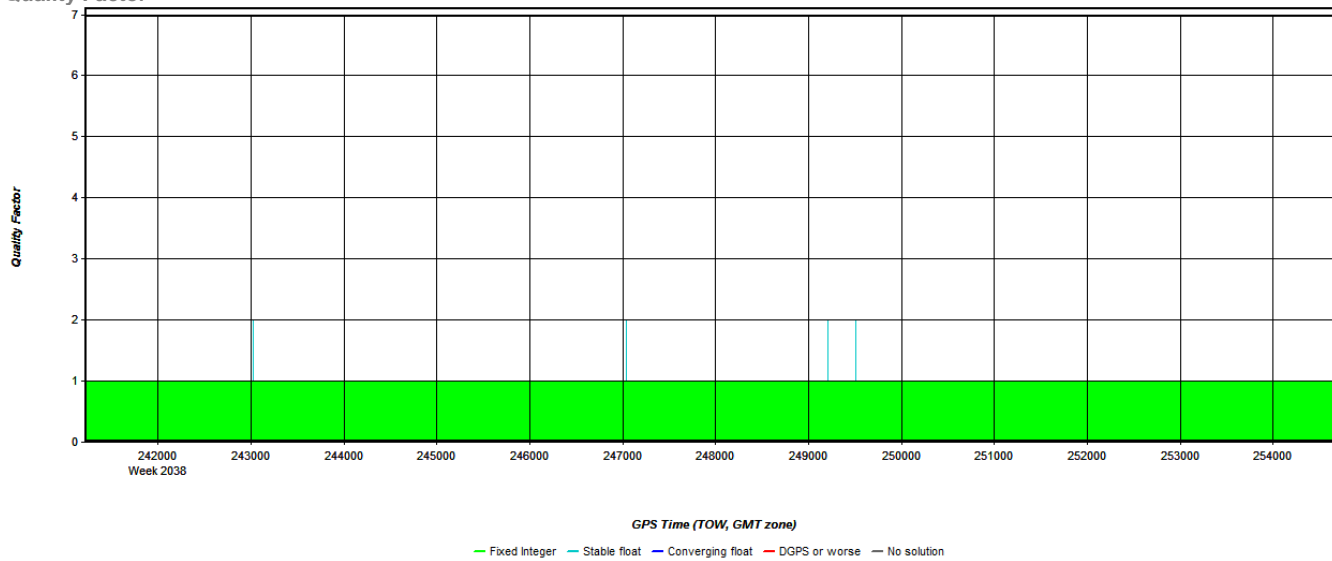
Trajectory and GPS Plots:



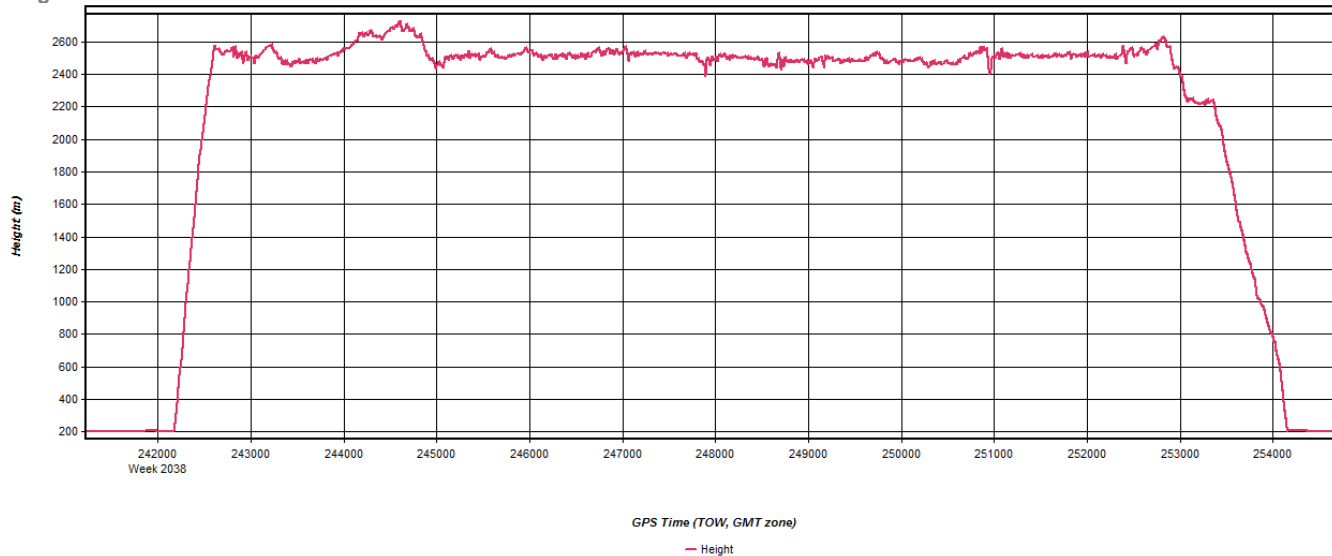
Estimated Accuracy



Quality Factor



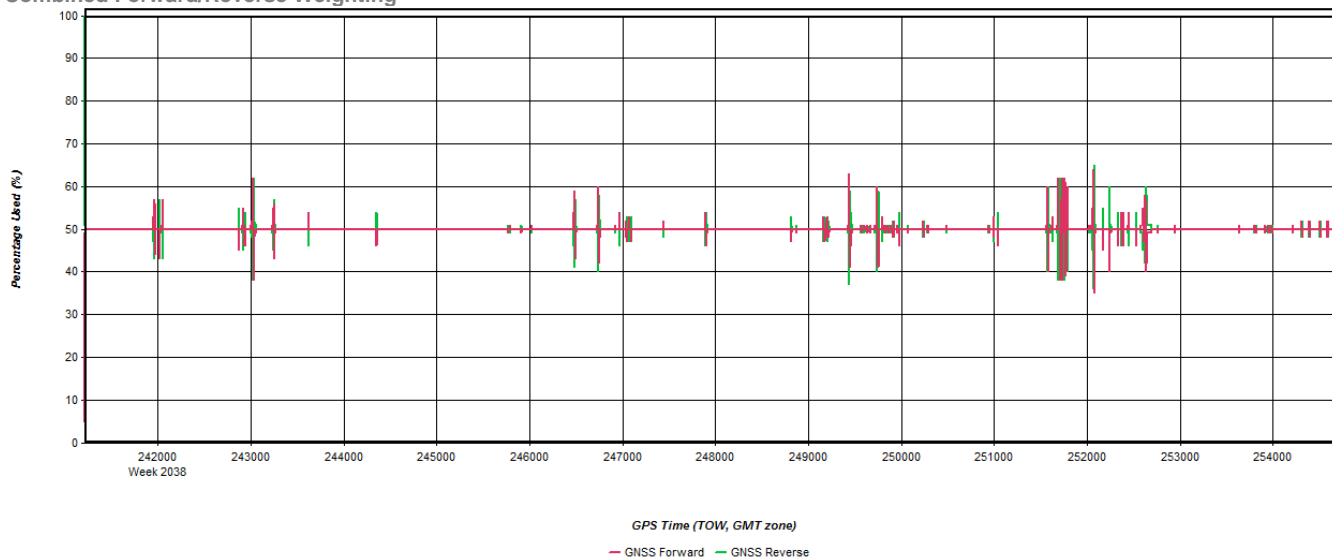
Height



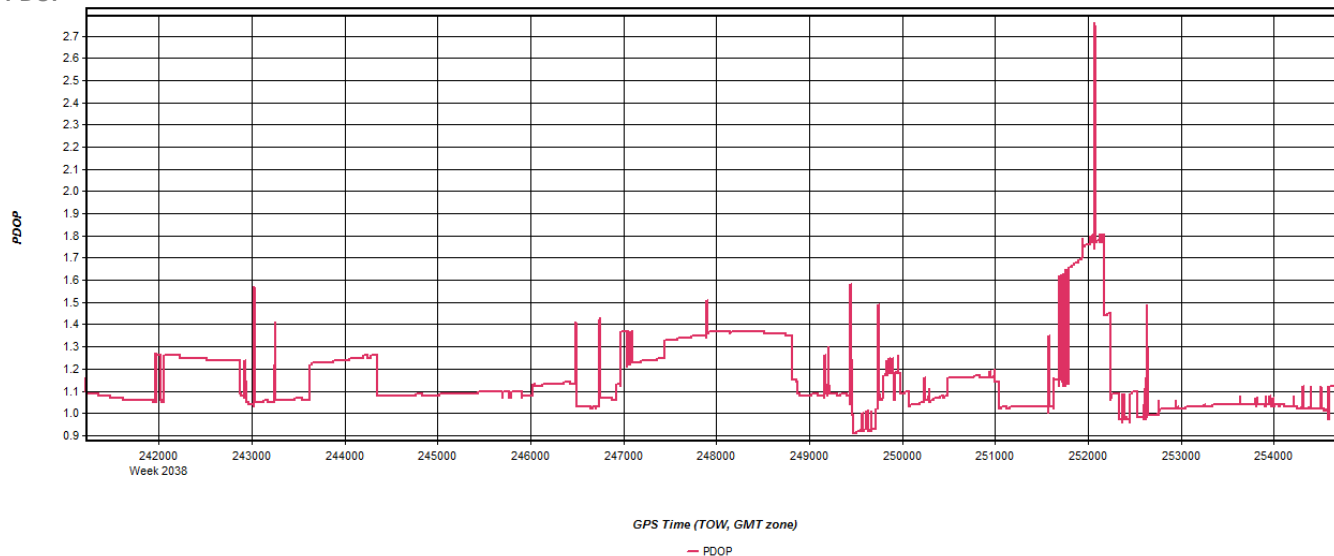
Combined Forward/Reverse Separation



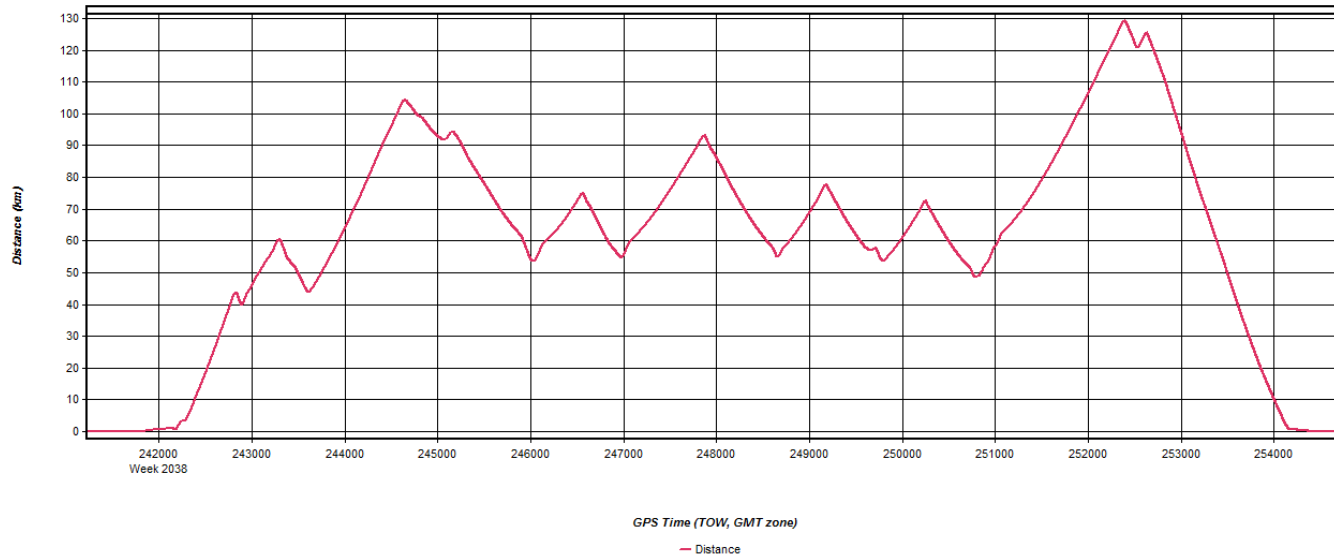
Combined Forward/Reverse Weighting



PDOP



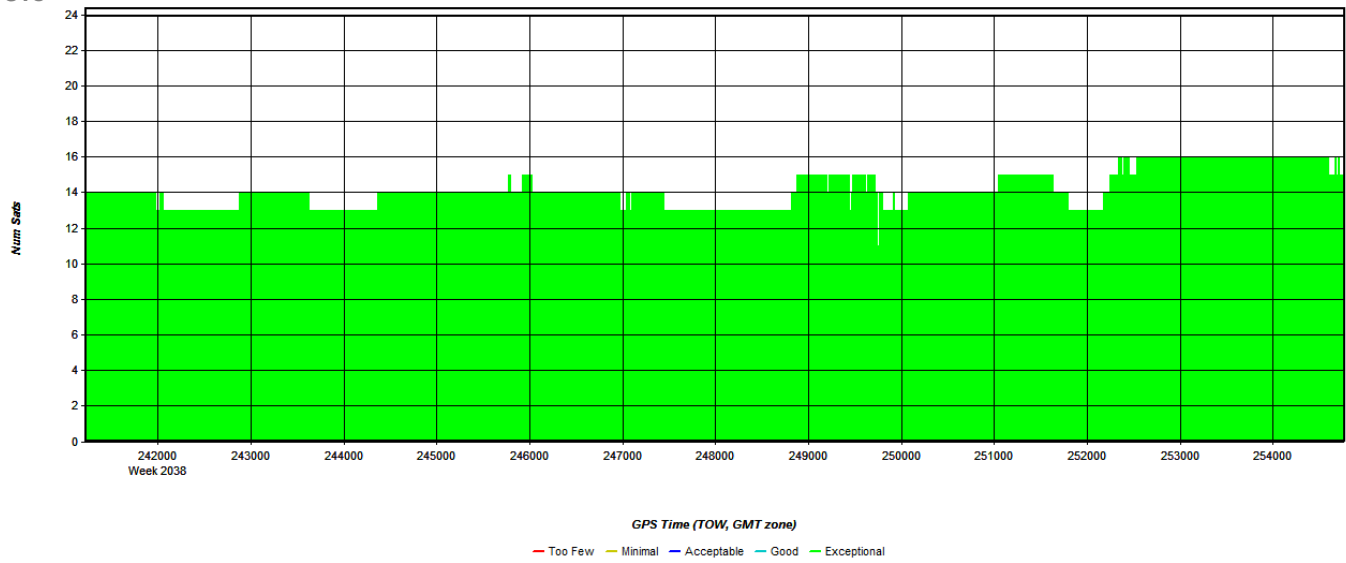
Distance from Base







SVs



USGS  
COLLECTION REPORT



Acquisition and Processing details ----- (January 29, 2019)

Log: 190129\_130\_33780084\_11

	Menu										Lift Begin		Lift End		Fit	Fit	Hobbs	
	1	KLBX	18:15	1371.2	KLBX	22:08	1374.6	3:52	3:75	3.4	0900-Production							
	2																	
	3																	

AC80-44-00-02

FGI Job # <b>33780084</b>	Project Name <b>USGS Harvey utm15 final</b>				System <b>ALS80</b>	Unit <b>130</b>	IMU <b>uRS</b>	PIA <b>4</b>	SW1	SW2-Gain	Aper	AutoScan	Ground Temp °C <b>9.0 11.0</b>	Min Range Gate <b>2232</b>	Data Logger Drive <b>LG 102</b>
Flight Date <b>29-Jan-19</b>	GPS Day <b>19-029</b>	Lift <b>11</b>			Sun°	Solar Times (UTC)	Laser Power <b>96%</b>	Pattern <b>Triangle</b>	Flying Temp °C <b>-3.0 -3.0</b>	Max Range Gate <b>2691</b>	Download Drive <b>NS1TB-110</b>				
Mission ID (yyymmdd_Sen_Job_Lift) <b>190129_130_33780084_11</b>	Aircraft <b>N97HC</b>	Airport ID <b>KLBX</b>	FMS <b>CCNS 8</b>	UTC <b>-6</b>	AMT (ft) <b>7,900</b>	Speed <b>150</b>	Scan Hz <b>34.0</b>	Pulse Rate <b>442,600</b>	FOV <b>46</b>	km/WPT <b>1.448</b>	Altm Setting <b>30.31 30.22</b>	Shipping Track <b>7743 3749 1930</b>			
Pilot #1 <b>Grant Cassell</b>		Pilot #2		Operator #1 <b>Dave Verhey</b>		Operator #2									

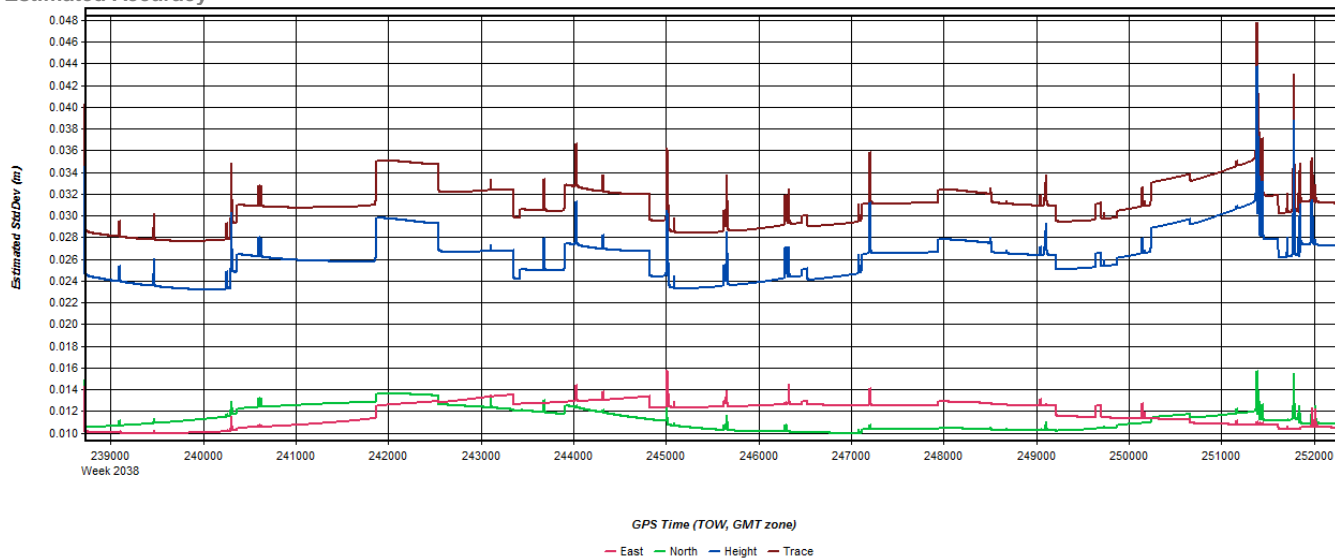
Base 1 ID <b>temp_lbx</b>	Location <b>KLBX</b>	Rec ID <b>GR3-1</b>	Ant ID <b>GR3-1</b>	ARP (m) <b>1.8</b>	Start Time (UTC) <b>29-Jan-19 17:39</b>	Stop Time (UTC) <b>29-Jan-19 22:26</b>	GPS Filename <b>Unit10129r</b>	Operator <b>Dave Verhey</b>	Data <b>FTP</b>
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Area	Flight #		Wpt		Distance		UTC		Fit	Altitude (GPS)	Speed (knots)	Scan Rate	Comments and Conditions	SVs	PDOP
	FGI	Client's	From	To	Begin	End	Start	End							
							18:18:54	18:23:54					Ground static at KLBX	19	1.5
							18:43:46	18:45:57					S-turn	18	1.4
BLOCK_K	29		1	37	0	52.1	18:49:36	19:01:59	51.0	7782	139		Tie line in entirety	19	1.1
	28		1	12	0	15.9	19:07:29	19:11:32	321.6	7888	134			16	1.4
	27		14	1	18.8	0	19:14:22	19:18:55	141.5	7875	141			17	1.3
	26		1	21	0	29	19:22:00	19:29:15	321.6	7885	135			17	1.3
	25		22	1	30.4	0	19:32:15	19:39:30	141.4	7894	139			17	1.2
	25		1	10	0	13	19:42:53	19:46:09	321.6	7867	137		Calibration line	17	1.2
	24		1	22	0	30.4	19:53:58	20:01:15	321.5	7906	140		Open water 29 km	18	1.2
	23		22	1	30.4	0	20:04:42	20:12:00	141.3	7850	141		Open water 17-10 km	18	1.2
	22		1	23	0	31.9	20:15:50	20:23:28	321.5	7837	139			19	1.2
	21		25	1	34.8	0	20:25:48	20:34:03	141.3	7817	137			20	1.2
	20		1	31	0	43.4	20:41:14	20:51:30	321.5	7806	134			19	1.2
	19		38	1	53.6	0	20:56:45	21:09:22	141.1	7844	142			20	1.3
	18		1	41	0	57.9	21:12:46	21:26:28	321.5	7829	141			19	1.4
	17		43	1	60.8	0	21:29:49	21:43:54	141.1	7867	140			19	1.2
							21:44:16	21:46:25					S-turn	19	1.2
							21:59:56	22:04:56					Ground static at KLBX	21	1.1

Trajectory and GPS Plots:

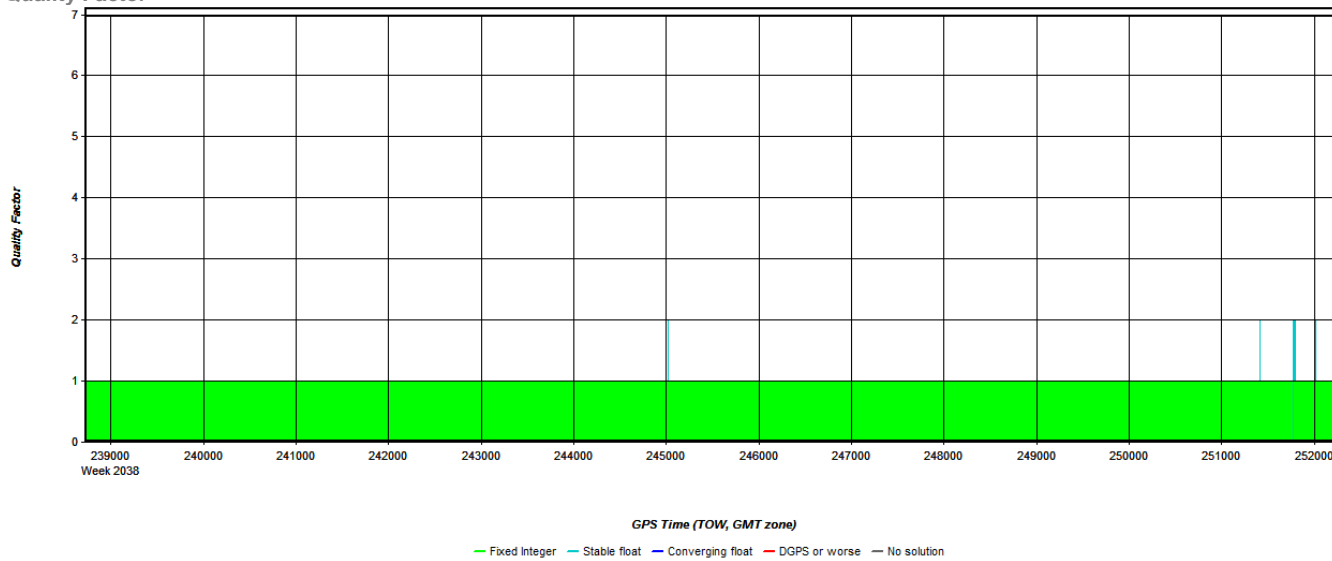


Estimated Accuracy

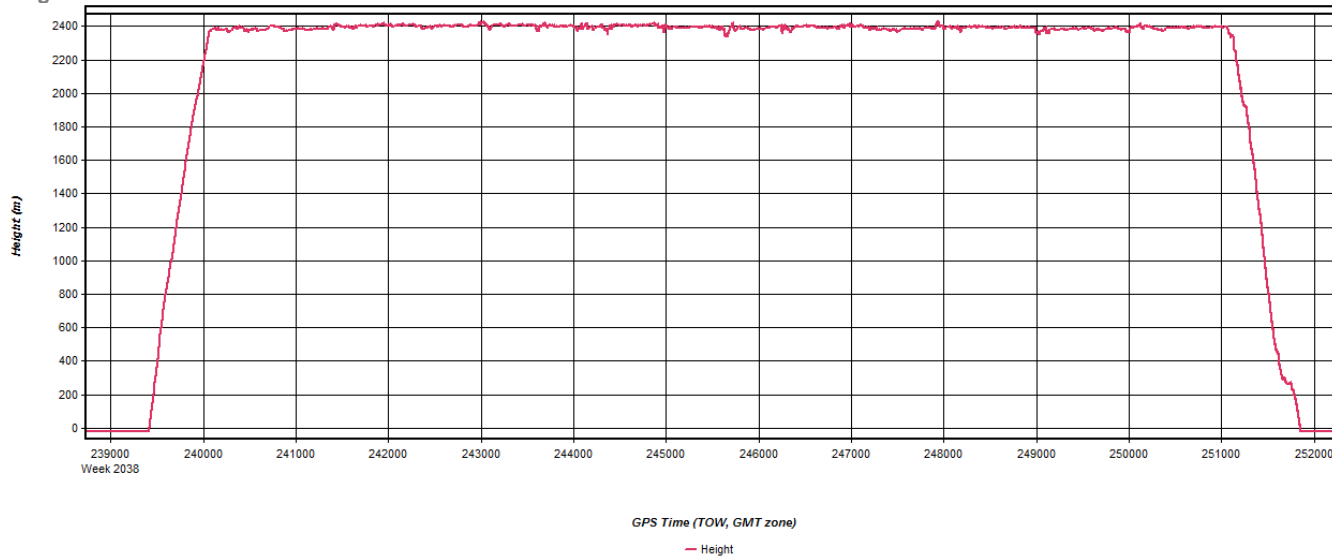




Quality Factor



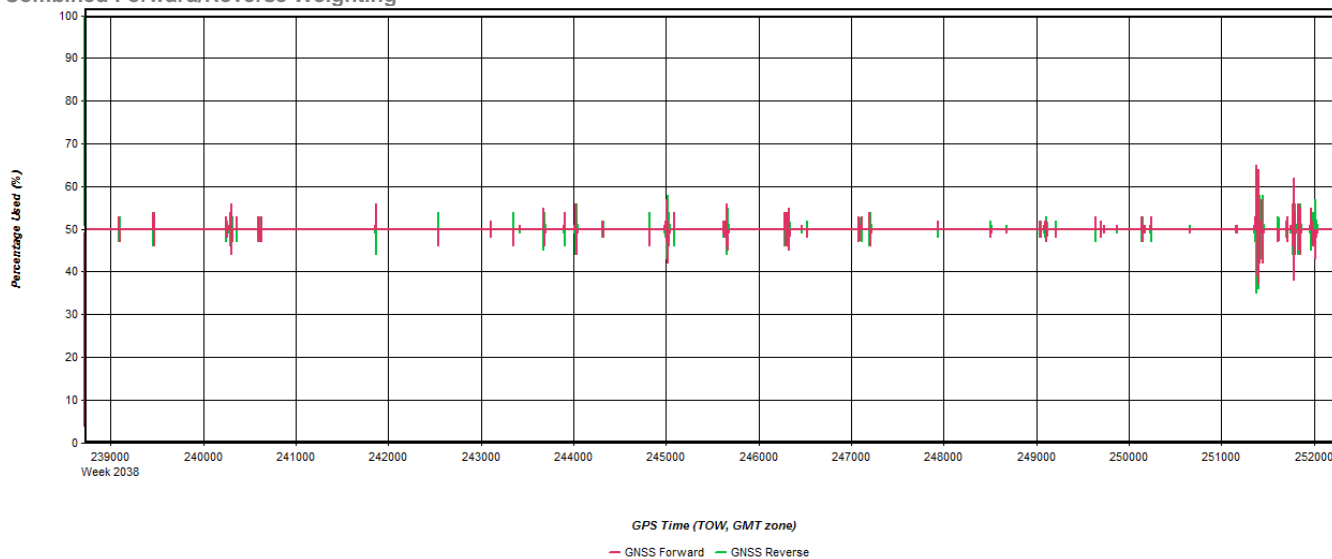
Height



Combined Forward/Reverse Separation

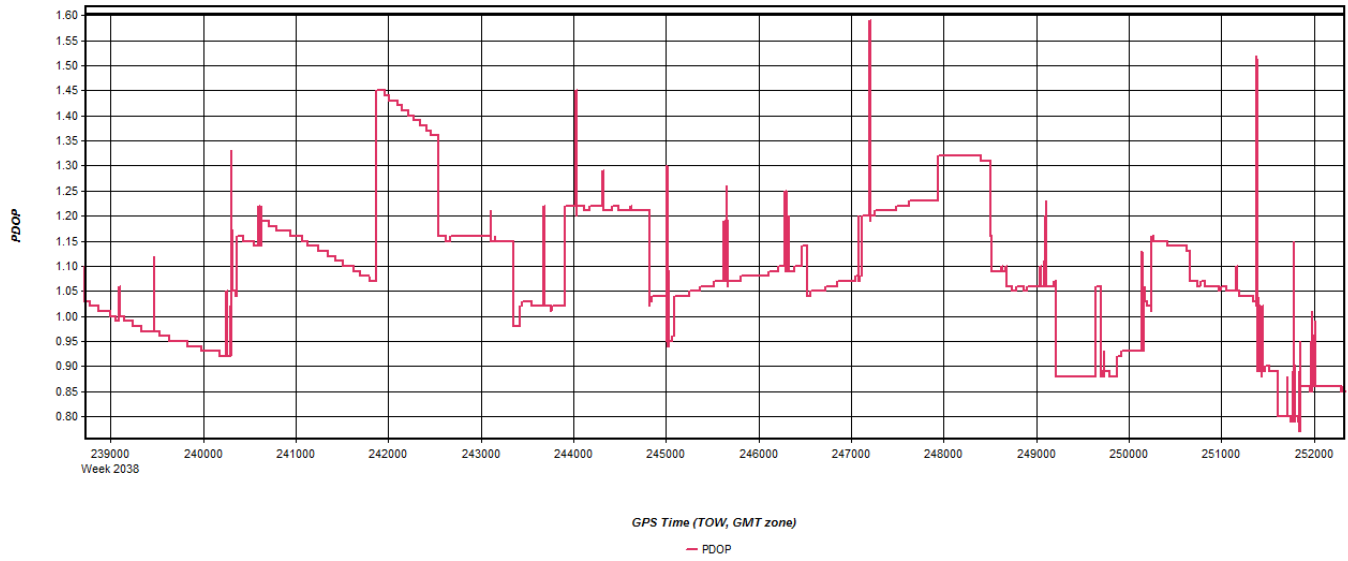


Combined Forward/Reverse Weighting

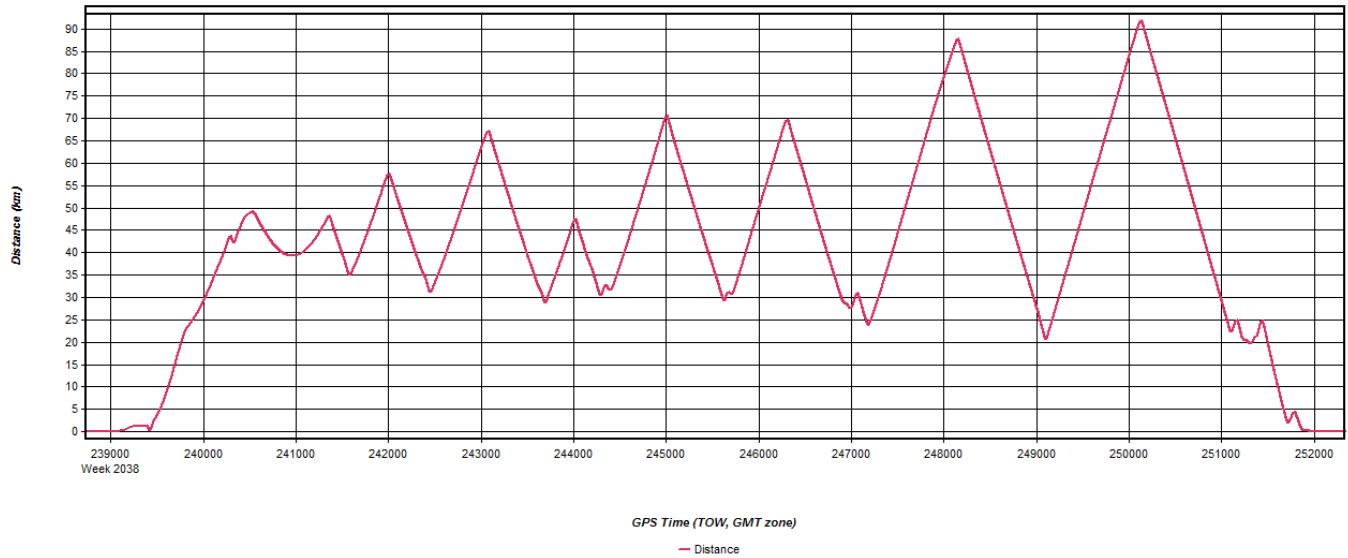


# USGS COLLECTION REPORT

## PDOP

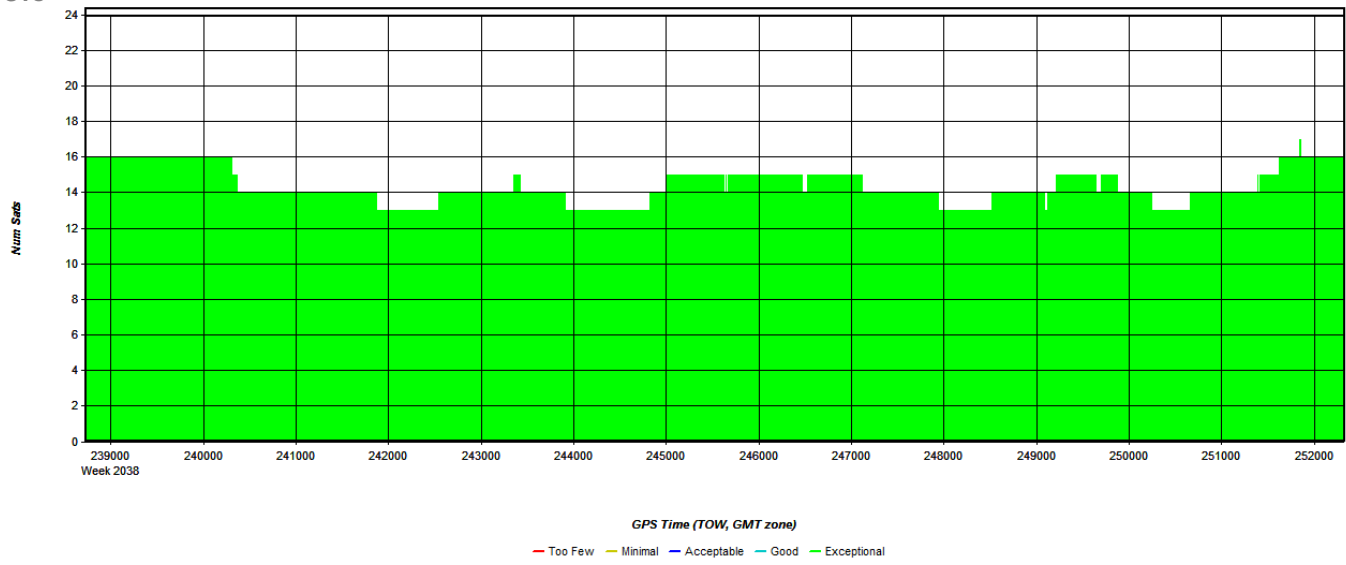


## Distance from Base





SVs



USGS  
COLLECTION REPORT



Acquisition and Processing details ----- (January 29, 2019)

Log: 190129\_133\_33780084\_13

Menu
19.023
ALS  
Flight Log

Lift Begin			Lift End			Fit Duration	Fit Hrs	Hobbs Hrs	Activity	
Airport	Chocks	Hobbs	Airport	Chocks	Hobbs					
1	KBAZ	14:39	8174.5	KBAZ	20:17	8180.1	5:37	5.50	5.6	0900-Production
2										
3										

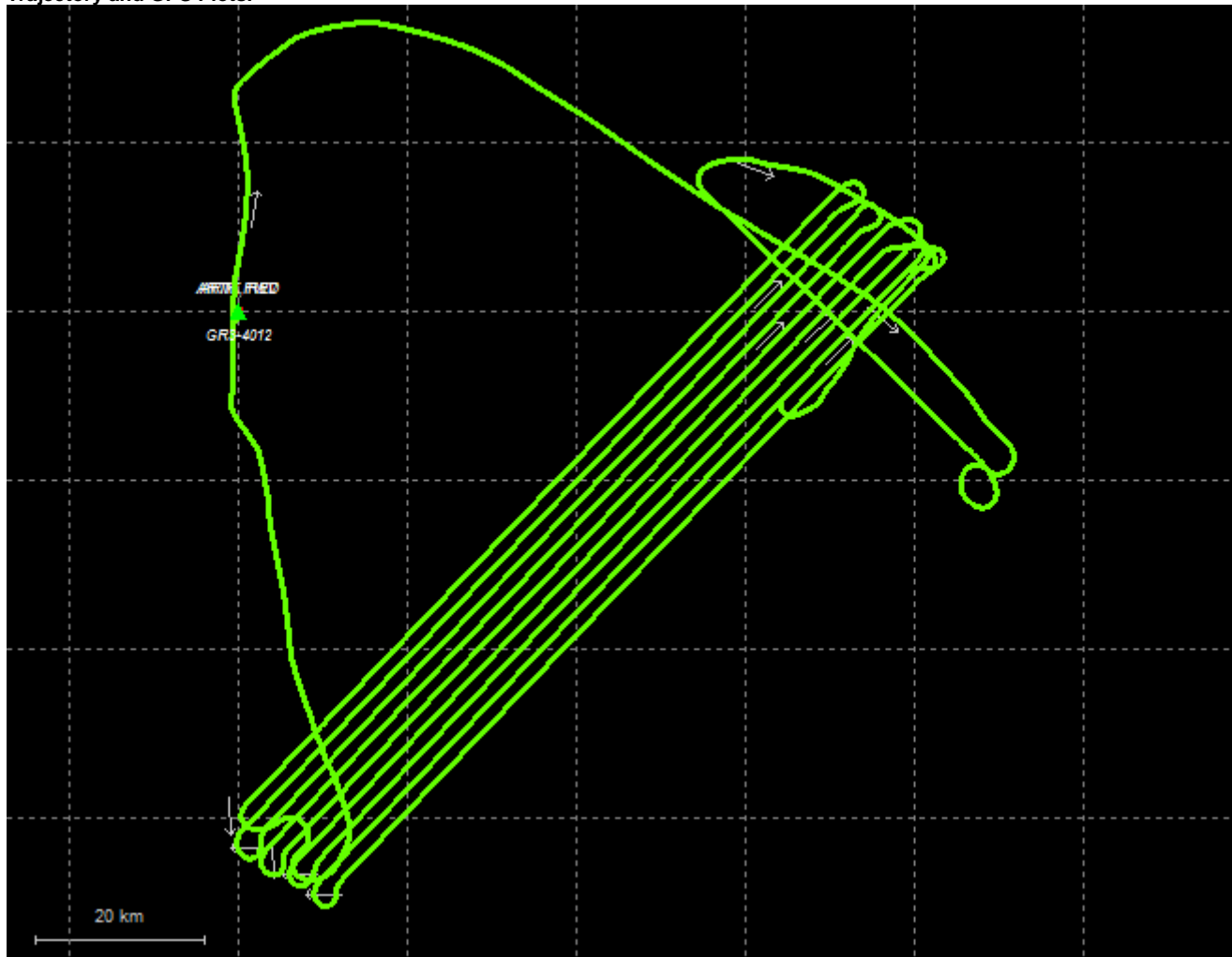
AC80-44-00-02

FGI Job # <b>33780084</b>		Project Name <b>USGS Disaster Recovery Harvey</b>				System <b>ALS80</b>	Unit <b>133</b>	IMU <b>uRS</b>	PIA <b>4</b>	SW1 <b>255</b>	SW2-Gain <b>60°</b>	Aper <b>Yes</b>	AutoScan <b>2.2</b>	Ground Temp °C <b>2.2</b>	Min Range Gate <b>7322</b>	Data Logger Drive <b>MM70-03</b>
Flight Date <b>29-Jan-19</b>		GPS Day <b>19-029</b>	Lift <b>13</b>	Sun° <b>NA</b>			Solar Times (UTC) <b>NA</b>		Laser Power <b>100%</b>	Pattern <b>Triangle</b>	Flying Temp °C <b>-2.0</b>	<b>0.0</b>	Max Range Gate <b>8830</b>	Download Drive <b>NS1TB-55</b>		
Mission ID (ymmdd_Sen_Job_Lift) <b>190129_133_33780084_13</b>		Aircraft <b>N76JN</b>	Airport ID <b>KBAZ</b>	FMS <b>FCMS</b>	UTC <b>7,900</b>	AMT (ft) <b>150</b>	Speed <b>34.0</b>	Scan Hz <b>442,600</b>	Pulse Rate <b>42</b>	FOV <b>1.448</b>	km/WPT <b>30.40</b>	AltM Setting	Shipping Track			
Pilot #1 <b>Maison Collins</b>		Pilot #2		Operator #1 <b>Adam Mueller</b>			Operator #2									
Base 1 ID <b>FGI 8003</b>	Location <b>KBAZ</b>	Rec ID <b>Unit 4</b>	Ant ID <b>Unit 4</b>	ARP (m) <b>1.8</b>	Start Time (UTC) <b>29-Jan-19 14:21</b>		Stop Time (UTC) <b>30-Jan-19 20:36</b>		GPS Filename <b>GR3-40129o</b>		Operator <b>Adam Mueller</b>		Data <b>With AB</b>			
Base 2 ID	Location	Rec ID	Ant ID	ARP (m)	Start Time (UTC)		Stop Time (UTC)		GPS Filename		Operator		Data			

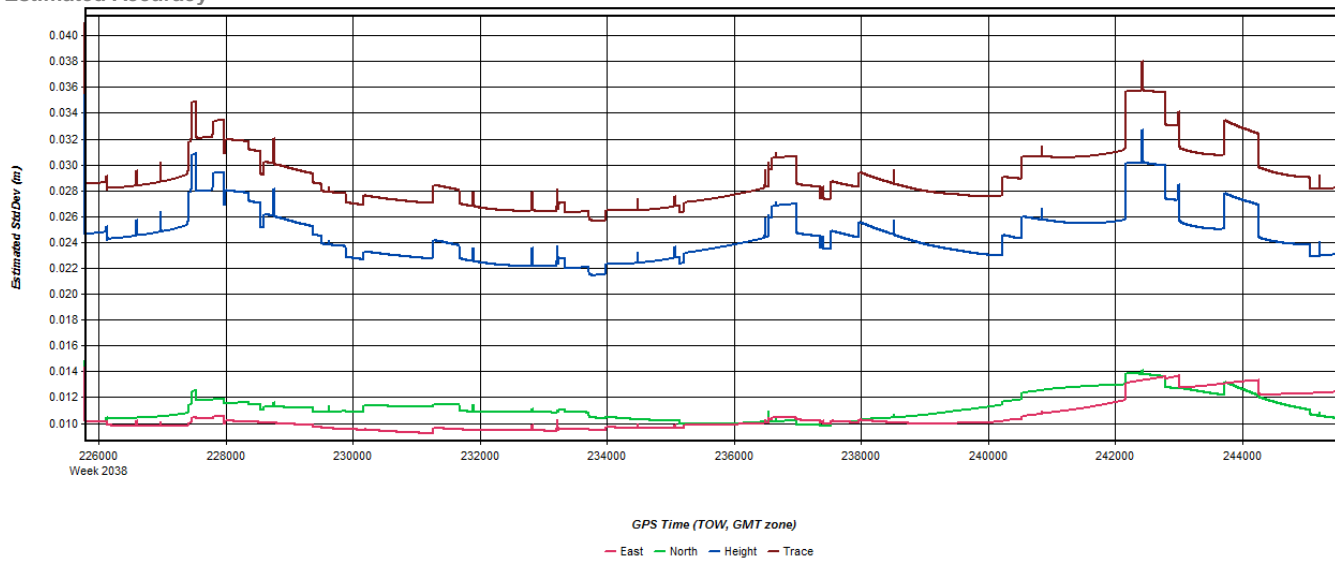
Area	Flight #		Wpt		Distance		UTC		Fit Dir	Altitude (GPS)	Speed (knots)	Scan Rate	Comments and Conditions	SVs	PDOP
	FGI	Client's	From	To	Begin	End	Start	End							
							14:44:21	14:49:21					Ground Static at KBAZ	22	1.1
							15:30:35	15:33:11					S turn	24	1.1
Block_D	85		47	20	66.6	27.5	15:36:04	15:45:14	W	7913	146	34.0	Cross Line	23	1.1
	46		66	1	94.1	0	15:53:19	16:14:43	S	8064	145	34.0		23	1.1
	45		1	66	0	94.1	16:17:20	16:38:49	N	8064	145	34.0	few low returns	23	1.1
	45		66	56	94.1	79.6	16:41:59	16:46:07	S	8064	145	34.0	Calibration line	22	1.2
	44		66	1	94.1	0	16:54:37	17:15:51	S	8064	145	34.0	few low returns	22	1.1
	43		1	66	0	94.1	17:18:38	17:40:00	N	8064	146	34.0		21	1.2
	42		67	1	95.6	0	17:43:48	18:05:47	S	8113	140	34.0		22	1.1
	41		1	67	0	95.6	18:08:34	18:30:23	N	8113	145	34.0		19	1.2
	40		67	1	95.6	0	18:33:00	18:54:47	S	8113	145	34.0	km 50 low returns	18	1.2
	39		1	67	0	95.6	18:57:40	19:19:13	N	8113	145	34.0		17	1.3
	38		67	1	95.6	0	19:22:08	19:44:01	S	8113	140	34.0		19	1.3
							19:44:16	19:46:53					S Turn	18	1.1
							20:07:37	20:12:37					Ground Static at KBAZ	18	1.2



Trajectory and GPS Plots:

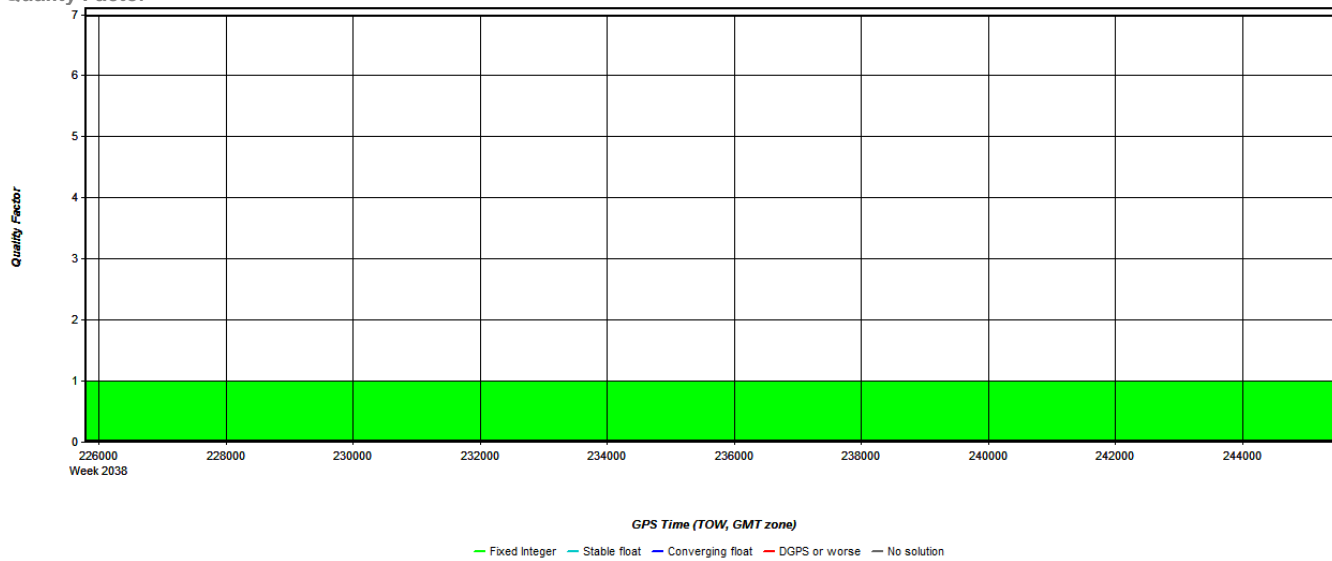


Estimated Accuracy

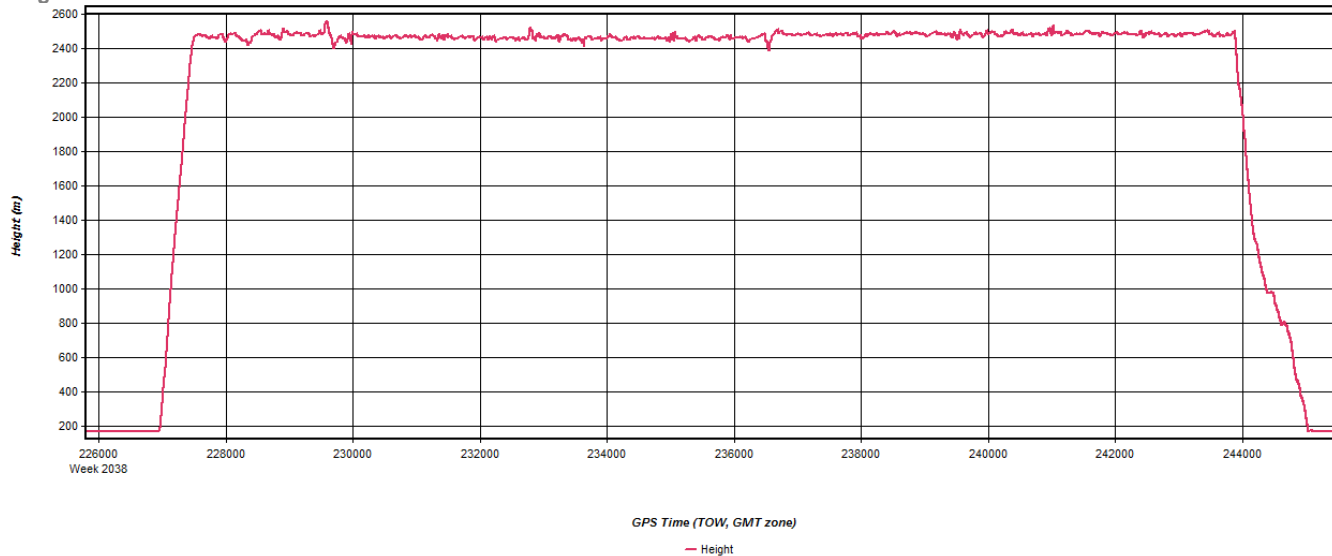




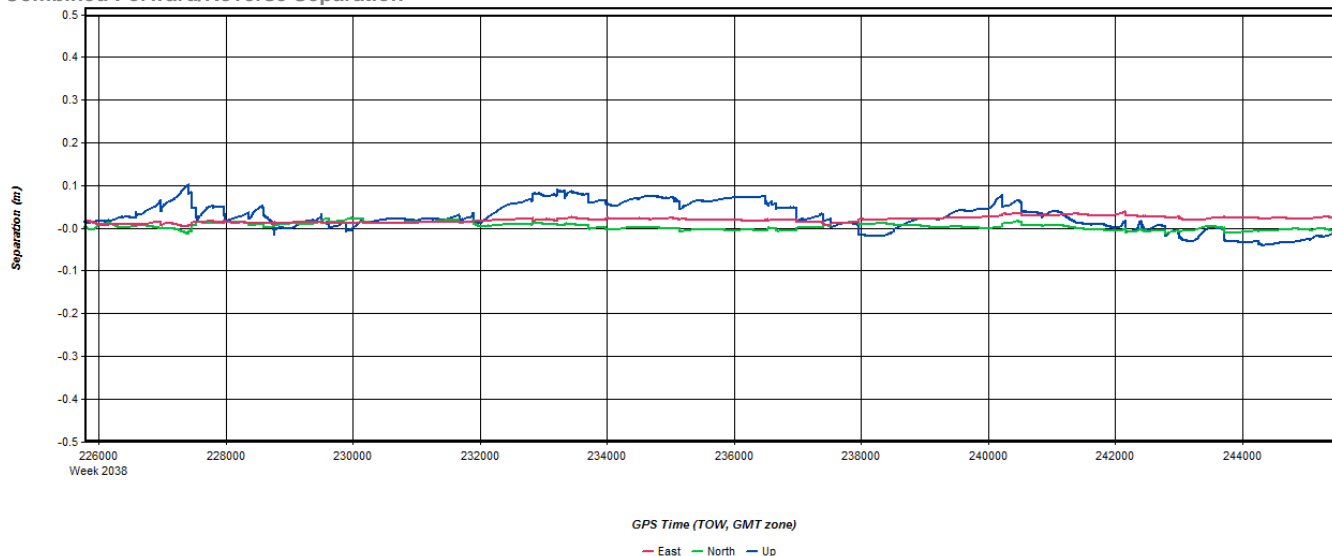
Quality Factor



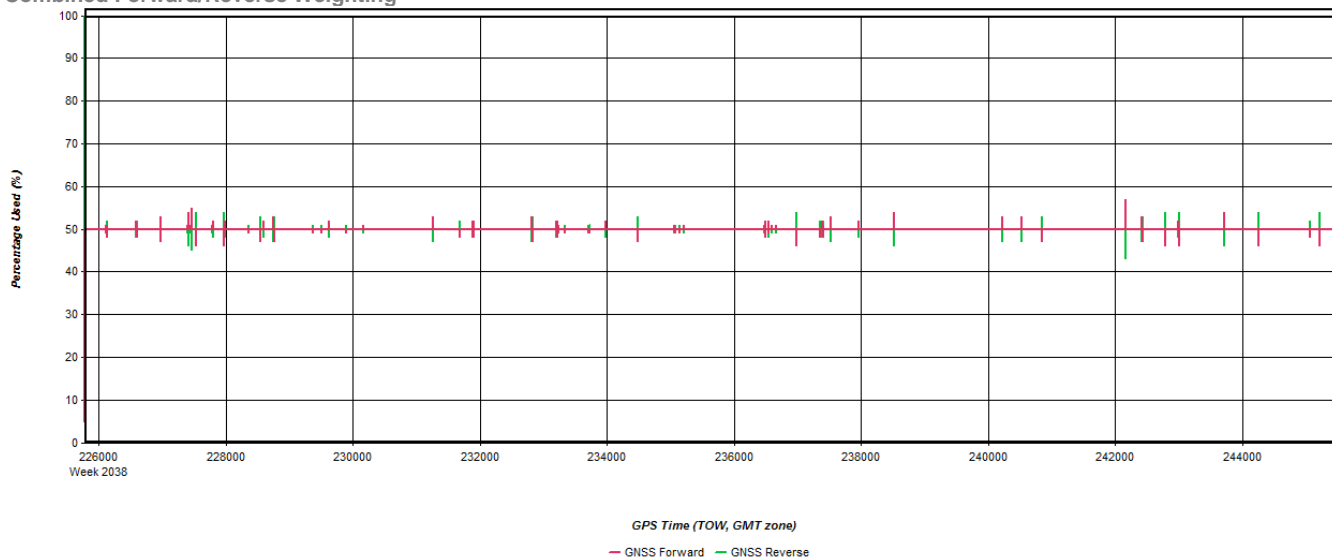
Height



Combined Forward/Reverse Separation

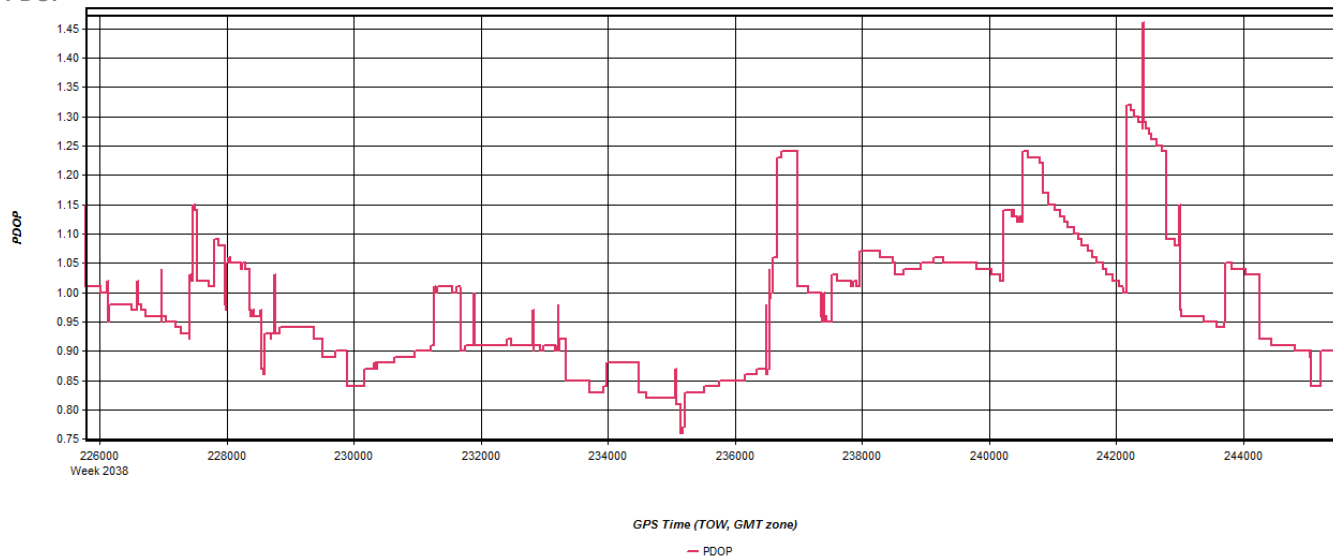


Combined Forward/Reverse Weighting

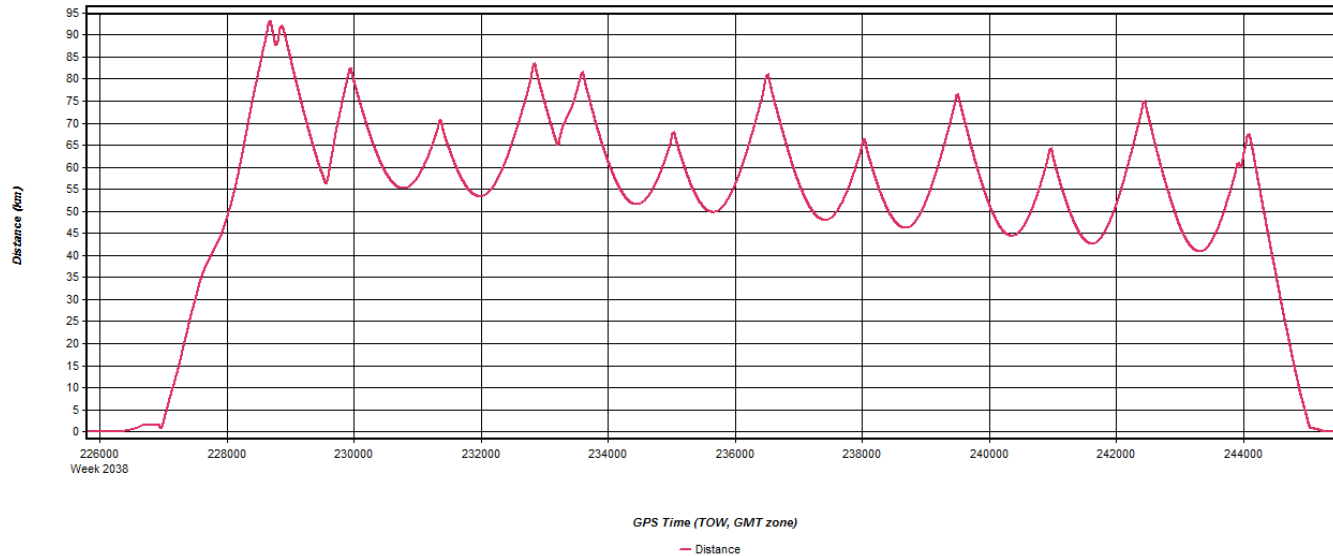




PDOP

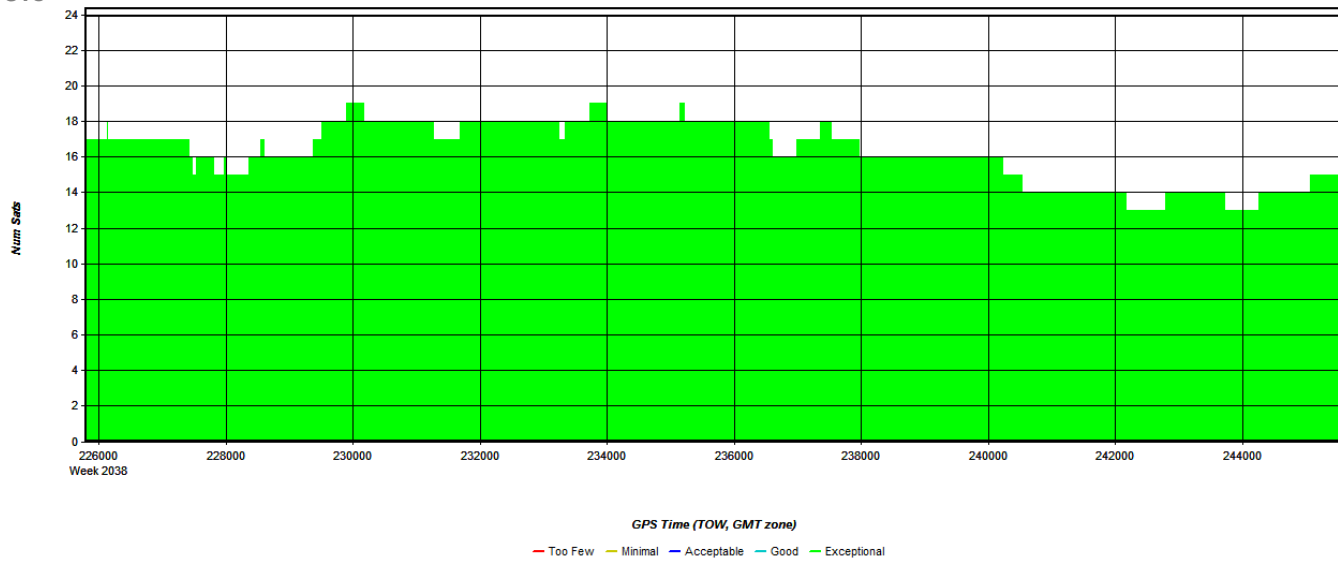


Distance from Base





SVs



USGS  
COLLECTION REPORT



Acquisition and Processing details ----- (February 08, 2019)

Log: 190208\_130\_33780084\_12

Menu		18.165			Lift Begin			Lift End			Flt	Flt	Hobbs	Activity
1	KLBX	14:19		1375.6	KLBX	17:14		1378.1	2:55	3:00	2.5	0900-Production		
2														
3														

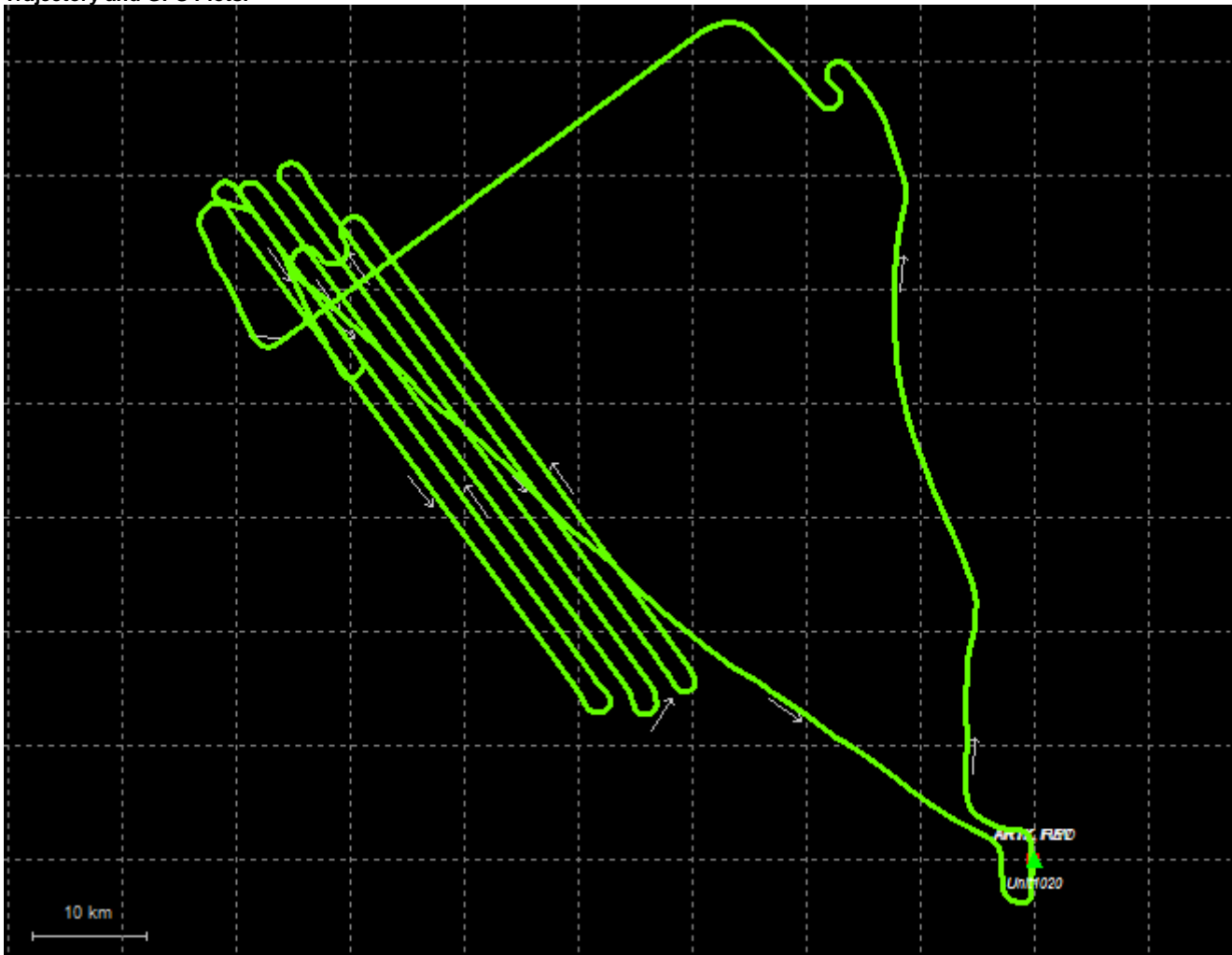


Fugro USA Land, Inc.

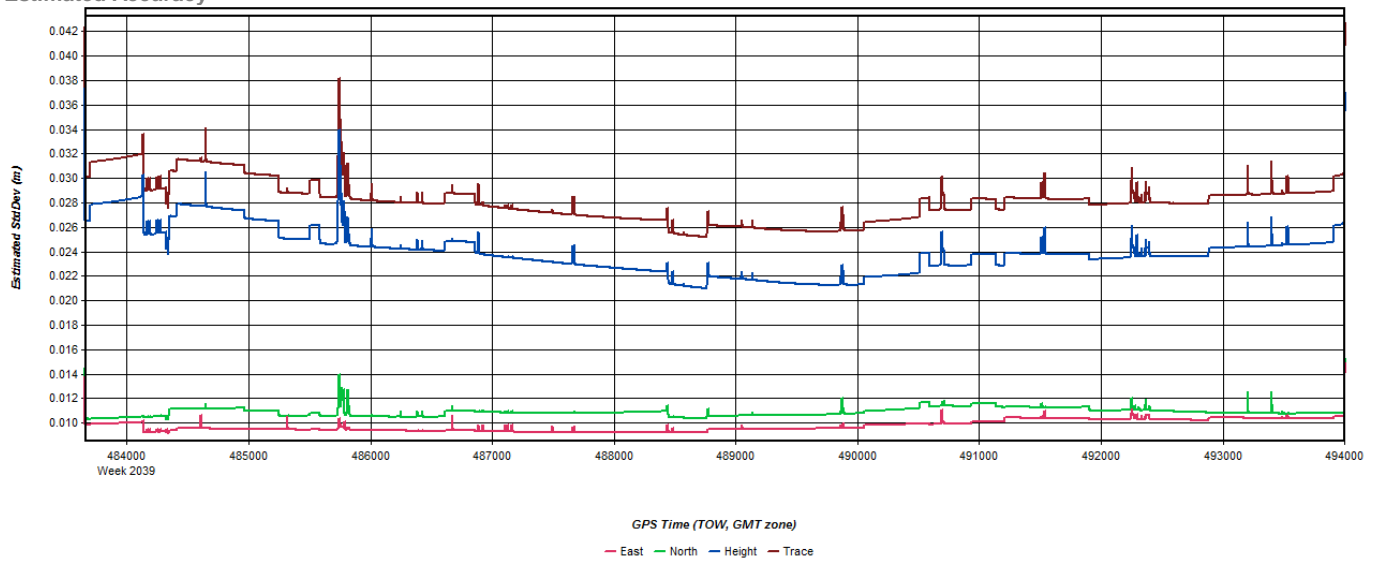
ALS  
Flight Log  
AC80-44-00-02

FGI Job # <b>33780084</b>	Project Name <b>USGS Harvey utm15 final</b>				System <b>ALS80</b>	Unit <b>130</b>	IMU <b>uRS</b>	PIA <b>4</b>	SW1	SW2-Gain	Aper	AutoScan	Ground Temp °C <b>5.0 6.0</b>	Min Range Gate <b>2232</b>	Data Logger Drive <b>LG 102</b>
Flight Date <b>8-Feb-19</b>	GPS Day <b>19-039</b>	Lift <b>12</b>			Sun°	Solar Times (UTC)		Laser Power <b>96%</b>	Pattern <b>Triangle</b>	Flying Temp °C <b>8.0 5.0</b>	Max Range Gate <b>2691</b>	Download Drive <b>NS1TB#06</b>			
Mission ID (yymmdd_Sen_Job_Lift) <b>190208_130_33780084_12</b>	Aircraft <b>N97HC</b>	Airport ID <b>KLBX</b>	FMS <b>CCNS 8</b>	UTC <b>-6</b>	AMT (ft) <b>7,900</b>	Speed <b>150</b>	Scan Hz <b>34.0</b>	Pulse Rate <b>442,600</b>	FOV <b>46</b>	km/WPT <b>1.448</b>	Altm Setting <b>30.48 30.51</b>	Shipping Track <b>7744 2594 1982</b>			
Pilot #1 <b>Kevin Lee</b>		Pilot #2		Operator #1 <b>Dave Verhey</b>		Operator #2									
Base 1 ID <b>KLBX</b>	Location <b>KLBX</b>	Rec ID <b>GR3-1</b>	Ant ID <b>GR3-1</b>	ARP (m) <b>1.8</b>	Start Time (UTC) <b>08-Feb-19 13:58</b>	Stop Time (UTC) <b>08-Feb-19 17:38</b>	GPS Filename <b>Unit10208n</b>	Operator <b>Dave Verhey</b>		Data <b>FTP</b>					
Area	Flight #		Wpt		Distance		UTC		Flt Dir	Altitude (GPS)	Speed (knots)	Scan Rate	Comments and Conditions	SVs	PDOP
	FGI	Client's	From	To	Begin	End	Start	End							
						14:21:10	14:26:10						Ground static at KLBX	21	1.5
						14:55:10	14:56:51						S-Turn	25	1.1
BLOCK_K	30		26	1	36.2	0	15:01:38	15:10:02	231.3	7915	139		Tie line in entirety	22	1.2
	1		34	1	47.8	0	15:15:00	15:26:22	140.8	7915	140		Went 1 kt over speed at 22 km; open water at 4, 1 km	24	1.1
	2		1	34	0	47.8	15:28:11	15:39:20	321.1	7886	141		Open water 3-5 km	25	1.2
	2		34	25	47.8	34.8	15:41:56	15:45:10	140.8	7868	144		Calibration line	27	1.1
	3		36	1	50.7	0	15:51:43	16:03:29	140.9	7912	142			24	1.1
	4		1	36	0	50.7	16:05:27	16:17:23	321.2	7846	141			24	1.1
	5		33	1	46.3	0	16:19:49	16:30:55	140.9	7855	144		Moisture on windshield at 11 km, returns unimpacted	22	1.0
	6		1	32	0	44.9	16:32:56	16:43:27	321.2	7850	142			23	1.2
													Cloud ceiling too low; ceasing production.		
							16:43:30	16:45:15					S-Turn	22	1.3
							17:07:55	17:12:55					Ground static at KLBX	23	1.2

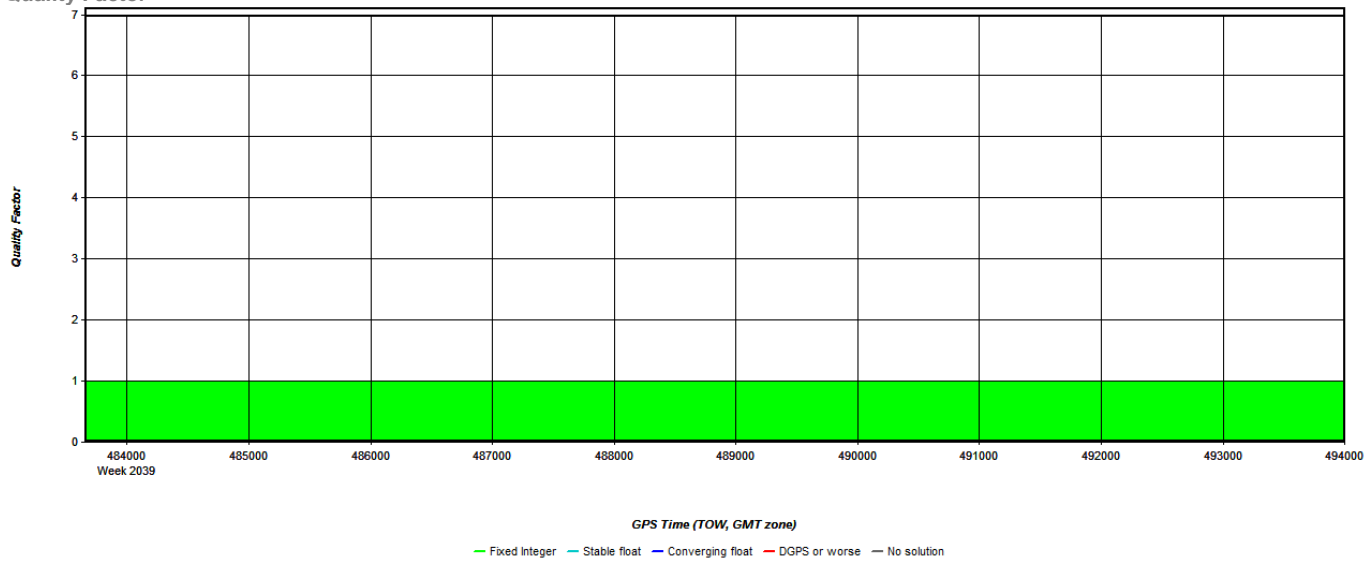
Trajectory and GPS Plots:



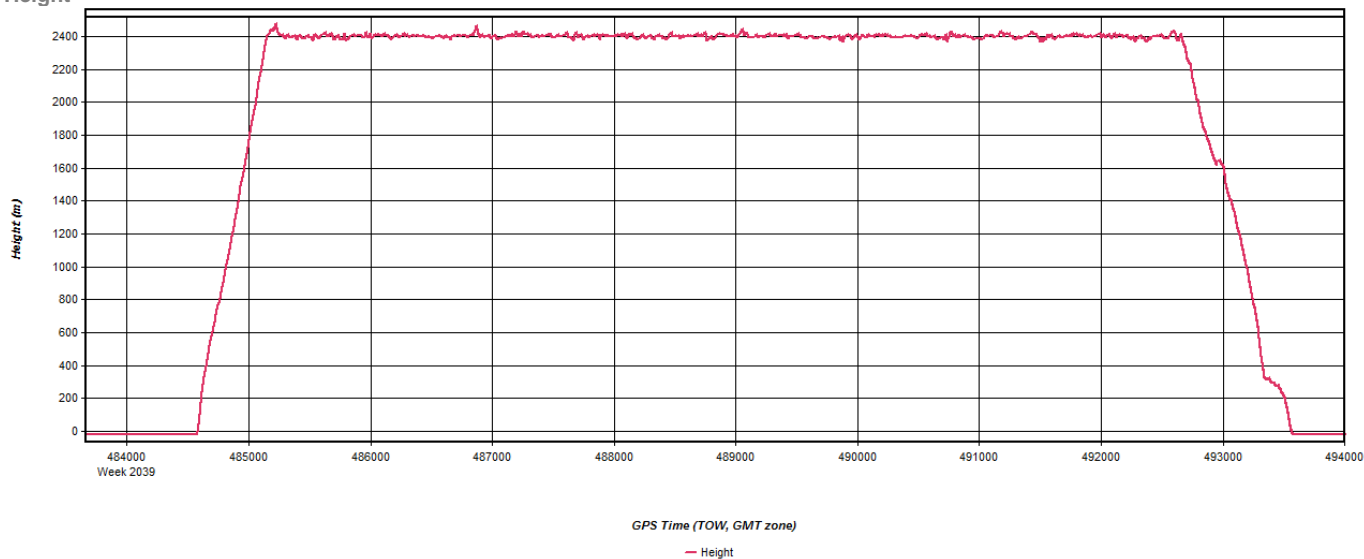
Estimated Accuracy



Quality Factor



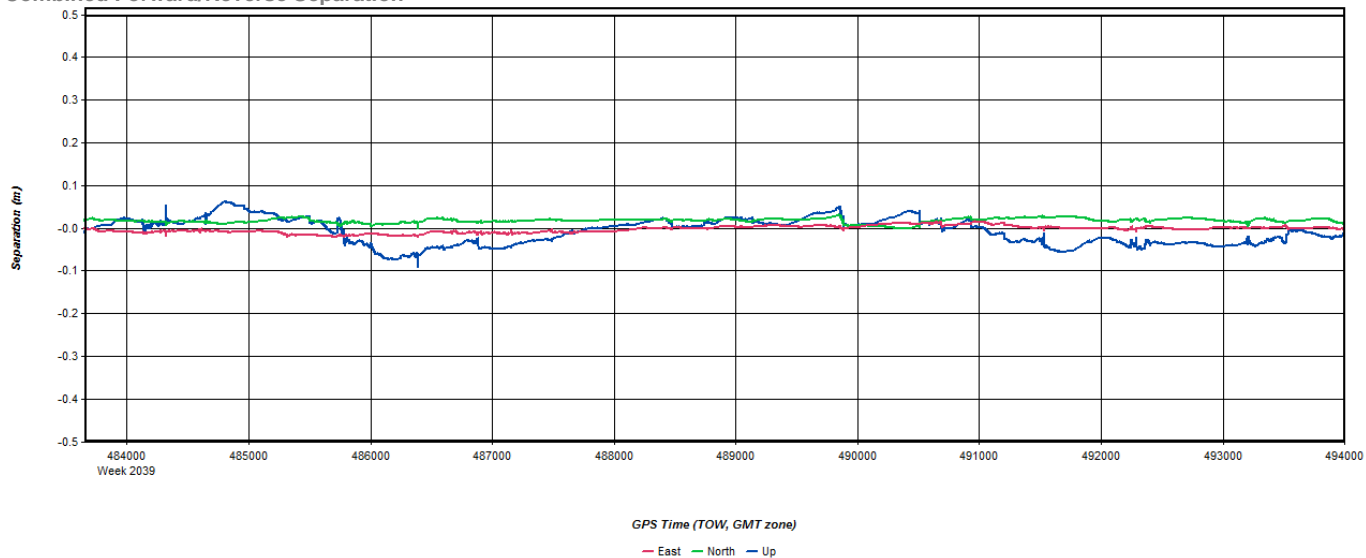
Height



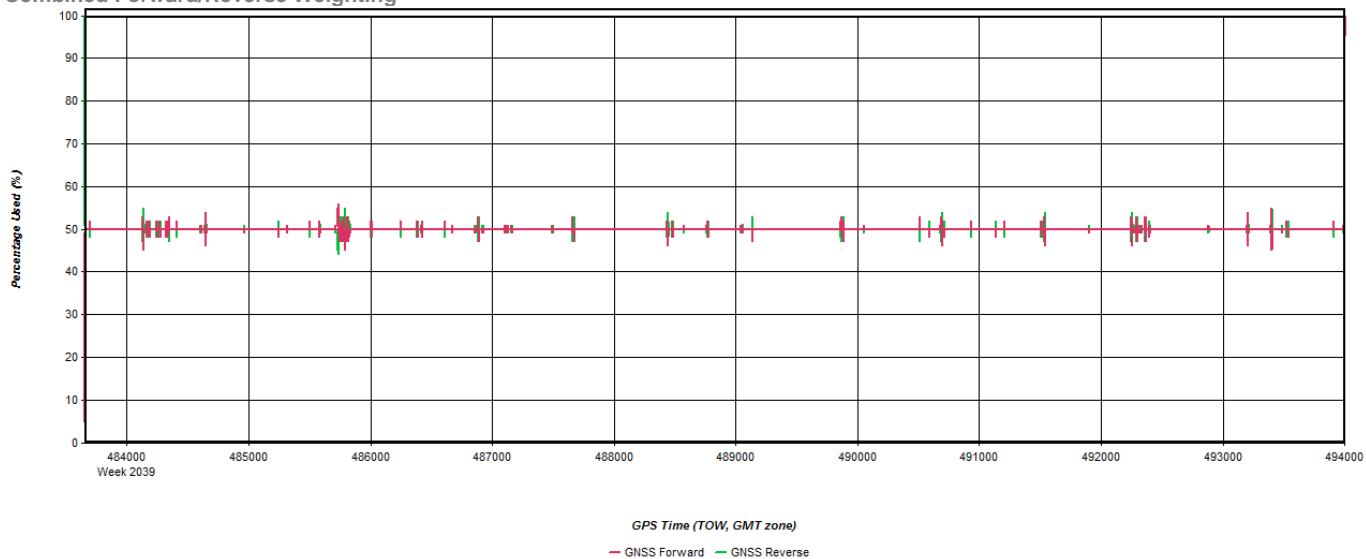




Combined Forward/Reverse Separation

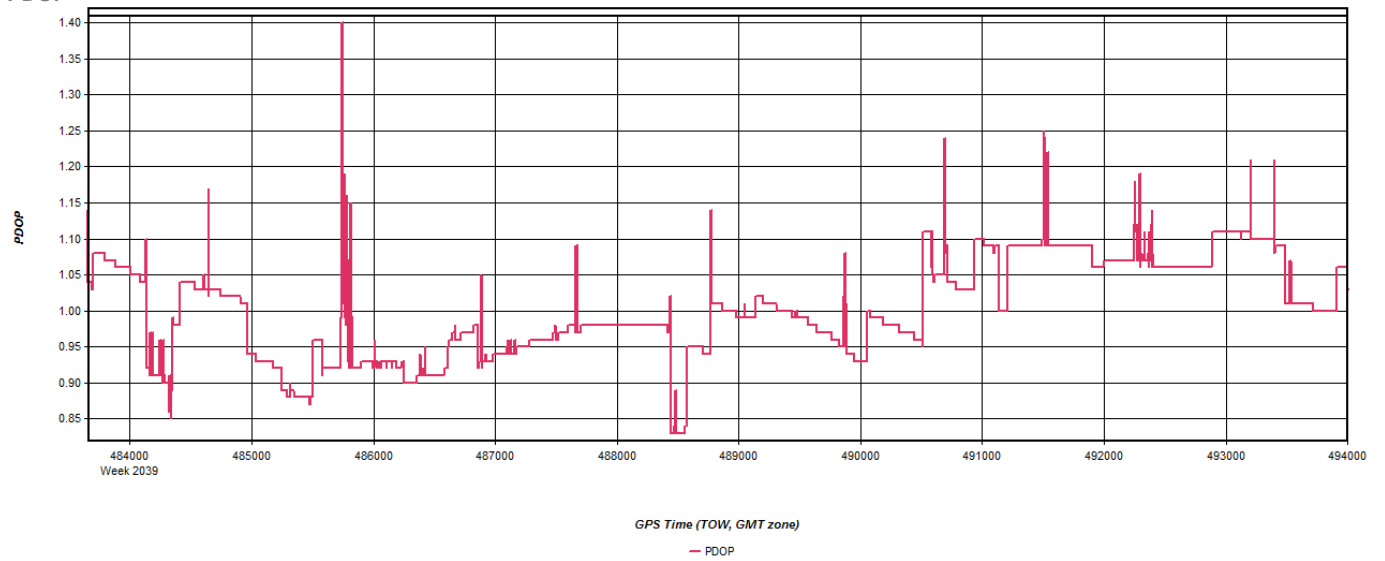


Combined Forward/Reverse Weighting

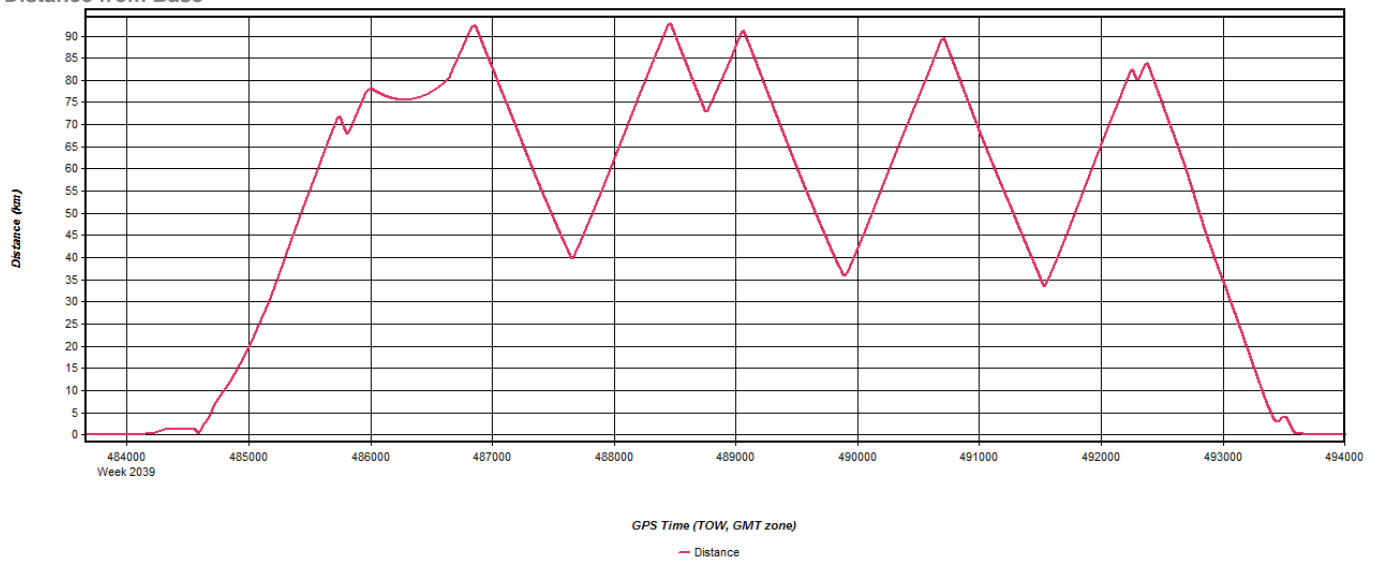


# USGS COLLECTION REPORT

## PDOP

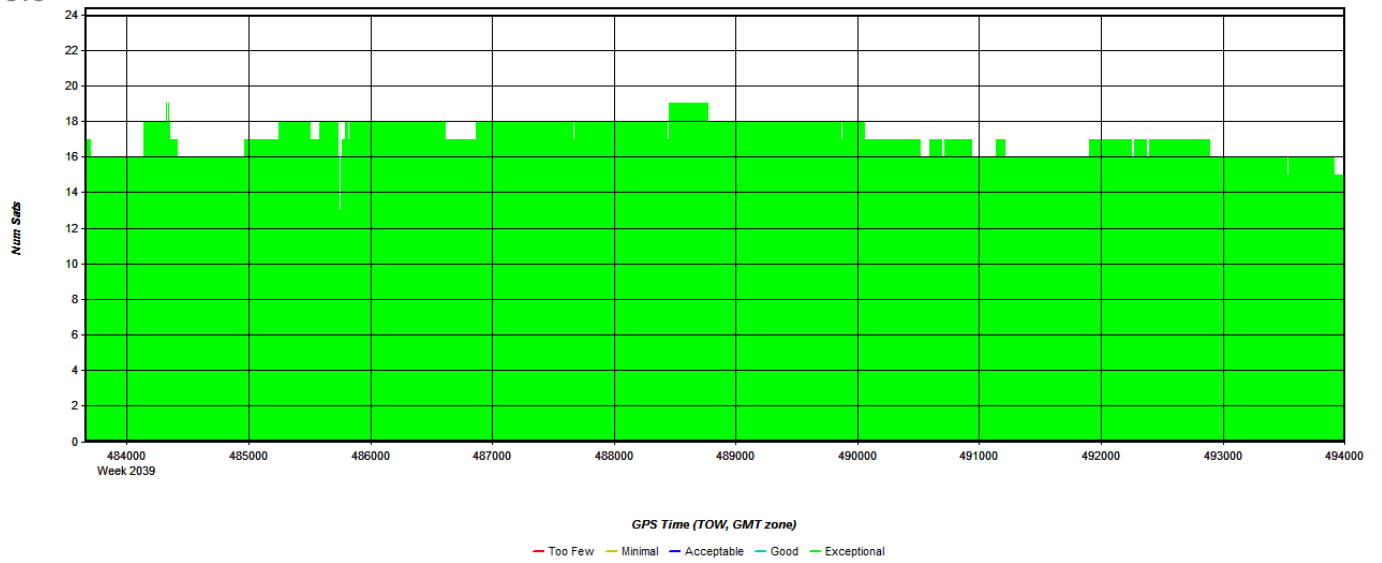


## Distance from Base





SVs



**USGS  
COLLECTION REPORT**



**Acquisition and Processing details ----- (February 12, 2019)**

Log: 190212\_118\_33780084\_24

	Menu	19.023	Lift Begin			Lift End			Flt	Flt	Hobbs		
			Airport	Chocks	Hobbs	Airport	Chocks	Hobbs	Duration	Hrs	Hrs		Activity
	1		KG TU	13:54	3002.0	KG TU	18:39	3006.2	4:45	4.75	4.2		0900-Production
	2												
3													

**Fugro USA Land, Inc.**

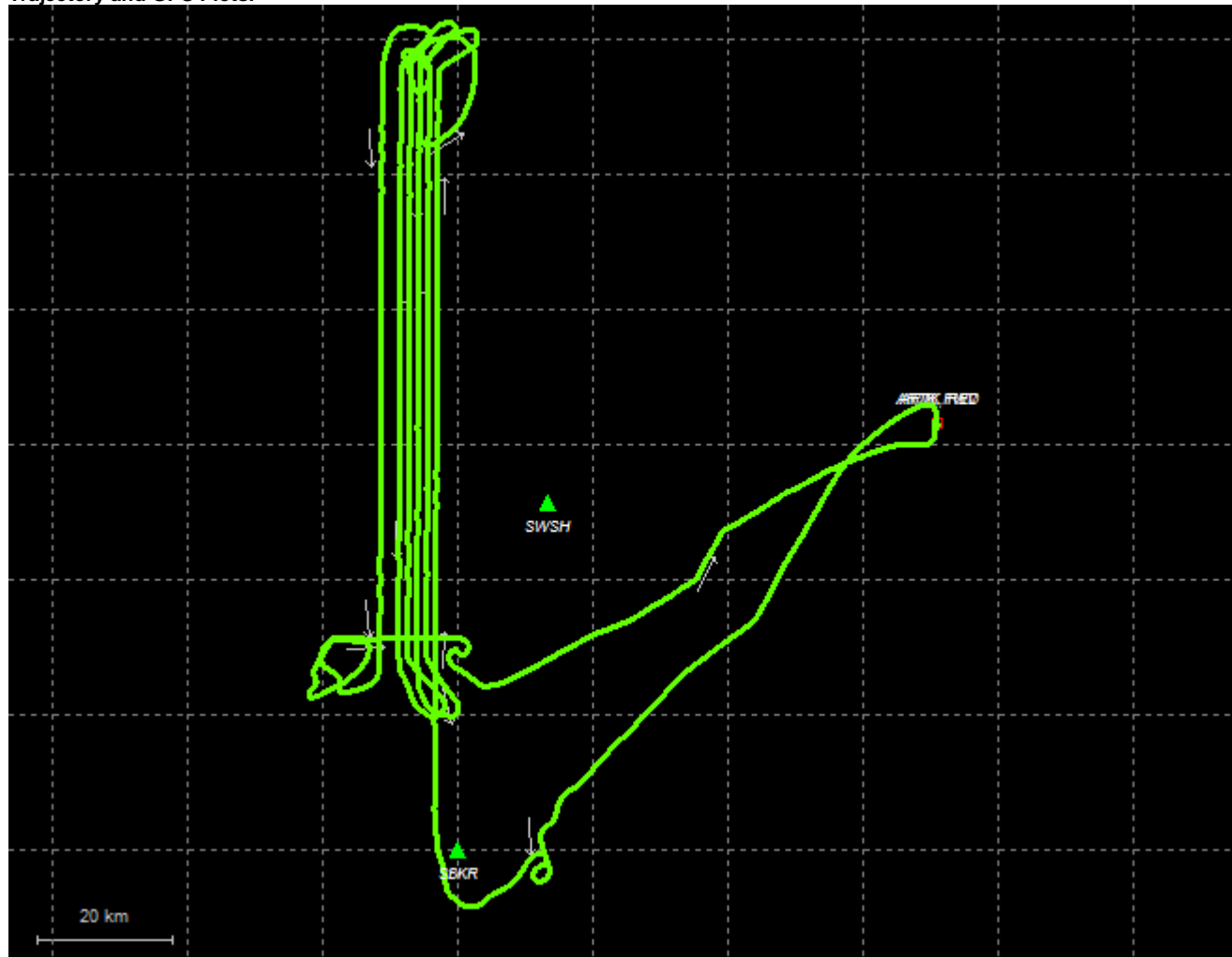
AC80-44-00-02

FGI Job # <b>33780084</b>	Project Name <b>USGS Hurricane Harvey UTM 14</b>			System <b>ALS80</b>	Unit <b>118</b>	IMU <b>uIRS</b>	PIA <b>3</b>	SW1 <b>-</b>	SW2-Gain <b>-</b>	Aper <b>60°</b>	AutoScan <b>Yes</b>	Ground Temp °C <b>7.0 14.0</b>	Min Range Gate <b>6244</b>	Data Logger Drive <b>MM70-07</b>
Flight Date <b>12-Feb-19</b>	GPS Day <b>19-043</b>	Lift <b>24</b>		Sun° <b>-</b>	Solar Times (UTC) <b>-</b>			Laser Power <b>100%</b>		Pattern <b>Triangle</b>	Flying Temp °C <b>10.0 10.0</b>	Max Range Gate <b>8323</b>	Download Drive <b>NS1TB#5</b>	
Mission ID (yymmdd_Sen_Job_Lift) <b>190212_118_33780084_24</b>		Aircraft <b>N8131</b>	Airport ID <b>KG TU</b>	FMS <b>CCNS 4</b>	UTC <b>-</b>	AMT (ft) <b>7,550</b>	Speed <b>150</b>	Scan Hz <b>35.0</b>	Pulse Rate <b>352,000</b>	FOV <b>42</b>	km/WPT <b>1.384</b>	AltM Setting <b>30.19 30.28</b>	Shipping Track	
Pilot #1 <b>Barry Hansen</b>		Pilot #2 <b>-</b>		Operator #1 <b>Lee Scadden</b>		Operator #2 <b>-</b>								

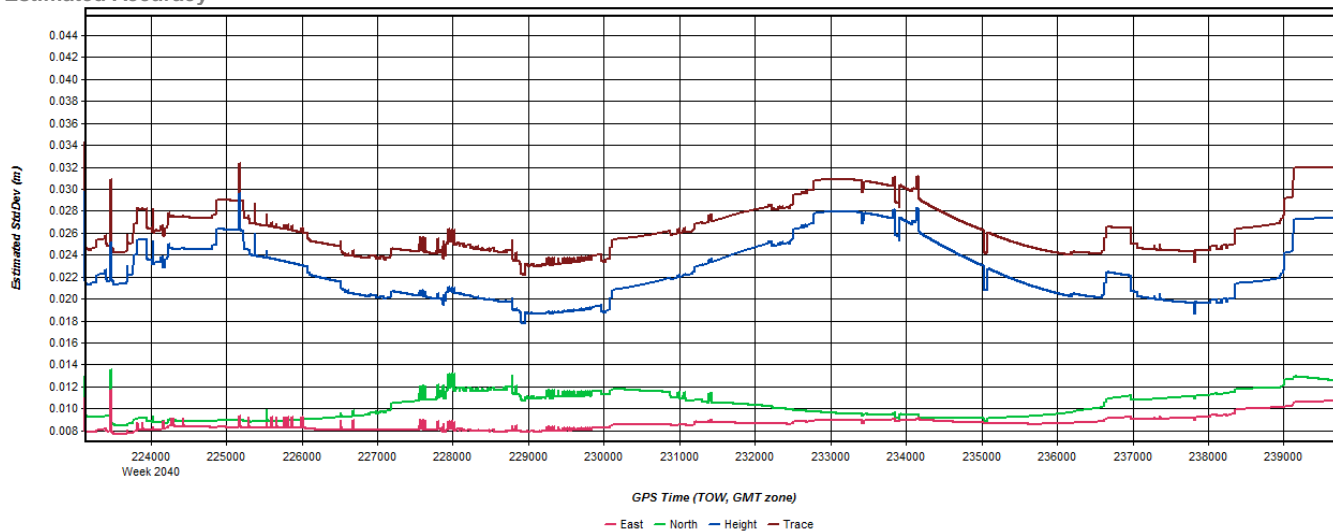
Base 1 ID <b>FEDI 1115</b>	Location <b>KG TU</b>	Rec ID <b>GR3#5</b>	Ant ID <b>GR3#5</b>	ARP (m) <b>1.8</b>	Start Time (UTC) <b>2-12-19-13:08</b>	Stop Time (UTC)	GPS Filename <b>Unit#51223p.tps</b>	Operator <b>Lee Scadden</b>	Data <b>FTP</b>
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Area	Flight #	Wpt		Distance		UTC		Fit	Altitude (GPS)	Speed (knots)	Scan Rate	Comments and Conditions	SVs	PDOP
		FGI	Client's	From	To	Begin	End							
												N8131 GPS Tracker is off		
												5 Minute Grd Static KG TU- Plane N8131	25	1.1
BLOCK_H												S-Turn	25	1.0
	48		1	61	0	83	14:49:59	15:12:11	356	8241	121		20	1.2
	47		61	1	83	0	15:20:50	15:40:23	176	8323	134		21	1.3
	46		1	61	0	83	15:46:18	16:08:40	356	8353	120	wpt 25 off center line	21	1.1
	46		61	57	83	77.5	16:13:49	16:15:46	176	8332	130	Calibration line	20	1.3
	45		61	1	83	0	16:24:12	16:43:21	177	8343	143	wpt 10, wpt 7 off center line	20	1.3
	44		1	61	0	83	16:49:39	17:13:12	356	8391	112		21	1.1
	42		61	1	83	0	17:18:40	17:39:42	177	8373	138		16	1.4
	73		33	42	44.3	56.7	17:56:01	17:59:17	79	8690	129	Cross Tie Line	16	1.3
							17:59:22	18:01:44				S-Turn	16	1.2
							18:30:36	18:36:09				5 Minute Grd Static KG TU- Plane N8131	14	1.4

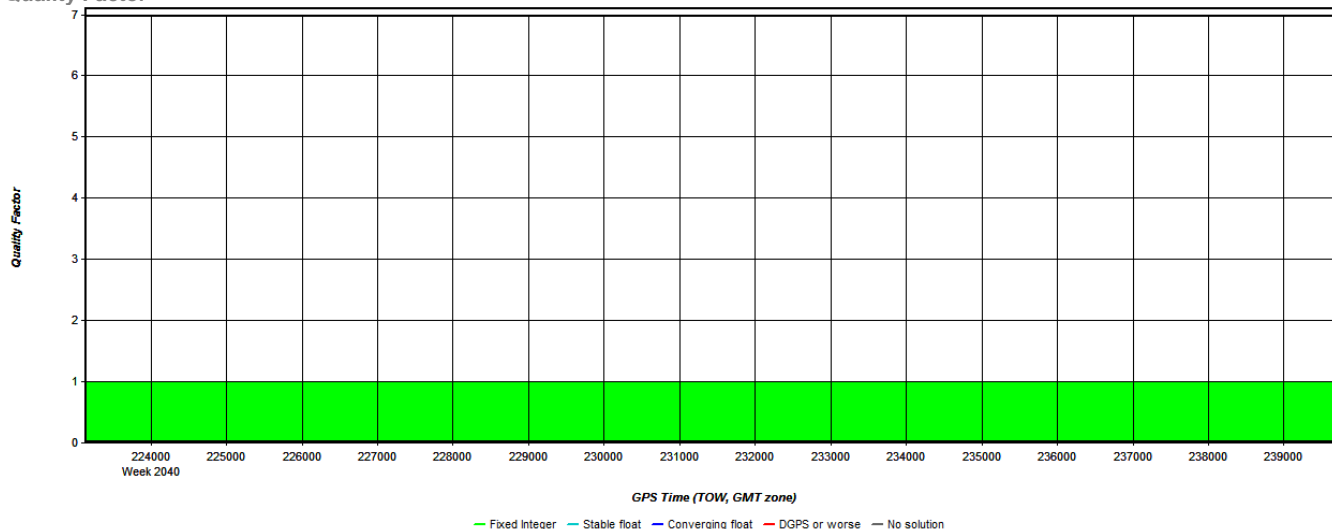
Trajectory and GPS Plots:



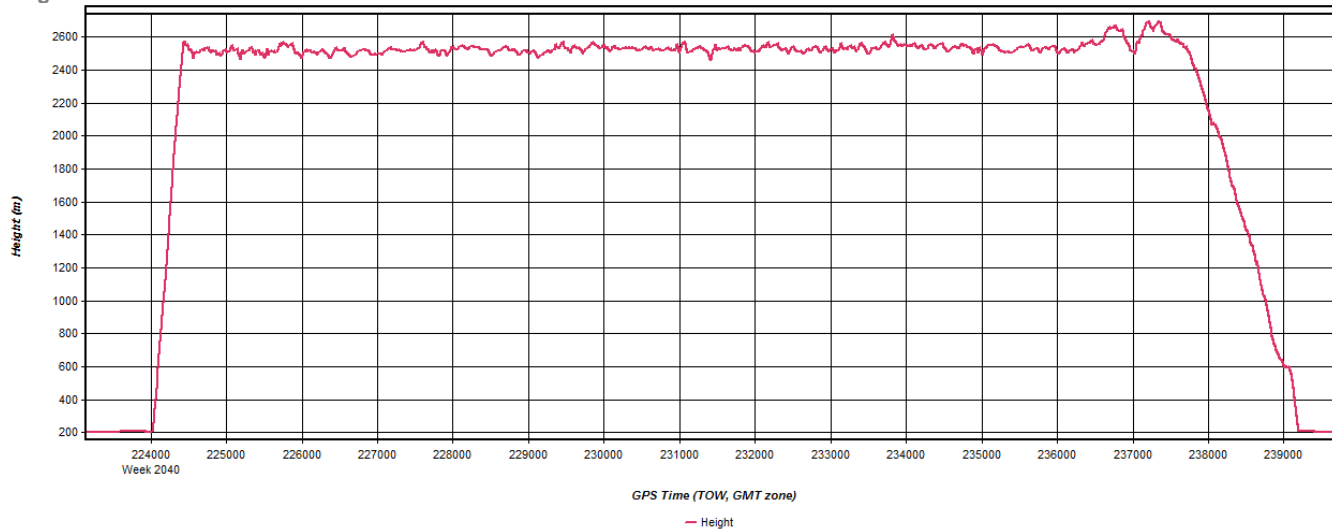
Estimated Accuracy



Quality Factor



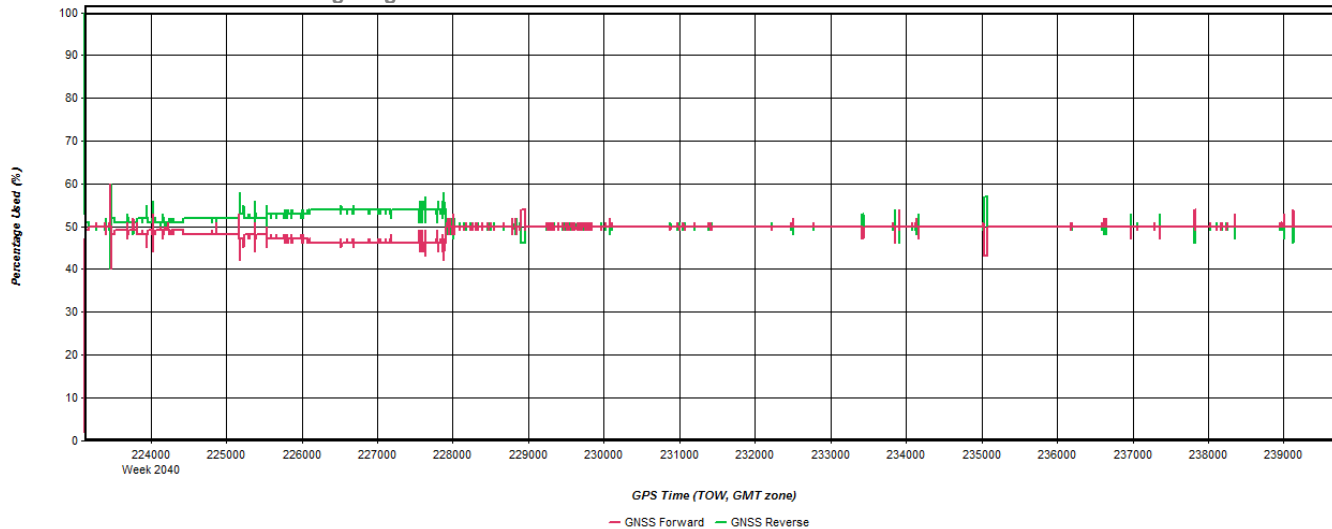
Height



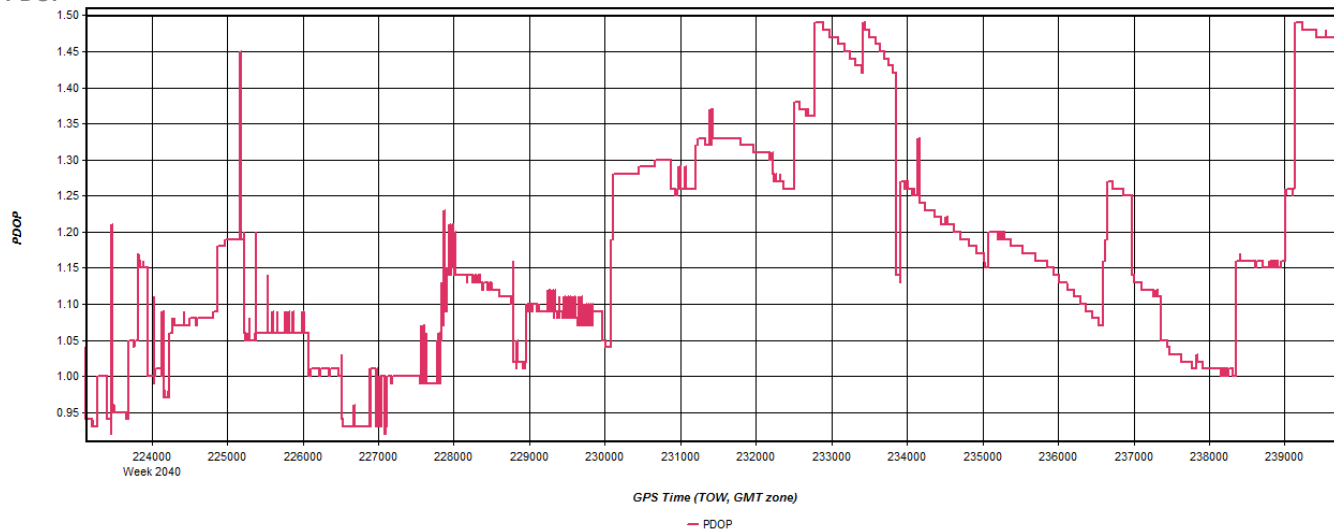
Combined Forward/Reverse Separation



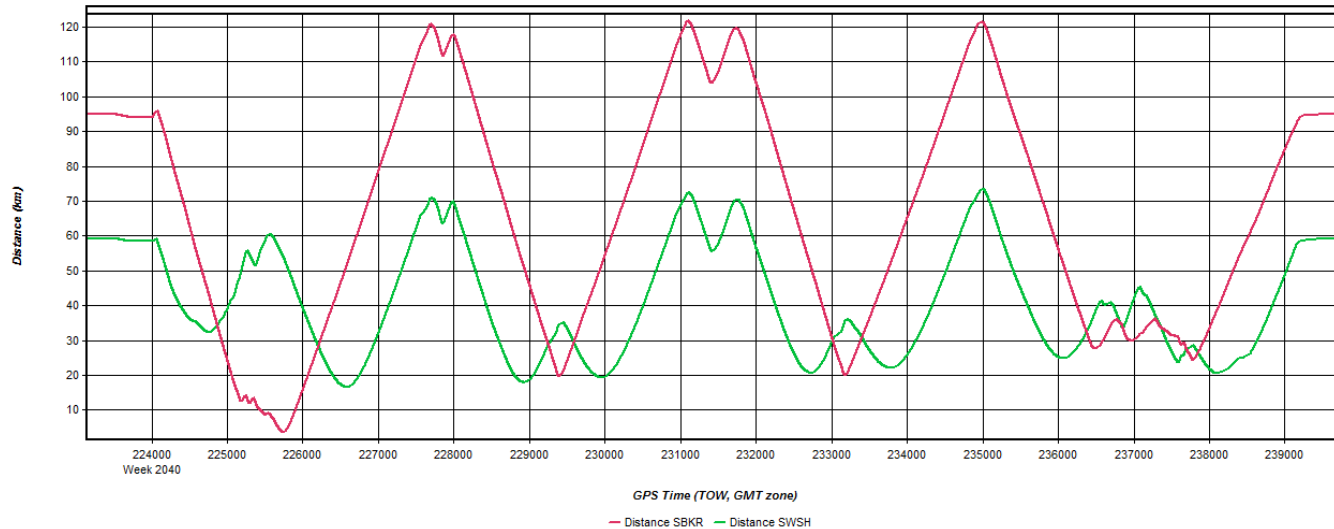
Combined Forward/Reverse Weighting



PDOP



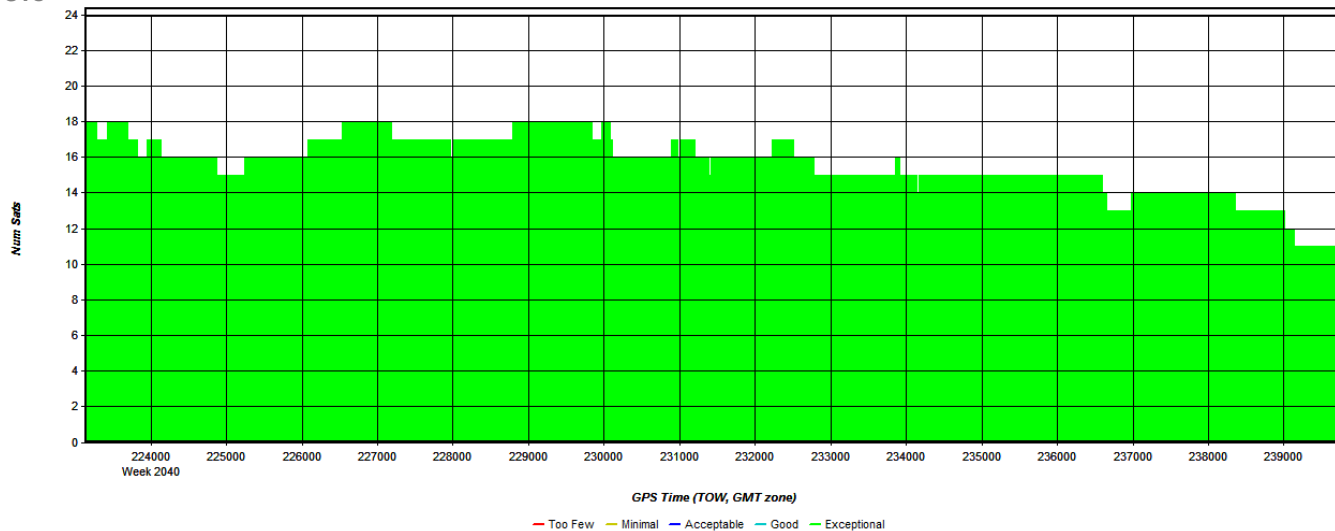
Distance from Base







SVs



USGS  
COLLECTION REPORT



Acquisition and Processing details ----- (February 12, 2019)

Log: 190212\_118\_33780084\_25

**Fugro USA Land, Inc.**

19.023	Lift Begin			Lift End			Fit Duration	Fit Hrs	Hobbs Hrs	Activity
	Airport	Chocks	Hobbs	Airport	Chocks	Hobbs				
1	KGTU	19:24	3006.2	KGTU	22:46	3009.1	3:22	3.25	2.9	0900-Production
2										
3										

**ALS**  
Flight Log

AC80-44-00-02

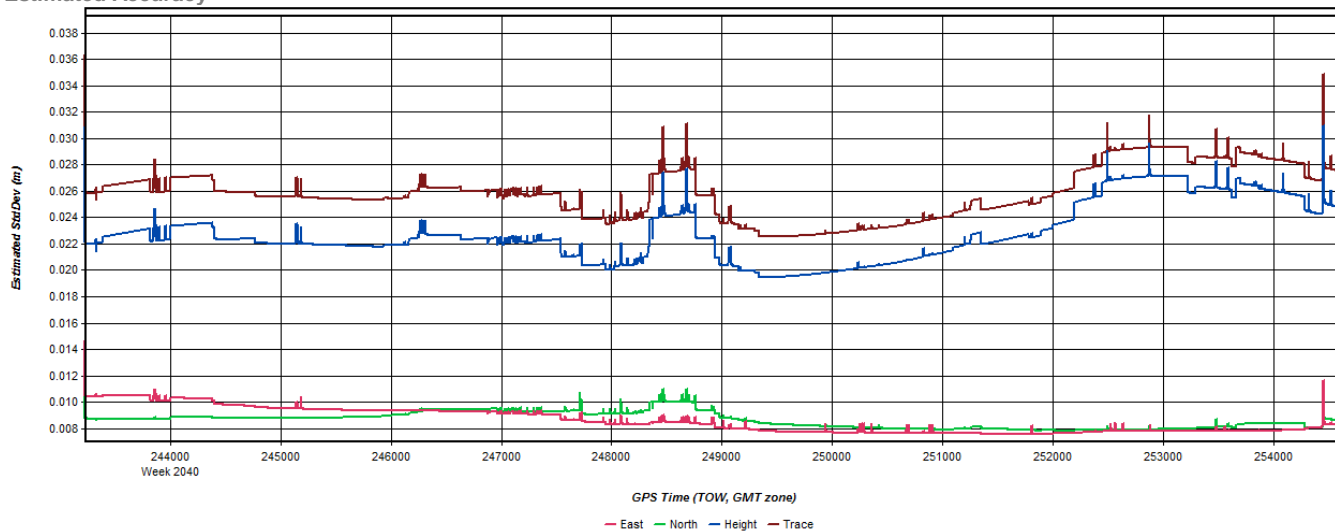
FGI Job # <b>33780084</b>	Project Name <b>USGS Hurricane Harvey UTM 14</b>		System <b>ALS80</b>	Unit <b>118</b>	IMU <b>uRS</b>	PIA <b>3</b>	SW1 <b>-</b>	SW2-Gain <b>-</b>	Aper <b>60°</b>	AutoScan <b>Yes</b>	Ground Temp °C <b>17.0 15.0</b>	Min Range Gate <b>6244</b>	Data Logger Drive <b>MM70-08</b>
Flight Date <b>12-Feb-19</b>	GPS Day <b>19-043</b>	Lift <b>25</b>		Sun° <b>-</b>	Solar Times (UTC) <b>-</b>	Laser Power <b>100%</b>	Pattern <b>Triangle</b>	Flying Temp °C <b>6.0 6.0</b>	Max Range Gate <b>8323</b>	Download Drive <b>NS1TB#01</b>			
Mission ID (yyymmdd_Sen_Job_Lift) <b>190212_118_33780084_25</b>	Aircraft <b>N8131</b>	Airport ID <b>KGTU</b>	FMS <b>CCNS 4</b>	UTC <b>-</b>	AMT (ft) <b>7,550</b>	Speed <b>150</b>	Scan Hz <b>35.0</b>	Pulse Rate <b>352,000</b>	FOV <b>42</b>	kmWPT <b>1.384</b>	AltM Setting <b>30.26 30.27</b>		Shipping Track
Pilot #1 <b>Barry Hansen</b>		Pilot #2 <b>-</b>		Operator #1 <b>Lee Scadden</b>		Operator #2 <b>-</b>							
Base 1 ID <b>FEDI 1115</b>	Location <b>KGTU</b>	Rec ID <b>GR3#5</b>	Ant ID <b>GR3#5</b>	ARP (m) <b>1.8</b>	Start Time (UTC)	Stop Time (UTC)	GPS Filename <b>Unit#51223.pps</b>	Operator <b>Lee Scadden</b>	Data <b>FTP</b>				
Base 2 ID <b>CORS</b>	Location <b>SWSH-</b>	Rec ID	Ant ID	ARP (m)	Start Time (UTC)	Stop Time (UTC)	GPS Filename	Operator <b>Lee Scadden</b>	Data <b>FTP</b>				

Area	Flight #		Wpt		Distance		UTC		Dir	Altitude (GPS)	Speed (knots)	Scan Rate	Comments and Conditions	SVs	PDOP
	FGI	Client's	From	To	Begin	End	Start	End							
													N8131 GPS Tracker off		
							19:33:36	19:38:41					5 Minute GRD Static KGTU- Plane N8131	21	1.2
							19:57:35	20:02:37					CORS-SWSH	21	1.1
							20:05:09	20:07:20					S-Turn	19	1.2
BLOCK_H	41		1	61	0	83	20:14:36	20:35:30	351	8304	128		off center line wpt 53	20	1.2
	40		61	1	83	0	20:41:25	21:01:57	174	8261	127			19	1.2
	39		1	61	0	83	21:06:38	21:28:27	358	8344	105			23	1.0
	39		61	55	83	74.7	21:34:05	21:35:30	172	8200	147		Calibration line	20	1.2
	38		61	1	83	0	21:42:34	22:01:43	175	8405	143			20	1.2
	73		29	35	38.8	47.1	22:11:23	22:13:27	87	8730	128		CROSS TIE LINE	22	1.2
							22:13:40	22:16:43					S-Turn	19	1.4
							22:19:40	22:24:57					CORS-SWSH	23	1.3
							22:38:36	22:43:48					5 Minute GRD Static KGTU- Plane N8131	23	1.3

Trajectory and GPS Plots:

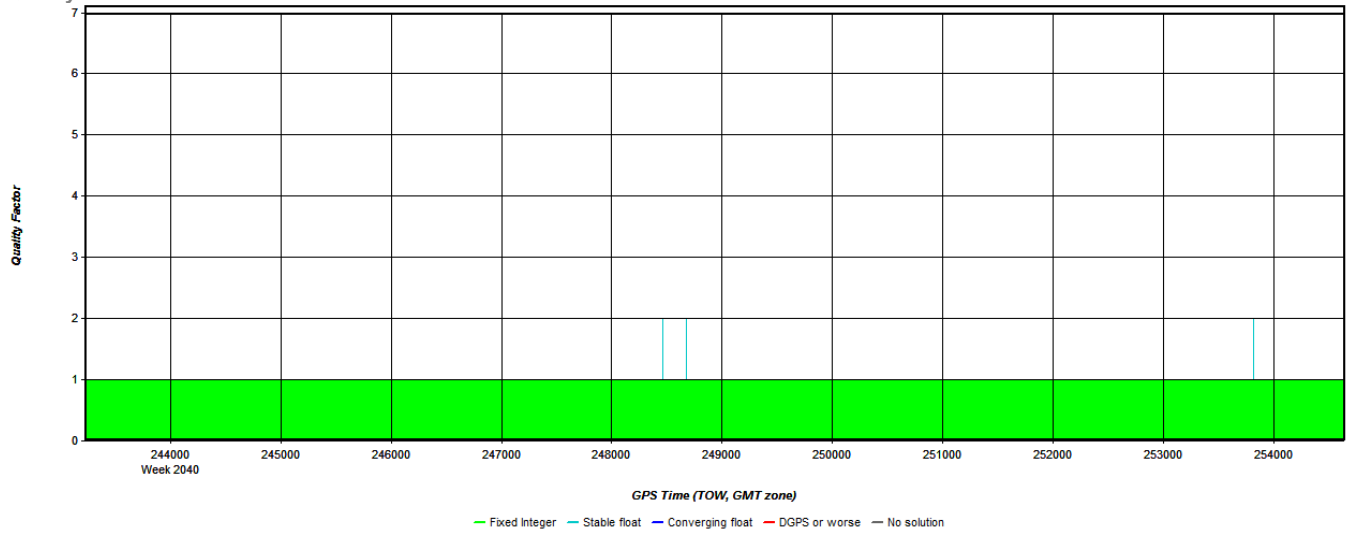


Estimated Accuracy

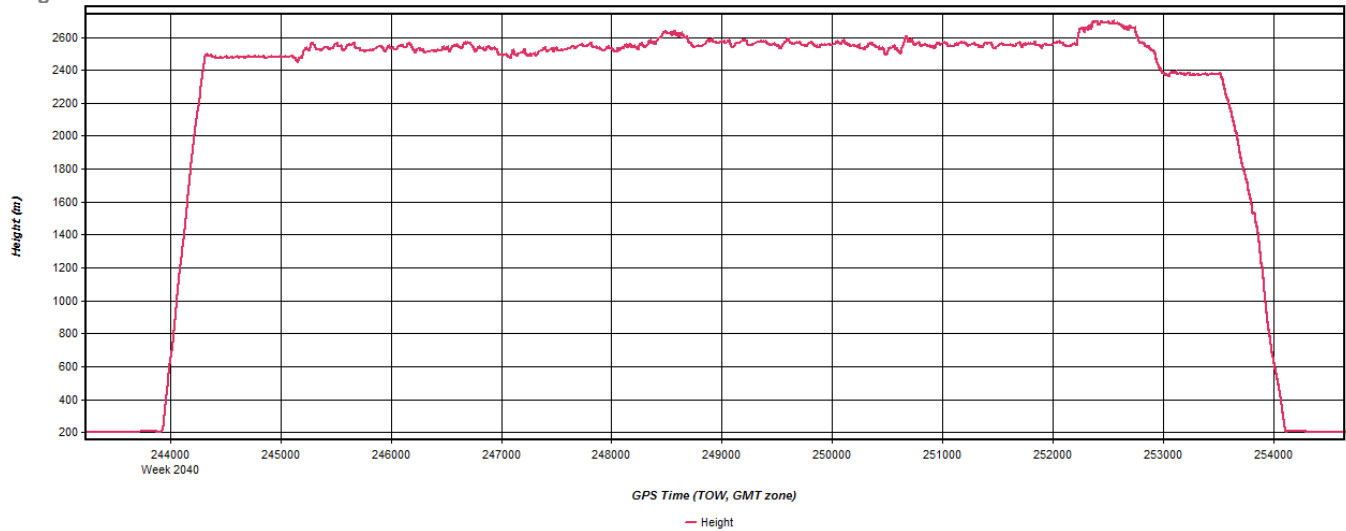


# USGS COLLECTION REPORT

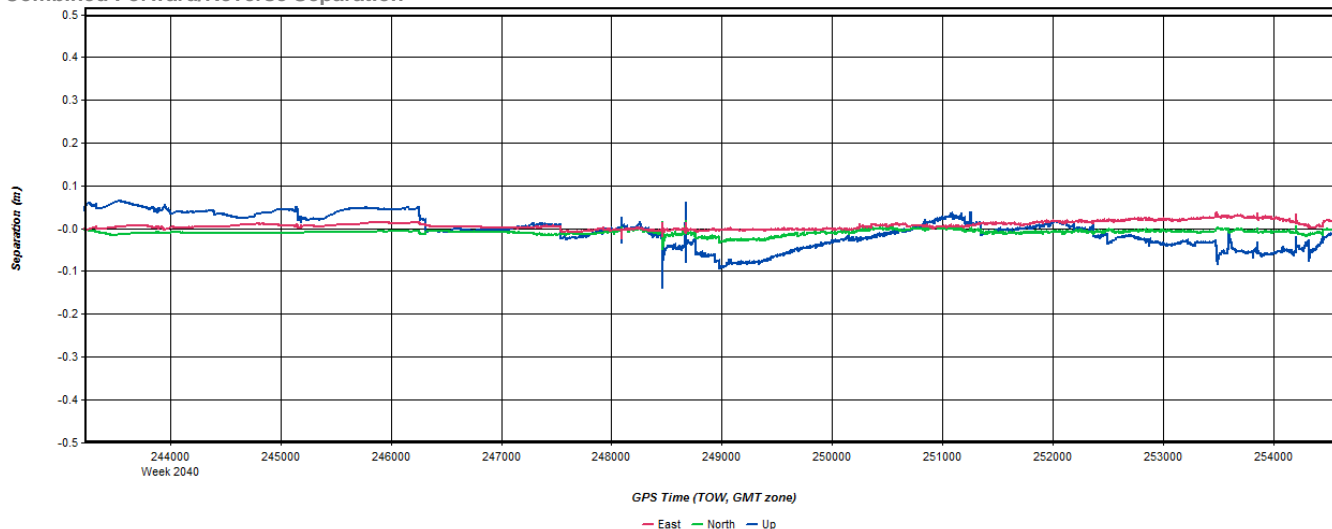
## Quality Factor



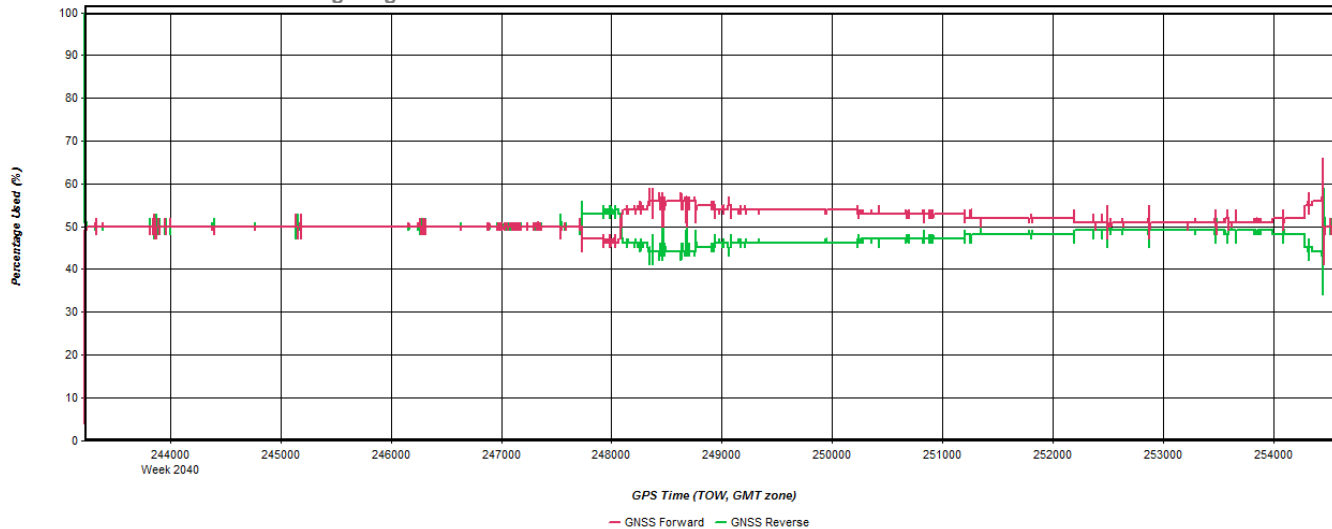
## Height



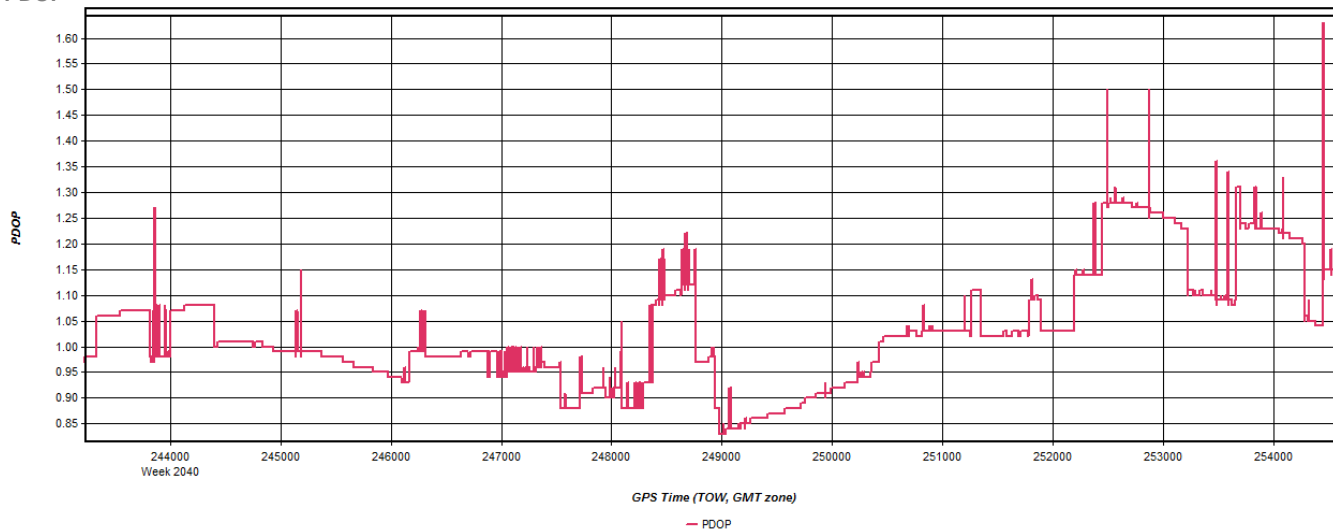
Combined Forward/Reverse Separation



Combined Forward/Reverse Weighting

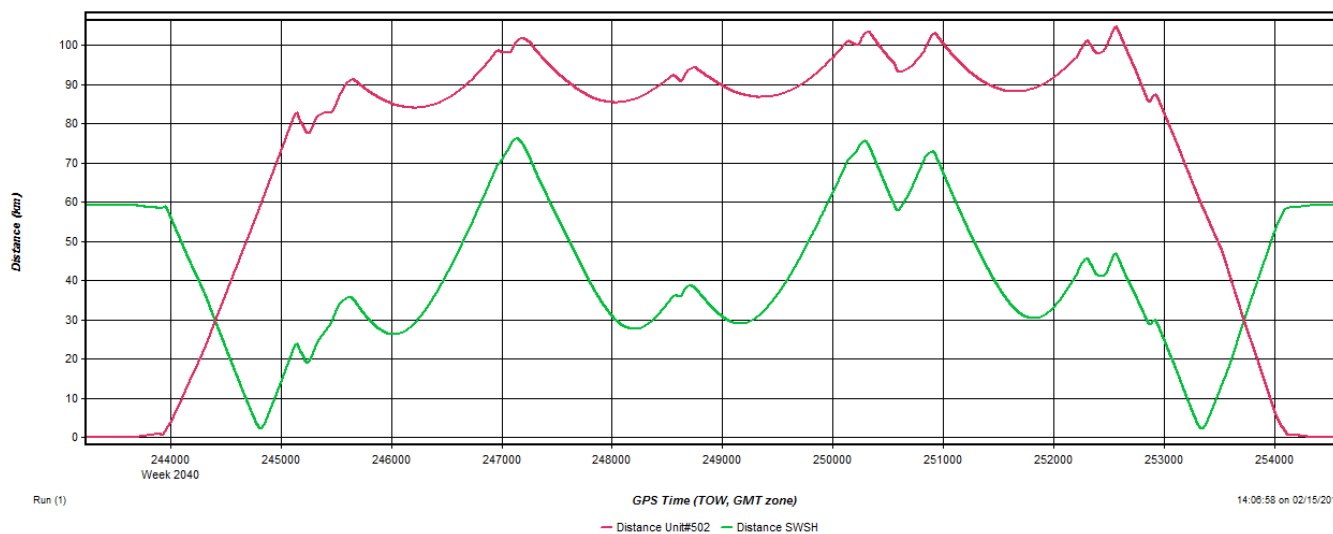


PDOP



Distance from Base

190212\_118\_33780084\_25 [Forward] - MB Distance to Base

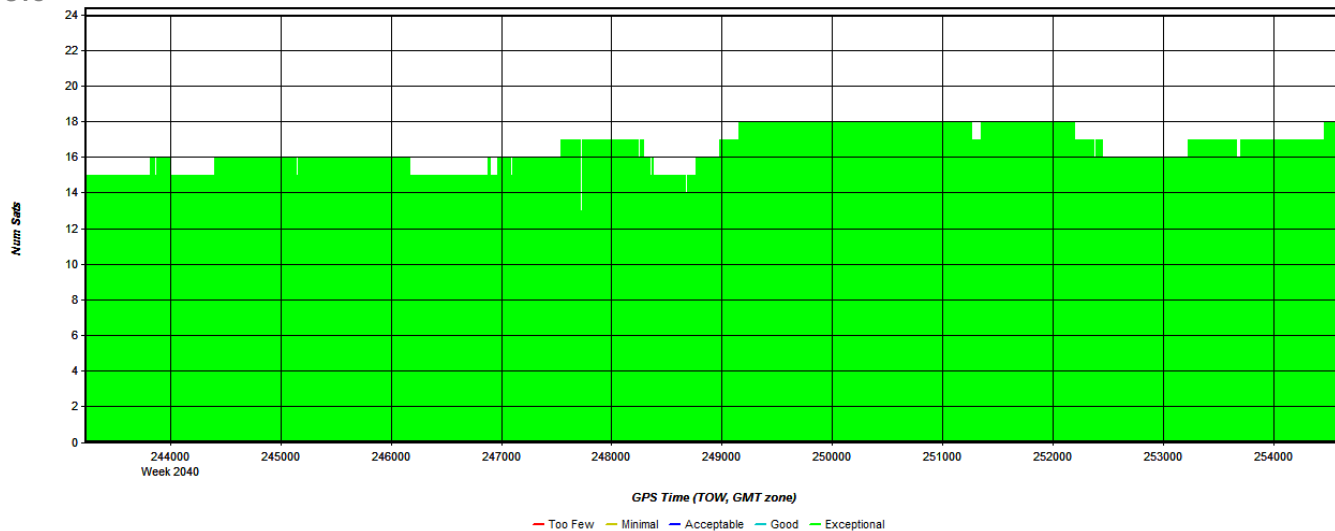


Run (1)

14:06:58 on 02/15/2019



SVs



USGS  
COLLECTION REPORT



Acquisition and Processing details ----- (February 12, 2019)

Log: 190212\_130\_33780084\_13

Menu
18.165

  
**ALS**  
 Flight Log  
 AC80-44-00-02

Lift Begin			Lift End			Fit Duration	Fit Hrs	Hobbs Hrs	Activity	
Airport	Chocks	Hobbs	Airport	Chocks	Hobbs					
1	KLBX	14:05	1378.4	KLBX	18:45	1382.6	4:39	4.75	4.2	0900-Production
2										
3										

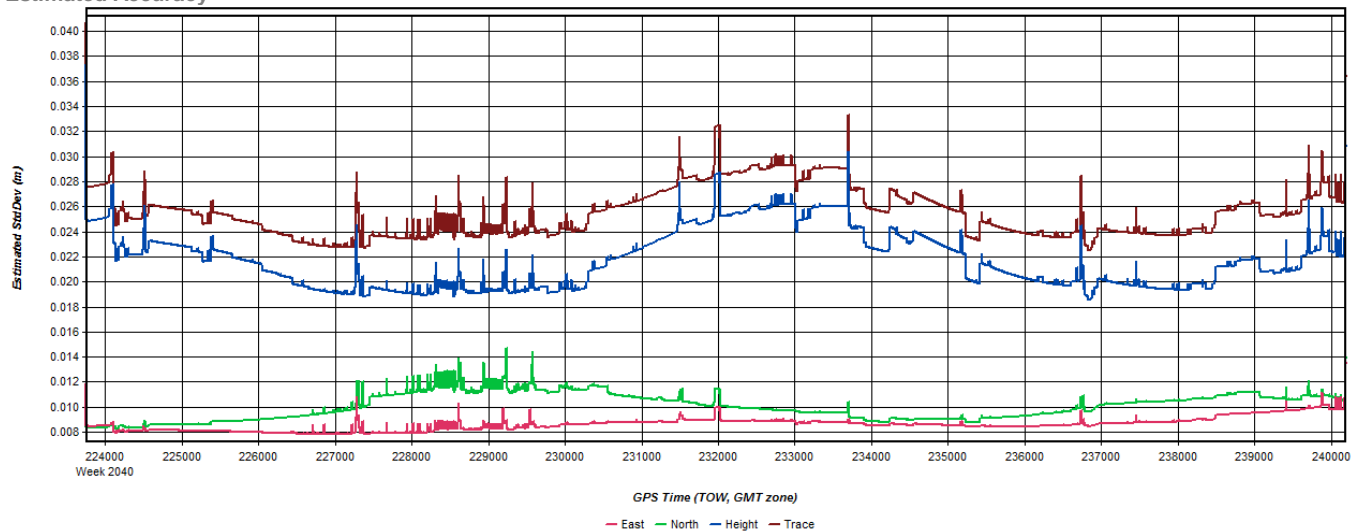
FGI Job #		Project Name				System	Unit	IMU	PIA	SW1	SW2-Gain	Aper	AutoScan	Ground Temp °C		Min Range Gate	Data Logger Drive
33780084		USGS Harvey utm15 final				ALS80	130	uIRS	4					14.0	17.0	2232	LG 102
Flight Date		GPS Day	Lift					Sun°	Solar Times (UTC)		Laser Power	Pattern	Flying Temp °C		Max Range Gate	Download Drive	
12-Feb-19		19-043	13								96%	Triangle	2.0	4.0	2691	NS1TB-60	
Mission ID (ymmdd_Sen_Job_Lift)		Aircraft	Airport ID	FMS	UTC	AMT (ft)	Speed	Scan Hz	Pulse Rate	FOV	km/WPT	Altm Setting		Shipping Track			
190212_130_33780084_13		N97HC	KLBX	CCNS 8	-6	7,900	150	34.0	442,600	46	1.448	30.08	30.16	7744 5156 2277			
Pilot #1		Pilot #2		Operator #1			Operator #2										
Kevin Lee				Dave Verhey													
Base 1 ID	Location	Rec ID	Ant ID	ARP (m)	Start Time (UTC)		Stop Time (UTC)		GPS Filename		Operator		Data				
KLBX	KLBX	GR3-1	GR3-1	1.8	12-Feb-19 13:33		12-Feb-19 18:52		Unit10212n		Dave Verhey		FTP				
Base 2 ID	Location	Rec ID	Ant ID	ARP (m)	Start Time (UTC)		Stop Time (UTC)		GPS Filename		Operator		Data				
TXGZ	Gonzalez, TX										CORS						
Area	Flight #		Wpt		Distance		UTC		Fit Dir	Altitude (GPS)	Speed (knots)	Scan Rate	Comments and Conditions	SVs	PDOP		
	FGI	Client's	From	To	Begin	End	Start	End									
							14:09:03	14:14:03					Ground static at KLBX	23	1.3		
							15:07:12	15:09:14					S-turn	21	1.2		
Block_D	85		26	1	36.2	0	15:12:48	15:21:19	310.7	8143	141		Tie line; open water 21 km	22	1.1		
	15		7	1	8.7	0	15:26:14	15:28:33	220.3	8258	143			23	1.1		
	17		1	7	0	8.7	15:31:43	15:33:55	40.3	8320	142			23	1.1		
	19		7	1	8.7	0	15:36:07	15:38:24	220.5	8305	132			23	1.1		
	21		7	1	0	8.7	15:49:34	15:51:44	40.3	8241	142			23	1.1		
	22		67	1	95.6	0	15:54:49	16:16:46	220.5	8257	143			22	1.1		
	23		1	67	0	95.6	16:19:40	16:42:05	39.7	8261	139			20	1.3		
	23		67	58	95.6	82.5	16:45:22	16:48:39	220.5	8259	145		Calibration line	22	1.4		
	24		68	1	97	0	16:55:55	17:18:31	220.4	8284	139			20	1.2		
	25		1	68	0	97	17:20:34	17:43:24	39.8	8264	139			16	1.4		
							17:44:05	17:45:57					S-turn	18	1.1		
							17:51:40	17:56:40					Overflight of CORS at TXGZ	17	1.3		
							18:37:54	18:42:54					Ground Static at KLBX	19	1.2		



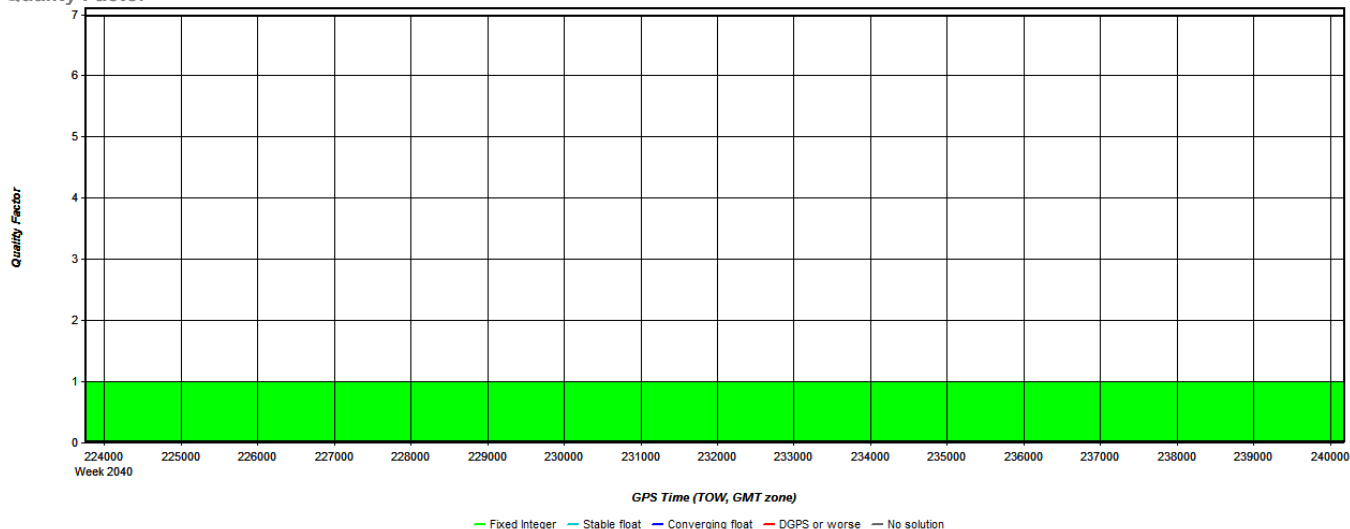
Trajectory and GPS Plots:



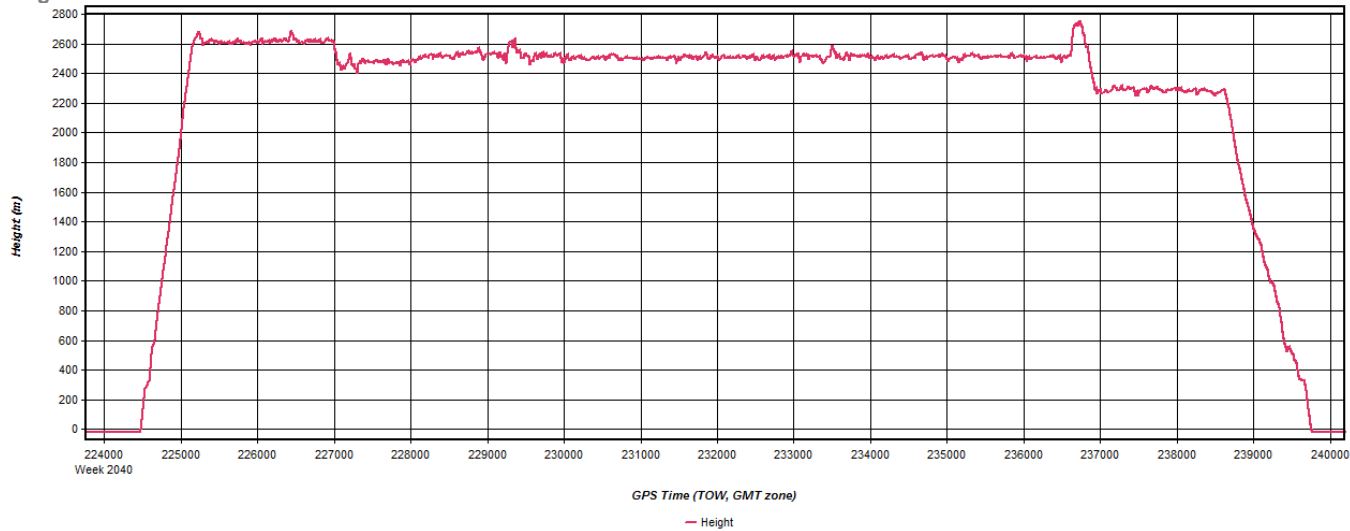
Estimated Accuracy



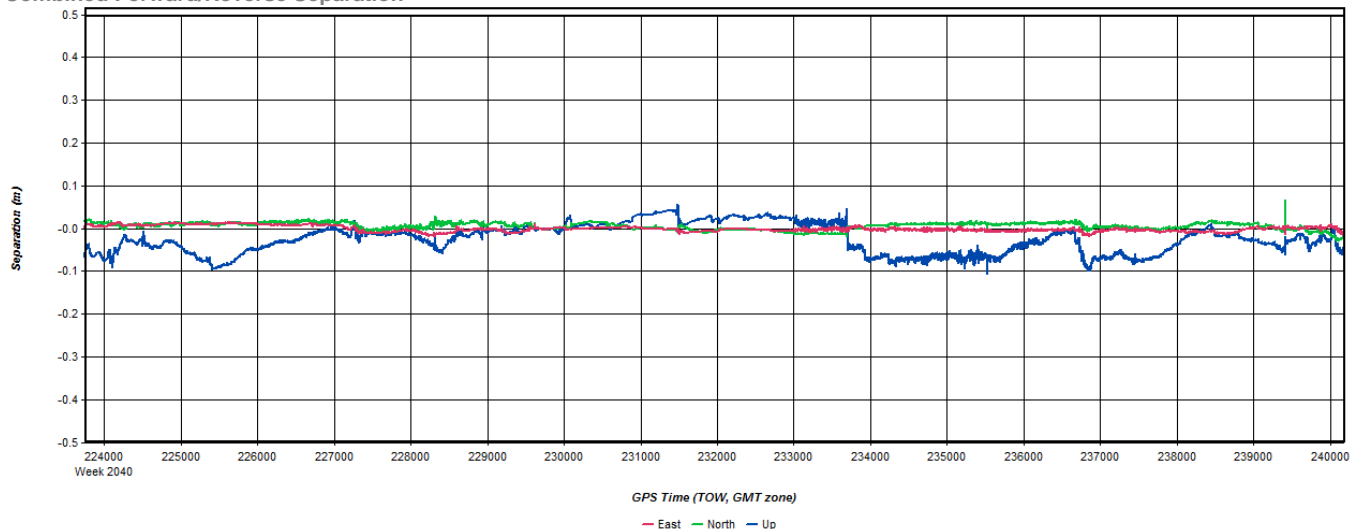
Quality Factor



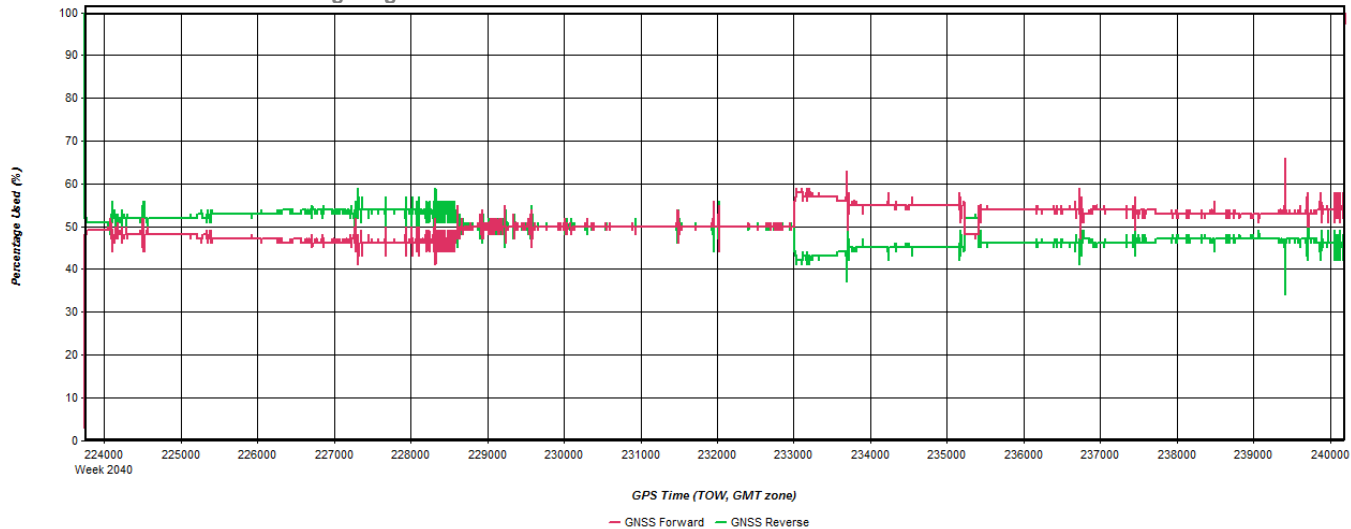
Height



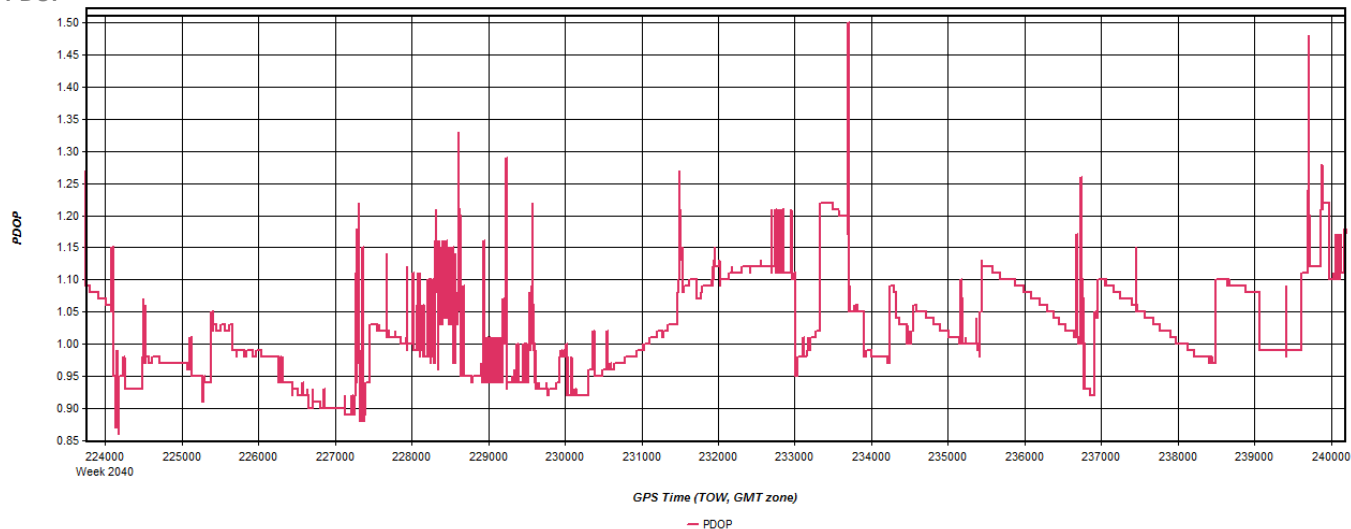
Combined Forward/Reverse Separation



Combined Forward/Reverse Weighting

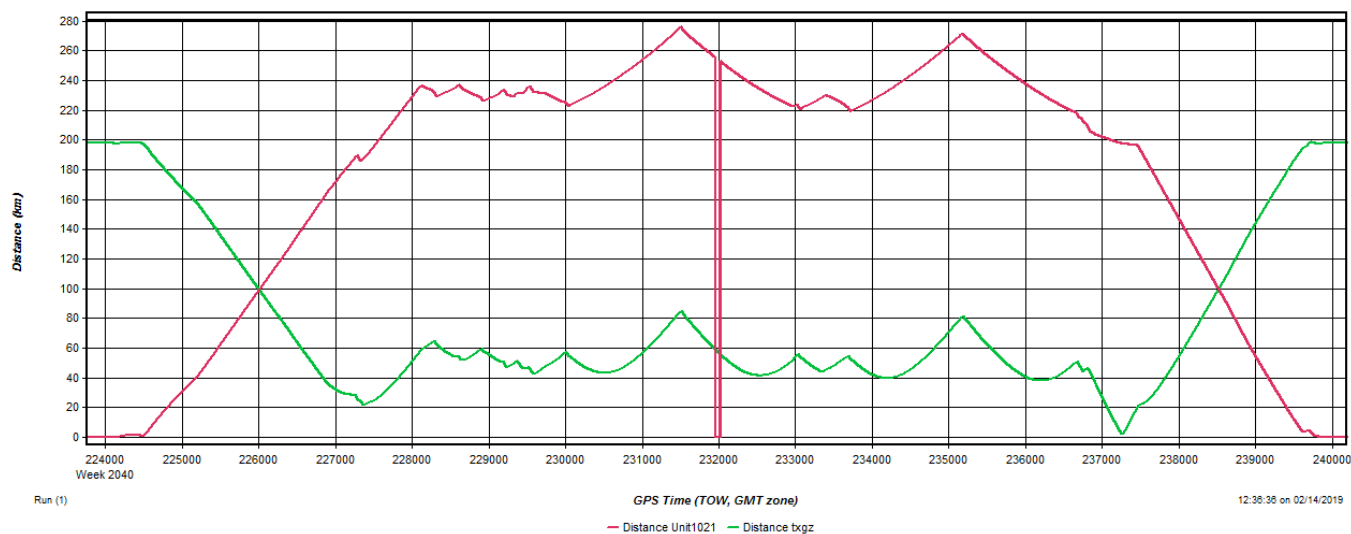


PDOP



Distance from Base

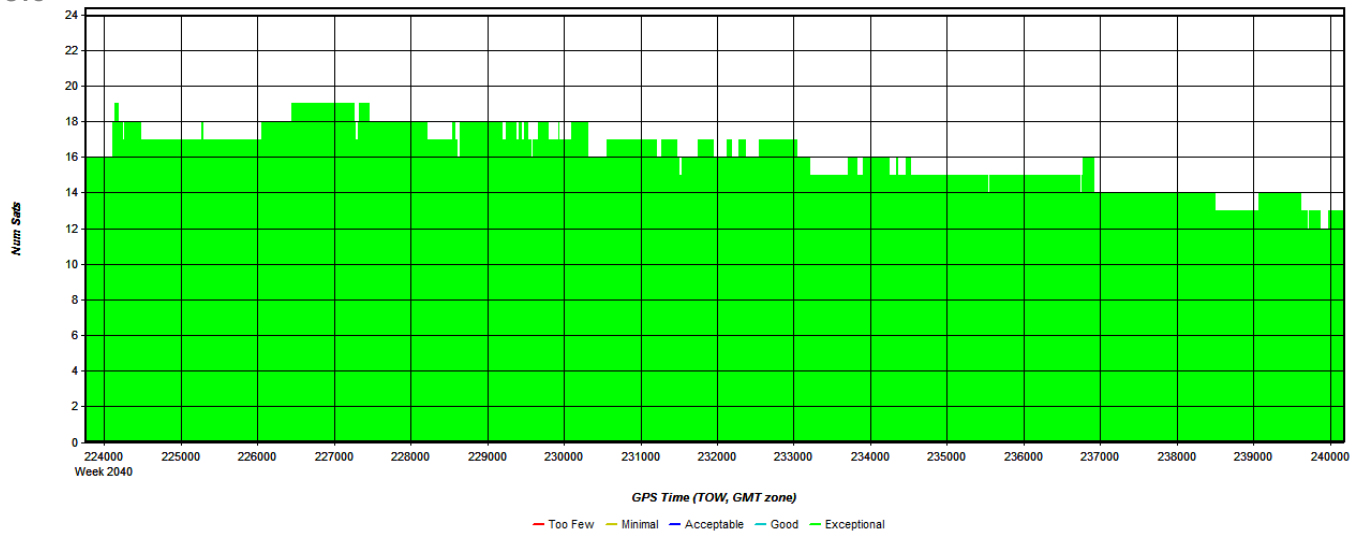
190212\_130\_33780084\_13 [Forward] - MB Distance to Base



# USGS COLLECTION REPORT



SVs



USGS  
COLLECTION REPORT



Acquisition and Processing details ----- (February 12, 2019)

Log: 190212\_130\_33780084\_14

Menu		18.165		Lift Begin			Lift End			Fit	Fit	Hobbs	Activity
		Airport	Chocks	Hobbs	Airport	Chocks	Hobbs	Duration	Hrs	Hrs			
1	KLBX	19:34	1382.6	KLBX	23:40	1386.4	4:06	4.00	3.8	0900-Production			
2													
3													



Fugro USA Land, Inc.

ALS  
Flight Log  
AC80-44-00-02

FGI Job # <b>33780084</b>	Project Name <b>USGS Harvey utm15 final</b>		System <b>ALS80</b>	Unit <b>130</b>	IMU <b>uRS</b>	PIA <b>4</b>	SW1	SW2-Gain	Aper	AutoScan	Ground Temp °C <b>19.0 18.0</b>	Min Range Gate <b>2232</b>	Data Logger Drive <b>LG 102</b>
Flight Date <b>12-Feb-19</b>	GPS Day <b>19-043</b>	Lift <b>14</b>	Sun°	Solar Times (UTC)		Laser Power <b>96%</b>	Pattern <b>Triangle</b>	Flying Temp °C <b>3.0 7.0</b>	Max Range Gate <b>2691</b>	Download Drive <b>NS1TB-60</b>			
Mission ID (yyymmdd_Sen_Job_Lift) <b>190212_130_33780084_14</b>	Aircraft <b>N97HC</b>	Airport ID <b>KLBX</b>	FMS <b>CCNS 8</b>	UTC <b>-6</b>	AMT (ft) <b>7,900</b>	Speed <b>150</b>	Scan Hz <b>34.0</b>	Pulse Rate <b>442,600</b>	FOV <b>46</b>	km/WPT <b>1.448</b>	Altm Setting <b>30.15 30.21</b>	Shipping Track <b>7744 5156 2277</b>	
Pilot #1 <b>Kevin Lee</b>		Pilot #2		Operator #1 <b>Dave Verhey</b>		Operator #2							

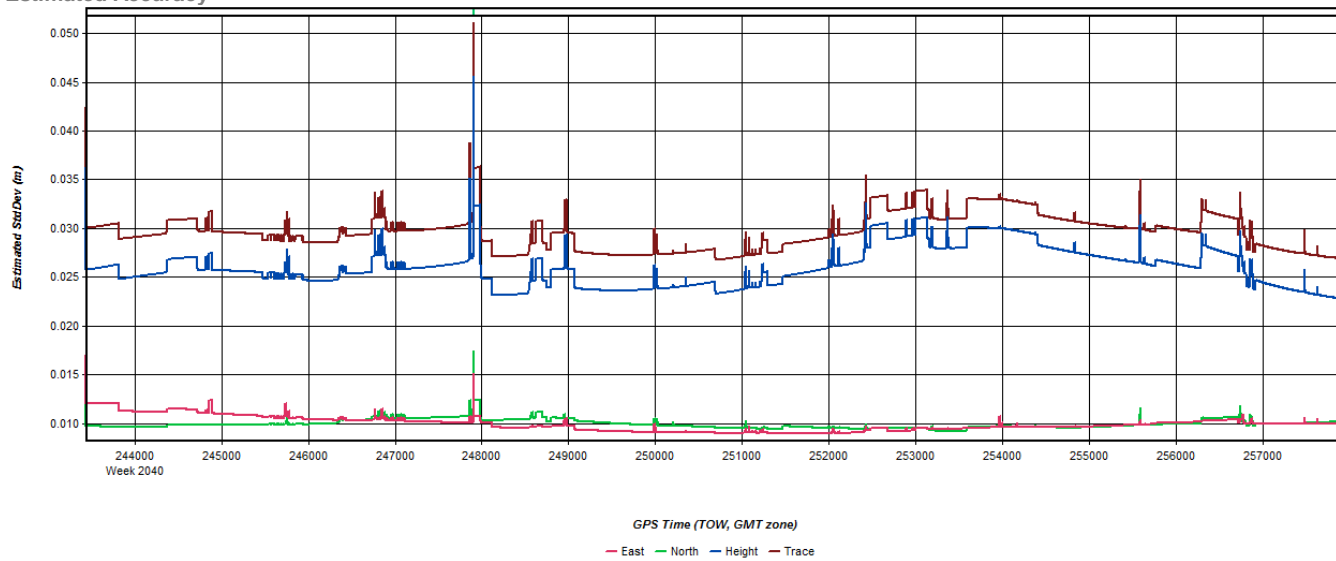
Base 1 ID <b>KLBX</b>	Location <b>KLBX</b>	Rec ID <b>GR3-1</b>	Ant ID <b>GR3-1</b>	ARP (m) <b>1.8</b>	Start Time (UTC) <b>12-Feb-19 18:53</b>	Stop Time (UTC) <b>12-Feb-19 23:49</b>	GPS Filename <b>Unit10212s</b>	Operator <b>Dave Verhey</b>	Data
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Area	Flight #		Wpt		Distance		UTC		Fit	Altitude (GPS)	Speed (knots)	Scan Rate	Comments and Conditions	SVs	PDOP
	FGI	Client's	From	To	Begin	End	Start	End							
							19:37:29	19:42:29					Ground static at KLBX	19	1.3
							19:59:33	20:01:22					S-turn	21	1.1
BLOCK_K	29		8	23	10.1	31.9	20:06:08	20:11:17	51.4	7796	142		Tie line	21	1.2
	16		1	44	0	62.3	20:17:04	20:32:05	321.4	7838	142			20	1.2
	15		45	1	63.7	0	20:34:43	20:49:48	141.0	7870	143			20	1.2
	14		1	45	0	63.7	20:52:36	21:08:01	321.4	7837	138			20	1.1
	13		45	1	63.7	0	21:10:13	21:25:23	140.9	7880	139			22	1.0
	12		1	44	0	62.3	21:28:02	21:43:06	321.4	7922	138			20	1.1
	11		41	1	57.9	0	21:45:36	21:59:13	140.9	7880	142			20	1.2
	11		1	10	0	13	22:02:32	22:05:58	321.4	7934	139		Calibration line	20	1.2
	10		1	38	0	53.6	22:11:49	22:18:35	321.3	7943	141		Track deviation, restarting partial line	21	1.2
	10		14	38	18.8	53.6	22:23:51	22:32:10	321.3	7881	141			21	1.3
	9		34	1	47.8	0	22:35:10	22:45:58	140.9	7907	145			23	1.1
	8		1	31	0	43.4	22:48:13	22:58:39	321.3	7878	142			22	1.3
	7		31	1	43.4	0	23:00:42	23:10:45	140.9	7861	140			22	1.2
	14		10	18	14	25	23:15:44	23:18:24	321.3	7866	144		Pre-emptive reflight	23	1.1
							23:18:29	23:20:29					S-turn	22	1.2
							23:33:59	23:38:59					Ground static at KLBX	21	1.3

Trajectory and GPS Plots:

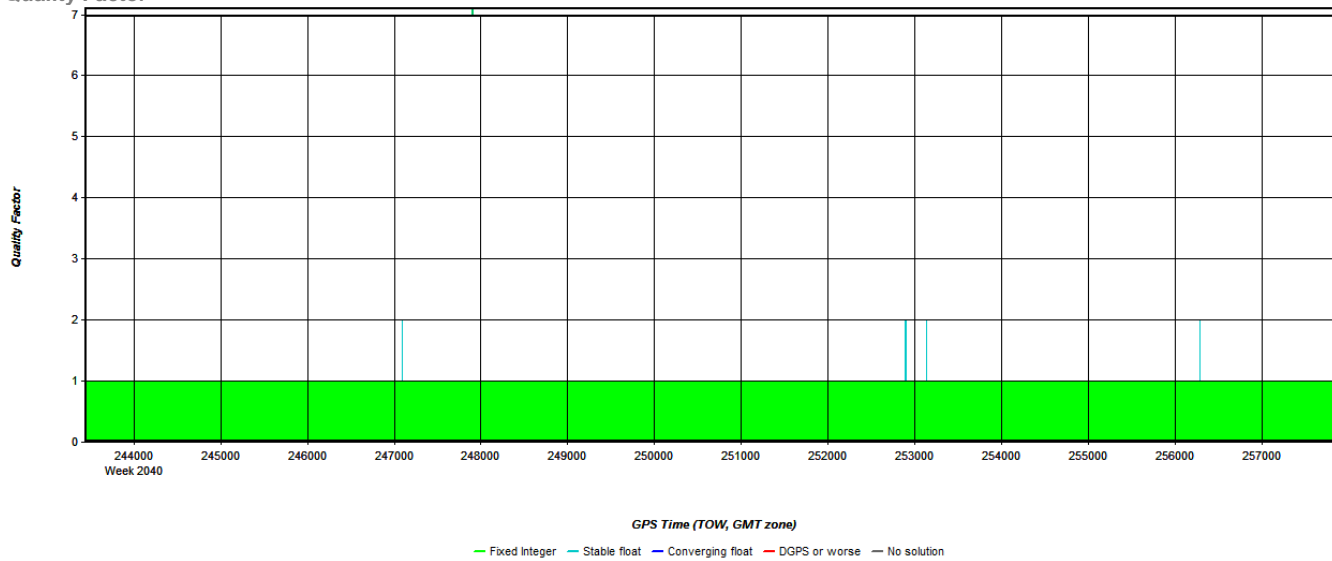


Estimated Accuracy

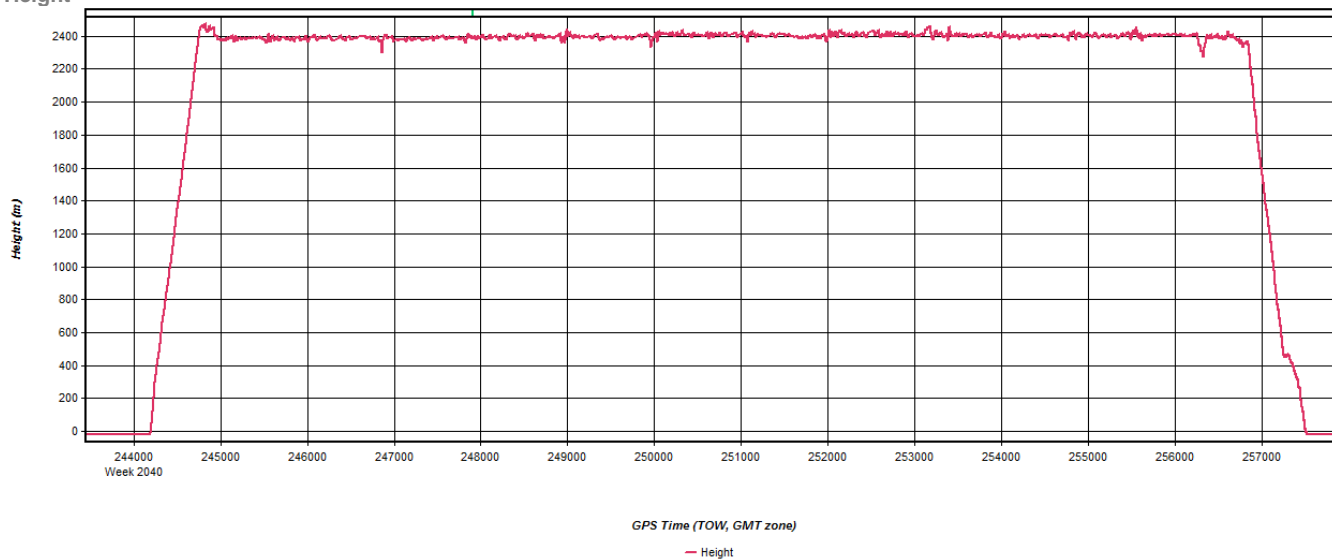




Quality Factor

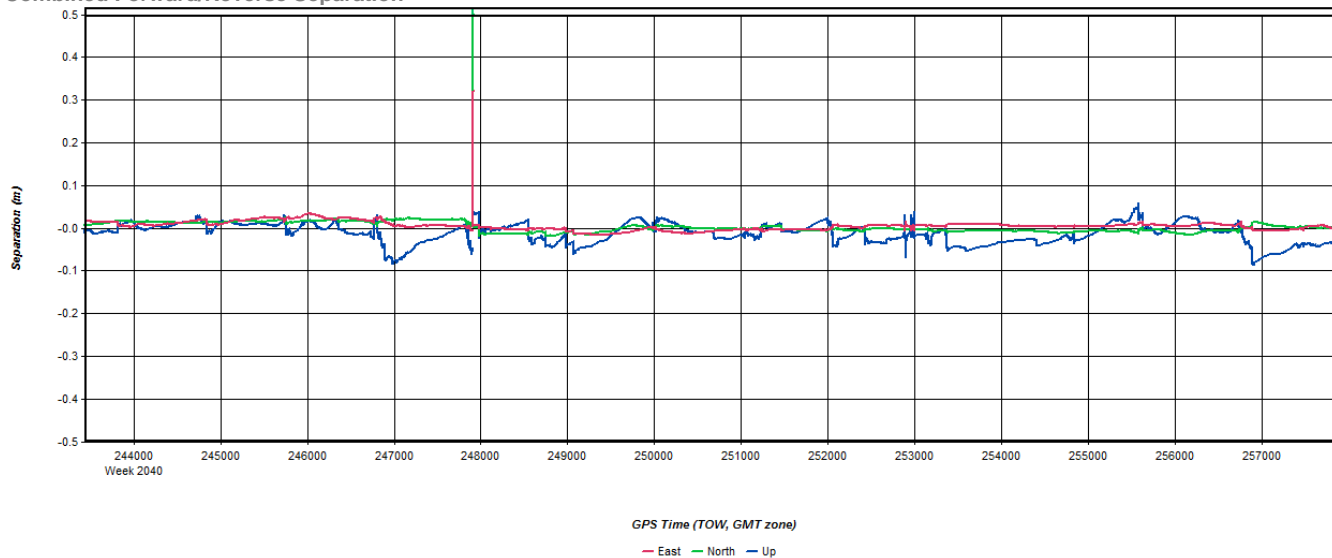


Height

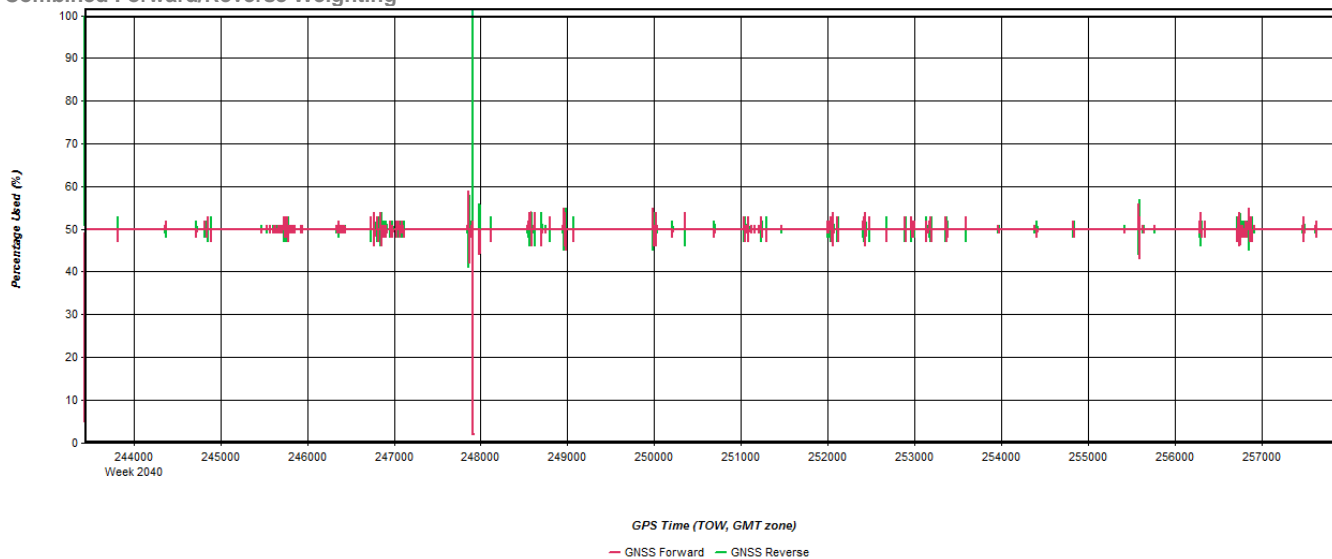




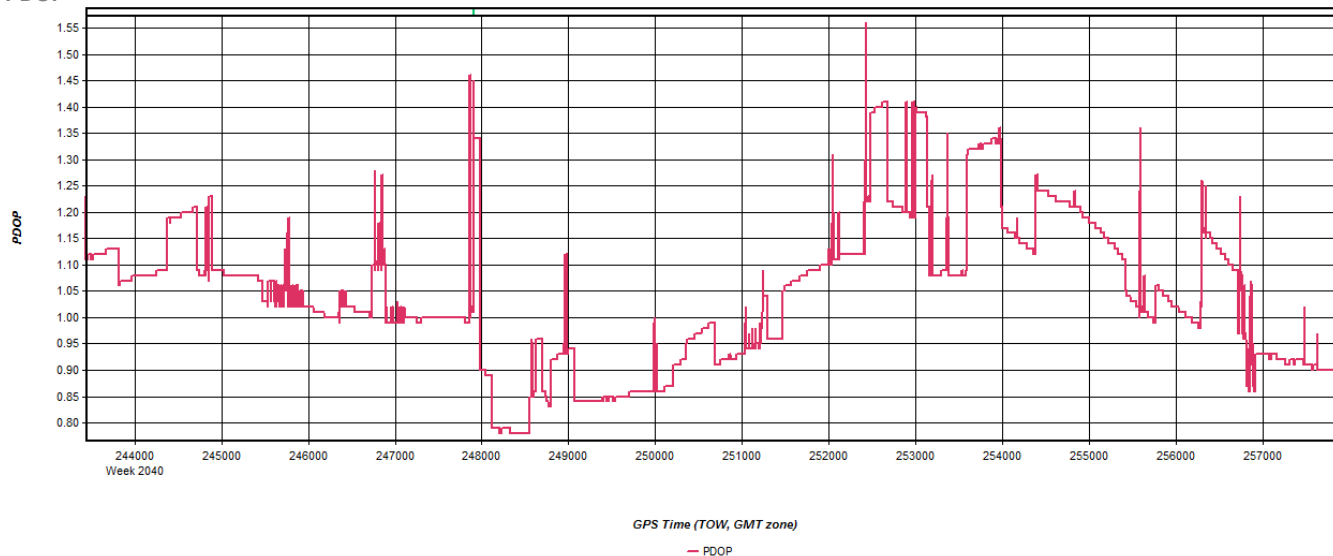
Combined Forward/Reverse Separation



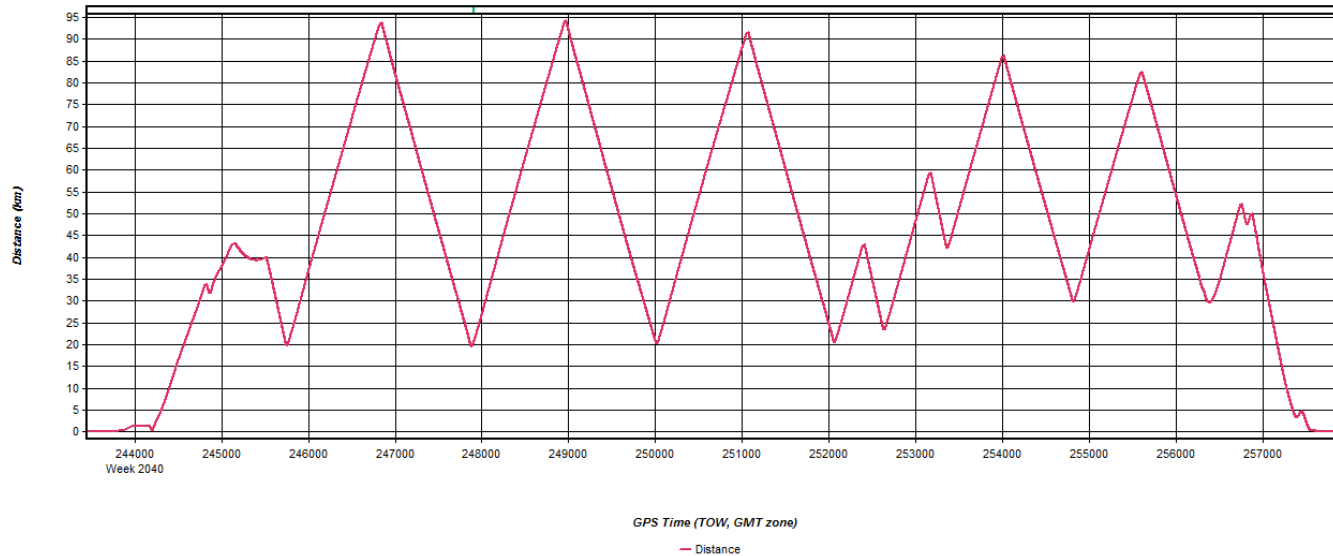
Combined Forward/Reverse Weighting



PDOP



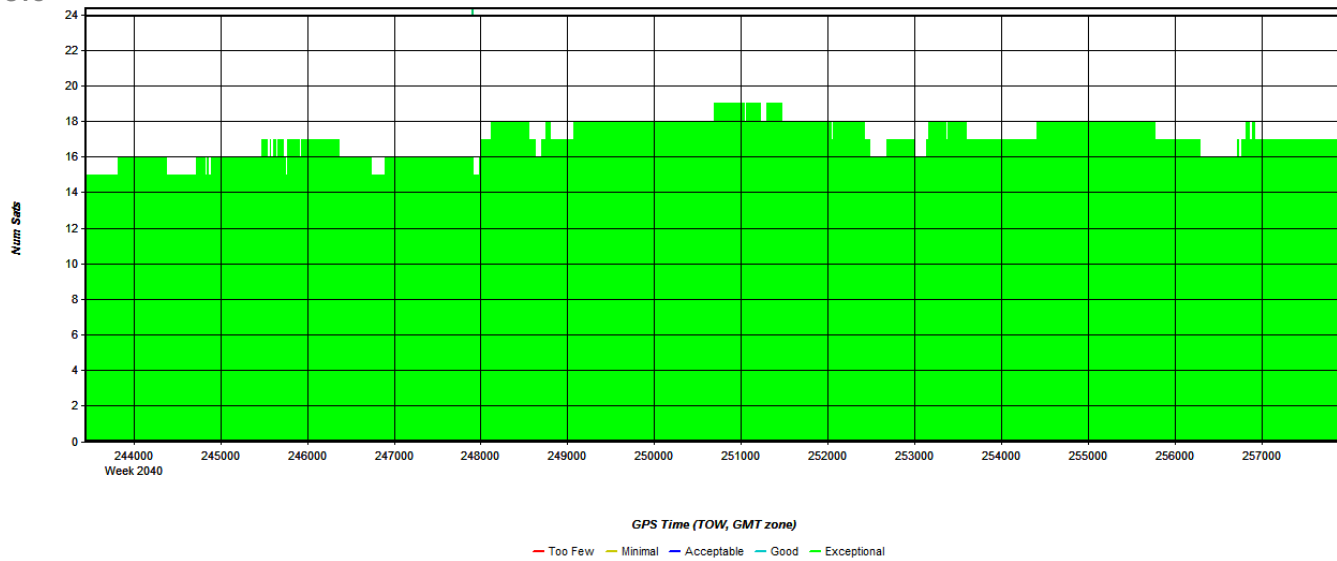
Distance from Base



# USGS COLLECTION REPORT



SVs



USGS  
COLLECTION REPORT



Acquisition and Processing details ----- (February 12, 2019)

Log: 190212\_133\_33780084\_14

**FUGRO**  
Fugro USA Land, Inc.

18.165	Lift Begin			Lift End			Fit Duration	Fit Hrs	Hobbs Hrs	Activity
	Airport	Chocks	Hobbs	Airport	Chocks	Hobbs				
1	KHYI	12:58	2463.5	KHYI	17:45	2467.8	4:46	4.75	4.3	0900-Production
2										
3										

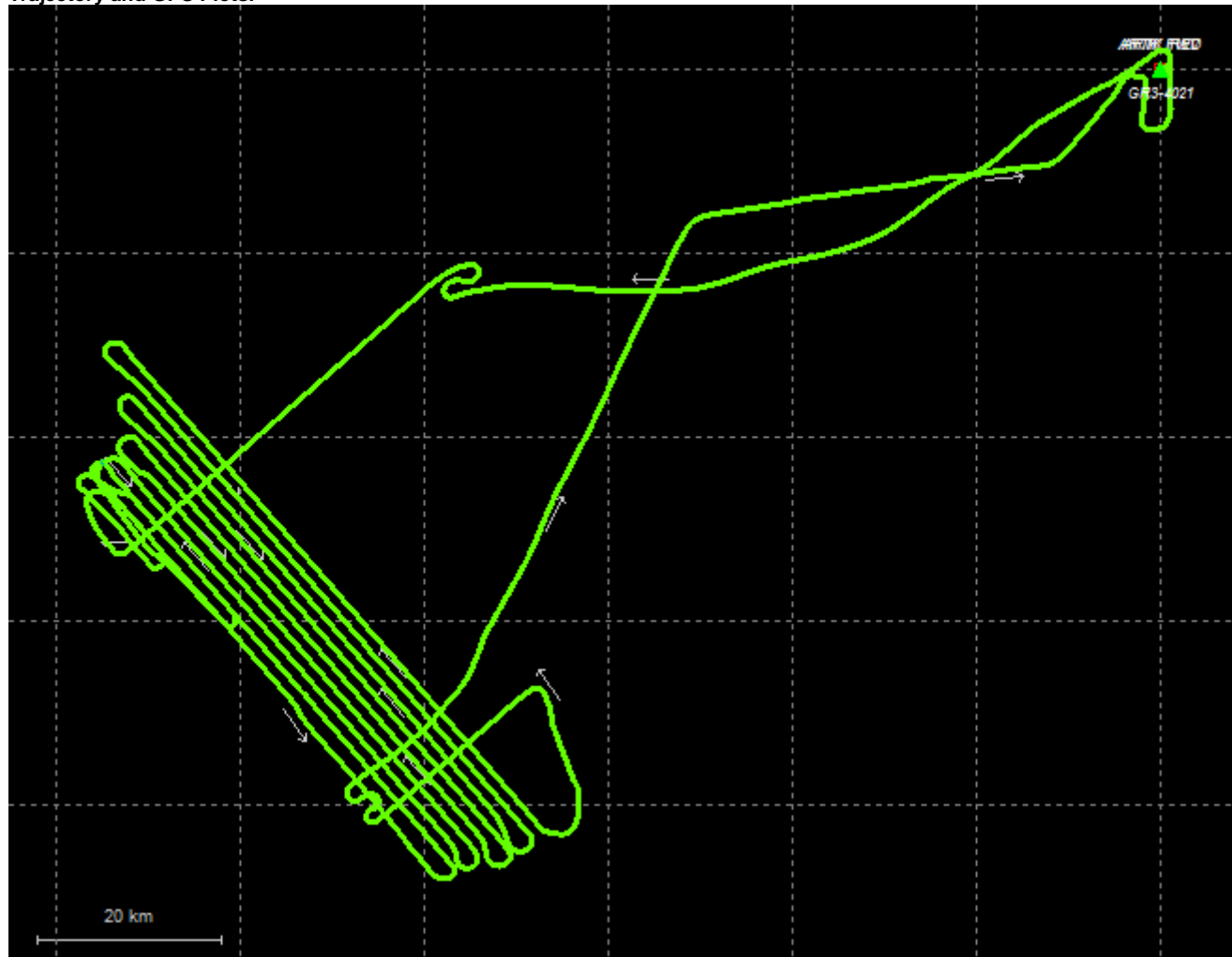
**ALS**  
Flight Log

AC80-44-00-02

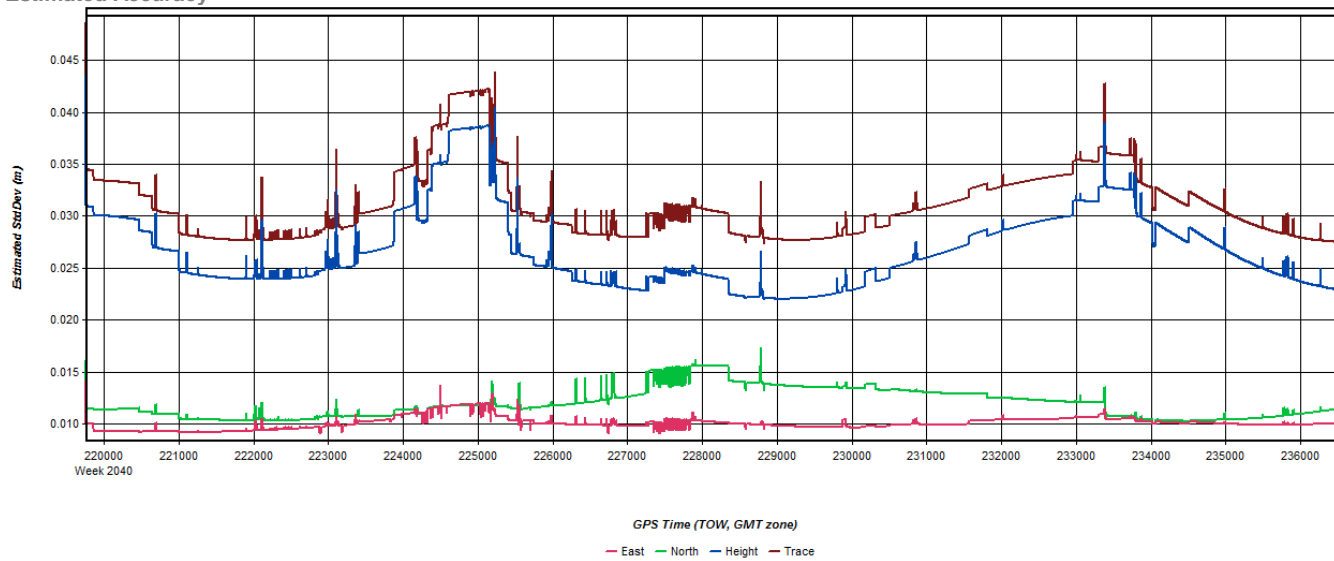
FGI Job # <b>33780084</b>	Project Name <b>Hurricane Harvey</b>		System <b>ALS80</b>	Unit <b>133</b>	IMU <b>uIRS</b>	PIA <b>4</b>	SW1	SW2-Gain	Aper	AutoScan	Ground Temp °C <b>8.0 16.0</b>	Min Range Gate <b>2232</b>	Data Logger Drive <b>MM70-05</b>
Flight Date <b>12-Feb-19</b>	GPS Day <b>19-043</b>	Lift <b>14</b>	Sun°		Solar Times (UTC)		Laser Power <b>64%</b>	Pattern <b>Triangle</b>	Flying Temp °C <b>5.0 5.0</b>	Max Range Gate <b>2691</b>	Download Drive <b>NS1TB-107</b>		
Mission ID (yyymmdd_Sen_Job_Lift) <b>190212_133_33780084_14</b>		Aircraft <b>N88N</b>	Airport ID <b>KHYI</b>	FMS <b>CCNS 7</b>	UTC <b>-6</b>	AMT (ft) <b>7,900</b>	Speed <b>150</b>	Scan Hz <b>35.0</b>	Pulse Rate <b>322,600</b>	FOV <b>46</b>	km/WPT <b>1.540</b>	AltM Setting <b>30.14 30.27</b>	Shipping Track <b>774455851641</b>
Pilot #1 <b>Brandon Eastin</b>		Pilot #2		Operator #1 <b>Riley Forsyth</b>		Operator #2							
Base 1 ID <b>1045</b>	Location <b>San Marcos, TX</b>		Rec ID <b>GR3-4</b>	Ant ID <b>GR3-4</b>	ARP (m) <b>1.8</b>	Start Time (UTC)		Stop Time (UTC)		GPS Filename <b>GR3-40212m.tps</b>	Operator <b>Riley Forsyth</b>		Data <b>With AB</b>

Area	Flight #		Wpt		Distance		UTC		Fit Dir	Altitude (GPS)	Speed (knots)	Scan Rate	Comments and Conditions	SVs	PDOP
	FGI	Client's	From	To	Begin	End	Start	End							
							13:02:55	13:08:01					Ground static at KHYI	15	1.6
							13:39:49						s turn	20	1.2
Block E	29		22	1	32.3	0	13:45:10	13:53:08	225	9078	144		cross tie line	21	1.1
	1		18	1	26.2	0	13:56:55	13:57:58	134	9165	167		line aborted, overspeed		
	1		18	1	26.2	0	14:04:09	14:10:33	134	9207	142			23	1.1
	2		1	31	0	46.2	14:17:50	14:31:13	314	9017	112			24	1.0
	2		31	21	46.2	30.8	14:34:44	14:38:07	134	9002	145		calibration line	24	1.0
	3		31	1	46.2	0	14:47:12	14:58:38	134	8969	131			20	1.2
	4		1	31	0	46.2	15:02:20	15:15:47	314	8953	108			20	1.2
	5		33	1	49.3	0	15:18:00	15:31:08	134	9069	135			22	1.1
	6		1	34	0	50.8	15:35:06	15:49:33	314	8968	112			21	1.1
	7		36	1	53.9	0	15:52:57	16:05:43	134	9114	140			21	1.2
	8		1	38	0	57	16:09:02	16:24:47	314	8865	118			19	1.3
	9		41	1	61.6	0	16:28:25	16:43:52	134	9141	137			19	1.4
	28		10	1	13.9	0	16:51:11	16:54:48	225	8832	131			20	1.2
							16:55:02						s turn	19	1.3
							17:37:56	17:42:58					Ground static at KHYI	17	1.2

Trajectory and GPS Plots:

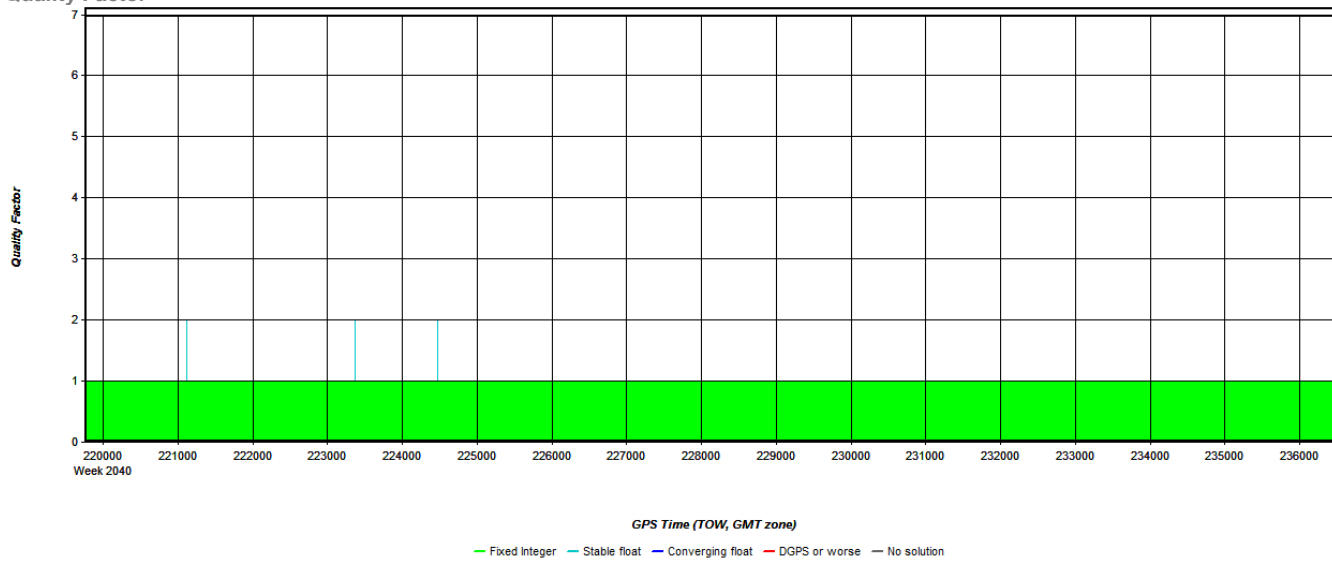


Estimated Accuracy

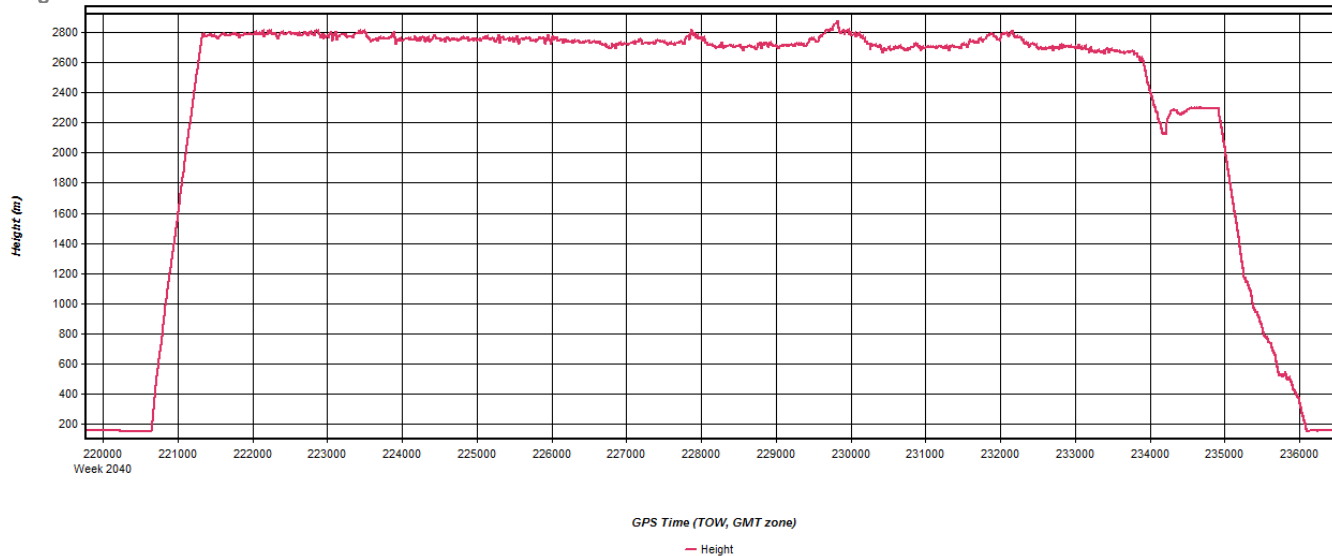




Quality Factor

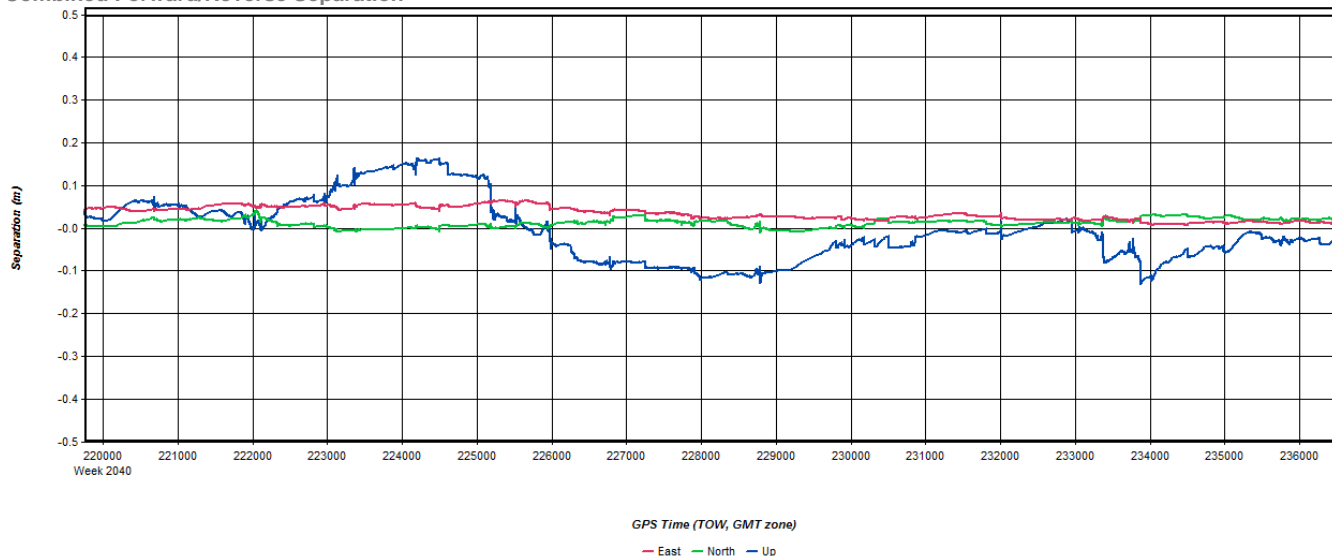


Height

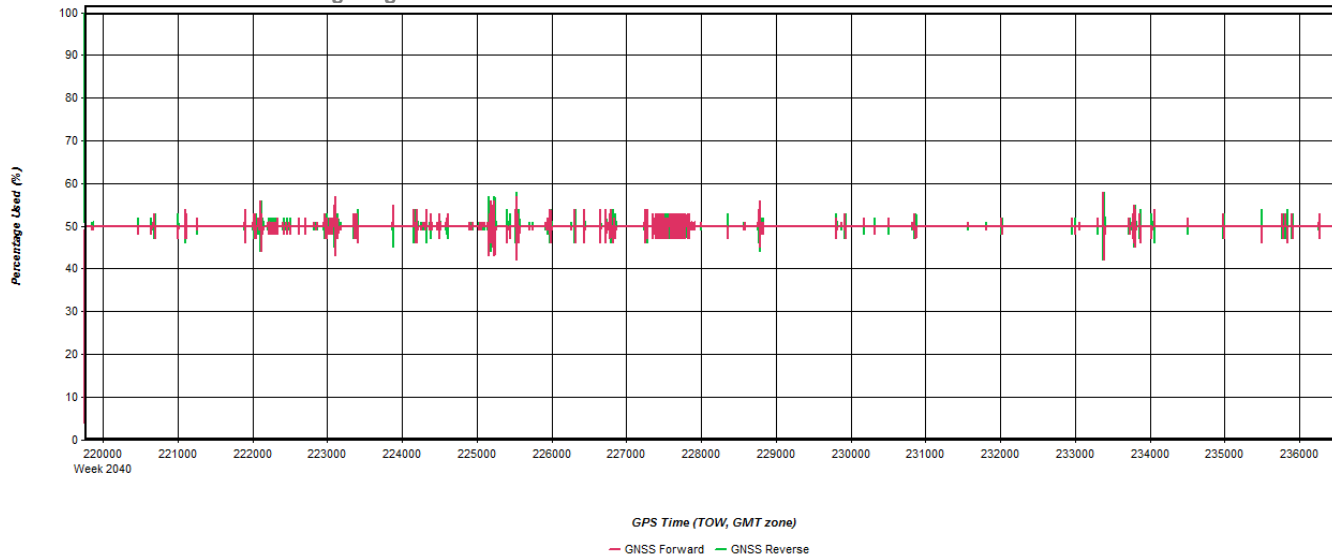




Combined Forward/Reverse Separation

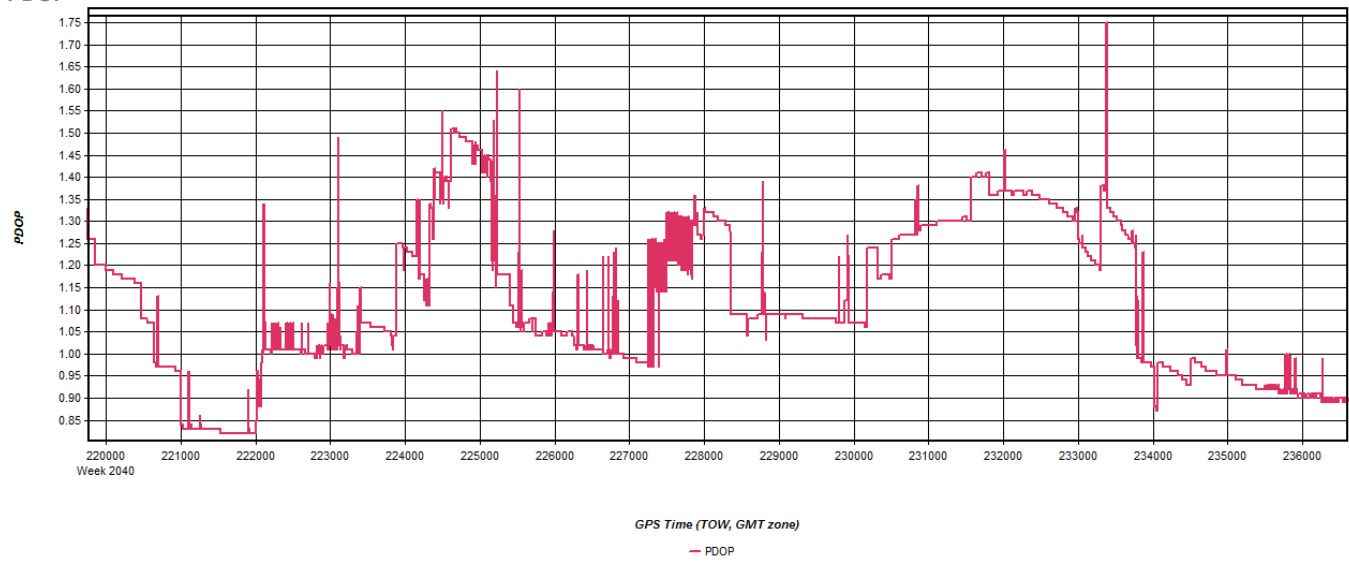


Combined Forward/Reverse Weighting

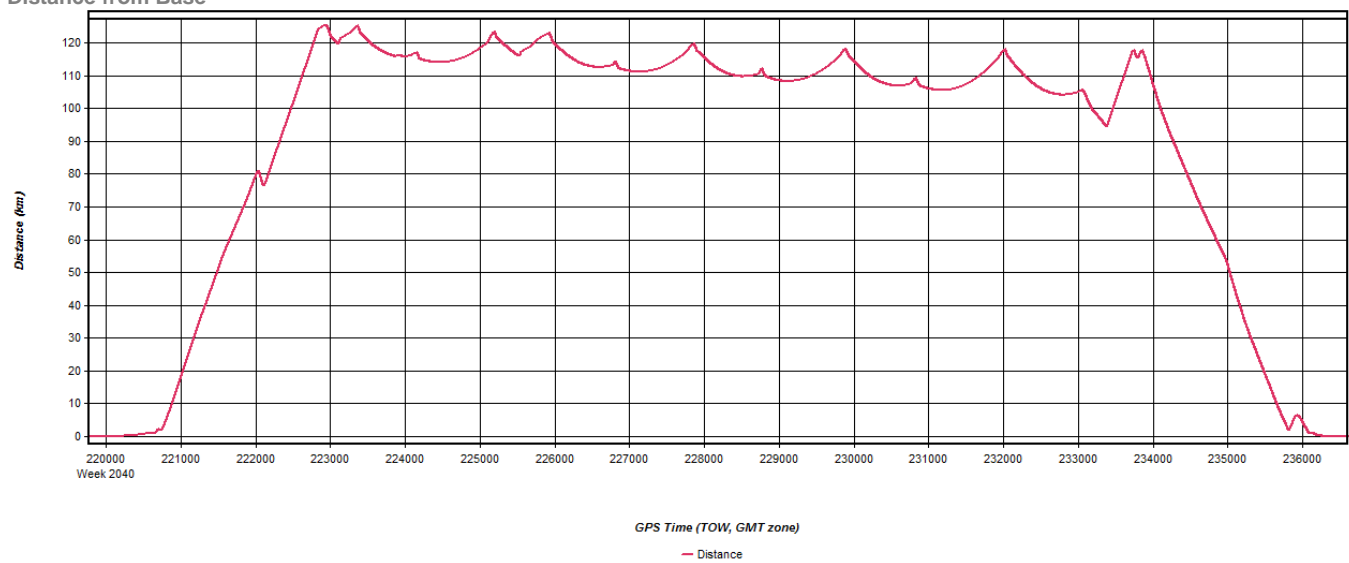


# USGS COLLECTION REPORT

## PDOP



## Distance from Base

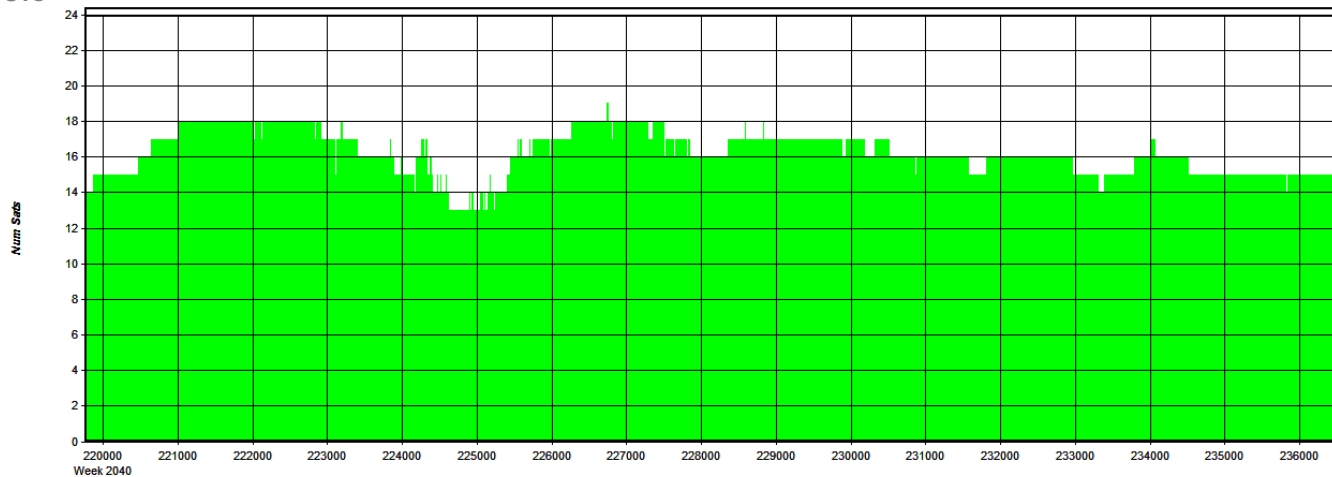




# USGS COLLECTION REPORT



SVs



GPS Time (TOW, GMT zone)  
- Too Few - Minimal - Acceptable - Good - Exceptional

USGS  
COLLECTION REPORT



Acquisition and Processing details ----- (February 12, 2019)

Log: 190212\_133\_33780084\_15

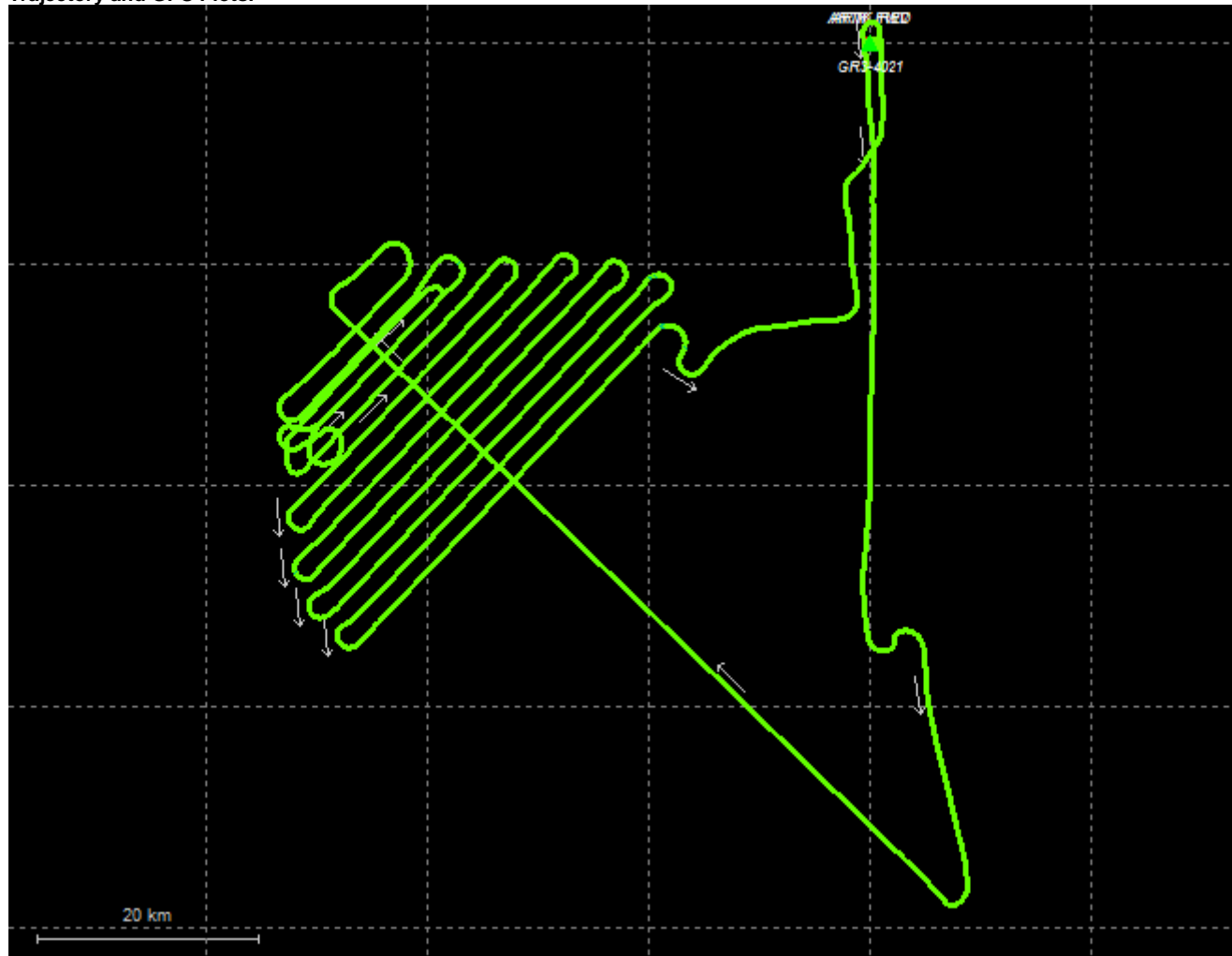
**Fugro USA Land, Inc.**

18.165	Lift Begin			Lift End			Flt Duration	Flt Hrs	Hobbs Hrs	Activity
	Airport	Chocks	Hobbs	Airport	Chocks	Hobbs				
1	KHYI	18:14	2467.8	KHYI	21:30	2470.6	3:15	3.25	2.8	0900-Production
2										
3										

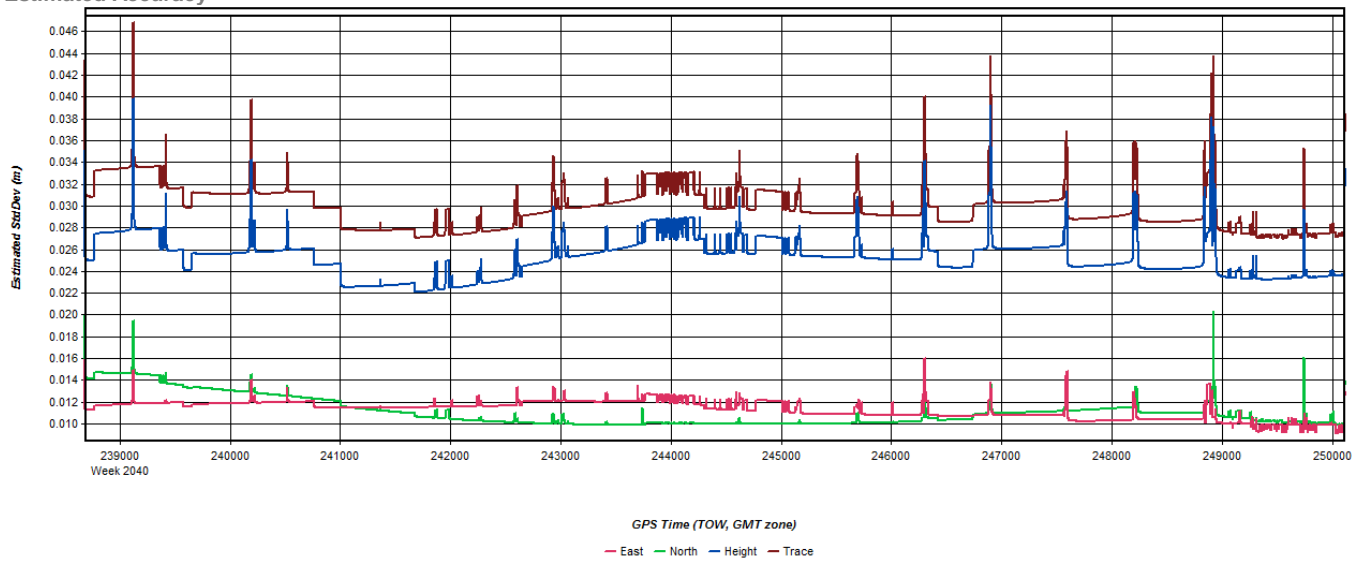
**ALS**  
Flight Log  
AC80-44-00-02

FGI Job #	Project Name			System	Unit	IMU	PIA	SW1	SW2-Gain	Aper	AutoScan	Ground Temp °C	Min Range Gate	Data Logger Drive		
<b>33780084</b>	<b>Hurricane Harvey</b>			<b>ALS80</b>	<b>133</b>	<b>uIRS</b>	<b>4</b>					<b>16.0 18.0</b>	<b>2232</b>	<b>MM70-05</b>		
Flight Date	GPS Day	Lift	Sun°			Solar Times (UTC)			Laser Power	Pattern	Flying Temp °C	Max Range Gate	Download Drive			
<b>12-Feb-19</b>	<b>19-043</b>	<b>15</b>							<b>100%</b>	<b>Triangle</b>	<b>6.0 6.0</b>	<b>2691</b>	<b>NS1TB-107</b>			
Mission ID (ymmdd_Sen_Job_Lift)	Aircraft	Airport ID	FMS	UTC	AMT (ft)	Speed	Scan Hz	Pulse Rate	FOV	km/WPT	Altm Setting	Shipping Track				
<b>190212_133_33780084_15</b>	<b>N88N</b>	<b>KHYI</b>	<b>CCNS 7</b>	<b>-6</b>	<b>7,900</b>	<b>150</b>	<b>34.0</b>	<b>442,600</b>	<b>46</b>	<b>1.448</b>	<b>30.27 30.24</b>	<b>774455851641</b>				
Pilot #1		Pilot #2		Operator #1		Operator #2										
<b>Brandon Eastin</b>				<b>Riley Forsyth</b>												
Base 1 ID	Location		Rec ID	Ant ID	ARP (m)	Start Time (UTC)		Stop Time (UTC)		GPS Filename	Operator	Data				
<b>1045</b>	<b>San Marcos, TX</b>		<b>GR3-4</b>	<b>GR3-4</b>	<b>1.8</b>					<b>GR3-40212m.tps</b>	<b>Riley Forsyth</b>	<b>With AB</b>				
Area	Flight #		Wpt		Distance		UTC		Flt Dir	Altitude (GPS)	Speed (knots)	Scan Rate	Comments and Conditions		SVs	PDOP
	FGI	Client's	From	To	Begin	End	Start	End								
													Ground static at KHYI		17	1.4
													s turn		18	1.3
Block D	83		50	1	71	0	18:50:12	19:10:14	310	8175	110		cross tie line		17	1.3
	1		5	1	5.8	0	19:13:57	19:15:29	219	8546	135				19	1.2
	2		1	8	0	10.1	19:18:39	19:21:28	039	8603	123				19	1.2
	3		10	1	13	0	19:24:04	19:27:20	219	8585	138				19	1.3
	3		1	10	0	13	19:32:44	19:36:17	039	8613	121		calibration line		18	1.3
	4		1	12	0	15.9	19:43:17	19:47:30	039	8576	126				20	1.1
	5		15	1	20.3	0	19:50:14	19:55:13	219	8588	136				20	1.1
	6		1	17	0	23.2	19:57:38	20:03:40	039	8563	122				19	1.2
	7		20	1	27.5	0	20:06:34	20:13:06	219	8479	141				18	1.2
	8		1	22	0	30.4	20:15:30	20:23:23	039	8474	133				18	1.2
	9		24	1	33.3	0	20:25:49	20:33:40	219	8440	136				18	1.3
	10		1	24	0	33.3	20:36:11	20:44:50	039	8401	129				18	1.1
	11		25	1	34.8	0	20:47:14	20:55:35	219	8488	139				20	1.1
	12		1	25	0	34.8	20:57:52	21:06:53	039	8364	125				21	1.1
							21:06:58						s turn		19	1.1
							21:22:53	21:27:53					ground static at KHYI		19	1.2

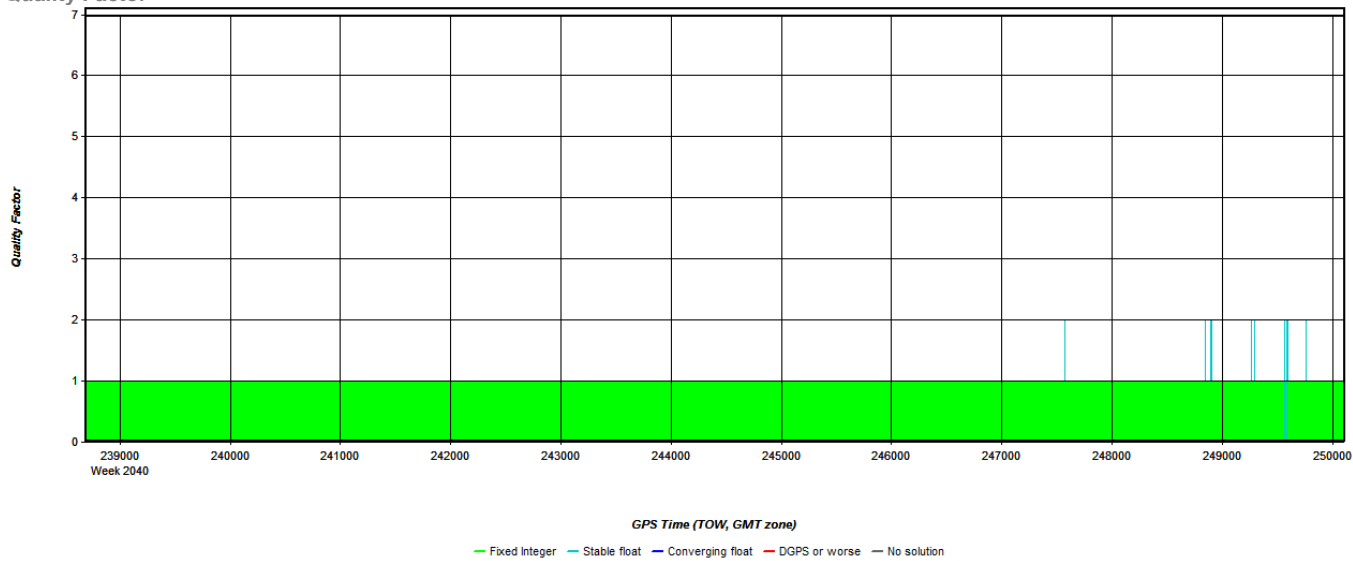
Trajectory and GPS Plots:



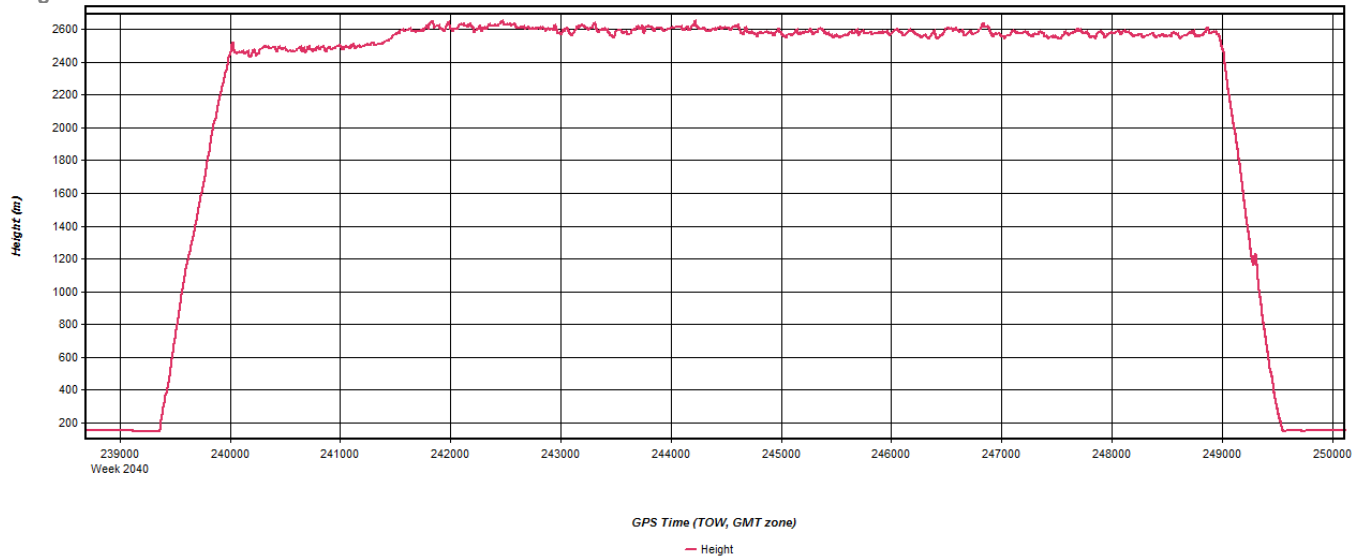
Estimated Accuracy



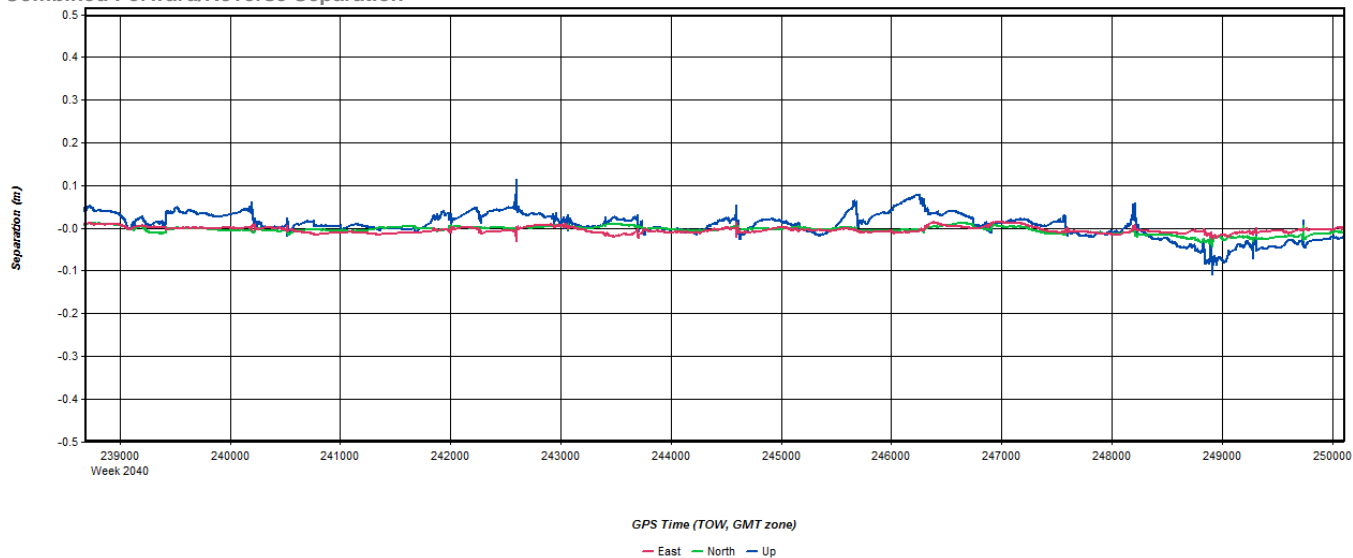
Quality Factor



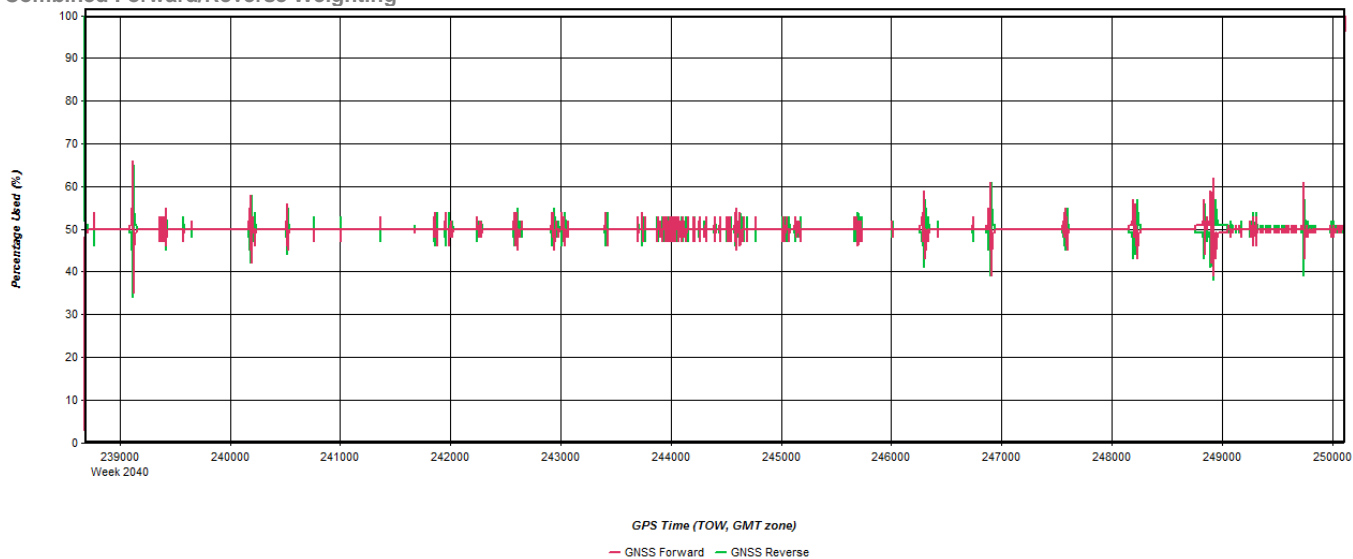
Height



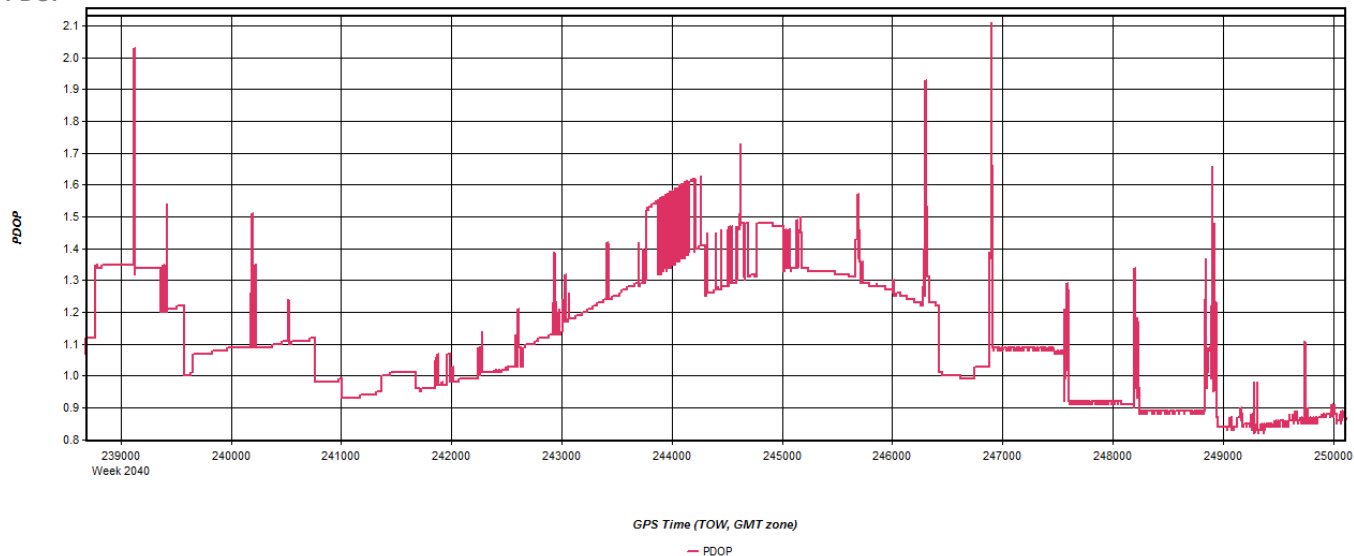
Combined Forward/Reverse Separation



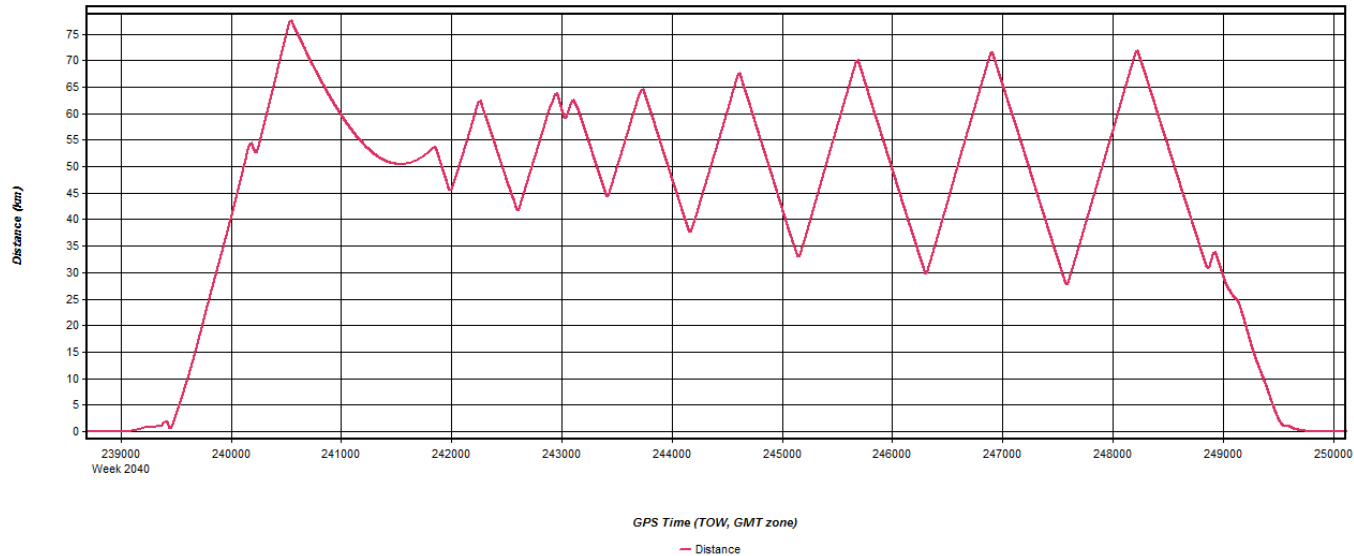
Combined Forward/Reverse Weighting



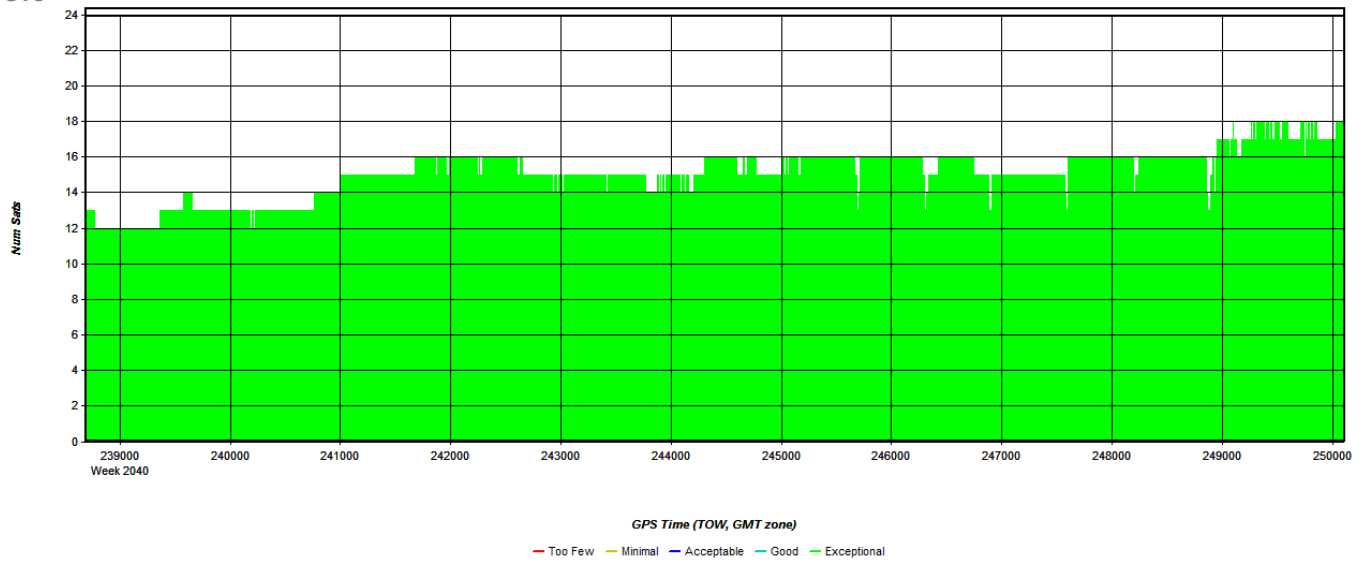
PDOP



Distance from Base



SVs



USGS  
COLLECTION REPORT



Acquisition and Processing details ----- (February 13, 2019)

Log: 190213\_118\_33780084\_26

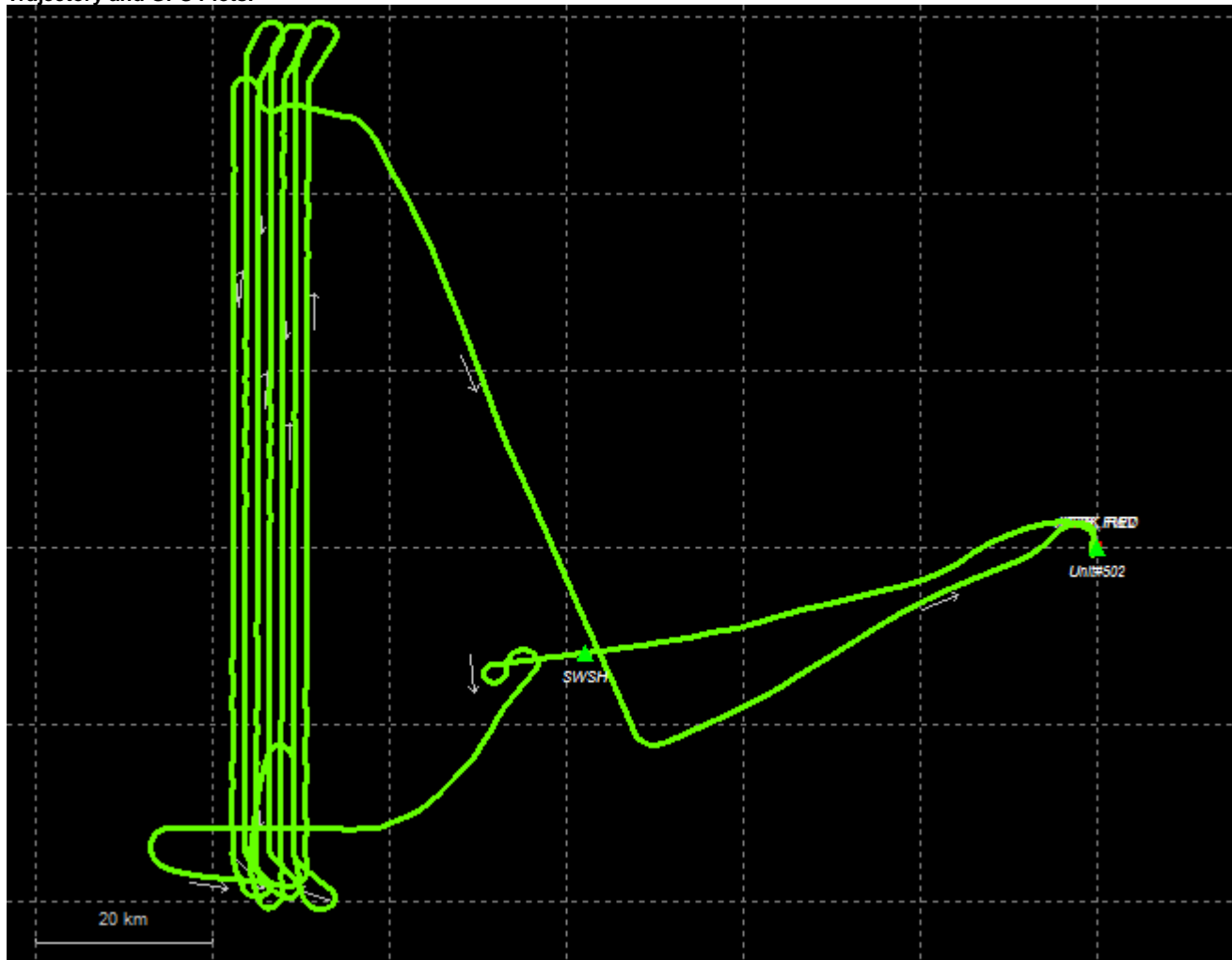
 <b>Fugro USA Land, Inc.</b>	Menu	19.023	Lift Begin			Lift End			Flt	Flt	Hobbs	 <b>ALS</b> Flight Log AC80-44-00-02	
			Airport	Chocks	Hobbs	Airport	Chocks	Hobbs	Duration	Hrs	Hrs		Activity
	1		KG TU	13:36	3009.1	KG TU	18:10	3013.1	4:33	4.50	4.0		0900-Production
	2												

FGI Job # <b>33780084</b>	Project Name <b>USGS Hurricane Harvey UTM 14</b>		System <b>ALS80</b>	Unit <b>118</b>	IMU <b>uIRS</b>	PIA <b>3</b>	SW1 <b>-</b>	SW2-Gain <b>-</b>	Aper <b>60°</b>	AutoScan <b>Yes</b>	Ground Temp °C <b>-3.0 12.0</b>	Min Range Gate <b>6244</b>	Data Logger Drive <b>MM70-01</b>
Flight Date <b>13-Feb-19</b>	GPS Day <b>19-044</b>	Lift <b>26</b>		Sun° <b>-</b>	Solar Times (UTC) <b>-</b>	Laser Power <b>100%</b>	Pattern <b>Triangle</b>	Flying Temp °C <b>4.0 6.0</b>	Max Range Gate <b>8323</b>	Download Drive <b>NS1TB-67</b>			
Mission ID (yymmdd_Sen_Job_Lift) <b>190213_118_33780084_26</b>	Aircraft <b>N8131</b>	Airport ID <b>KG TU</b>	FMS <b>CCNS 4</b>	UTC <b>-</b>	AMT (ft) <b>7,550</b>	Speed <b>150</b>	Scan Hz <b>35.0</b>	Pulse Rate <b>352,000</b>	FOV <b>42</b>	kmWPT <b>1,384</b>	Altm Setting <b>30.31 30.33</b>	Shipping Track <b>7744 6734 9284</b>	
Pilot #1 <b>Barry Hansen</b>		Pilot #2 <b>-</b>		Operator #1 <b>Lee Scadden</b>		Operator #2 <b>-</b>							
Base 1 ID <b>FEDI 1115</b>	Location <b>KG TU</b>	Rec ID <b>GR3#5</b>	Ant ID <b>GR3#5</b>	ARP (m) <b>1.8</b>	Start Time (UTC) <b>2/13/2019-13:15:00</b>	Stop Time (UTC) <b>2-13-19-</b>	GPS Filename <b>Unit#50213n.tps</b>	Operator <b>Lee Scadden</b>	Data <b>FTP</b>				
Base 2 ID <b>CORS</b>	Location <b>SWSH-</b>	Rec ID	Ant ID	ARP (m)	Start Time (UTC)	Stop Time (UTC)	GPS Filename	Operator <b>Lee Scadden</b>	Data				

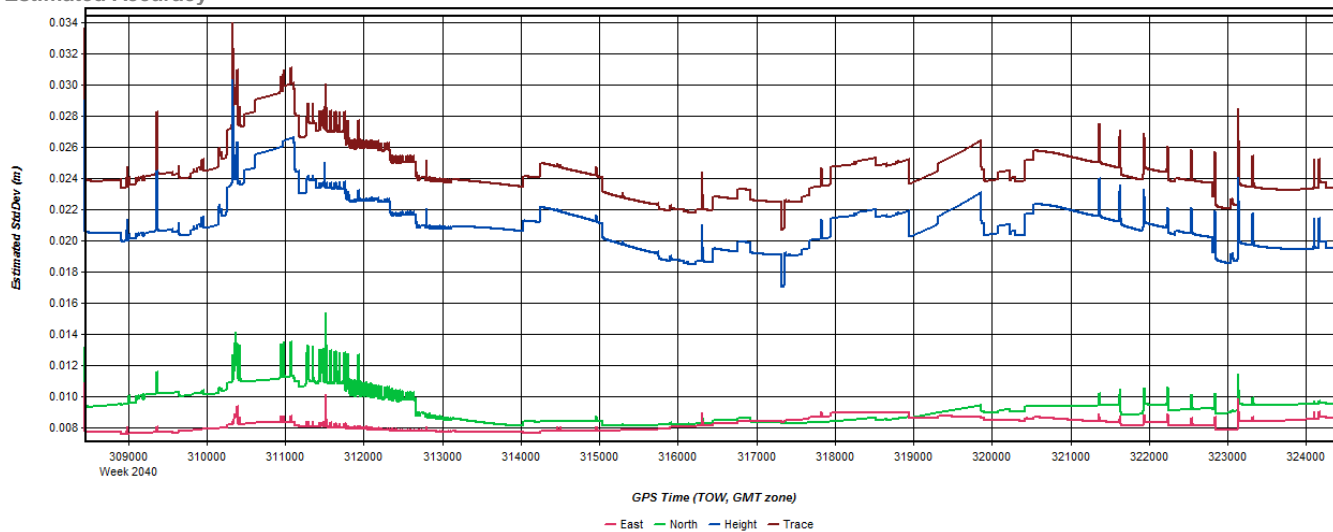
Area	Flight #		Wpt		Distance		UTC		Dir	Altitude (GPS)	Speed (knots)	Scan Rate	Comments and Conditions	SVs	PDOP
	FGI	Client's	From	To	Begin	End	Start	End							
													N8131 GPS Tracker off	25	1.1
													5 Minute GRD Static KG TU- Plane N8131		
													CORS-SWSH	26	1.0
													S-Turn	25	1.0
BLOCK_H	73		32	20	42.9	26.3	14:22:07	14:26:11	W				Cross Tie Line	26	1.0
							13:40:39	13:46:06							
							14:06:31	14:11:32							
							14:11:49	14:14:19							
							14:22:07	14:26:11	W						
							14:32:11	14:51:22	357	8431	144			25	1.0
							14:56:26	15:16:43	177	8444	119			21	1.2
							15:20:56	15:22:49	355	8275	137		Calibration Line	21	1.1
							15:30:44	15:49:54	356	8385	148			21	1.1
							15:54:24	16:15:23	175	8470	128			24	1.0
							16:19:25	16:38:42	355	8675	142			22	1.1
							16:43:14	17:04:16	176	8480	134			21	1.1
BLOCK_H	31		1	61	0	83	17:07:55	17:27:02	356	8460	143			20	1.1
							17:27:14	17:29:21					S-Turn	17	1.4
							17:43:00	17:48:01					CORS-SWSH	17	1.3
							18:02:52	18:07:52					5 Minute GRD Static KG TU- Plane N8131	16	1.3



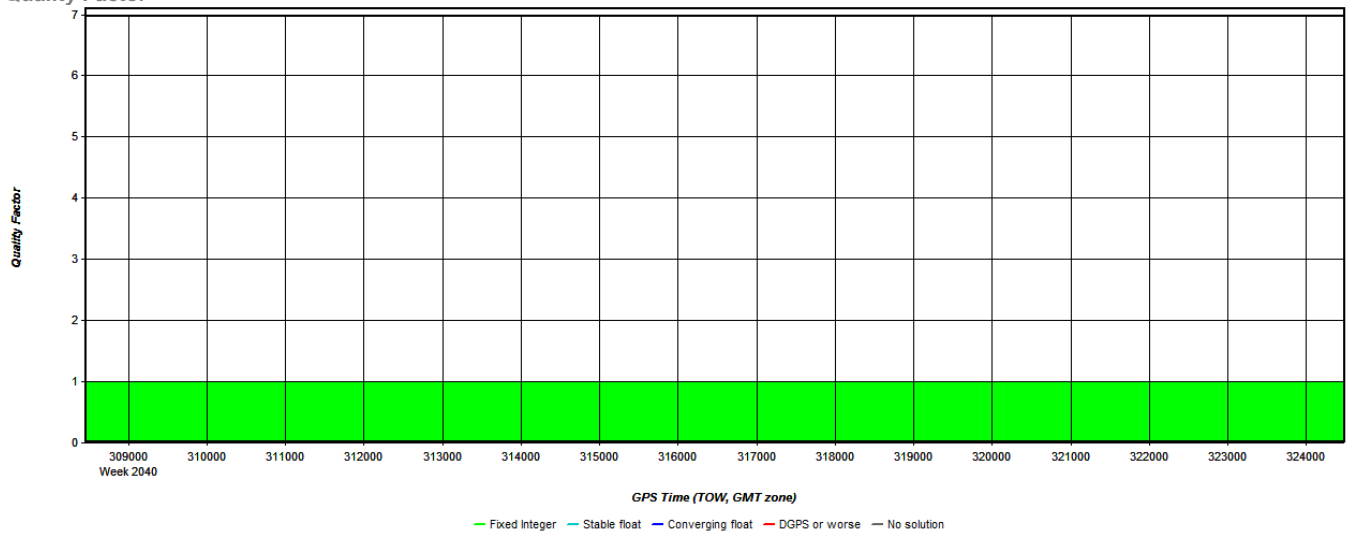
Trajectory and GPS Plots:



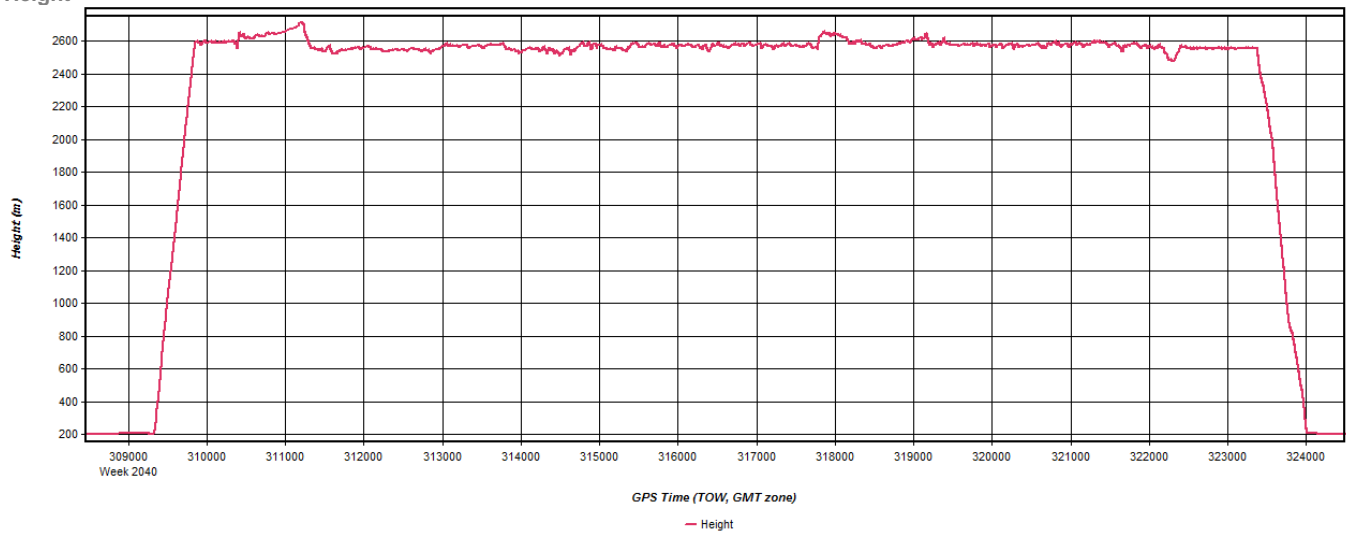
Estimated Accuracy



Quality Factor

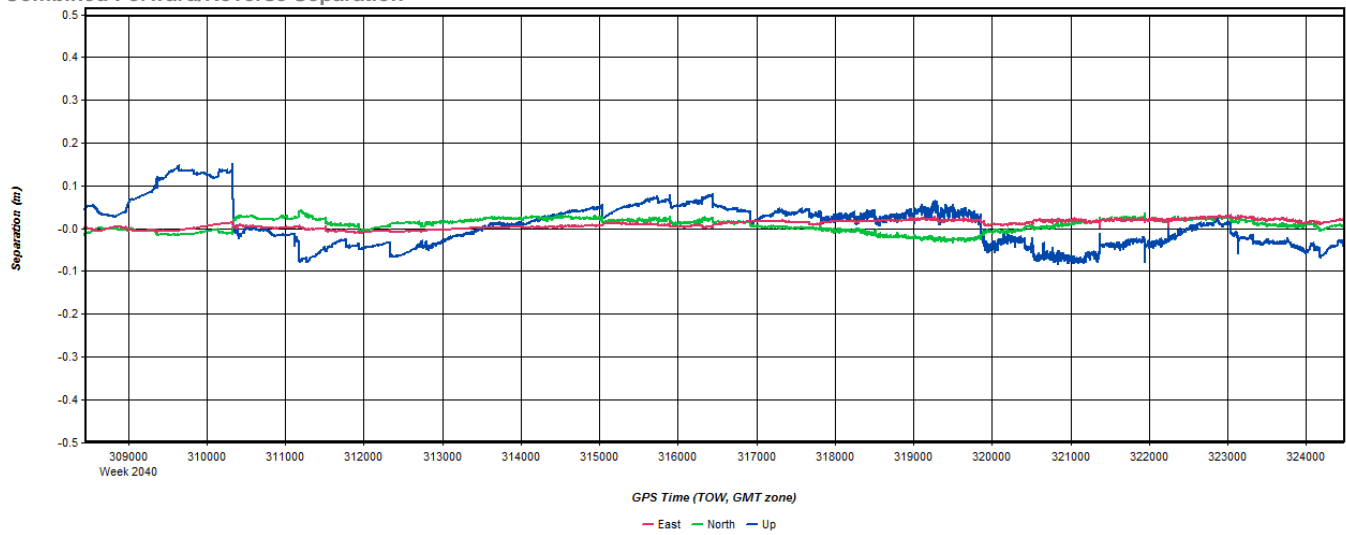


Height

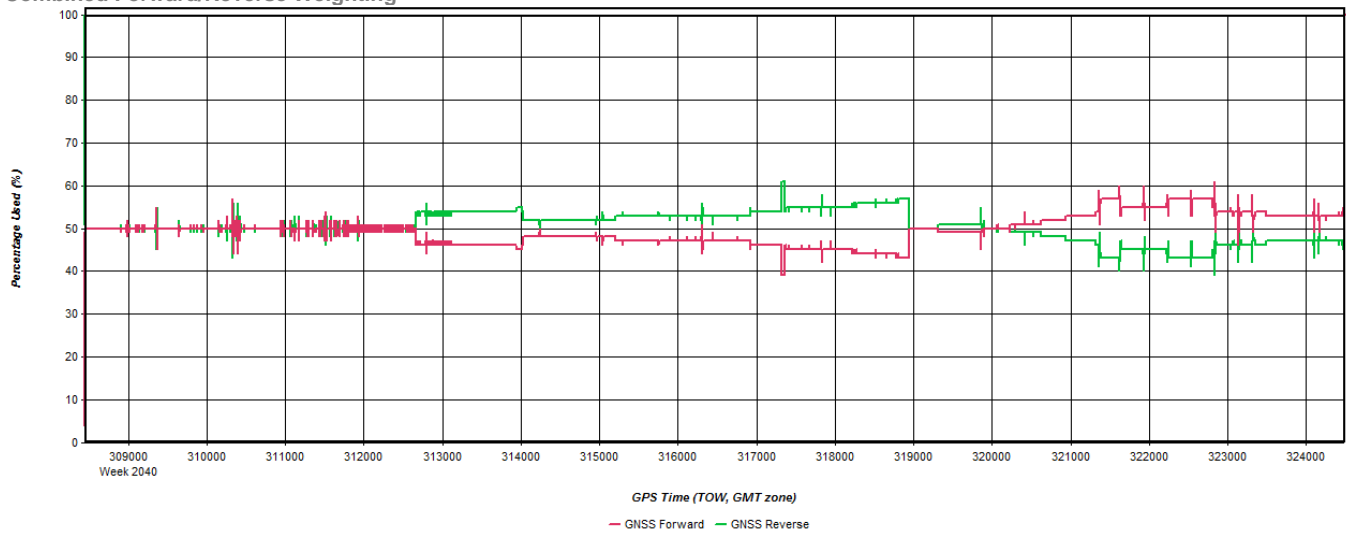


# USGS COLLECTION REPORT

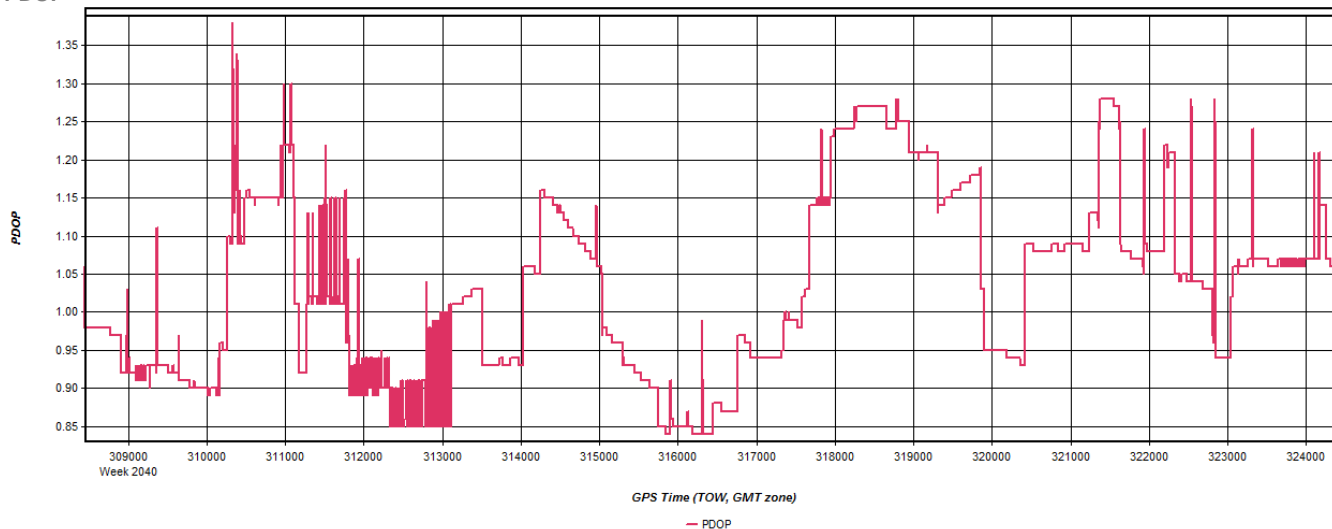
## Combined Forward/Reverse Separation



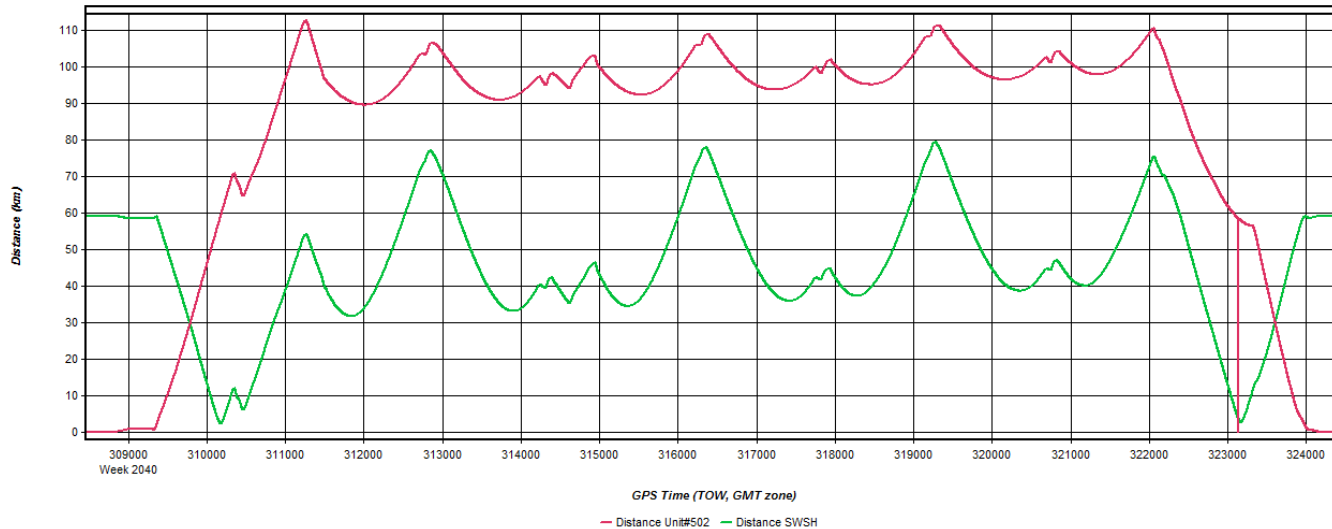
## Combined Forward/Reverse Weighting



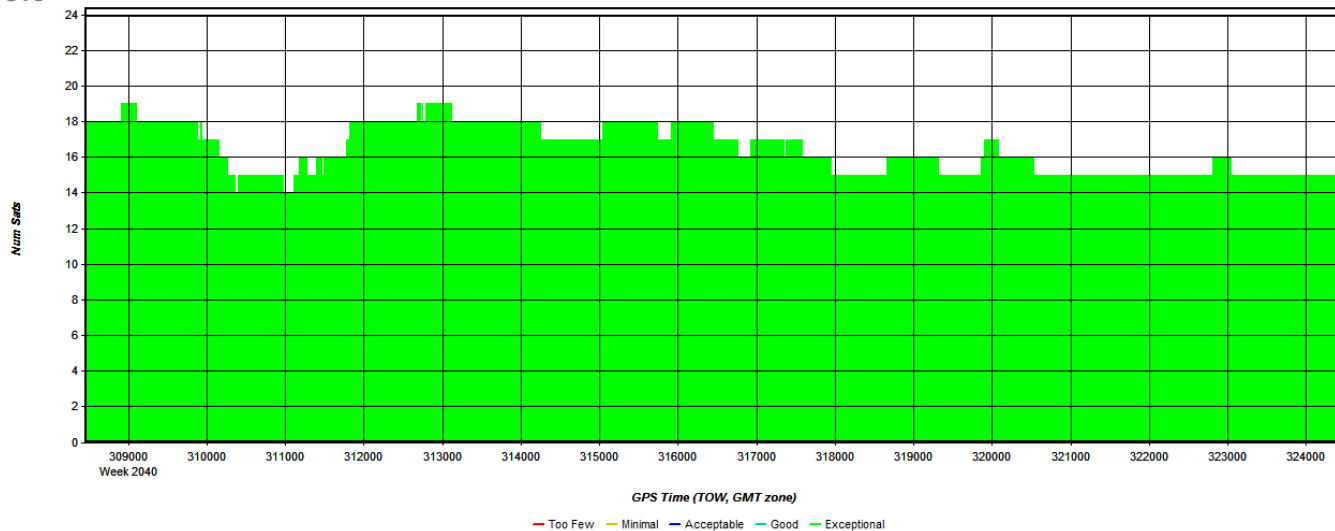
PDOP



Distance from Base



SVs



USGS  
COLLECTION REPORT



Acquisition and Processing details ----- (February 13, 2019)

Log: 190213\_118\_33780084\_27

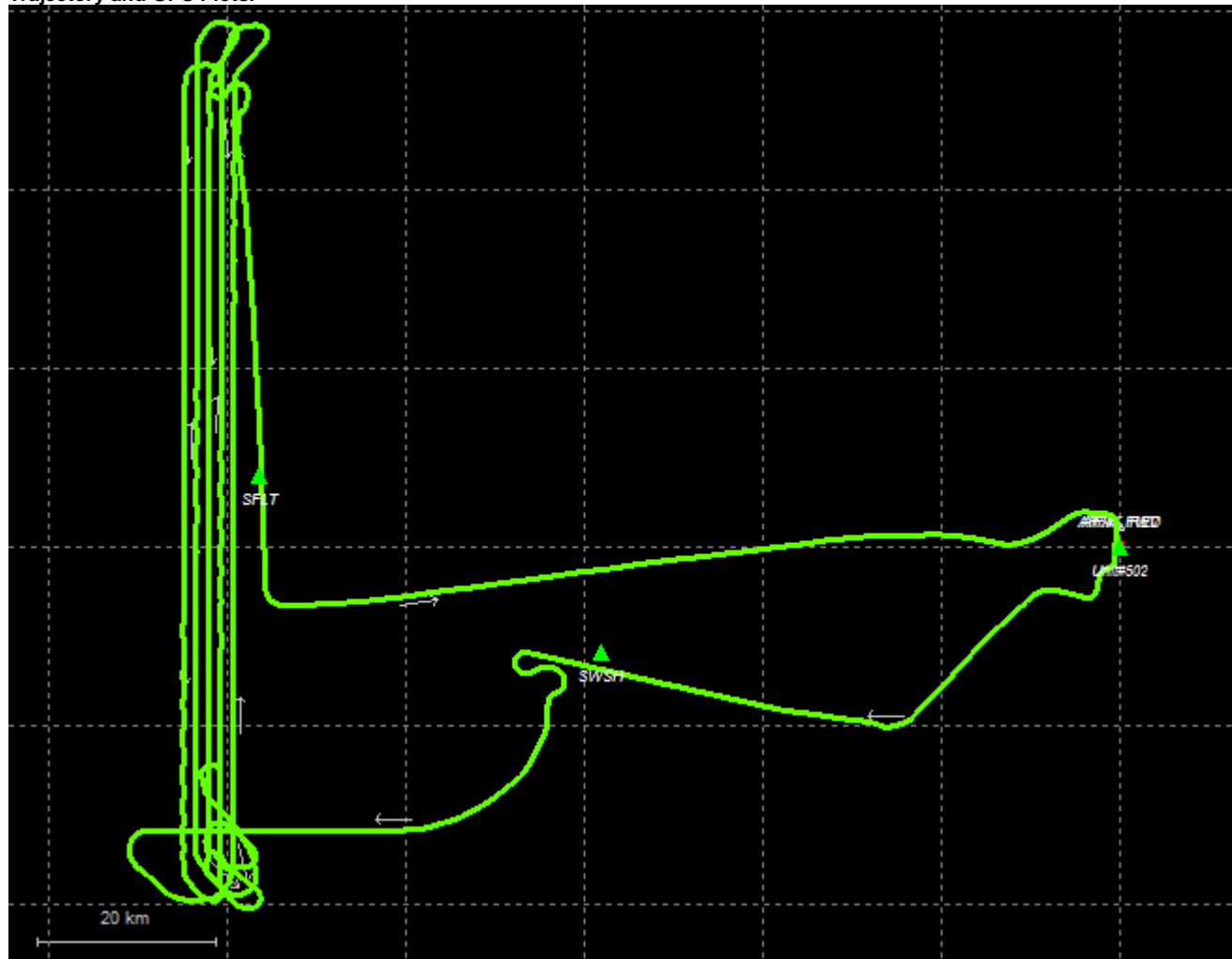
	Menu	19.023	Lift Begin			Lift End			Flt	Flt	Hobbs		<b>ALS</b> Flight Log AC80-44-00-02	
			Airport	Chocks	Hobbs	Airport	Chocks	Hobbs	Duration	Hrs	Hrs			Activity
	1	KG TU	19:03		3013.1	KG TU	22:50	3016.5	3:47	3.75	3.4			0900-Production
	2													

FGI Job # <b>33780084</b>	Project Name <b>USGS Hurricane Harvey UTM 14</b>		System <b>ALS80</b>	Unit <b>118</b>	IMU <b>uIRS</b>	PIA <b>3</b>	SW1 <b>-</b>	SW2-Gain <b>-</b>	Aper <b>60°</b>	AutoScan <b>Yes</b>	Ground Temp °C <b>16.0 17.0</b>	Min Range Gate <b>6244</b>	Data Logger Drive <b>MM70-01</b>
Flight Date <b>13-Feb-19</b>	GPS Day <b>19-044</b>	Lift <b>27</b>		Sun° <b>-</b>	Solar Times (UTC) <b>-</b>	Laser Power <b>100%</b>	Pattern <b>Triangle</b>	Flying Temp °C <b>8.0 10.0</b>	Max Range Gate <b>8323</b>	Download Drive <b>Ns1TB-67</b>			
Mission ID (yyymmdd_Sen_Job_Lift) <b>190213_118_33780084_27</b>	Aircraft <b>N8131</b>	Airport ID <b>KG TU</b>	FMS <b>CCNS 4</b>	UTC <b>-</b>	AMT (ft) <b>7,550</b>	Speed <b>150</b>	Scan Hz <b>35.0</b>	Pulse Rate <b>352,000</b>	FOV <b>42</b>	kmWPT <b>1,384</b>	AltM Setting <b>30.24 30.08</b>		Shipping Track <b>7744 6734 9284</b>
Pilot #1 <b>Barry Hansen</b>		Pilot #2 <b>-</b>		Operator #1 <b>Lee Scadden</b>		Operator #2 <b>-</b>							

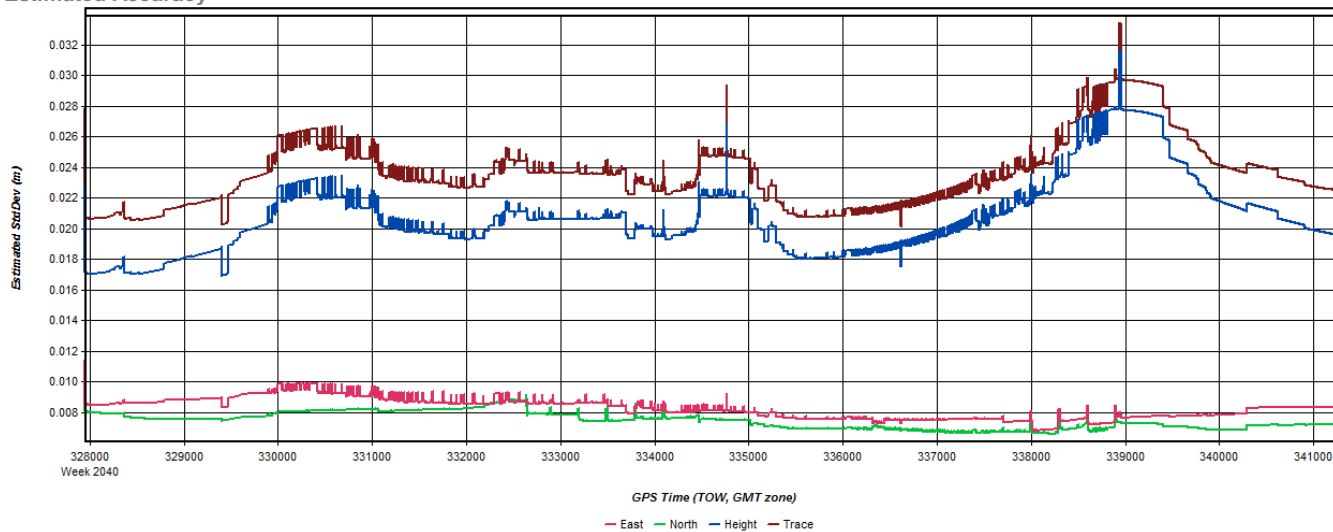
Base 1 ID <b>FEDI 1115</b>	Location <b>KG TU</b>	Rec ID <b>GR3#5</b>	Ant ID <b>GR3#5</b>	ARP (m) <b>1.8</b>	Start Time (UTC) <b>2-13-19-13:15</b>	Stop Time (UTC) <b>2-13-19-23:00</b>	GPS Filename <b>Unit#50213n.tps</b>	Operator <b>Lee Scadden</b>	Data <b>FTP</b>
Base 2 ID <b>CORS</b>	Location <b>SWSH-</b>	Rec ID	Ant ID	ARP (m)	Start Time (UTC)	Stop Time (UTC)	GPS Filename <b>Opened Block</b>	Operator <b>Lee Scadden</b>	Data
Base 3 ID <b>CORS</b>	Location <b>SFLT</b>	Rec ID	Ant ID	ARP (m)	Start Time (UTC)	Stop Time (UTC)	GPS Filename <b>Closed block</b>	Operator <b>Lee Scadden</b>	Data

Area	Flight #		Wpt		Distance		UTC		Flt Dir	Altitude (GPS)	Speed (knots)	Scan Rate	Comments and Conditions	SVs	PDOP
	FGI	Client's	From	To	Begin	End	Start	End							
													N8131 GPS Tracker off		
							19:05:57	19:10:59					5 Minute GRD Static KG TU- Plane N8131	19	1.3
							19:32:45	19:37:46					CORS-SWSH	23	1.2
							19:38:19	19:40:38					S-Turn 1044GB		
BLOCK_H	73		25	17	33.2	22.1	19:49:47	19:52:43	266	8760	142		CROSS TIE LINE	23	1.1
			30	1	61	0	19:57:24	20:16:47	357	8620	149		off center line wpt	22	1.2
			29	61	1	83	20:21:31	20:41:59	174	8590	123			23	1.2
			29	1	5	0	20:46:03	20:47:44	356	8490	144		CALIBRATION LINE	24	1.1
			28	1	61	0	20:59:30	21:18:50	357	8543	147			26	1.0
			27	61	1	83	21:22:10	21:43:21	175	8490	141			24	1.2
			26	1	61	0	21:46:02	22:06:23	355	8675	130			25	1.2
							22:07:46	22:09:46					S-Turn	25	1.2
							22:17:21	22:22:21					CORS- SFLT	25	1.2
							22:43:30	22:48:31					5 Minute GRD Static KG TU- Plane N8131	26	1.2

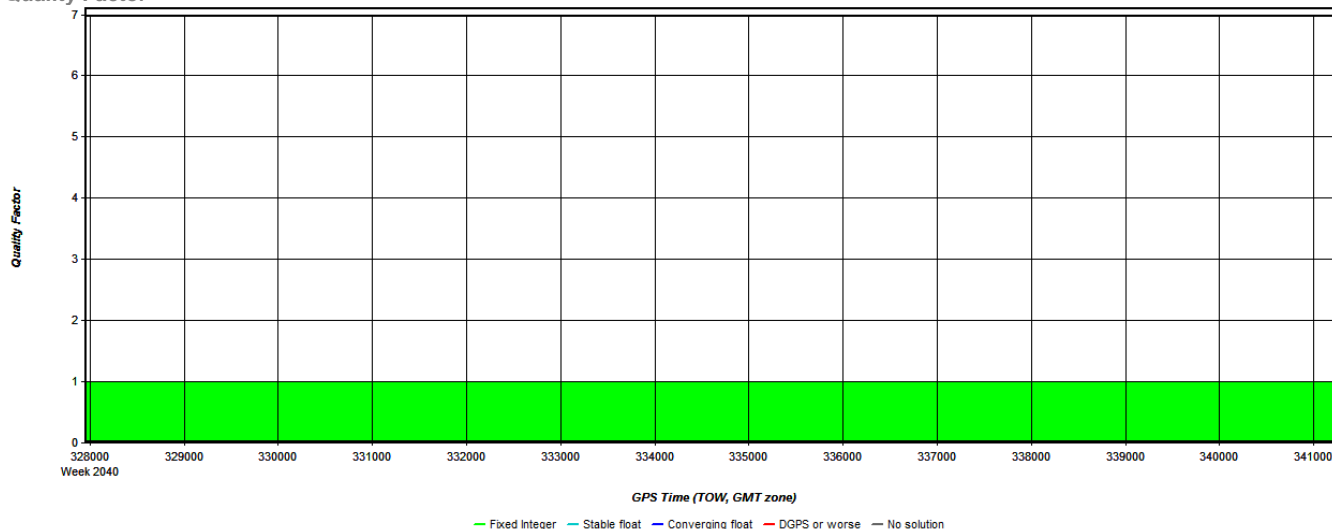
Trajectory and GPS Plots:



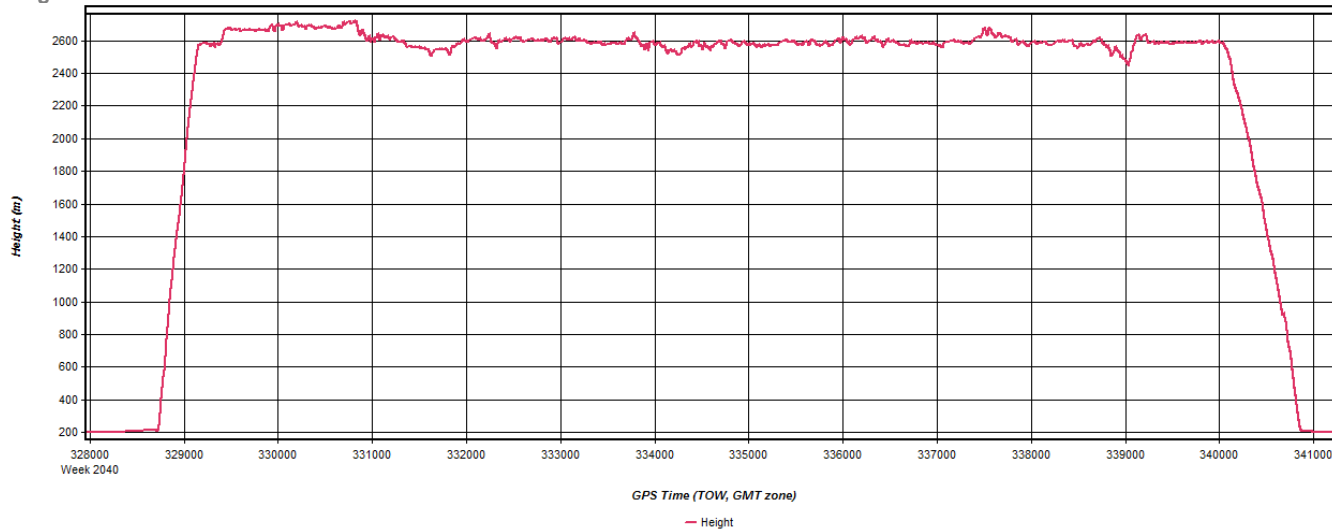
Estimated Accuracy



Quality Factor

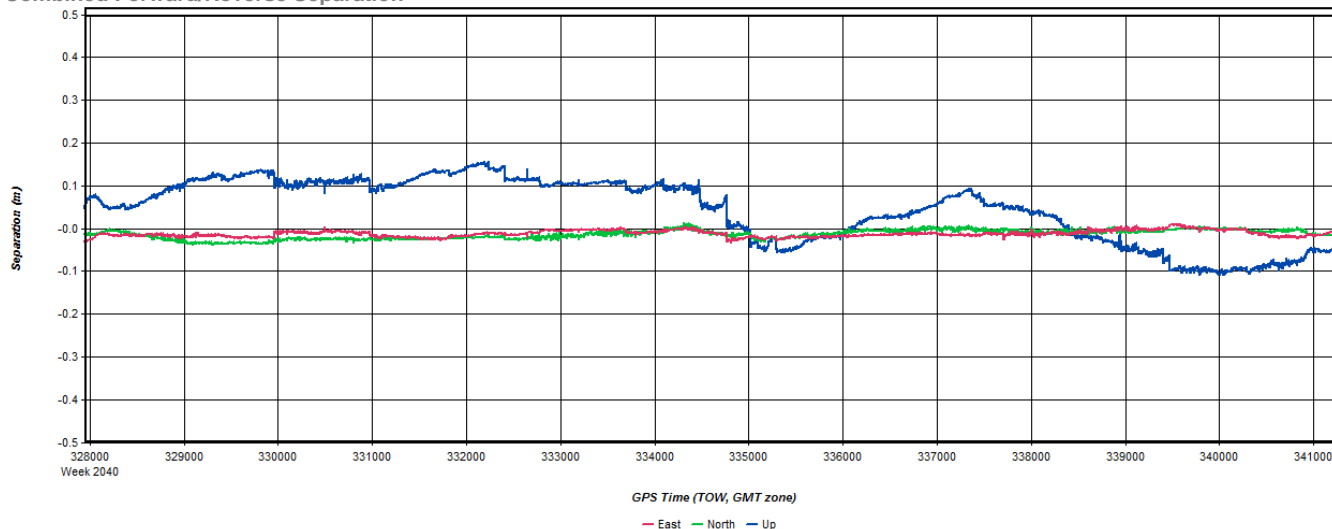


Height

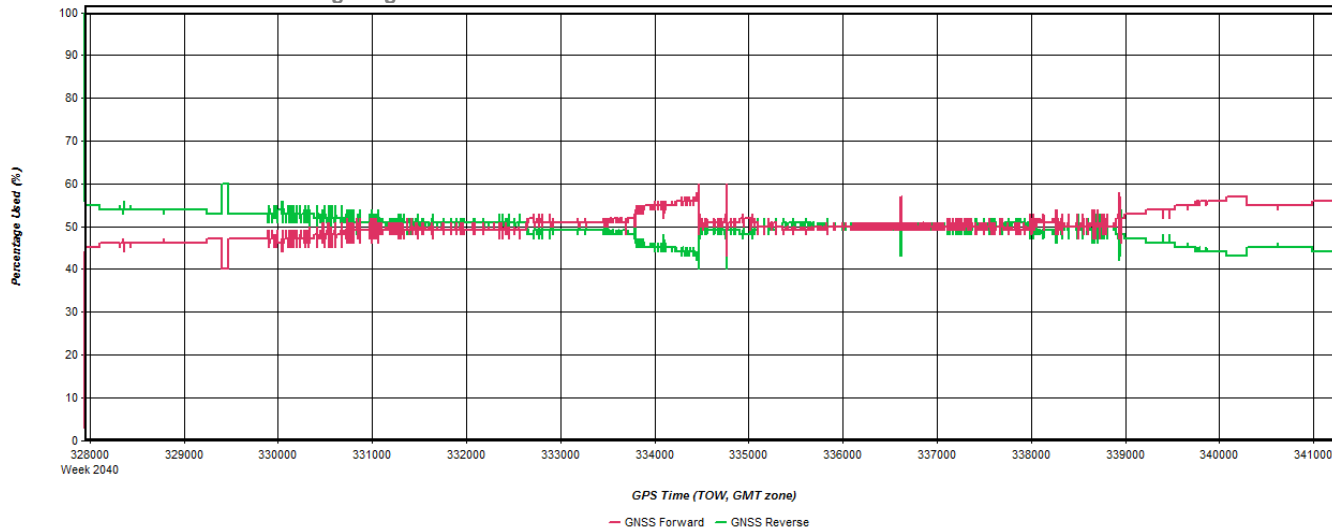




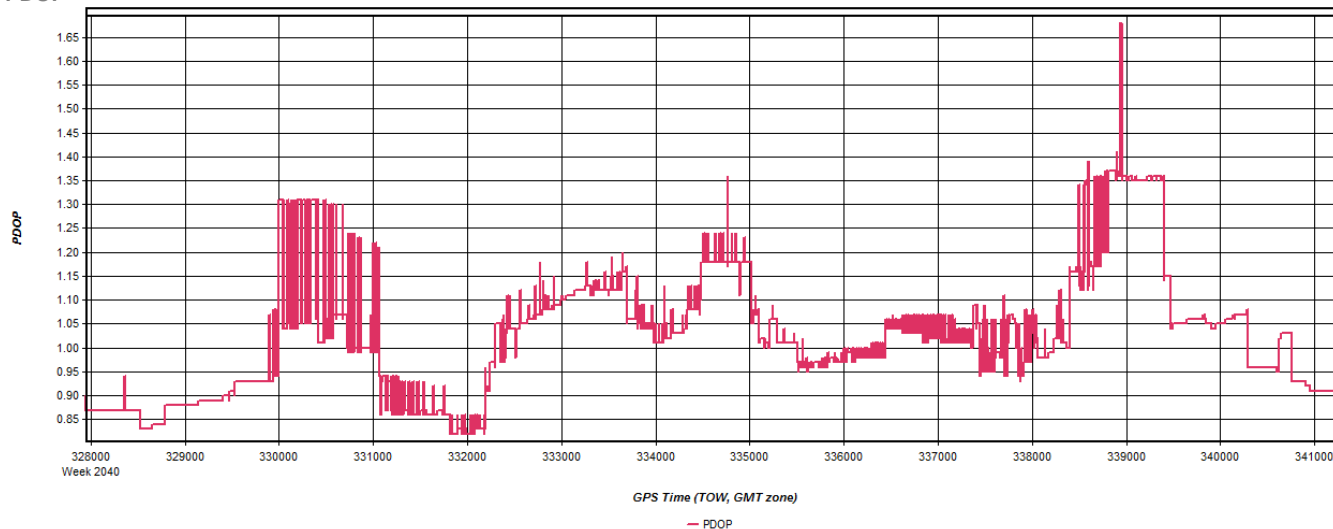
Combined Forward/Reverse Separation



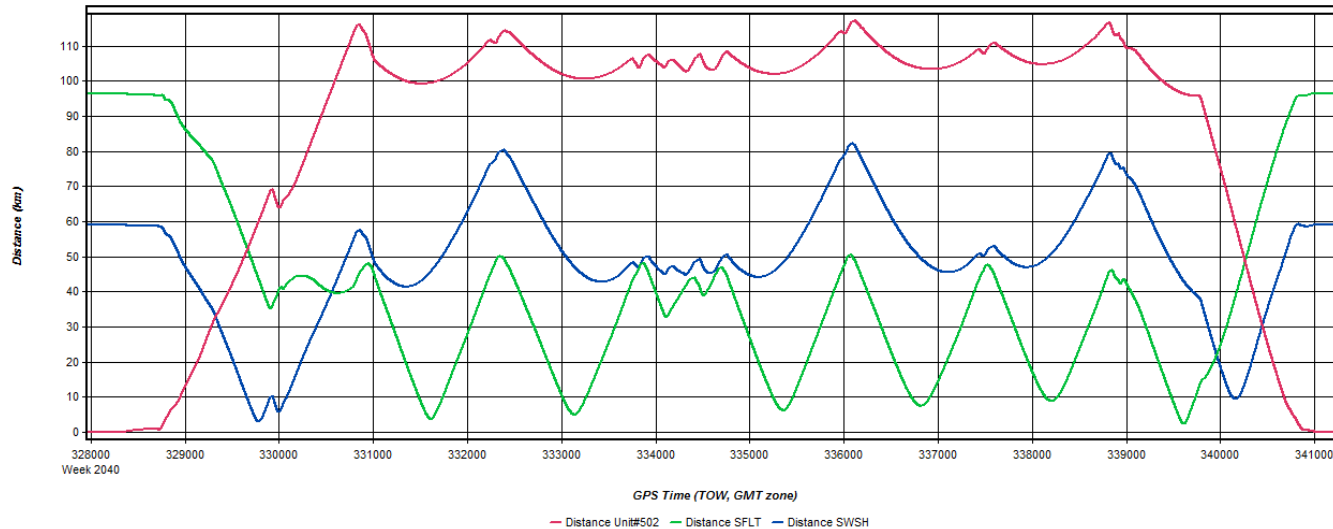
Combined Forward/Reverse Weighting



PDOP



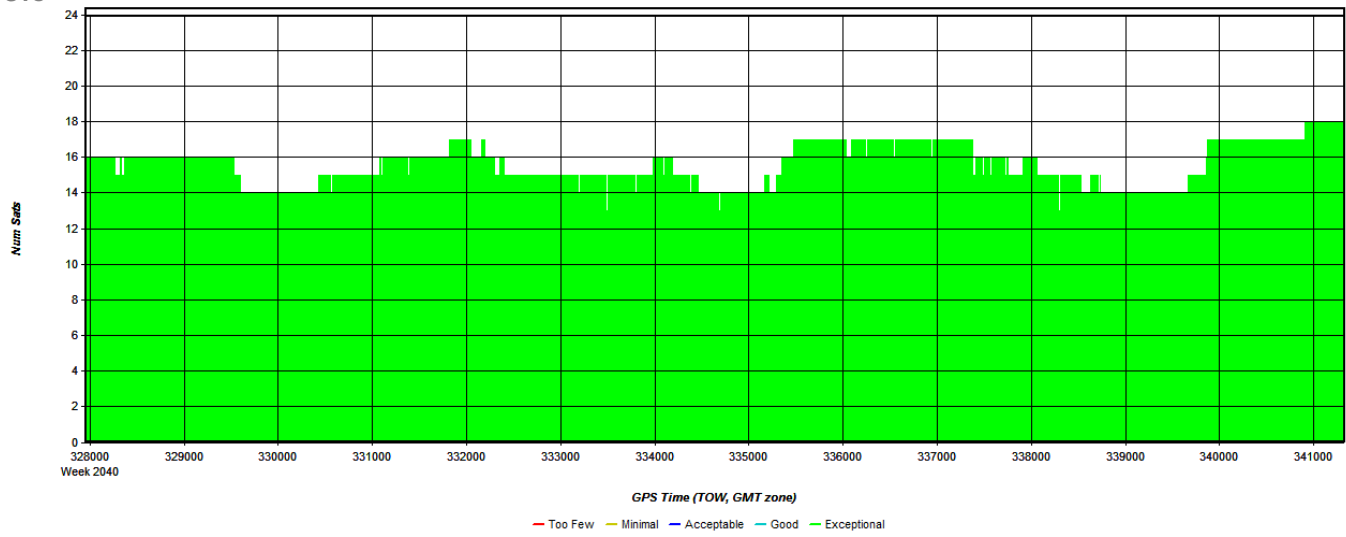
Distance from Base



# USGS COLLECTION REPORT



SVs



USGS  
COLLECTION REPORT



Acquisition and Processing details ----- (February 13, 2019)

Log: 190213\_130\_33780084\_15

**Fugro USA Land, Inc.**

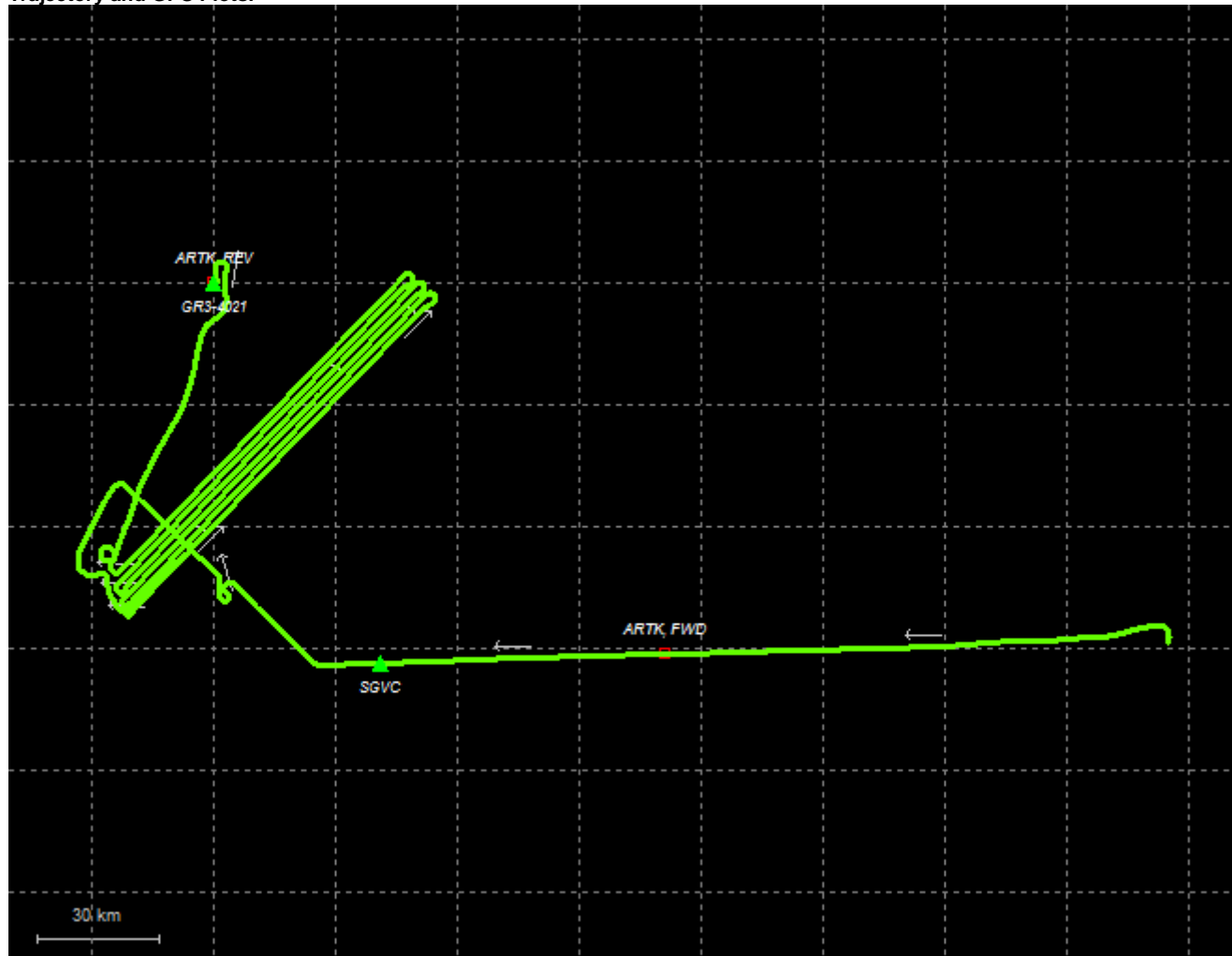
Lift Begin			Lift End			Fit Duration	Fit Hrs	Hobbs Hrs	Activity	
Airport	Chocks	Hobbs	Airport	Chocks	Hobbs					
1	KLBX	14:31	1386.4	KHYI	19:07	1390.5	4:36	4.50	4.1	0900-Production
2										
3										

**ALS**  
Flight Log

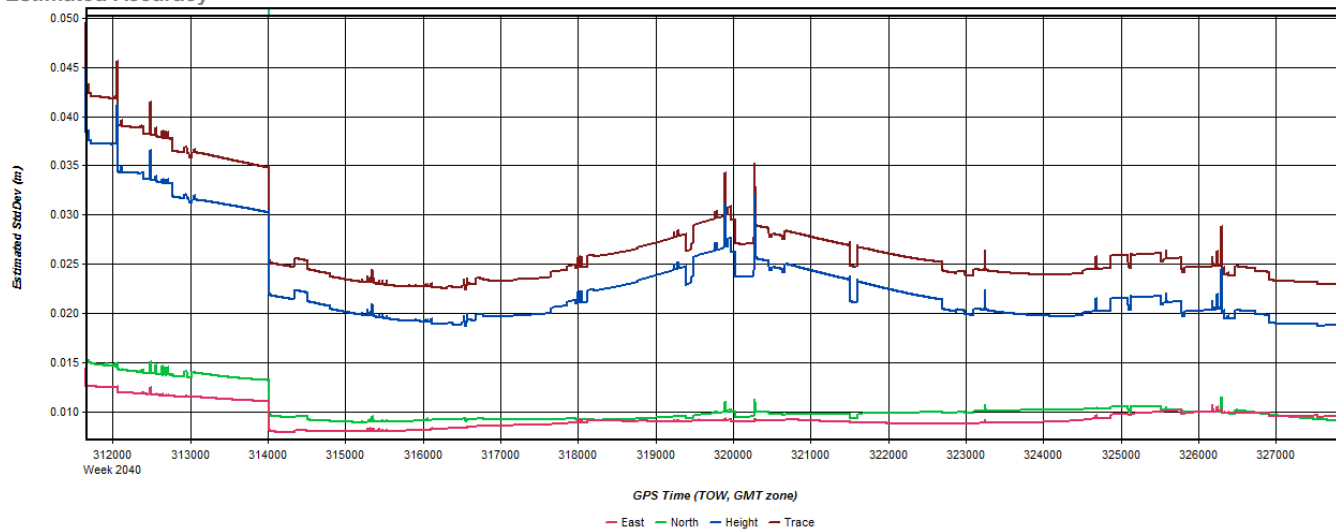
AC80-44-00-02

FGI Job #	Project Name				System	Unit	IMU	PIA	SW1	SW2-Gain	Aper	AutoScan	Ground Temp °C		Min Range Gate	Data Logger Drive
33780084	USGS Harvey utm15 final				ALS80	130	uRS	4					10.0	15.0	2232	LG 102
Flight Date	GPS Day	Lift					Sun°	Solar Times (UTC)	Laser Power	Pattern	Flying Temp °C	Max Range Gate	Download Drive			
13-Feb-19	19-044	15							96%	Triangle	6.0	2691	AP1TB#47			
Mission ID (ymmdd_Sen_Job_Lift)	Aircraft	Airport ID	FMS	UTC	AMT (ft)	Speed	Scan Hz	Pulse Rate	FOV	km/WPT	Altm Setting	Shipping Track				
190213_130_33780084_15	N97HC	KLBX	CCNS 8	-6	7,900	150	34.0	442,600	46	1.448	30.34	x				
Pilot #1		Pilot #2		Operator #1			Operator #2									
Grant Cassell				Dave Verhey												
Base 1 ID	Location	Rec ID	Ant ID	ARP (m)	Start Time (UTC)	Stop Time (UTC)	GPS Filename	Operator	Data							
SGVC	Yorktown, TX							CORS								
Base 2 ID	Location	Rec ID	Ant ID	ARP (m)	Start Time (UTC)	Stop Time (UTC)	GPS Filename	Operator	Data							
1045	KHYI	GR3-4	GR3-4	1.8	13-Feb-19 12:15	14-Feb-19 00:45	GR3-40213m.tps	Riley Forsyth	FTP							
Area	Flight #		Wpt		Distance		UTC		Fit Dir	Altitude (GPS)	Speed (knots)	Scan Rate	Comments and Conditions		SVs	PDOP
	FGI	Client's	From	To	Begin	End	Start	End								
							15:23:26	15:28:26					Overflight of CORS at SGVC		22	1.1
							15:33:51	15:35:49					S-turn		22	1.1
BLOCK_D	83		43	27	60.8	37.6	15:38:35	15:44:23	310.3	8222	138		Tie line		21	1.2
	37		1	67	0	95.6	15:56:39	16:18:54	39.9	8115	143				24	1.0
	36		67	1	95.6	0	16:21:45	16:44:03	220.7	8111	140				22	1.2
	36		1	10	0	13	16:47:34	16:50:32	39.9	8123	145		Calibration line		23	1.1
	35		1	67	0	95.6	16:58:38	17:20:52	39.9	8107	144				23	1.1
	34		67	1	95.6	0	17:23:26	17:45:57	220.7	8303	141				18	1.4
	33		1	67	0	95.6	17:48:19	18:10:13	39.9	8133	144				18	1.3
	32		67	1	95.6	0	18:12:36	18:34:54	220.6	8198	140				17	1.3
							18:35:00	18:37:04					S-turn		21	1.1
							18:59:38	19:04:38					Ground Static at KHYI		19	1.2

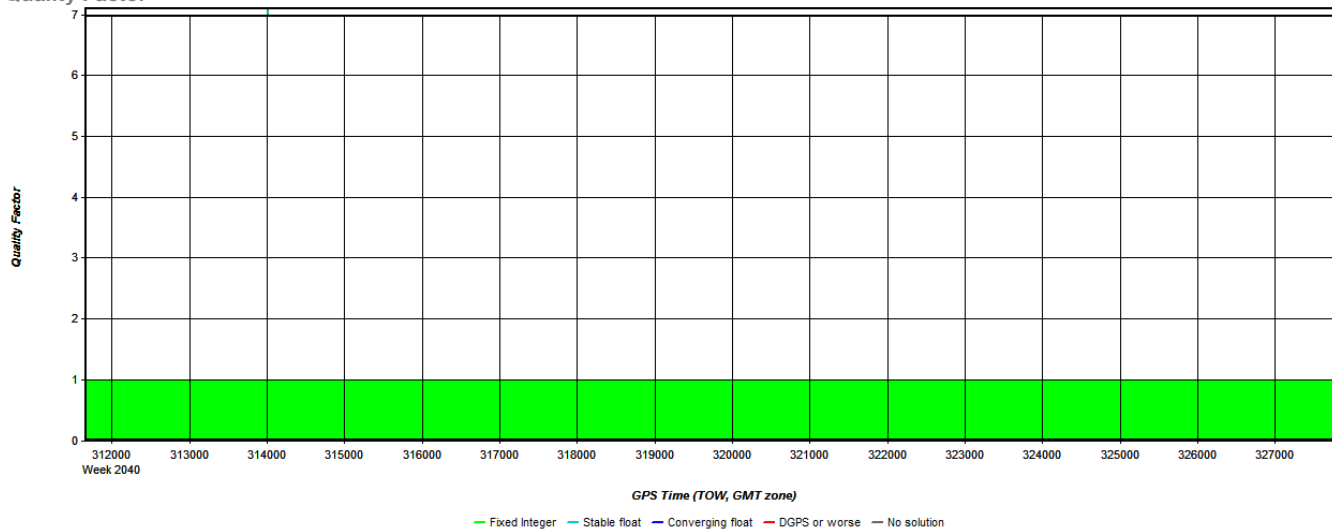
Trajectory and GPS Plots:



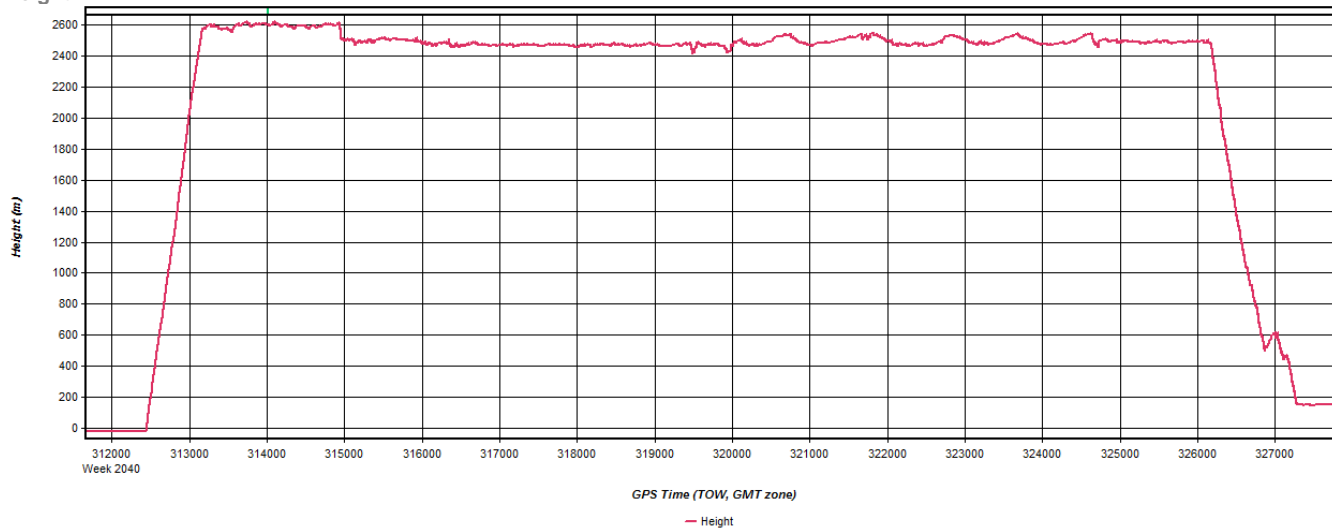
Estimated Accuracy



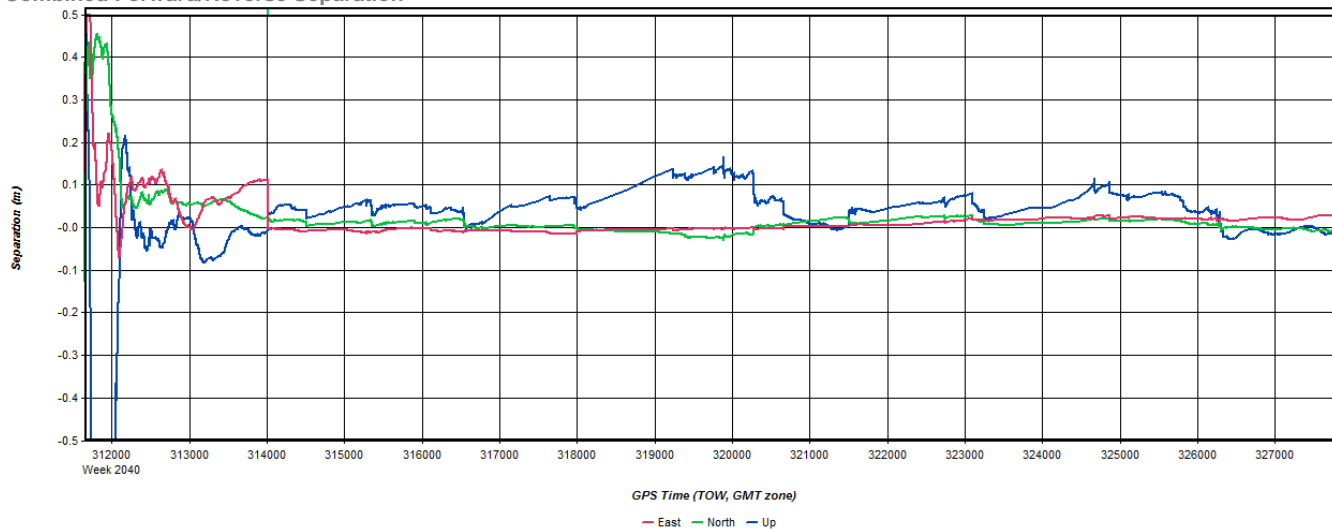
Quality Factor



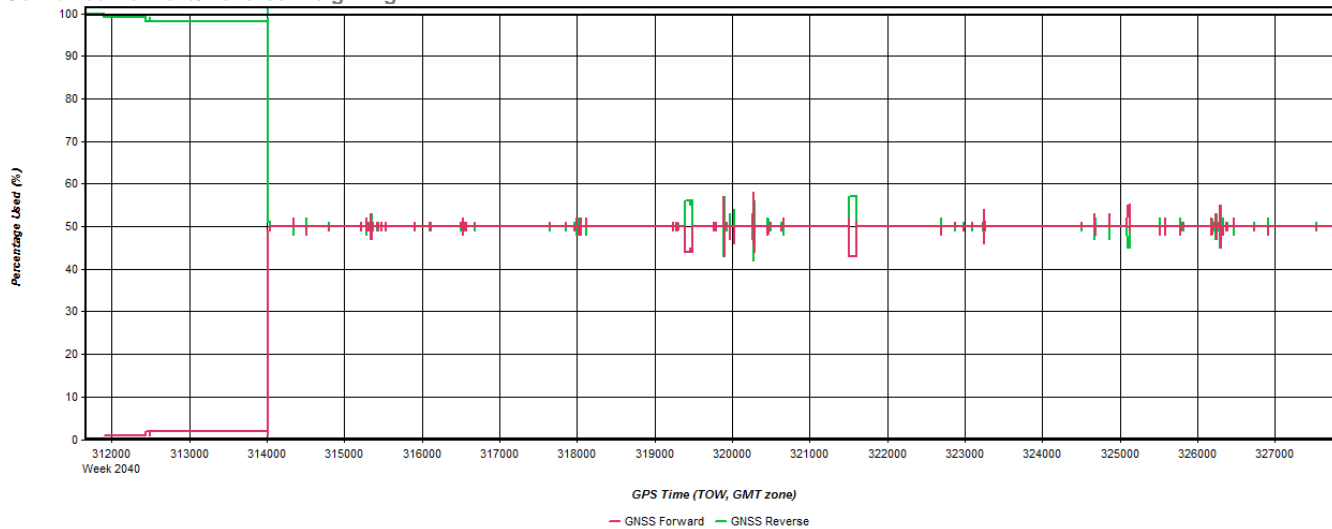
Height



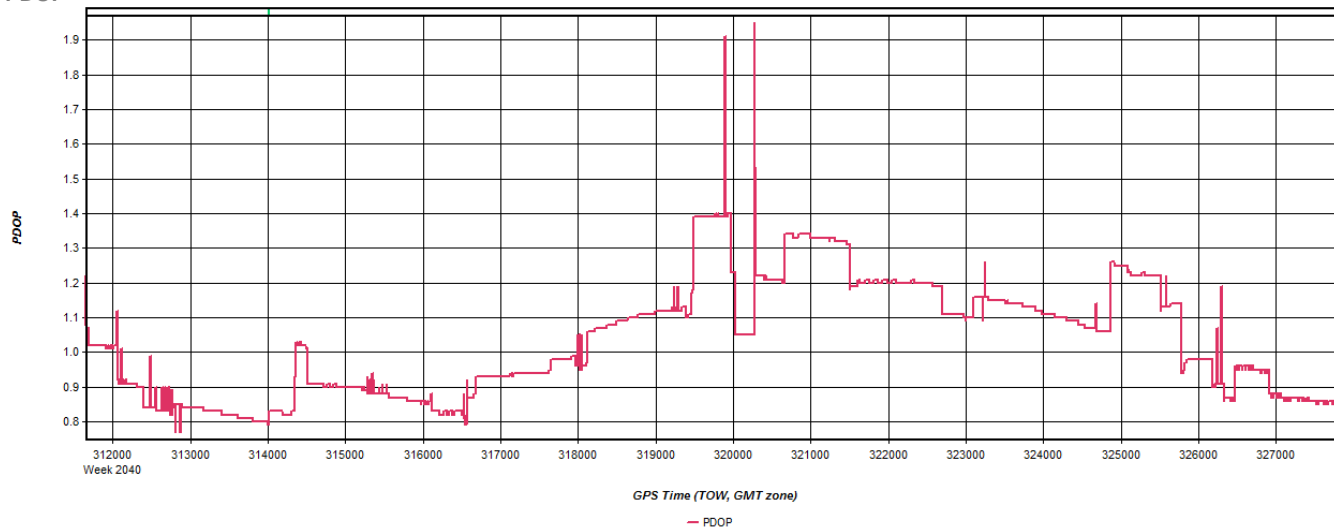
Combined Forward/Reverse Separation



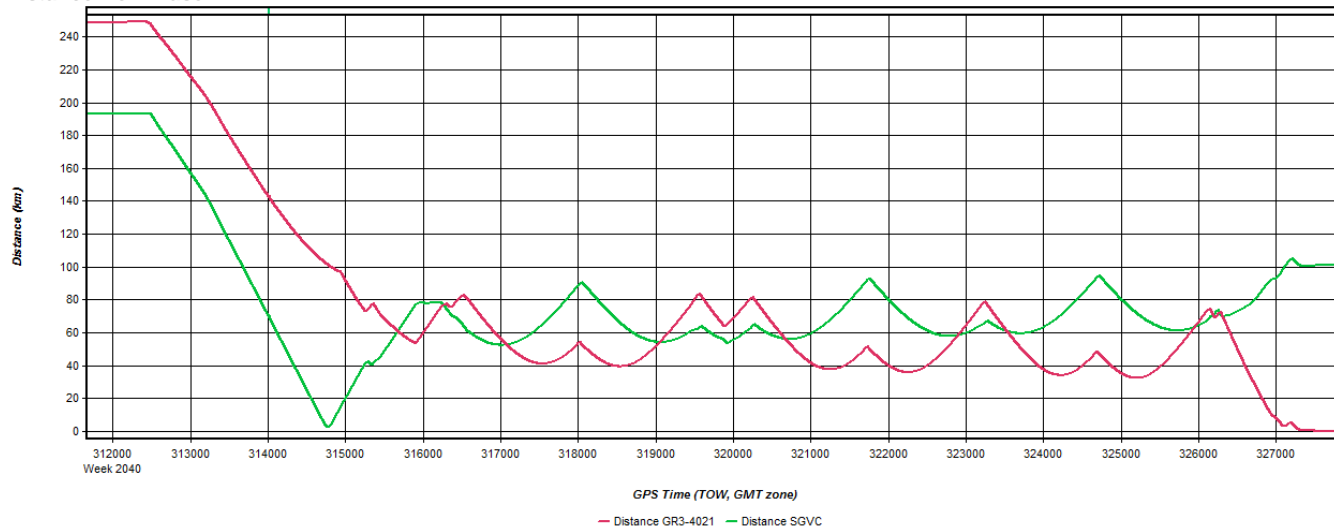
Combined Forward/Reverse Weighting



PDOP



Distance from Base

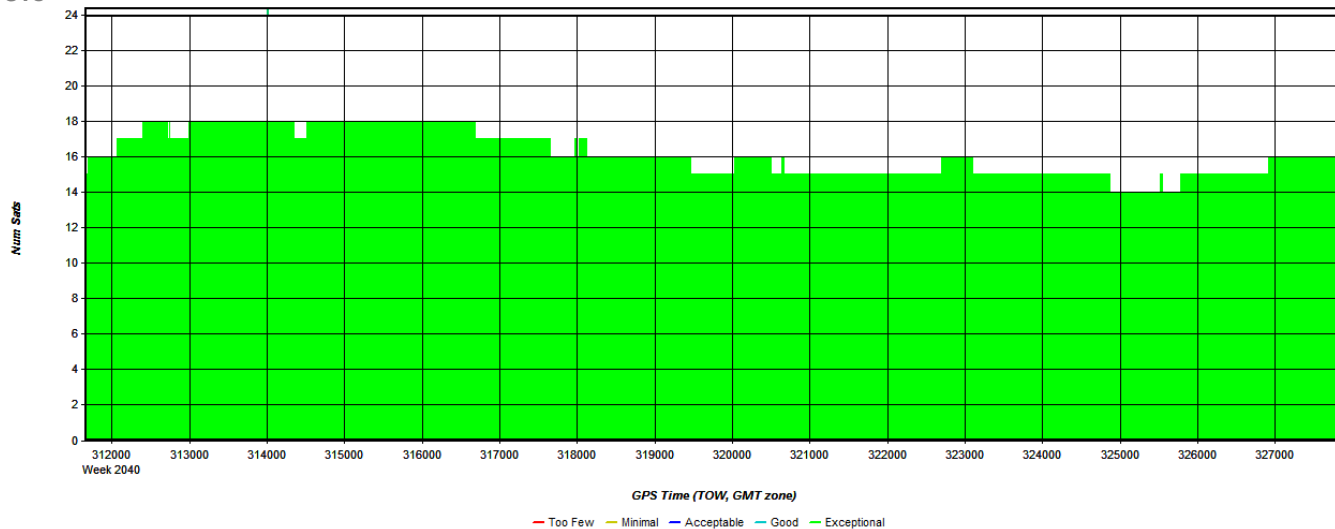




# USGS COLLECTION REPORT



SVs



USGS  
COLLECTION REPORT



Acquisition and Processing details ----- (February 13, 2019)

Log: 190213\_130\_33780084\_16

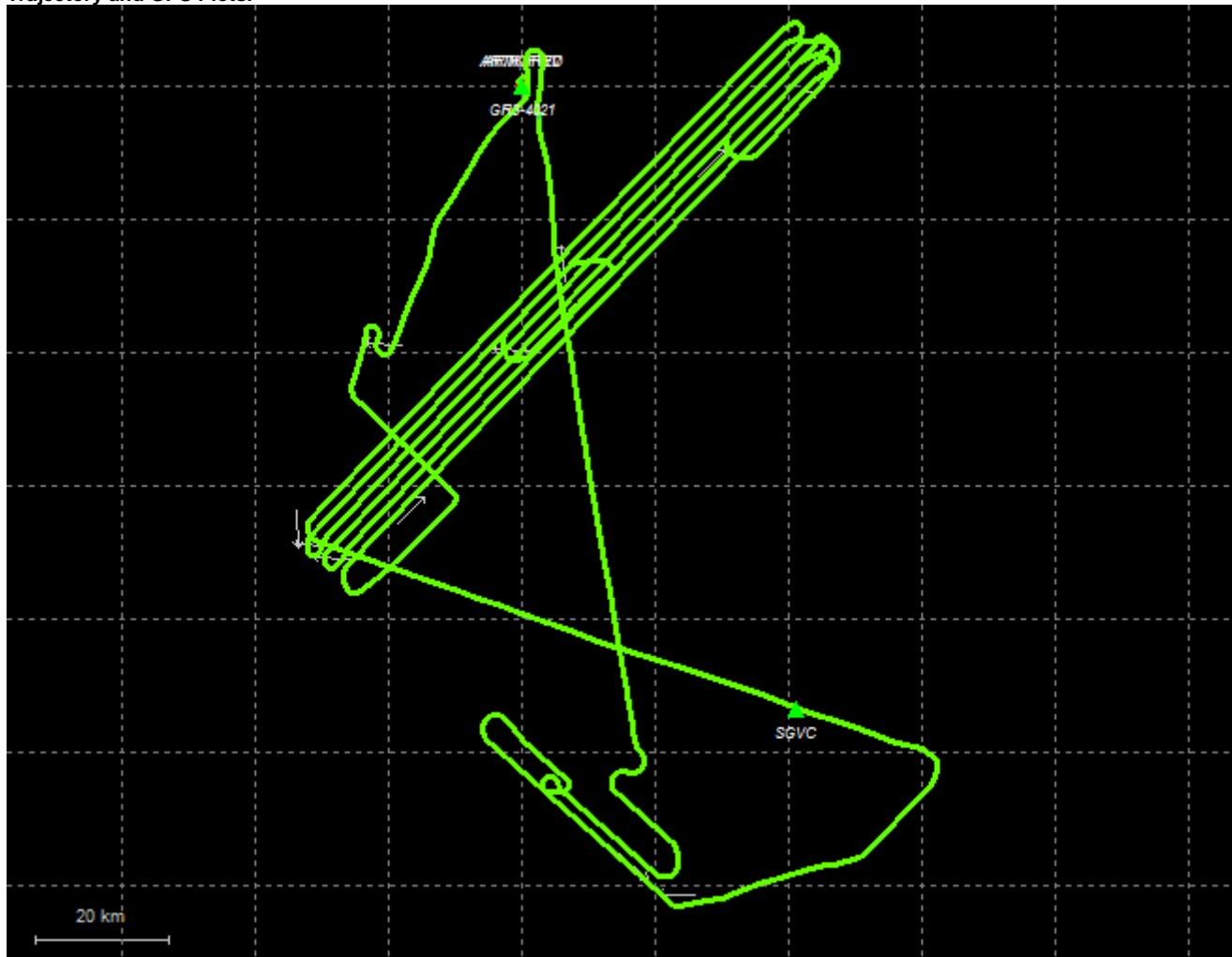
Menu ALS Flight Log

	Lift Begin			Lift End			Fit Duration	Fit Hrs	Hobbs Hrs	Activity
	Airport	Chocks	Hobbs	Airport	Chocks	Hobbs				
1	KHYI	19:36	1390.5	KHYI	0:46	1395.1	5:10	5.25	4.6	0900-Production
2										
3										

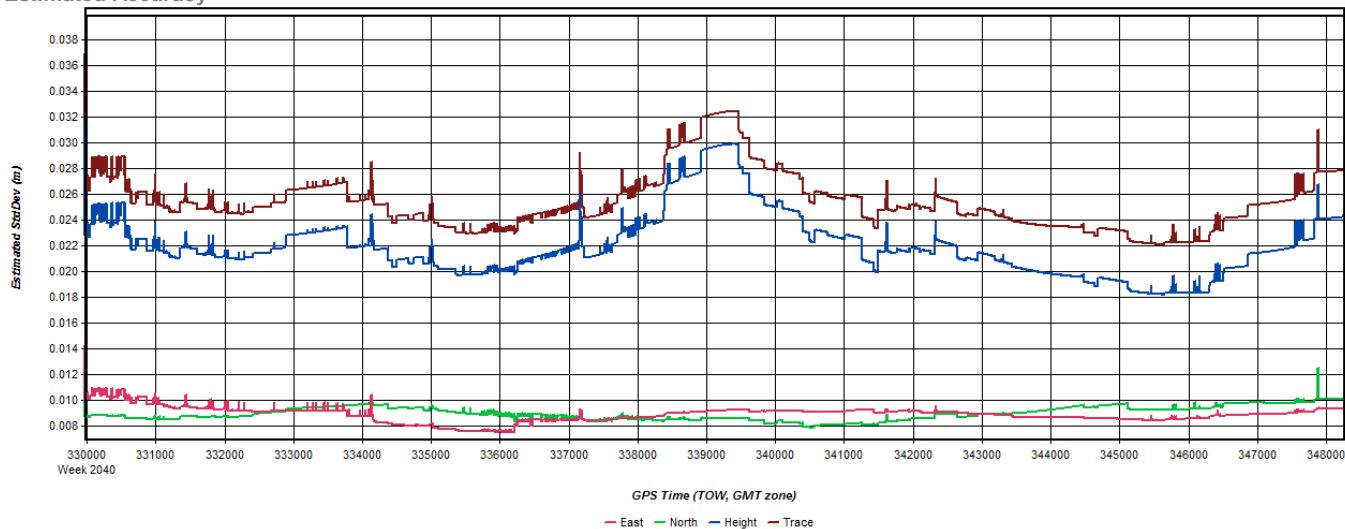
FGI Job # <b>33780084</b>		Project Name <b>USGS Harvey utm15 final</b>				System <b>ALS80</b>	Unit <b>130</b>	IMU <b>uRS</b>	PIA <b>4</b>	SW1	SW2-Gain	Aper	AutoScan	Ground Temp °C <b>17.0 16.0</b>	Min Range Gate <b>2232</b>	Data Logger Drive <b>LG 102</b>
Flight Date <b>13-Feb-19</b>		GPS Day <b>19-044</b>	Lift <b>16</b>	Sun°			Solar Times (UTC)		Laser Power <b>96%</b>	Pattern <b>Triangle</b>		Flying Temp °C <b>5.0 7.0</b>		Max Range Gate <b>2691</b>	Download Drive <b>AP1TB#47</b>	
Mission ID (ymmdd_Sen_Job_Lift) <b>190213_130_33780084_16</b>		Aircraft <b>N97HC</b>	Airport ID <b>KLBX</b>	FMS <b>CCNS 8</b>	UTC <b>-6</b>	AMT (ft) <b>7,900</b>	Speed <b>150</b>	Scan Hz <b>34.0</b>	Pulse Rate <b>442,600</b>	FOV <b>46</b>	km/WPT <b>1.448</b>	AltM Setting <b>30.26 30.06</b>		Shipping Track <b>N/A</b>		
Pilot #1 <b>Grant Cassell</b>		Pilot #2		Operator #1 <b>Dave Verhey</b>		Operator #2										
Base 1 ID <b>1045</b>	Location <b>KHYI</b>		Rec ID <b>GR3-4</b>	Ant ID <b>GR3-4</b>	ARP (m) <b>1.8</b>	Start Time (UTC) <b>13-Feb-19 12:15</b>		Stop Time (UTC) <b>14-Feb-19 00:45</b>		GPS Filename <b>GR3-40213m.tps</b>		Operator <b>Riley Forsyth</b>		Data <b>FTP</b>		
Base 2 ID <b>SGVC</b>	Location <b>Yorktown, TX</b>		Rec ID	Ant ID	ARP (m)	Start Time (UTC)		Stop Time (UTC)		GPS Filename		Operator <b>CORS</b>		Data		

Area	Flight #		Wpt		Distance		UTC		Fit Dir	Altitude (GPS)	Speed (knots)	Scan Rate	Comments and Conditions	SVs	PDOP
	FGI	Client's	From	To	Begin	End	Start	End							
							19:39:32	19:44:32					Ground static at KHYI	23	1.1
							20:08:30	20:10:21					S-turn	22	1.2
BLOCK_D	83		27	36	37.6	50.7	20:13:56	20:17:40	SE	8184	142		Tie line	23	1.2
	31		1	67	0	95.6	20:25:41	20:47:43		39.9	8134	145		23	1.2
	30		67	1	95.6	0	20:50:07	21:13:01		220.6	8167	140		23	1.1
	29		1	68	0	97	21:15:35	21:37:43		39.8	8162	142		24	1.2
	29		68	59	97	84	21:40:01	21:44:18		220.6	8162	141	Calibration line	24	1.2
	28		68	1	97	0	21:51:15	22:14:36		220.5	8203	138		23	1.3
	27		1	68	0	97	22:17:09	22:29:45		39.8	8172	140	Line aborted for traffic at 48 km	23	1.3
	27		31	68	43.4	97	22:39:42	22:52:19		39.8	8204	142	Line resumed	25	1.2
	26		68	1	97	0	22:55:02	23:17:46		220.5	8235	138		25	1.2
							23:29:28	23:34:28					Overflight of CORS at SGVC	24	1.3
	79		7	1	8.7	0	23:38:20	23:40:35		220.3	7866	133	Reflight	24	1.2
BLOCK_C	19		1	23	0	31.9	23:48:52	23:56:21		307.8	8003	143	Reflight	24	1.1
	20		11	1	14.5	0	0:03:55	0:07:29		127.4	8008	146	Reflight	22	1.1
	23		1	6	0	7.2	0:10:06	0:11:54		307.8	8157	139	Reflight	22	1.1
							0:11:59	0:13:53					S-turn	22	1.1
							0:38:18	0:43:18					Ground Static at KHYI	18	1.4

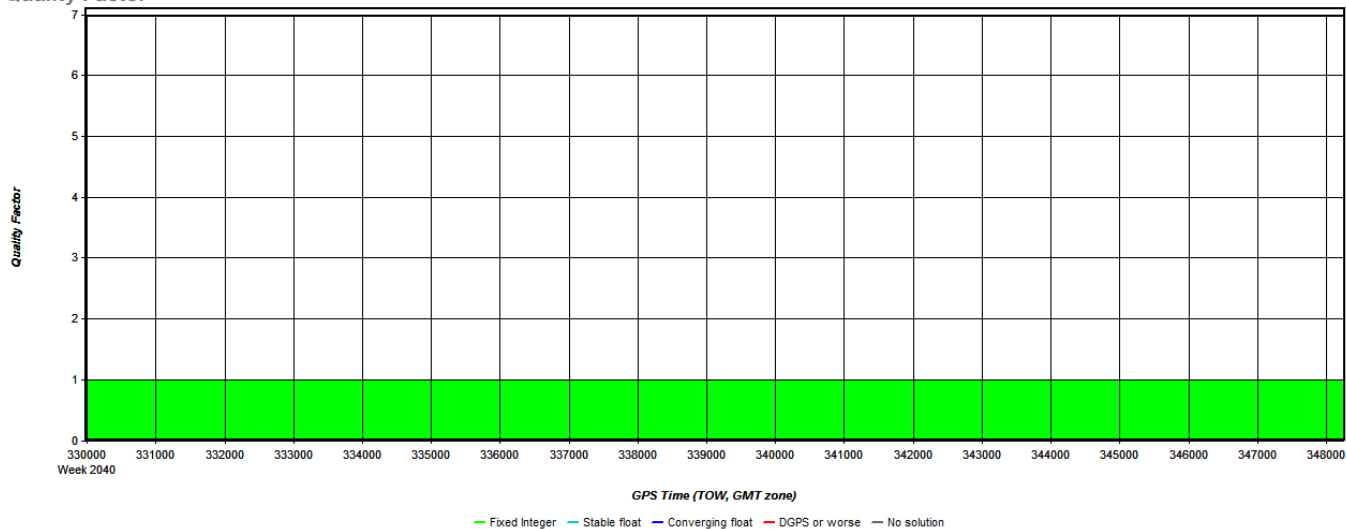
Trajectory and GPS Plots:



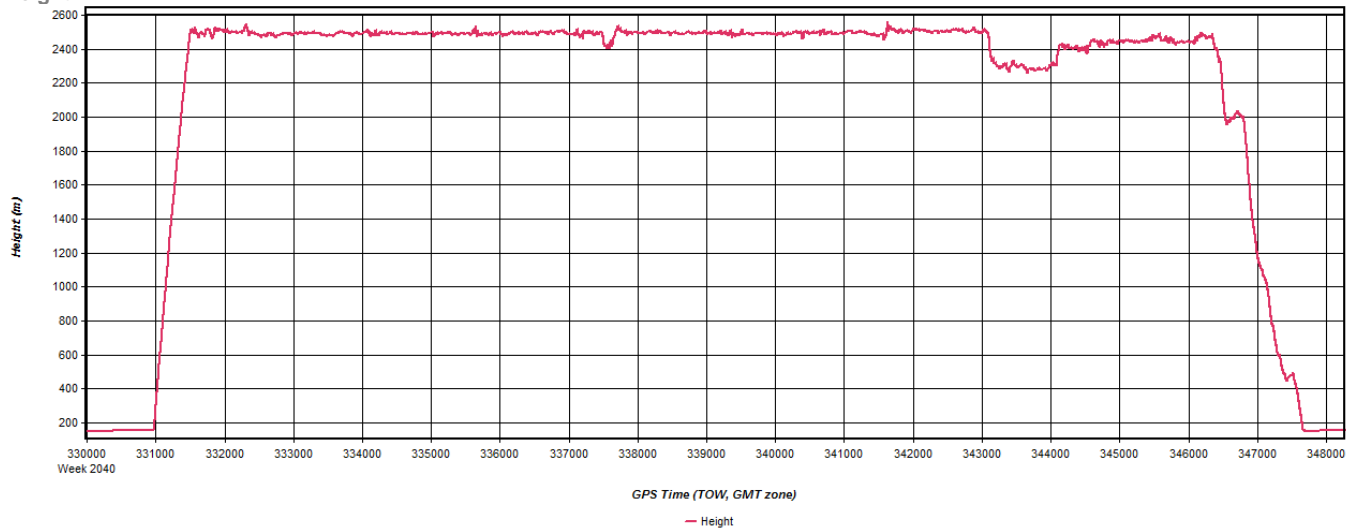
Estimated Accuracy



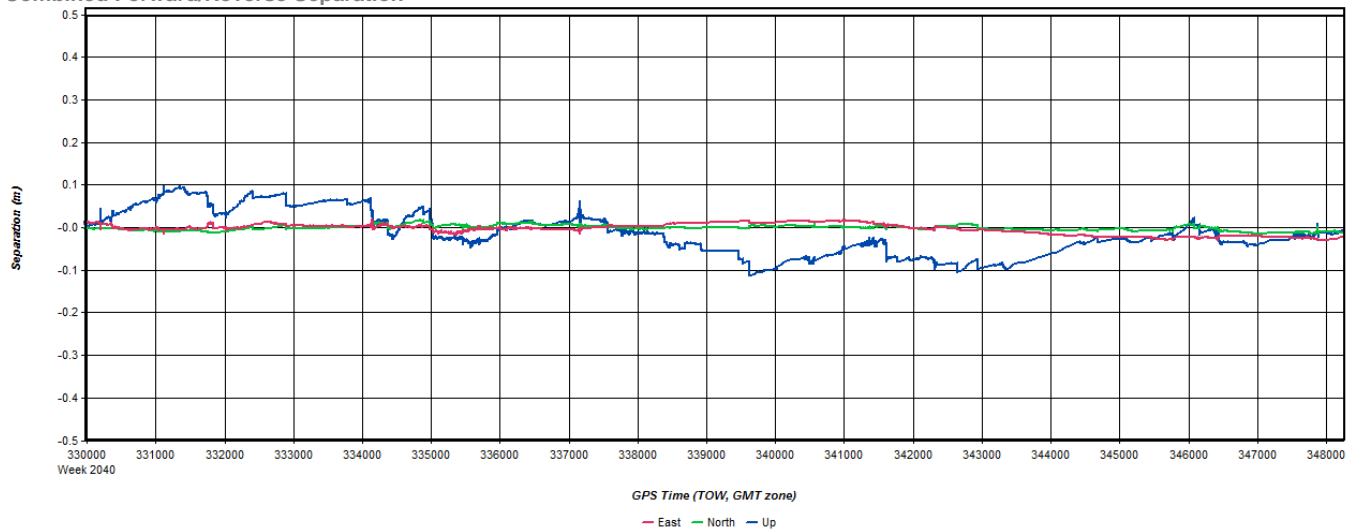
Quality Factor



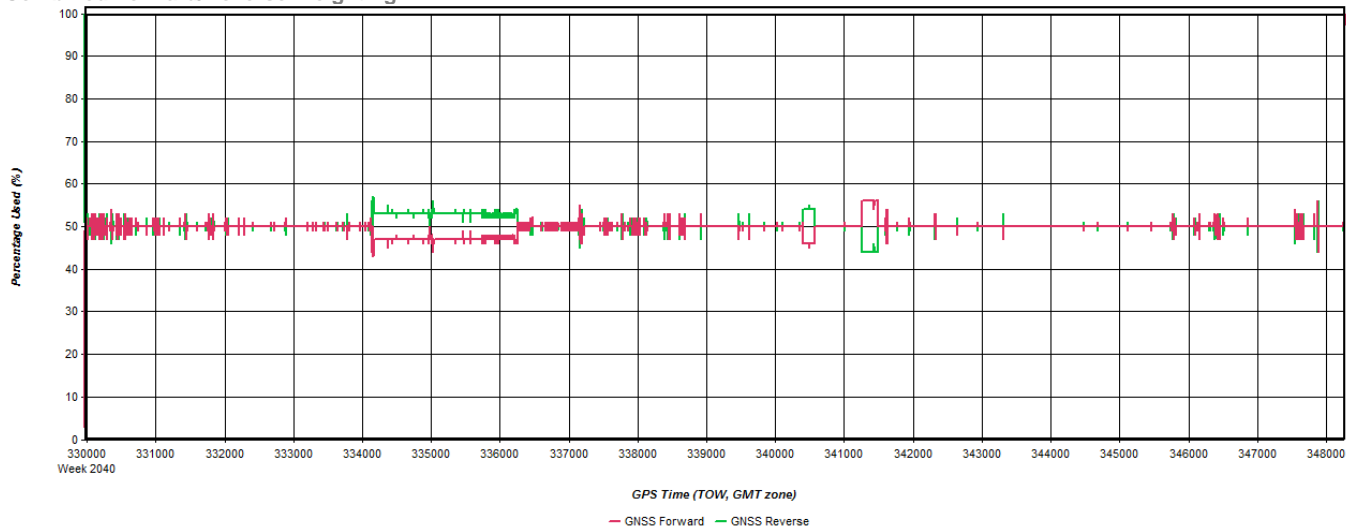
Height



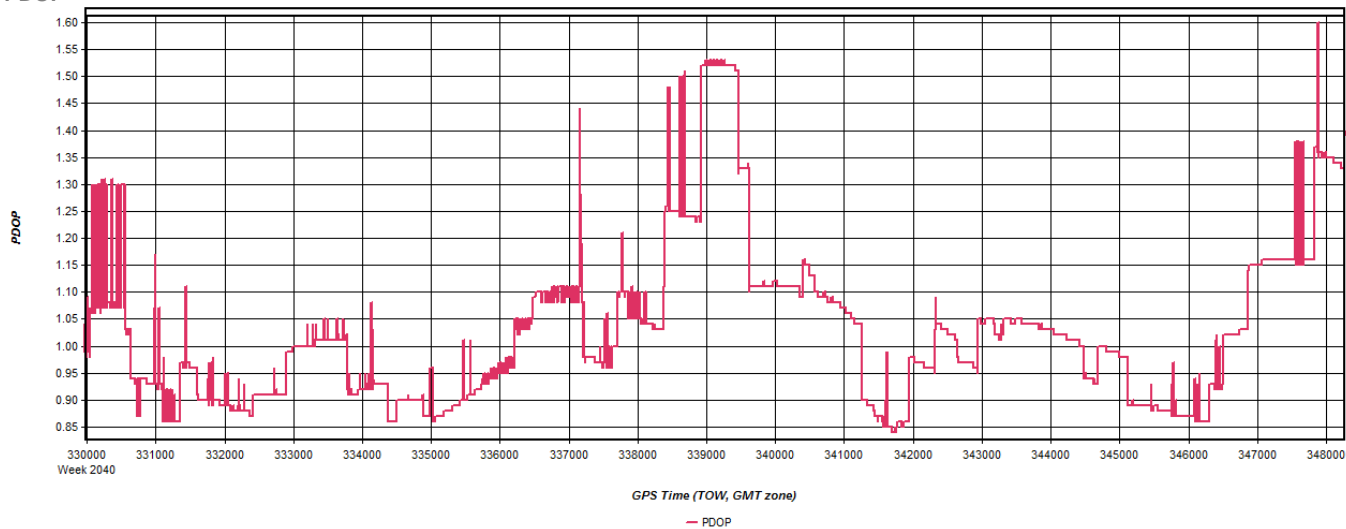
Combined Forward/Reverse Separation



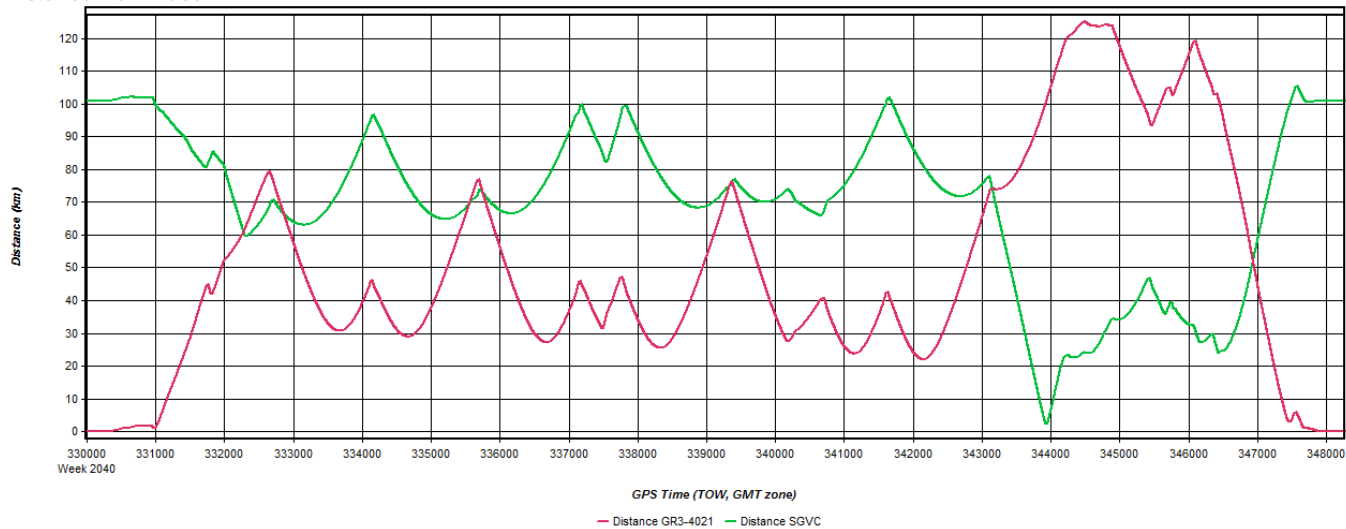
Combined Forward/Reverse Weighting



PDOP

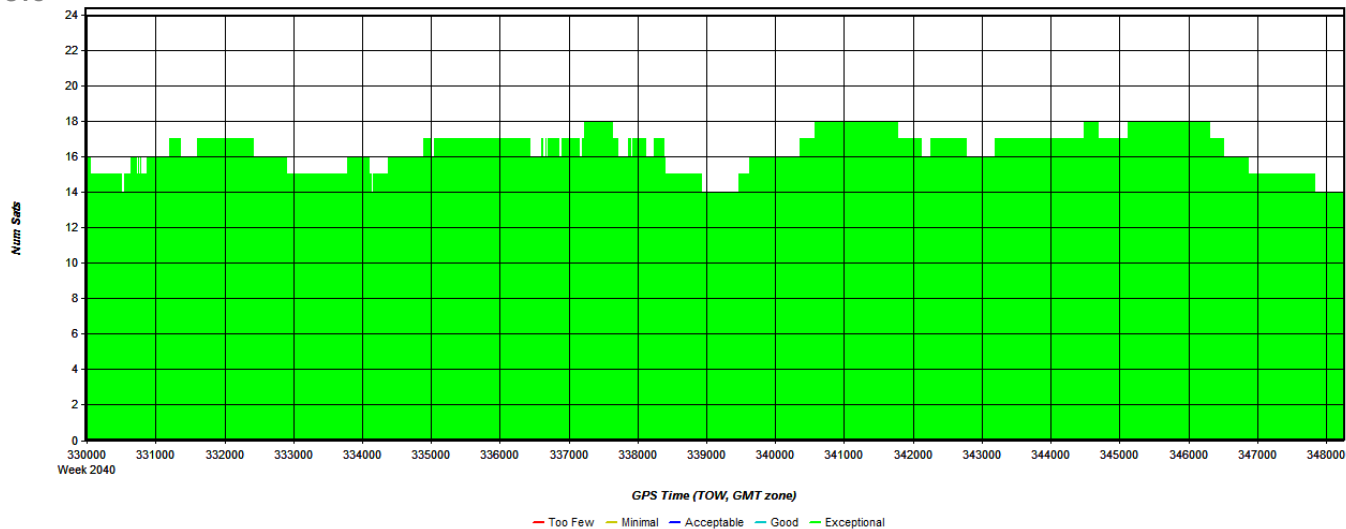


Distance from Base





SVs



USGS  
COLLECTION REPORT



Acquisition and Processing details ----- (February 13, 2019)

Log: 190213\_133\_33780084\_16

Fugro USA Land, Inc.

18.165	Lift Begin			Lift End			Flt Duration	Flt Hrs	Hobbs Hrs	Activity
	Airport	Chocks	Hobbs	Airport	Chocks	Hobbs				
1	KHYI	15:06	2470.6	KHYI	18:34	2473.7	3:28	3.50	3.1	0900-Production
2										
3										

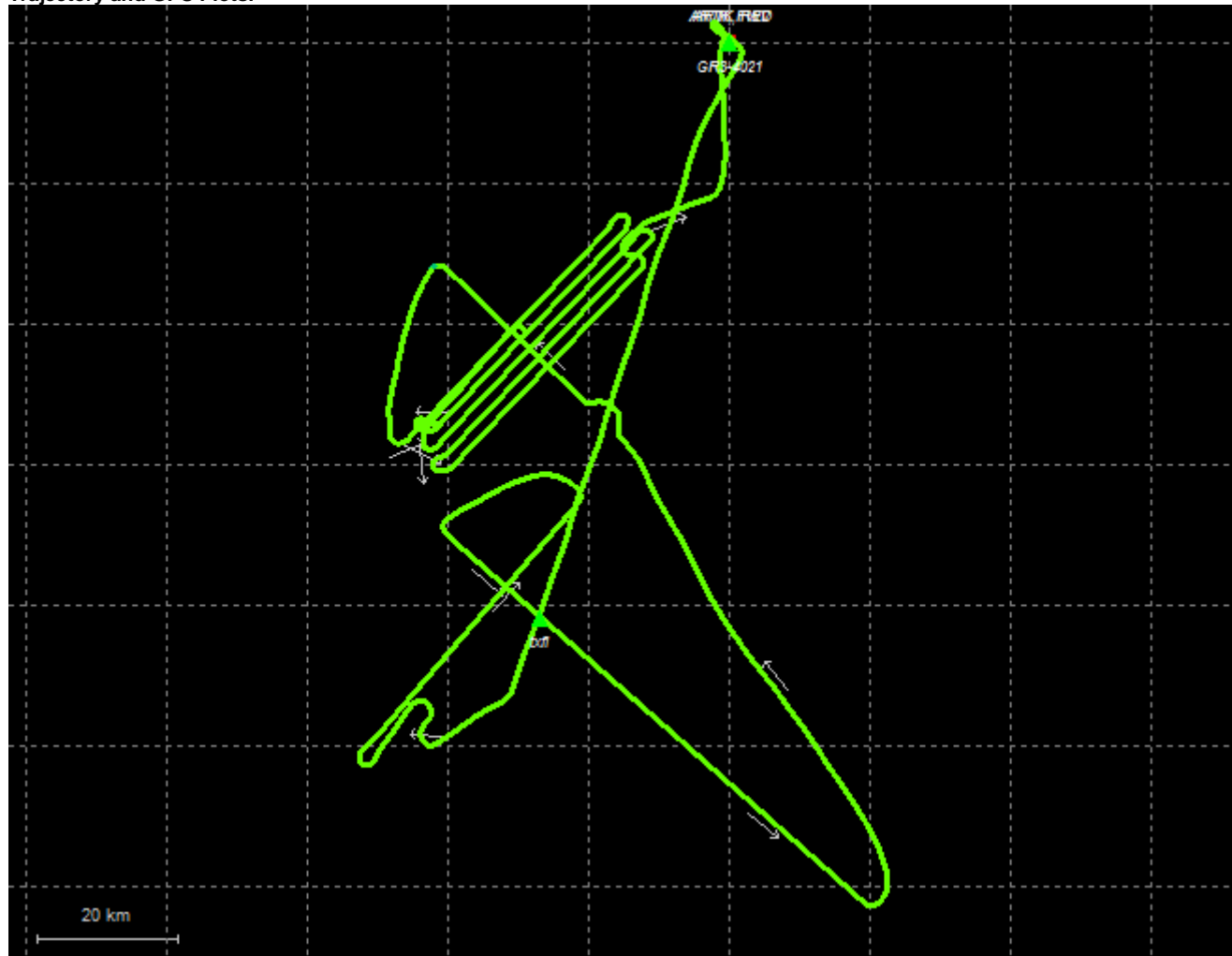
**ALS**
  
 Flight Log

AC80-44-00-02

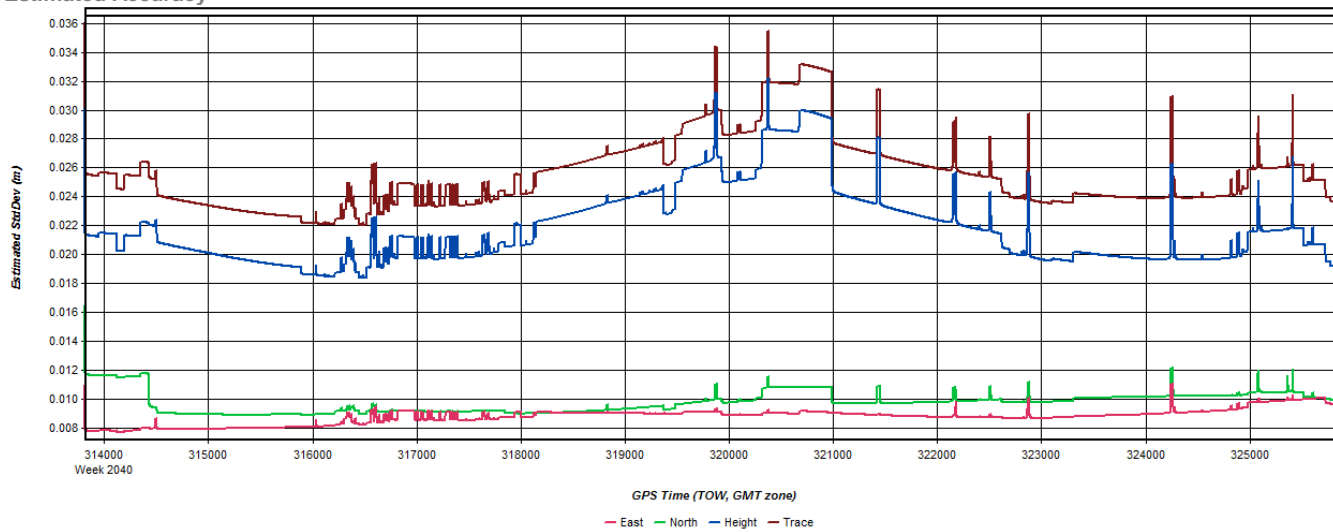
FGI Job #	Project Name		System	Unit	IMU	PIA	SW1	SW2-Gain	Aper	AutoScan	Ground Temp °C	Min Range Gate	Data Logger Drive			
<b>33780084</b>	<b>Hurricane Harvey</b>		<b>ALS80</b>	<b>133</b>	<b>uIRS</b>	<b>4</b>					<b>6.0 15.0</b>	<b>2232</b>	<b>MM70-05</b>			
Flight Date	GPS Day	Lift	Sun°		Solar Times (UTC)		Laser Power		Pattern		Flying Temp °C	Max Range Gate	Download Drive			
<b>13-Feb-19</b>	<b>19-044</b>	<b>16</b>					<b>96%</b>		<b>Triangle</b>		<b>9.0 6.0</b>	<b>2691</b>	<b>NS1TB-91</b>			
Mission ID (ymmdd_Sen_Job_Lift)	Aircraft	Airport ID	FMS	UTC	AMT (ft)	Speed	Scan Hz	Pulse Rate	FOV	km/WPT	Altm Setting	Shipping Track				
<b>190213_133_33780084_16</b>	<b>N88N</b>	<b>KHYI</b>	<b>CCNS 7</b>	<b>-6</b>	<b>7,900</b>	<b>150</b>	<b>34.0</b>	<b>442,600</b>	<b>46</b>	<b>1.448</b>	<b>30.35 30.30</b>					
Plot #1		Plot #2		Operator #1		Operator #2										
<b>Brandon Eastin</b>				<b>Riley Forsyth</b>												
Base 1 ID	Location		Rec ID	Ant ID	ARP (m)	Start Time (UTC)		Stop Time (UTC)		GPS Filename		Operator	Data			
<b>1045</b>	<b>San Marcos, TX</b>		<b>GR3-4</b>	<b>GR3-4</b>	<b>1.8</b>					<b>GR3-40213m.tps</b>		<b>Riley Forsyth</b>	<b>With AB</b>			
Area	Flight #		Wpt		Distance		UTC		Flt Dir	Altitude (GPS)	Speed (knots)	Scan Rate	Comments and Conditions		SVs	PDOP
	FGI	Client's	From	To	Begin	End	Start	End								
													Ground static at KHYI		19	1.5
													overfly TXFL cors		22	1.1
													s turn		23	1.1
Block C	27		1	29	0	40.5	15:57:36	16:07:30	037	8111	134		cross tie line		23	1.0
	18		51	1	72.4	0	16:15:13	16:33:07	127	8272	131				21	1.2
Block D	83		25	10	34.8	13	16:52:32	16:58:13	309	8100	133		cross tie line		20	1.3
	13		1	25	0	34.8	17:07:42	17:16:01	039	8423	143				17	1.6
	14		23	1	31.9	0	17:18:42	17:27:40	219	8400	115				17	1.5
	14		1	10	0	13	17:30:50	17:34:13	039	8271	138		calibration line		18	1.4
	16		1	24	0	33.3	17:42:06	17:50:01	039	8364	140				17	1.3
	18		25	1	34.8	0	17:52:53	18:02:34	220	8373	118				17	1.2
	20		1	25	0	34.8	18:05:05	18:13:09	039	8292	144				16	1.3
							18:13:40						s turn		17	1.3
							18:26:31	18:31:32					Ground static at KHYI		18	1.1



Trajectory and GPS Plots:

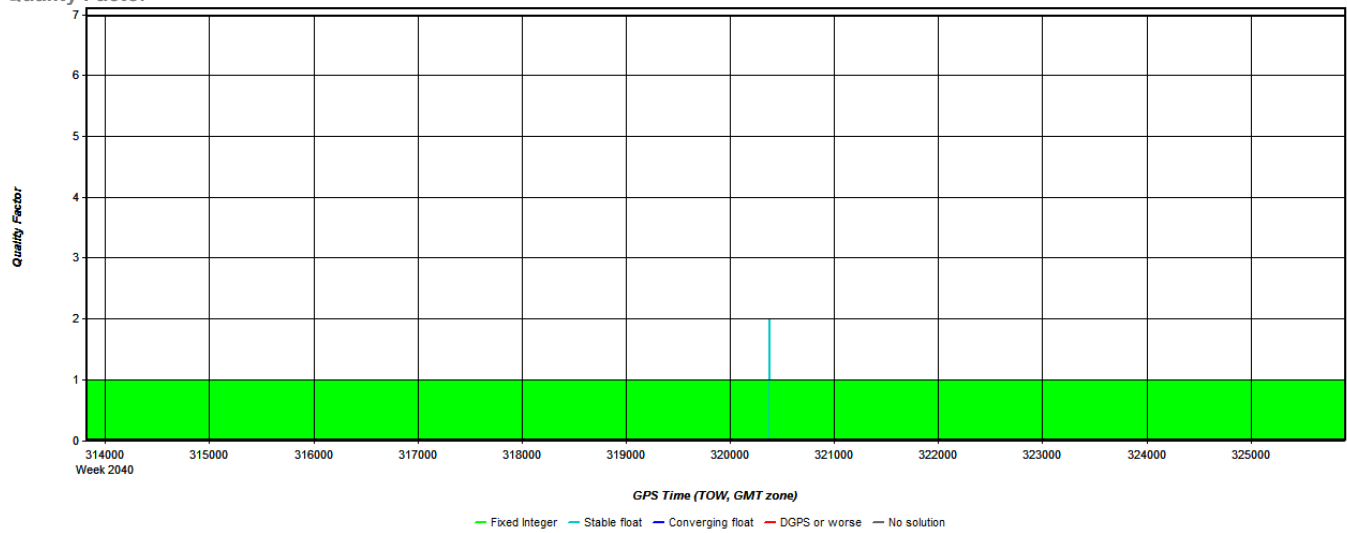


Estimated Accuracy

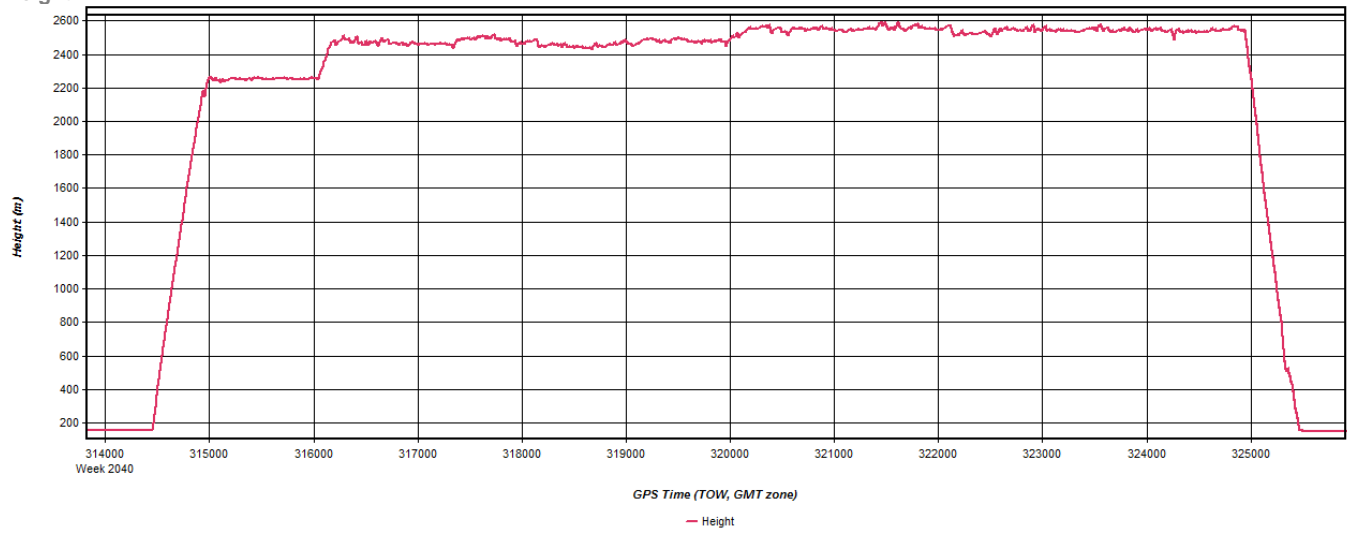


# USGS COLLECTION REPORT

## Quality Factor

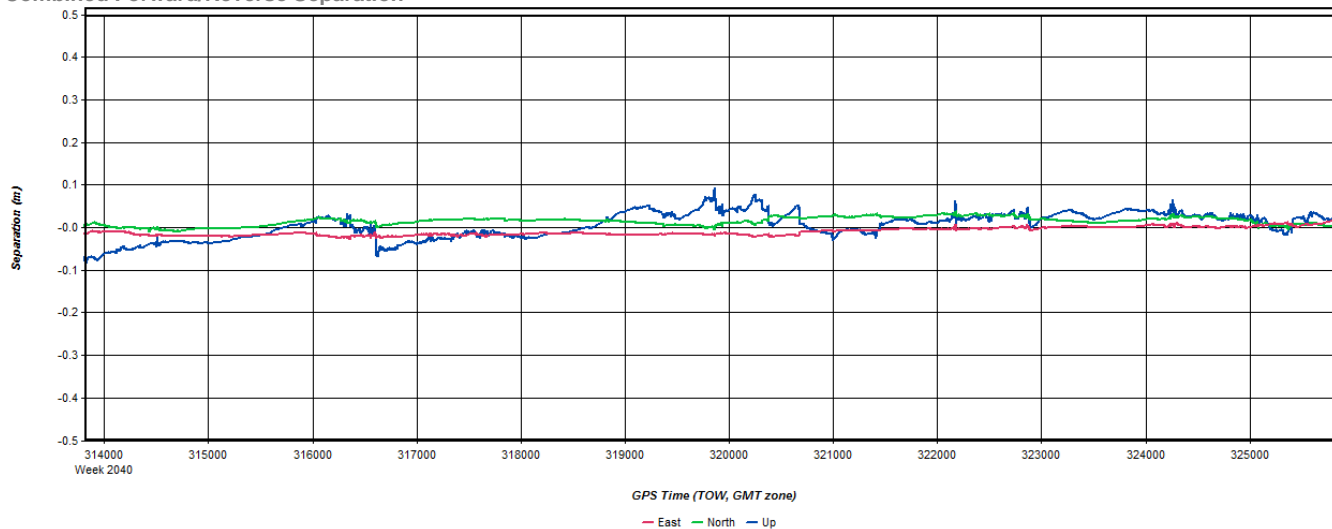


## Height

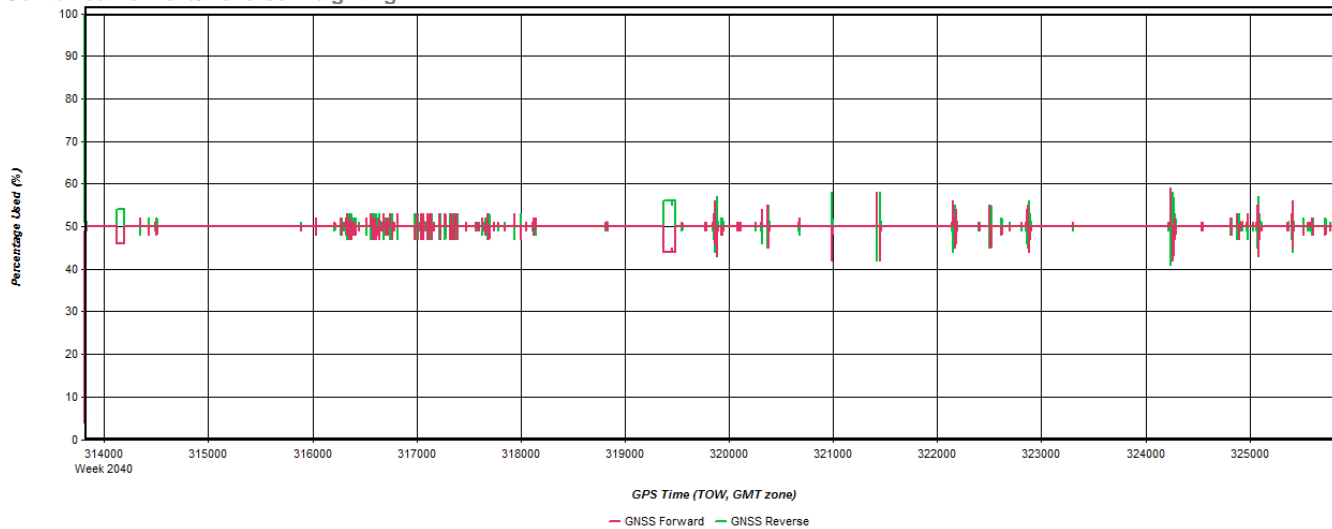




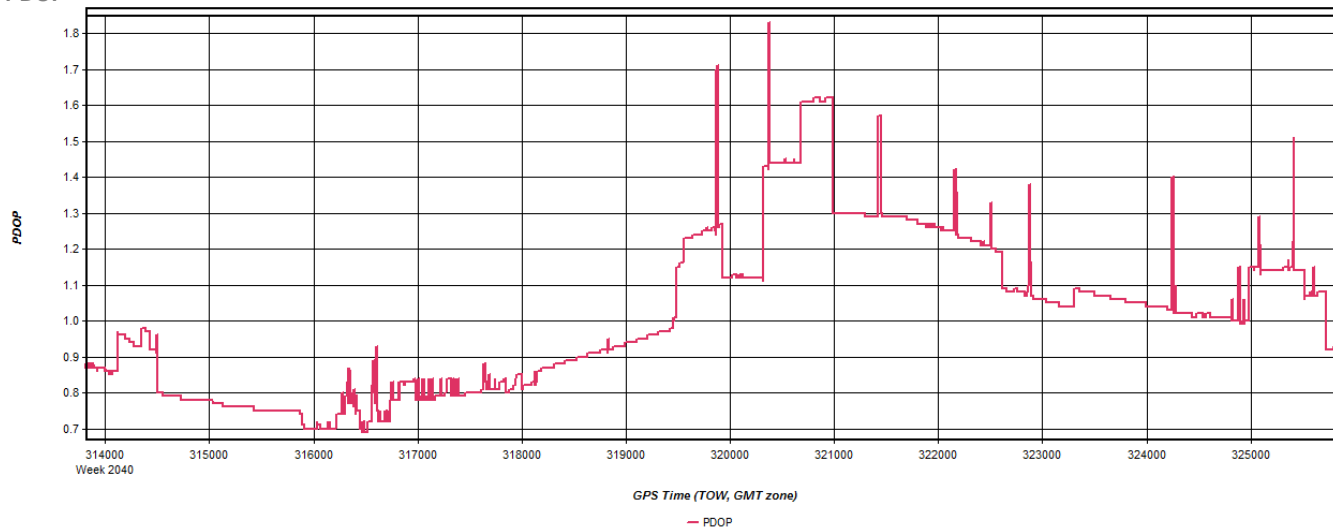
Combined Forward/Reverse Separation



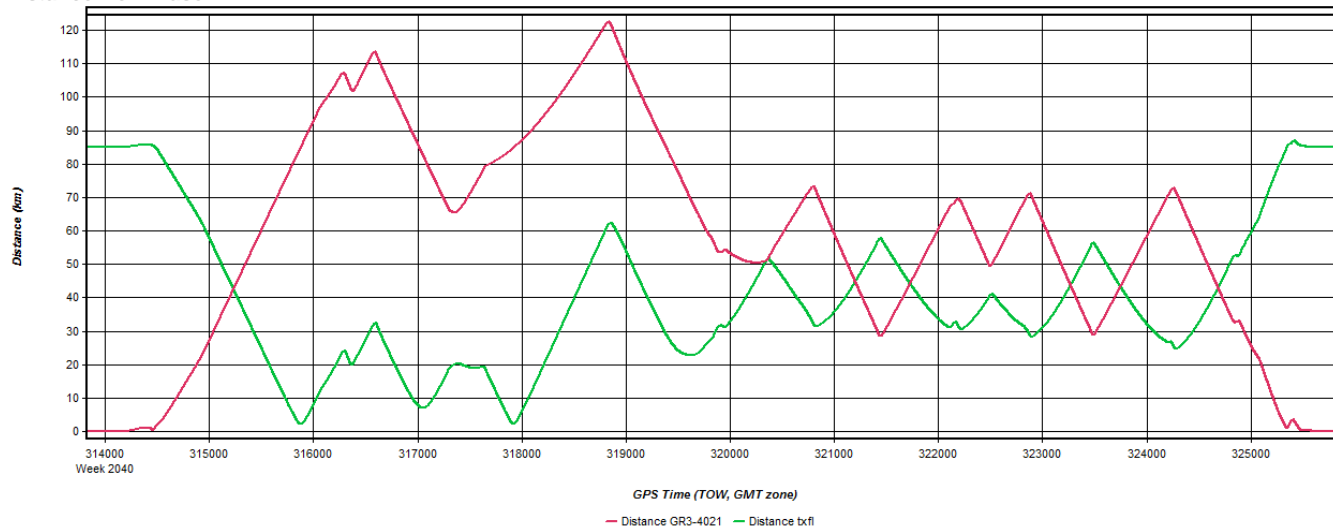
Combined Forward/Reverse Weighting



PDOP

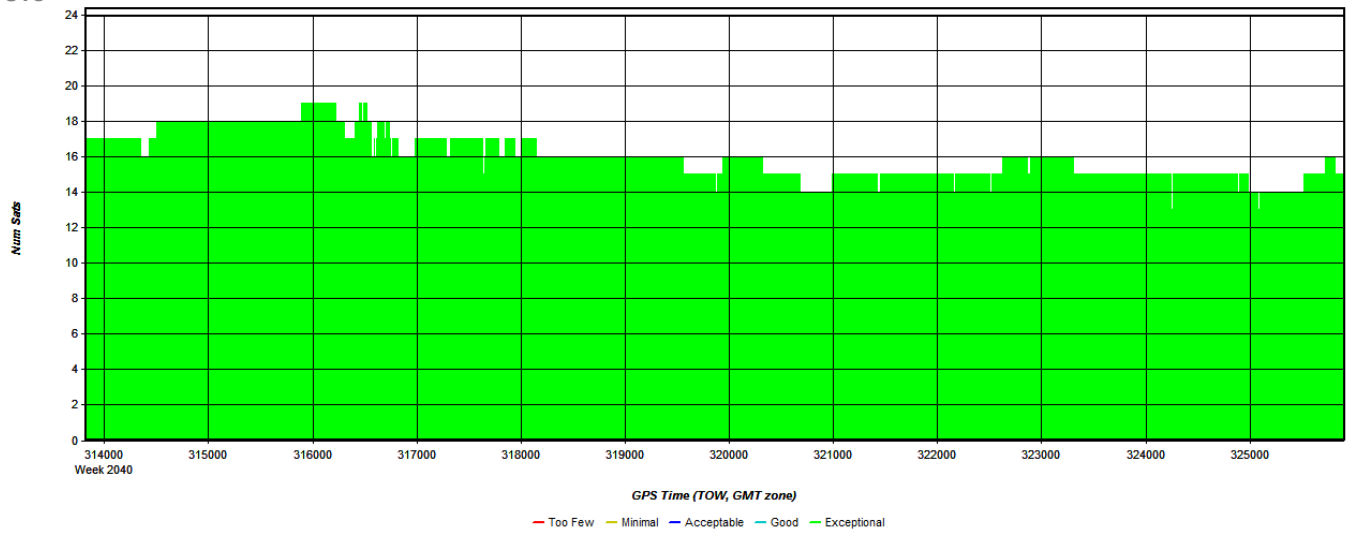


Distance from Base





SVs



USGS  
COLLECTION REPORT



Acquisition and Processing details ----- (February 13, 2019)

Log: 190213\_133\_33780084\_17

**Fugro USA Land, Inc.**

18.165	Lift Begin			Lift End			Fit Duration	Fit Hrs	Hobbs Hrs	Activity
	Airport	Chocks	Hobbs	Airport	Chocks	Hobbs				
1	KHYI	19:02	2473.7	KHYI	23:34	2477.9	4:31	4.50	4.2	0900-Production
2										
3										

**ALS**  
Flight Log

AC80-44-00-02

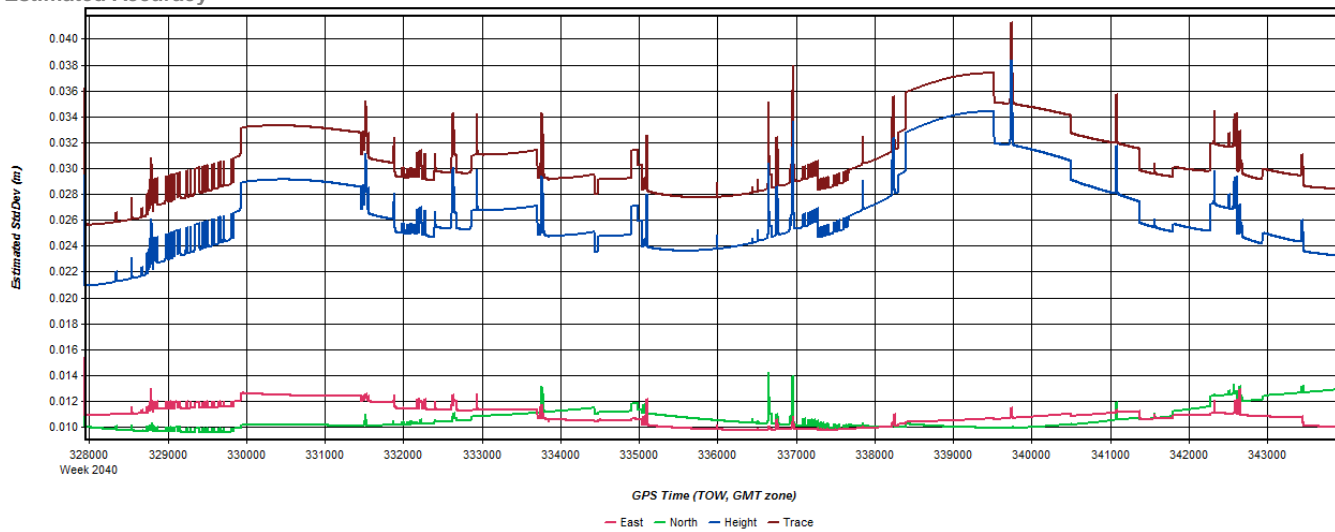
FGI Job # <b>33780084</b>	Project Name <b>Hurricane Harvey</b>		System <b>ALS80</b>	Unit <b>133</b>	IMU <b>uRS</b>	PIA <b>4</b>	SW1	SW2-Gain	Aper	AutoScan	Ground Temp °C <b>17.0 17.0</b>	Min Range Gate <b>2232</b>	Data Logger Drive <b>MM70-05</b>
Flight Date <b>13-Feb-19</b>	GPS Day <b>19-044</b>	Lift <b>17</b>	Sun°	Solar Times (UTC)		Laser Power <b>96%</b>	Pattern <b>Triangle</b>	Flying Temp °C <b>6.0 12.0</b>	Max Range Gate <b>2691</b>	Download Drive <b>NS1TB-91</b>	Shipping Track		
Mission ID (yyymmdd_Sen_Job_Lift) <b>190213_133_33780084_17</b>	Aircraft <b>N88N</b>	Airport ID <b>KHYI</b>	FMS <b>CCNS 7</b>	UTC <b>-6</b>	AMT (ft) <b>7,550</b>	Speed <b>150</b>	Scan Hz <b>35.0</b>	Pulse Rate <b>352,000</b>	FOV <b>46</b>	km/WPT <b>1.384</b>	AltM Setting <b>30.25 30.09</b>		
Pilot #1 <b>Brandon Eastin</b>		Pilot #2		Operator #1 <b>Riley Forsyth</b>		Operator #2							
Base 1 ID <b>1045</b>	Location <b>San Marcos, TX</b>	Rec ID <b>GR3-4</b>	Ant ID <b>GR3-4</b>	ARP (m) <b>1.8</b>	Start Time (UTC)	Stop Time (UTC)	GPS Filename <b>GR3-40213m.tps</b>	Operator <b>Riley Forsyth</b>	Data <b>With AB</b>				

Area	Flight #		Wpt		Distance		UTC		Fit Dir	Altitude (GPS)	Speed (knots)	Scan Rate	Comments and Conditions	SVs	PDOP
	FGI	Client's	From	To	Begin	End	Start	End							
							19:05:49	19:10:52					Ground static at KHYI	21	1.4
							19:23:29						s turn	21	1.2
Block F	74		60	40	81.7	54	19:31:38	19:40:04	266	8050	122		cross tie line	21	1.2
	56		29	1	38.8	0	19:53:04	20:03:31	176	8241	122			19	1.4
	54		1	29	0	38.8	20:06:21	20:15:17	356	8281	139			20	1.4
	54		29	19	38.8	24.9	20:19:24	20:23:01	356	8207	119			22	1.3
	52		29	1	38.8	0	20:30:25	20:41:03	176	8237	118			23	1.2
	50		1	61	0	83	20:43:45	21:02:59	356	8292	147			23	1.1
	49		61	1	83	0	21:06:10	21:29:22	176	8375	118			23	1.1
	48		1	3	0	2.8	21:31:42	21:33:11	356	8336	140		aborted for atc	23	1.3
	48		1	61	0	83	21:36:28	21:55:58	356	8322	138			23	1.2
	47		61	1	83	0	21:58:44	22:20:56	176	8420	127			21	1.4
	46		1	61	0	83	22:23:19	22:43:04	356	8299	133			20	1.8
	45		59	1	80.3	0	22:46:03	23:07:49	176	8524	128			23	1.3
							23:07:55						s turn	23	1.1
							23:27:44	23:32:45					Ground static at KHYI	20	1.4

Trajectory and GPS Plots:

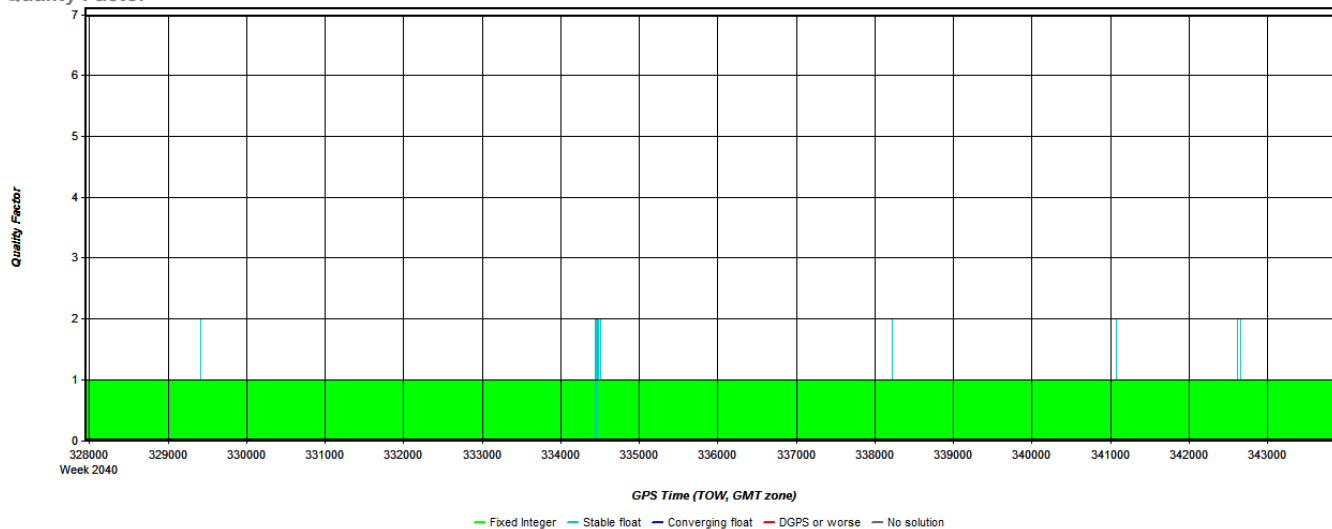


Estimated Accuracy

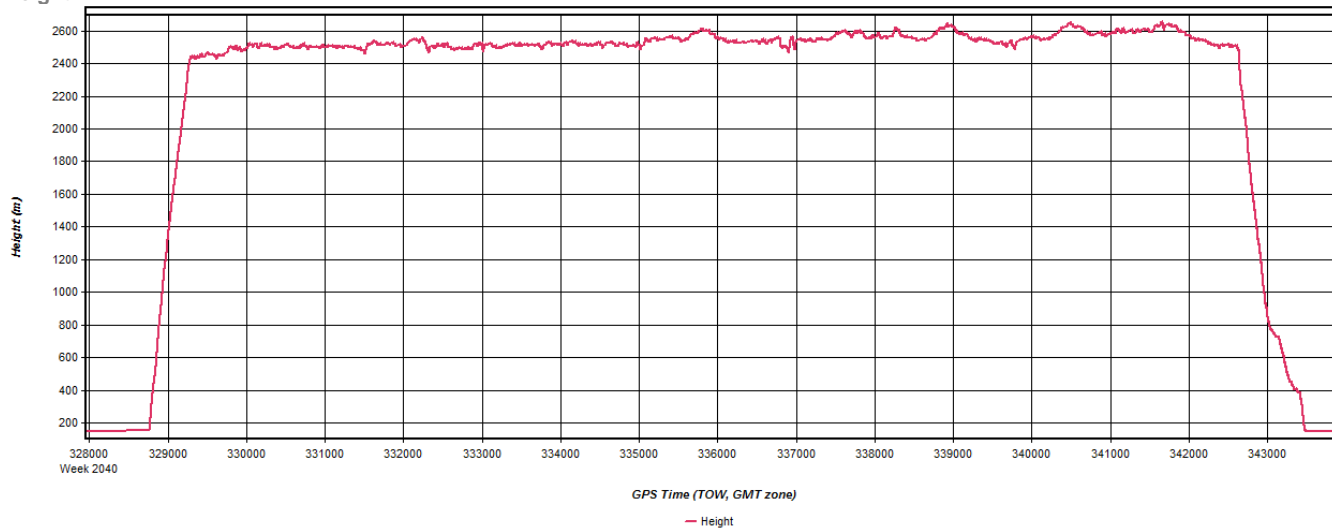




Quality Factor



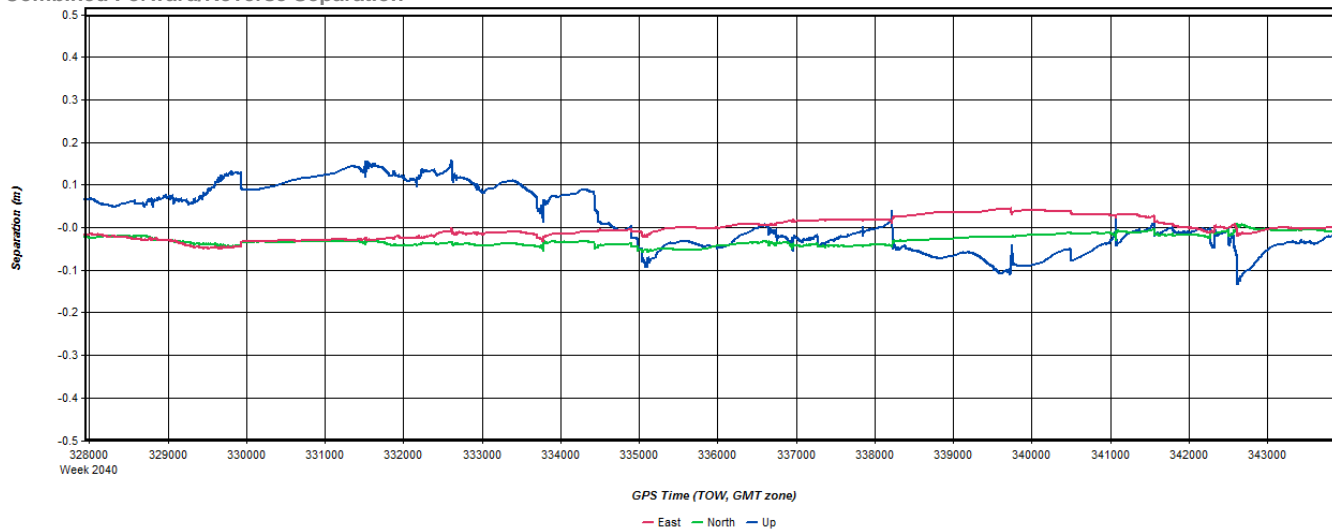
Height



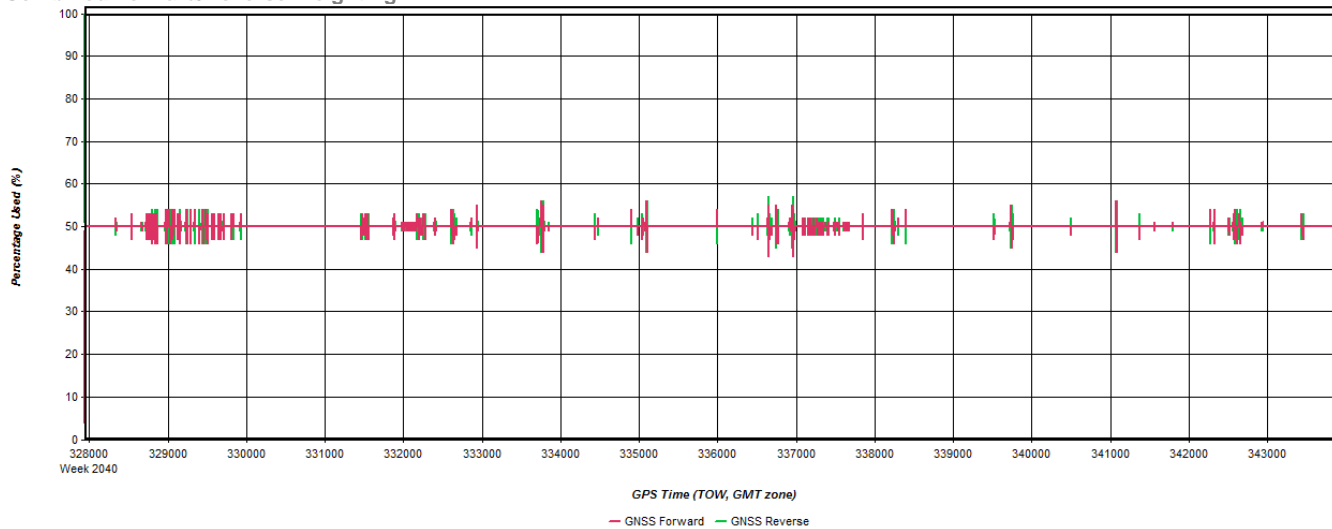




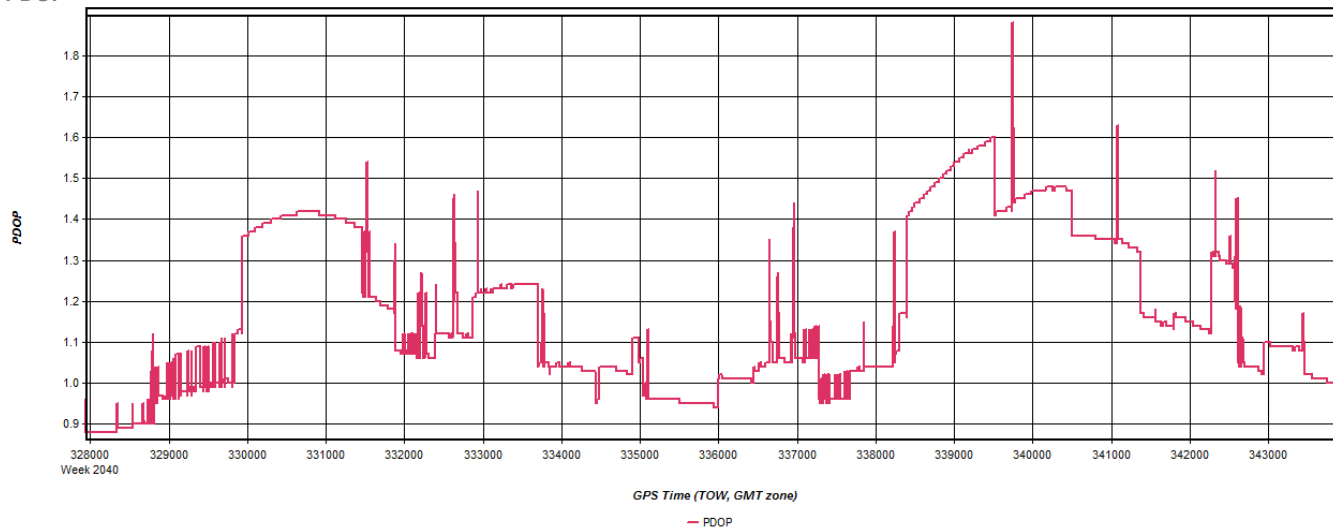
Combined Forward/Reverse Separation



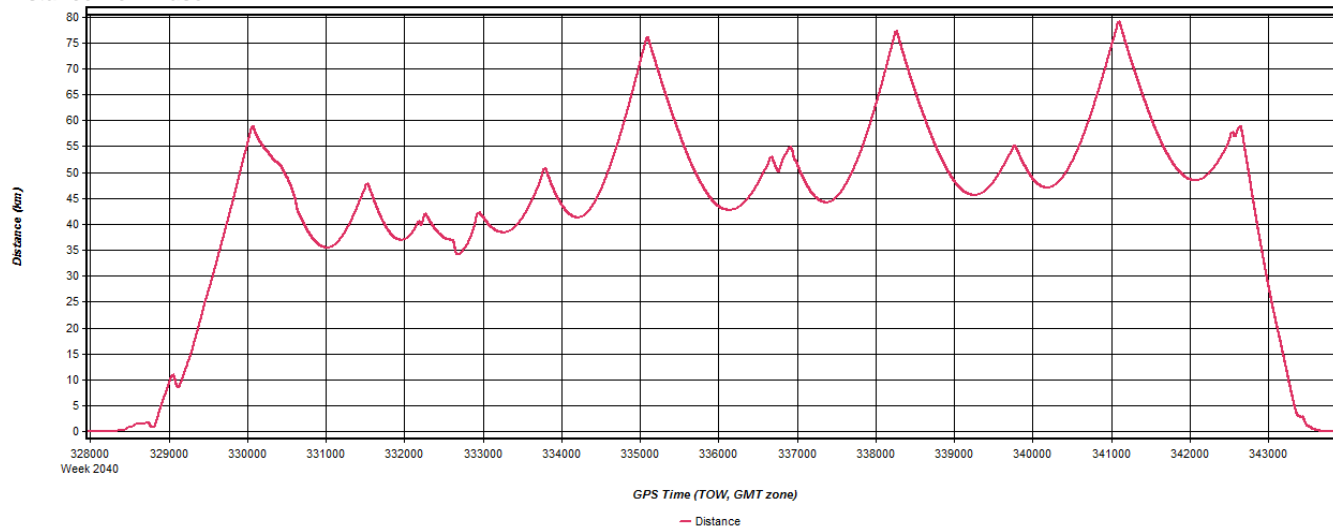
Combined Forward/Reverse Weighting



PDOP

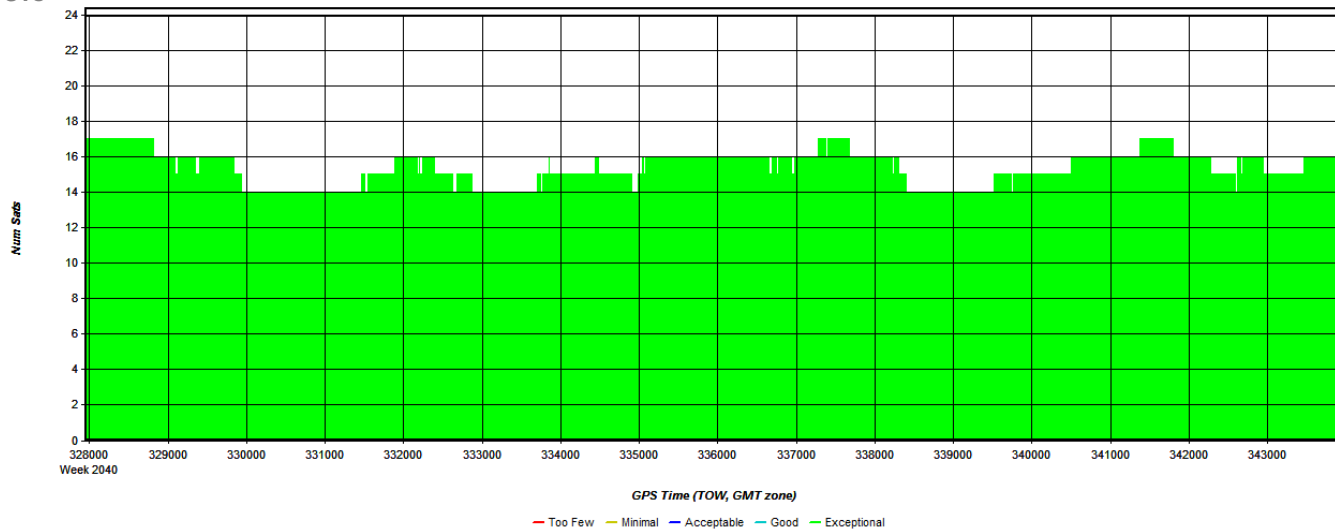


Distance from Base





SVs



USGS  
COLLECTION REPORT



Acquisition and Processing details ----- (February 14, 2019)

Log: 190214\_118\_33780084\_28

	Menu	19.023	Lift Begin			Lift End			Flt	Flt	Hobbs		
			Airport	Chocks	Hobbs	Airport	Chocks	Hobbs	Duration	Hrs	Hrs		
	1		KGTU	16:13	3016.5	KGTU	20:54	3020.7	4:41	4.75	4.2		0900-Production
	2												
3													

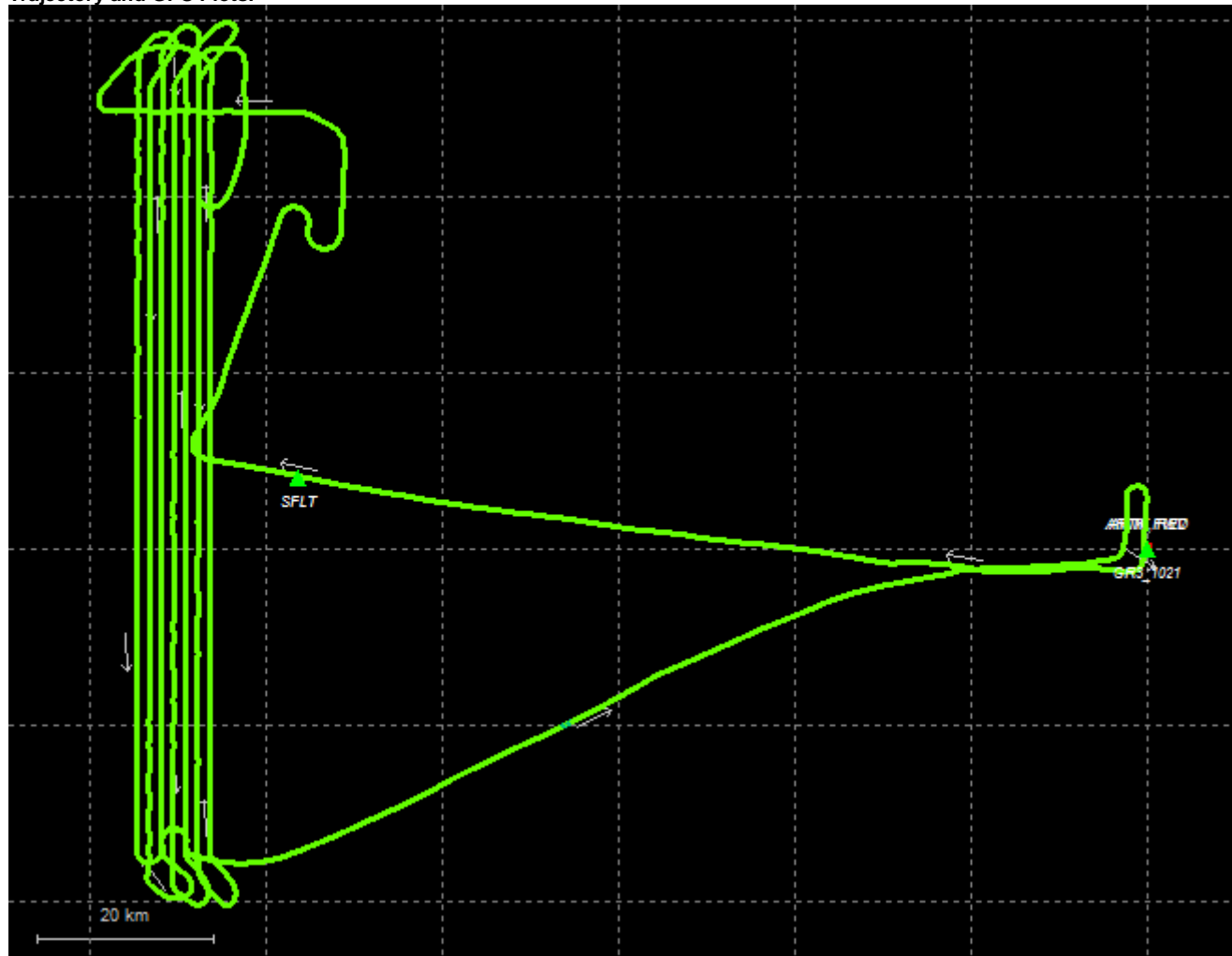
AC80-44-00-02

FGI Job # <b>33780084</b>	Project Name <b>USGS Hurricane Harvey UTM 14</b>		System <b>ALS80</b>	Unit <b>118</b>	IMU <b>uRS</b>	PIA <b>3</b>	SW1 <b>-</b>	SW2-Gain <b>-</b>	Aper <b>60°</b>	AutoScan <b>Yes</b>	Ground Temp °C <b>17.0 22.0</b>	Min Range Gate <b>6244</b>	Data Logger Drive <b>MM70-06</b>
Flight Date <b>14-Feb-19</b>	GPS Day <b>19-045</b>	Lift <b>28</b>		Sun° <b>-</b>	Solar Times (UTC) <b>-</b>	Laser Power <b>100%</b>	Pattern <b>Triangle</b>	Flying Temp °C <b>9.0 11.0</b>	Max Range Gate <b>8323</b>	Download Drive <b>AP1TB#06</b>			
Mission ID (yymmdd_Sen_Job_Lift) <b>190214_118_33780084_28</b>	Aircraft <b>N8131</b>	Airport ID <b>KGTU</b>	FMS <b>CCNS 4</b>	UTC <b>-6</b>	AMT (ft) <b>7,550</b>	Speed <b>150</b>	Scan Hz <b>35.0</b>	Pulse Rate <b>352,000</b>	FOV <b>42</b>	kmWPT <b>1,384</b>	AltM Setting <b>29.93 29.89</b>	Shipping Track <b>774477349984</b>	
Pilot #1 <b>Barry Hansen</b>		Pilot #2 <b>-</b>		Operator #1 <b>Chris Fought</b>		Operator #2 <b>-</b>		Flight-/JOBS/33780084 Hurricane Harvey ALS80-USGS/Data/Base					

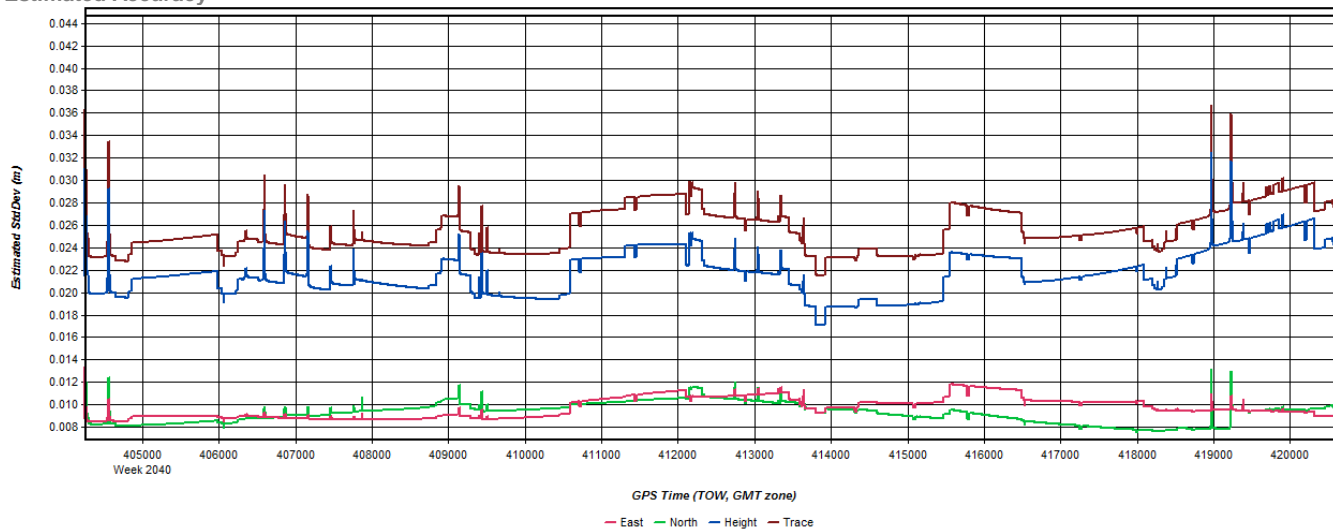
Base 1 ID <b>FEDI 1115</b>	Location <b>KGTU</b>	Rec ID <b>GR3#5</b>	Ant ID <b>GR3#5</b>	ARP (m) <b>1.8</b>	Start Time (UTC) <b>2/14/19 1330</b>	Stop Time (UTC) <b>2/14/19 2109</b>	GPS Filename <b>GR3_10214n</b>	Operator <b>Chris Fought</b>	Data <b>FTP</b>
Base 2 ID <b>SFLT</b>	Location <b>LLANO, TX</b>	Rec ID <b>CORS</b>	Ant ID	ARP (m)	Start Time (UTC)	Stop Time (UTC)	GPS Filename	Operator	Data

Area	Flight #		Wpt		Distance		UTC		Flt Dir	Altitude (GPS)	Speed (knots)	Scan Rate	Comments and Conditions	SVs	PDOP
	FGI	Client's	From	To	Begin	End	Start	End							
							16:17:00	16:20:00					ground static	23	1.2
							16:53:15	16:58:15					overflight of CORS SFLT	21	1.1
							17:05:07	17:08:04					S-turn	19	1.2
BLOCK_H	75		28	18	37.4	23.5	17:13:15	17:17:18	266	8523	124	35.0	cross line	18	1.4
	25		61	1	83	0	17:22:18	17:42:38	176	8523	131	1052GB		18	1.3
	24		1	61	0	83	17:46:51	18:07:43	356	8523	130	1,041.0		19	1.1
	24		61	55	83	74.7	18:12:26	18:15:00	176	8523	140	1,040.0	calibration line	15	1.3
	23		61	1	83	0	18:22:23	18:41:18	176	8523	145	1,030.0		17	1.1
	22		1	61	0	83	18:45:18	19:04:55	356	8523	140	1,020.0		17	1.3
	21		61	1	83	0	19:09:06	19:28:39	176	8523	145	1,011.0		19	1.2
	20		1	61	0	83	19:32:38	19:51:51	356	8573	137	1,001.0		20	1.3
	19		61	1	83	0	19:55:46	20:15:31	176	8573	143	991.0		18	1.3
							20:15:45	20:19:00					S-turn	19	1.3
							20:46:17	20:51:17					ground static	18	1.4

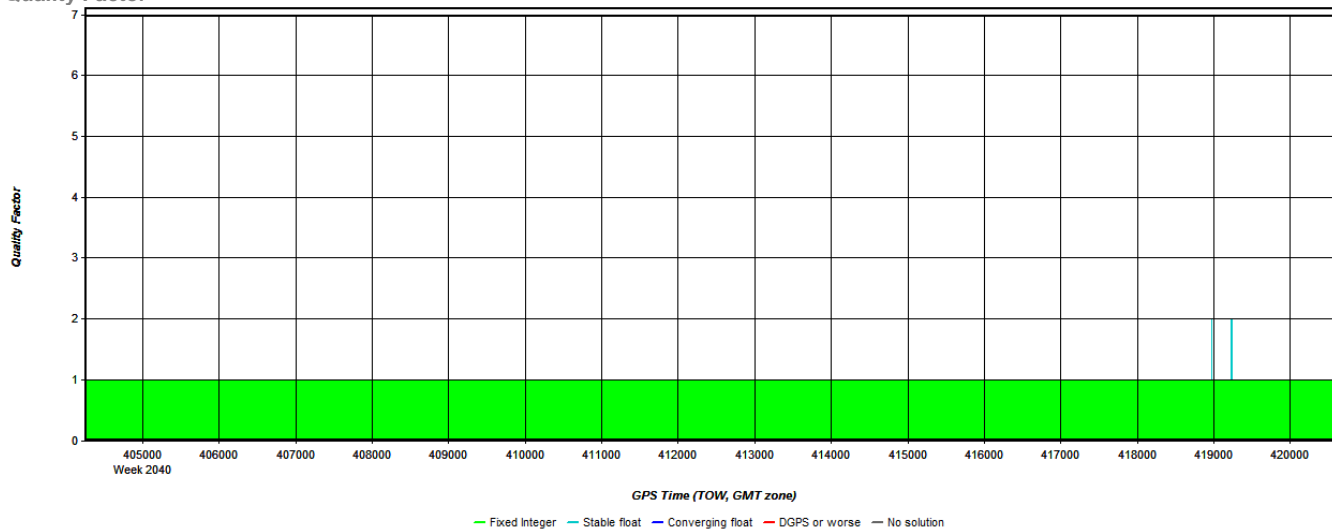
Trajectory and GPS Plots:



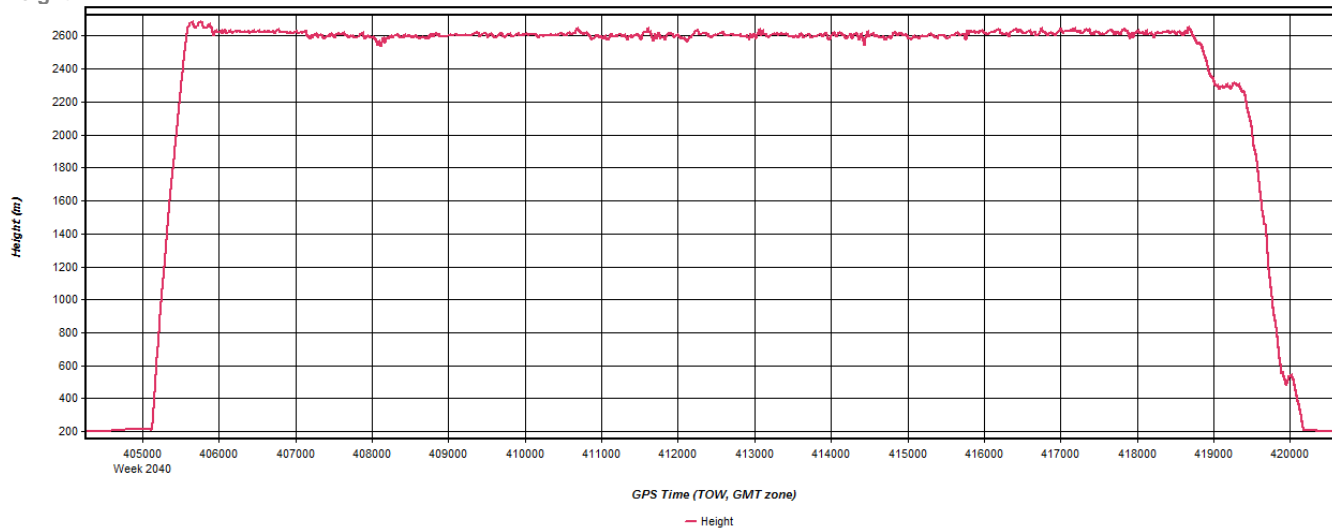
Estimated Accuracy



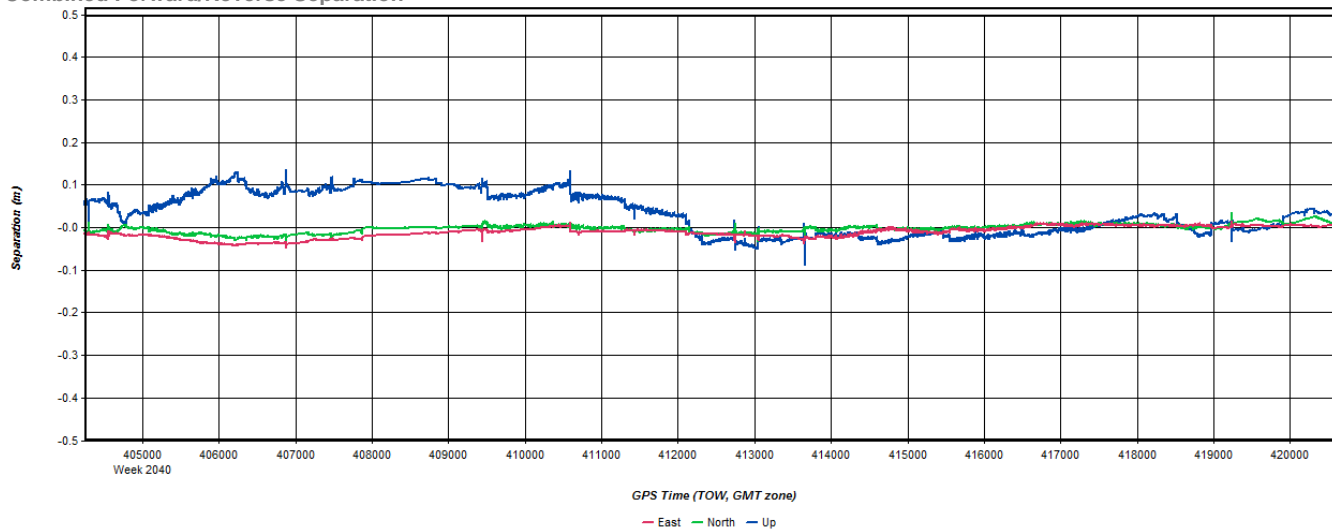
Quality Factor



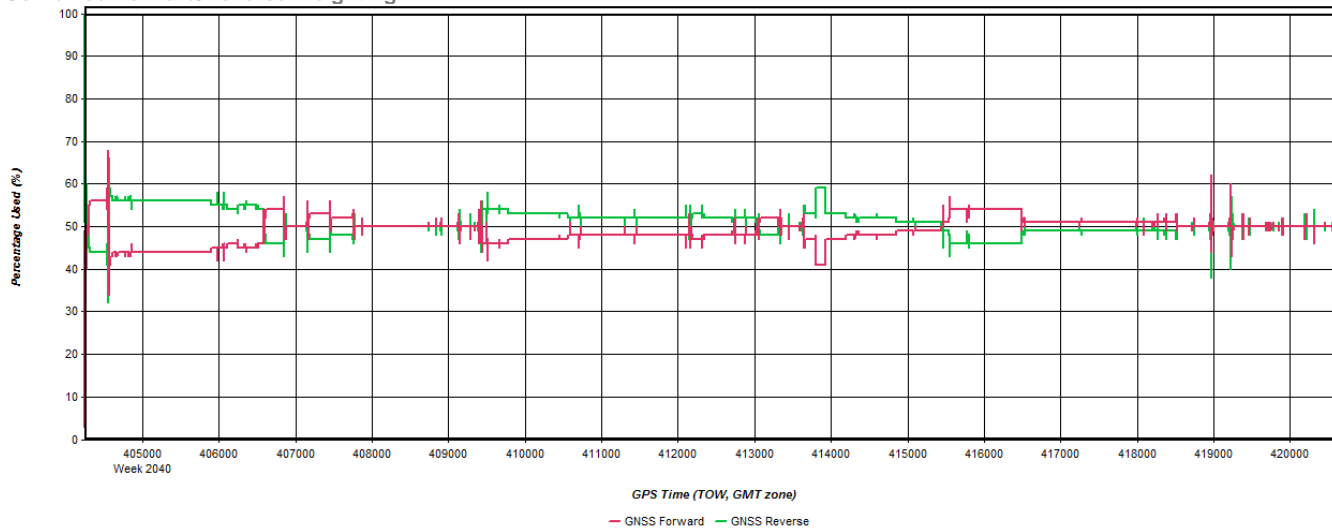
Height



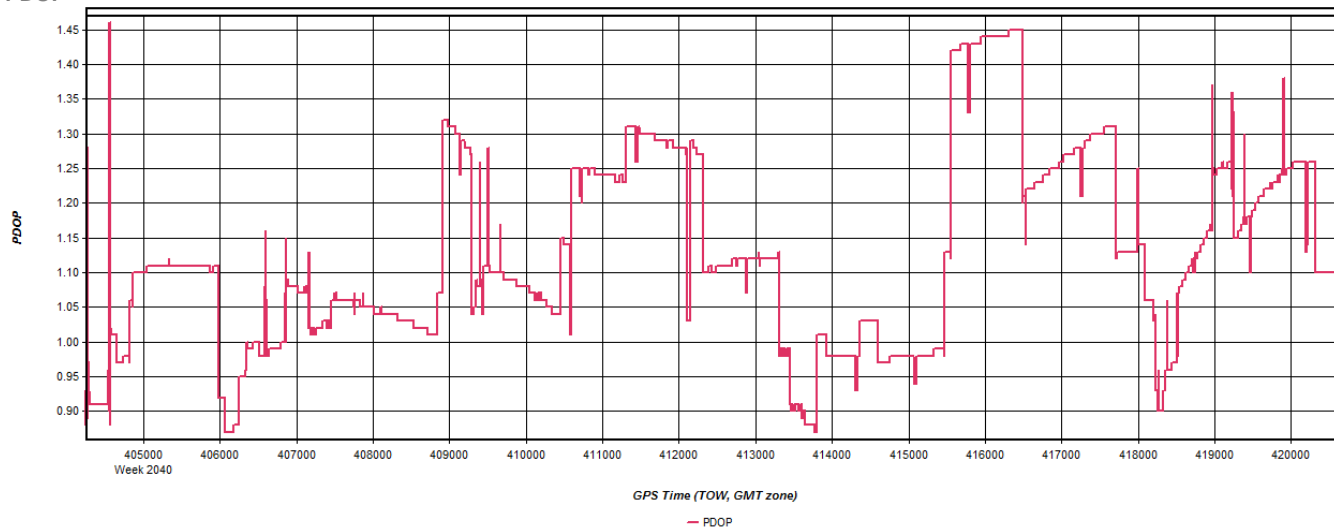
Combined Forward/Reverse Separation



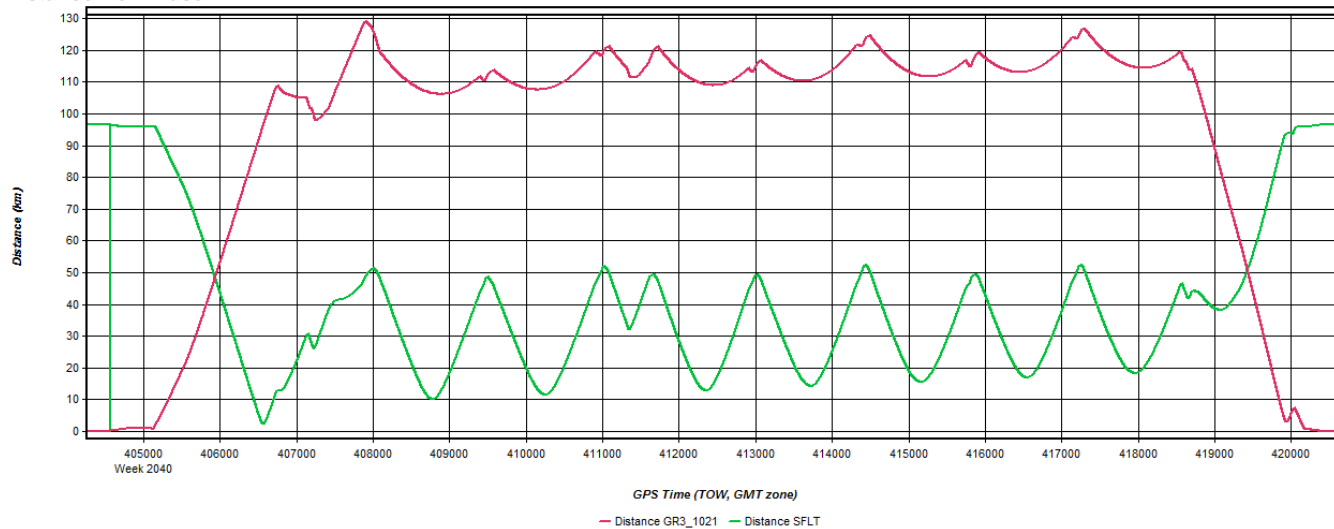
Combined Forward/Reverse Weighting



PDOP



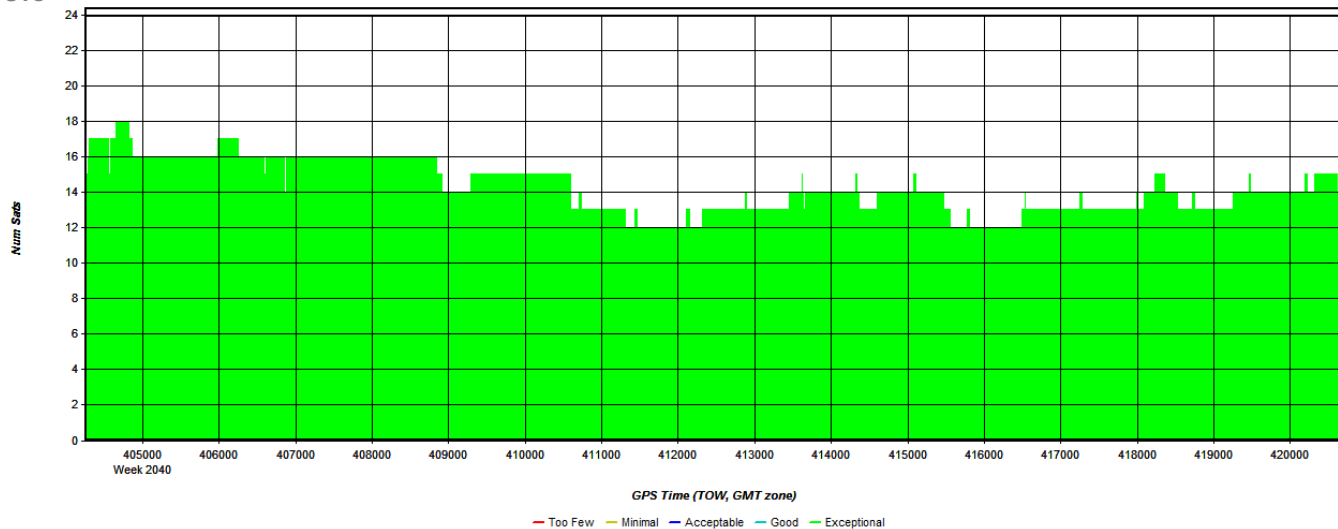
Distance from Base







SVs



USGS  
COLLECTION REPORT



Acquisition and Processing details ----- (February 14, 2019)

Log: 190214\_130\_33780084\_17

Menu
18.165

Lift Begin			Lift End			Fit Duration	Fit Hrs	Hobbs Hrs	Activity	
Airport	Chocks	Hobbs	Airport	Chocks	Hobbs					
1	KHYI	19:10	1395.1	KHYI	1:22	1400.8	6:12	6.25	5.7	0900-Production
2										
3										

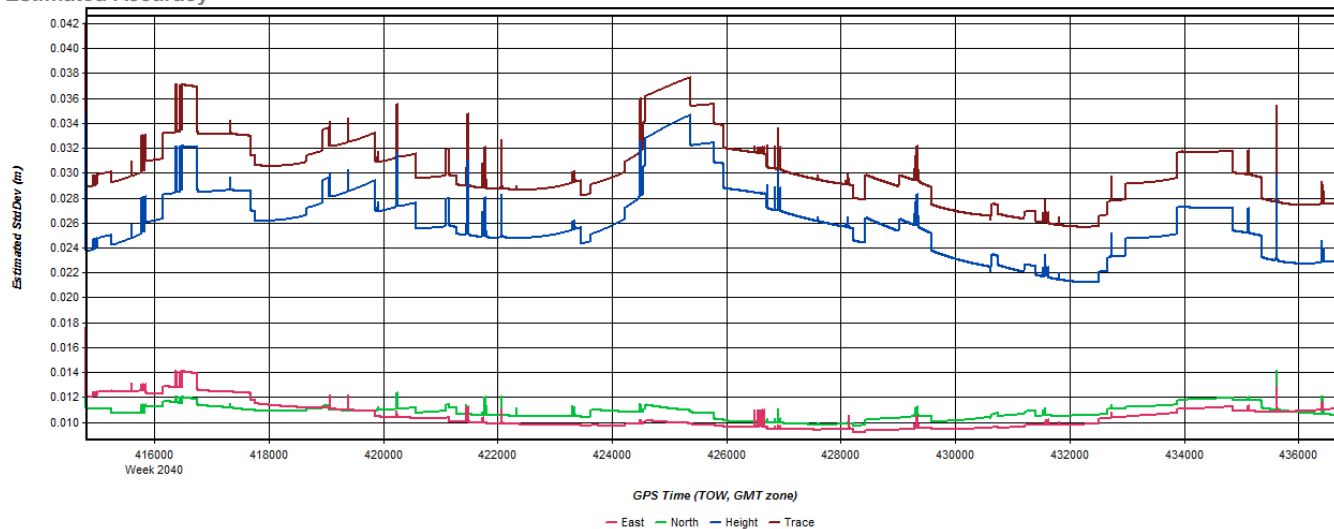
**ALS**  
**Flight Log**  
 AC80-44-00-02

FGI Job #		Project Name				System	Unit	IMU	PIA	SW1	SW2-Gain	Aper	AutoScan	Ground Temp °C		Min Range Gate	Data Logger Drive								
33780084		Hurricane Harvey				ALS80	130	uRS	4					22.0	17.0	1903	LG 102								
Flight Date		GPS Day		Lift		Sun°		Solar Times (UTC)		Laser Power		Pattern		Flying Temp °C		Max Range Gate		Download Drive							
14-Feb-19		19-045		17						96%		Triangle		11.0 14.0		2537		NS1TB-45							
Mission ID (yyymmdd_Sen_Job_Lift)				Aircraft		Airport ID		FMS		UTC		AMT (ft)		Speed		Scan Hz		Pulse Rate		FOV km/WPT		Altm Setting		Shipping Track	
190214_130_33780084_17				N97HC		KHYI		CCNS 8		-6		7,550		150		35.0		352,000		46		1.384		29.92 29.83	
Pilot #1			Pilot #2			Operator #1			Operator #2																
Grant Cassell						Riley Forsyth																			
Base 1 ID		Location		Rec ID		Ant ID		ARP (m)		Start Time (UTC)		Stop Time (UTC)		GPS Filename		Operator		Data							
1045		KHYI		GR3-4		GR3-4		1.8						GR3-40214s.tps		Riley Forsyth		FTP							
Area	Flight #		Wpt		Distance		UTC		Fit Dir	Altitude (GPS)	Speed (knots)	Scan Rate	Comments and Conditions										SVs	PDOP	
	FGI	Client's	From	To	Begin	End	Start	End																	
							19:13:34	19:18:34					Ground static at KHYI										19	1.6	
							19:39:29						s turn										20	1.3	
Block F	74		50	20	67.8	26.3	19:44:50	19:54:09	266	8140	141		cross tie line										20	1.3	
	44		1	59	0	80.3	20:02:08	20:20:32	356	8305	138												20	1.3	
	36		57	1	77.5	0	20:24:53	20:42:44	176	8476	141												20	1.3	
	35		1	57	0	77.5	20:44:47	21:02:47	356	8530	132												21	1.2	
	35		57	47	77.5	63.7	21:05:19	21:08:26	176	8533	132		calibration line										24	1.2	
	34		57	1	77.5	0	21:15:57	21:33:46	176	8522	139												22	1.3	
	33		1	57	0	77.5	21:36:03	21:53:55	356	8553	144												23	1.2	
	32		57	1	77.5	0	21:55:53	22:13:56	176	8515	138												22	1.3	
	31		1	57	0	77.5	22:15:45	22:33:52	356	8409	141												23	1.3	
	30		57	1	77.5	0	22:36:20	22:54:11	176	8575	142												23	1.2	
	29		1	57	0	77.5	22:56:04	23:13:00	356	8597	135												23	1.2	
	28		54	1	73.4	0	23:16:04	23:32:53	176	8628	139												22	1.2	
	27		1	54	0	73.4	23:34:42	23:51:49	356	8616	136												21	1.1	
	26		56	1	76.1	0	23:53:36	0:11:10	176	8713	141												21	1.1	
	25		1	56	0	76.1	0:13:15	0:30:50	356	8641	138												20	1.1	
	24		56	1	76.1	0	0:32:48	0:50:34	176	8649	142												17	1.4	
							0:50:38						s turn										18	1.4	
							1:13:50	1:18:51					Ground static at KHYI										19	1.1	

Trajectory and GPS Plots:

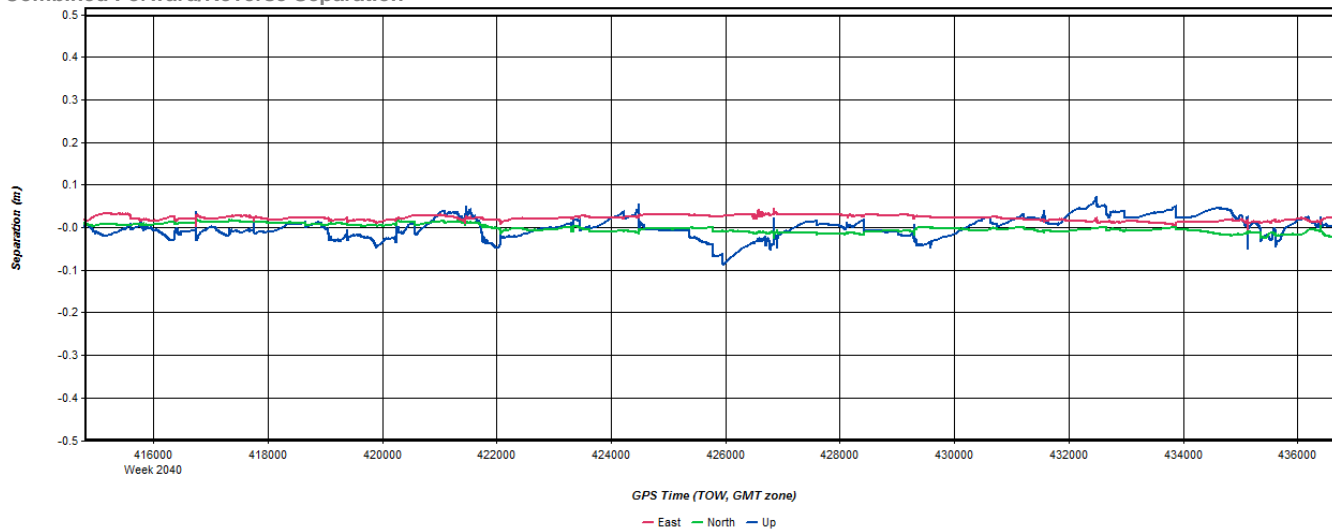


Estimated Accuracy

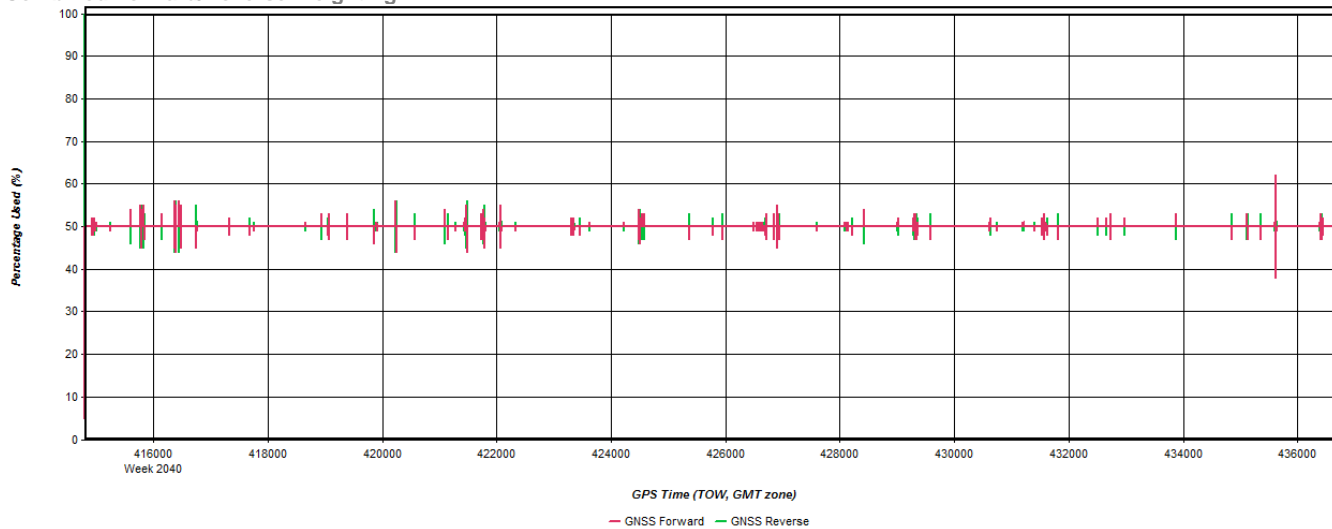




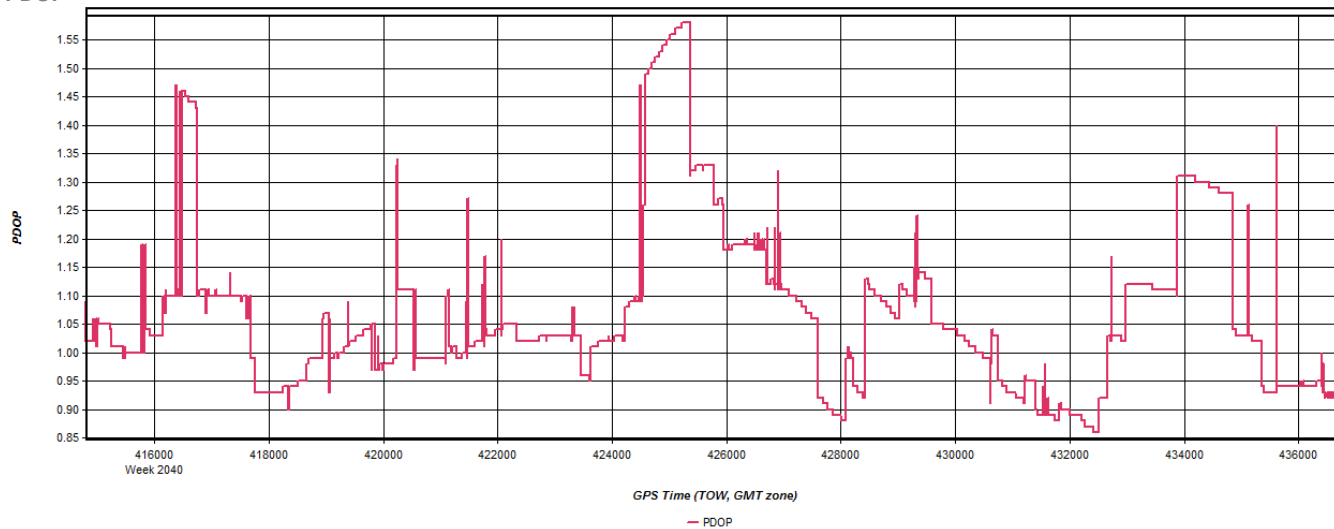
Combined Forward/Reverse Separation



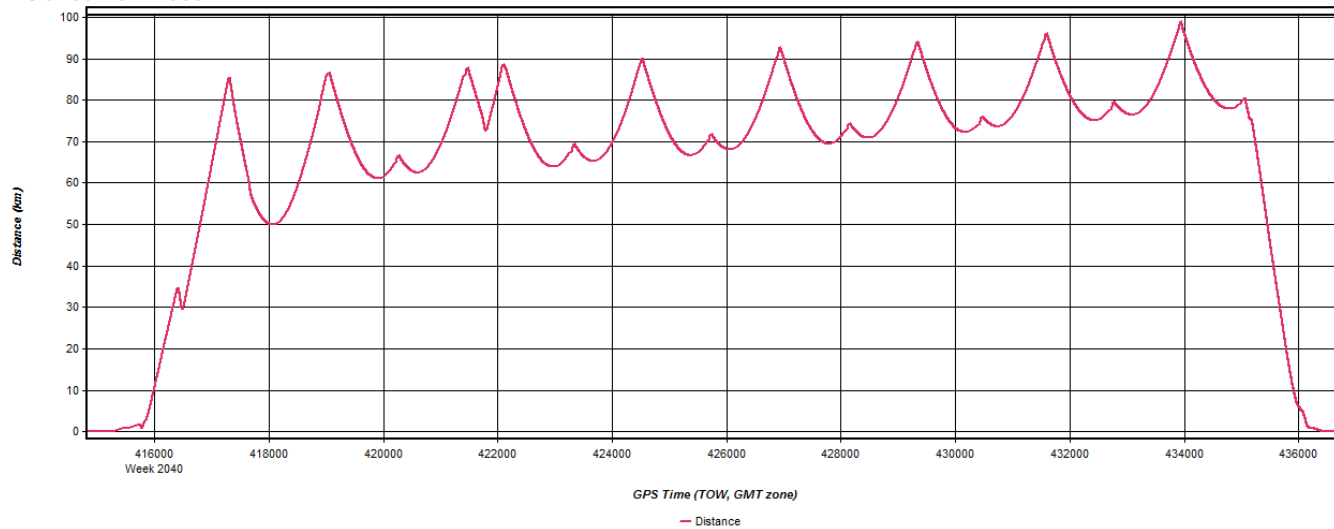
Combined Forward/Reverse Weighting



PDOP

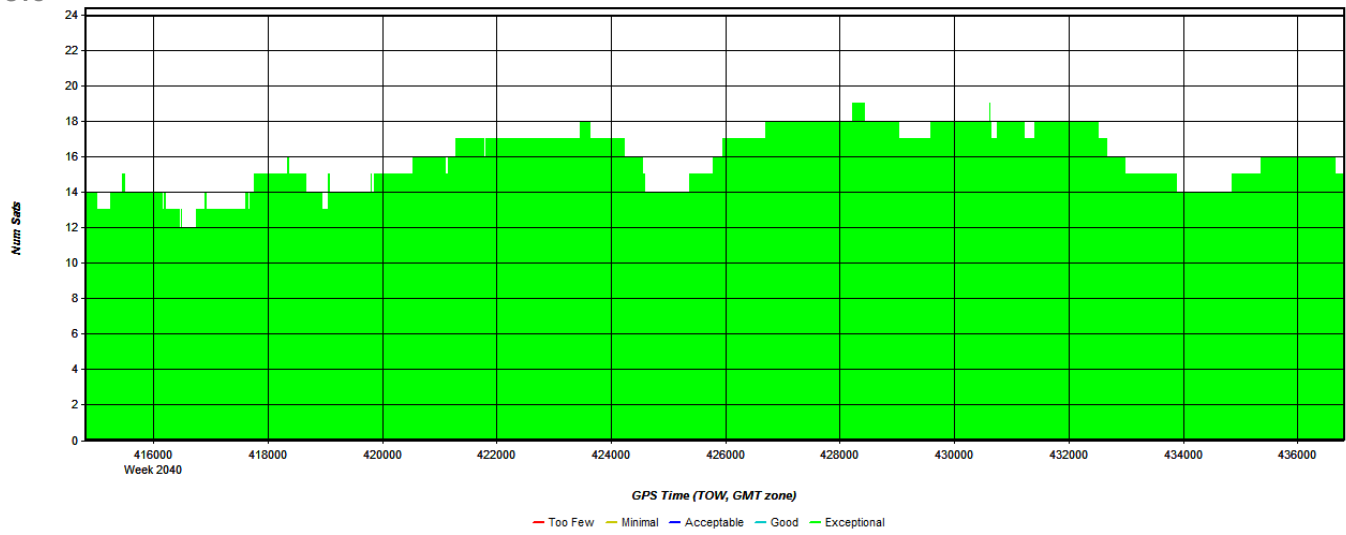


Distance from Base





SVs



USGS  
COLLECTION REPORT



Acquisition and Processing details ----- (February 15, 2019)

Log: 190215\_118\_33780084\_29

	Menu	19.023	Lift Begin			Lift End			Flt	Flt	Hobbs		<b>ALS</b> Flight Log AC80-44-00-02	
			Airport	Chocks	Hobbs	Airport	Chocks	Hobbs	Duration	Hrs	Hrs			Activity
	1	KGTU	13:35	3020.7	KGTU	18:02	3024.7	4:27	4.50	4.0	0900-Production			
	2													

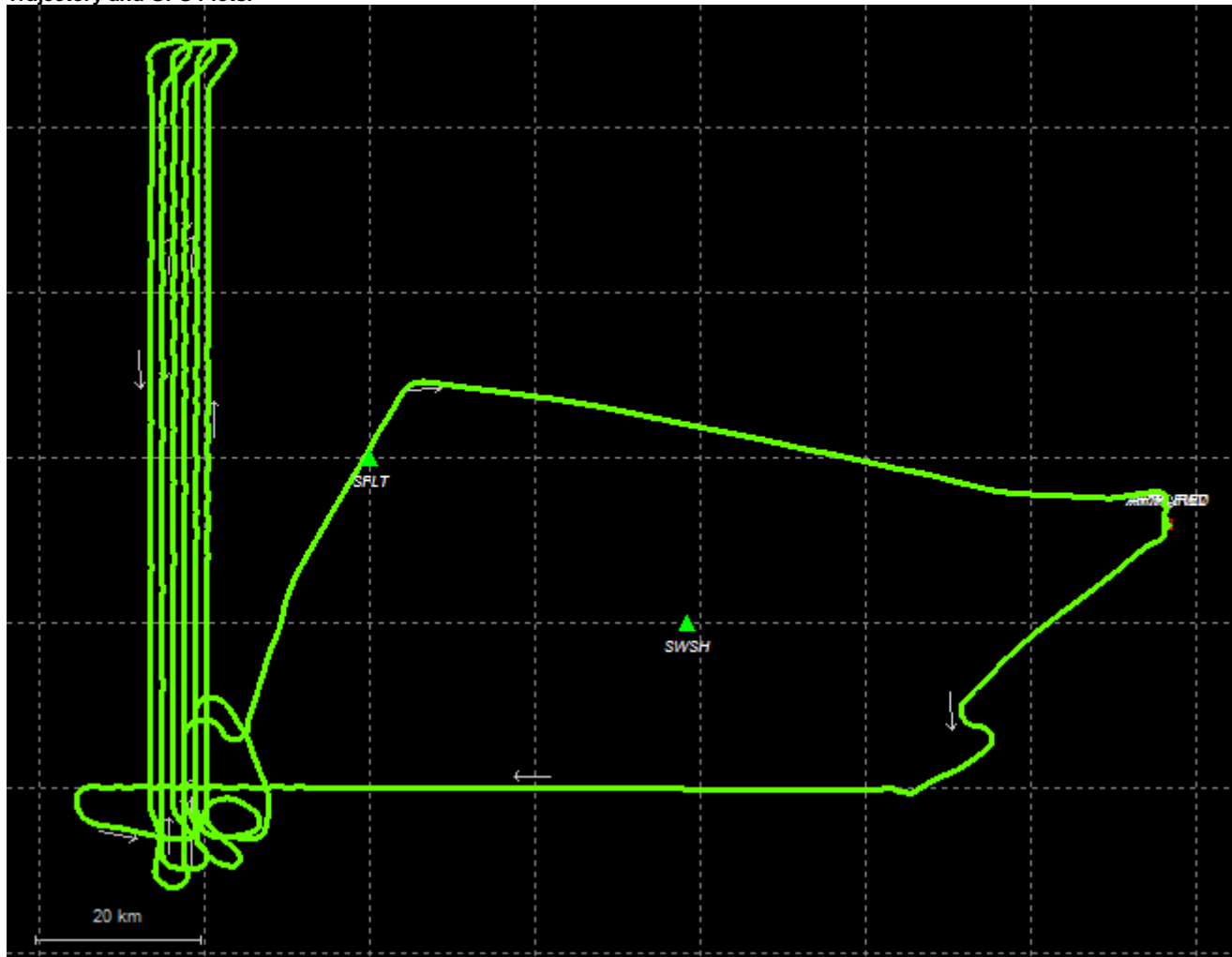
FGI Job # <b>33780084</b>	Project Name <b>USGS Hurricane Harvey UTM 14</b>		System <b>ALS80</b>	Unit <b>118</b>	IMU <b>uIRS</b>	PIA <b>3</b>	SW1 <b>-</b>	SW2-Gain <b>-</b>	Aper <b>60°</b>	AutoScan <b>Yes</b>	Ground Temp °C <b>12.0 25.0</b>	Min Range Gate <b>6244</b>	Data Logger Drive <b>MM70-07</b>
Flight Date <b>15-Feb-19</b>	GPS Day <b>19-046</b>	Lift <b>29</b>		Sun° <b>-</b>	Solar Times (UTC) <b>-</b>	Laser Power <b>100%</b>	Pattern <b>Triangle</b>	Flying Temp °C <b>10.0 12.0</b>	Max Range Gate <b>8323</b>	Download Drive <b>AP1TB-52</b>			
Mission ID (yymmdd_Sen_Job_Lift) <b>190215_118_33780084_29</b>	Aircraft <b>N8131</b>	Airport ID <b>KGTU</b>	FMS <b>CCNS 4</b>	UTC <b>-6</b>	AMT (ft) <b>7,550</b>	Speed <b>150</b>	Scan Hz <b>35.0</b>	Pulse Rate <b>352,000</b>	FOV <b>42</b>	kmWPT <b>1,384</b>	AltM Setting <b>29.77 29.76</b>		Shipping Track <b>774488202649</b>
Pilot #1 <b>Barry Hansen</b>		Pilot #2 <b>-</b>		Operator #1 <b>Chris Fought</b>		Operator #2 <b>-</b>		Flight-/JOBS/33780084 Hurricane Harvey ALS80-USGS/Data/Base					

Base 1 ID <b>FEDI 1115</b>	Location <b>KGTU</b>	Rec ID <b>GR3#5</b>	Ant ID <b>GR3#5</b>	ARP (m) <b>1.8</b>	Start Time (UTC) <b>2/15/19 1315</b>	Stop Time (UTC) <b>2/15/19 1805</b>	GPS Filename <b>GR3_10215n</b>	Operator <b>Chris Fought</b>	Data <b>FTP</b>
Base 2 ID <b>SFLT</b>	Location <b>LLANO, TX</b>	Rec ID <b>CORS</b>	Ant ID	ARP (m)	Start Time (UTC)	Stop Time (UTC)	GPS Filename	Operator	Data

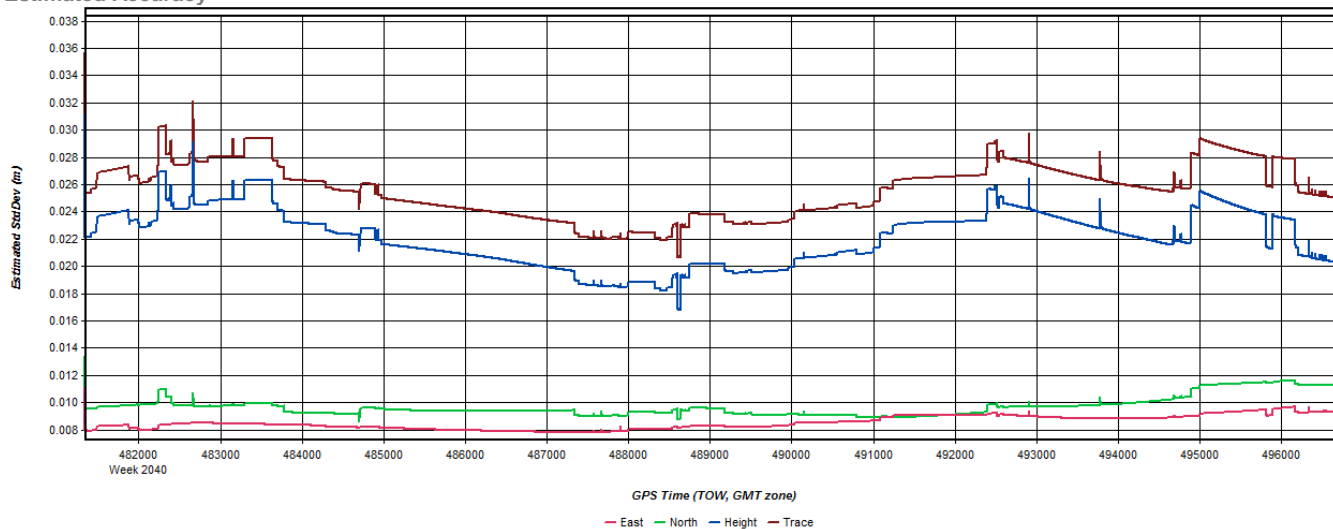
Area	Flight #		Wpt		Distance		UTC		Flt	Altitude (GPS)	Speed (knots)	Scan Rate	Comments and Conditions	SVs	PDOP
	FGI	Client's	From	To	Begin	End	Start	End							
							13:42:00	13:47:00					ground static	25	1.0
							14:03:51	14:06:00				1050GB	S-turn	26	1.0
BLOCK_H	73		66	1	90	0	14:10:24	14:34:26	267	8697	130	1,038.0	cross line	26	1.0
	18		1	61	0	83	14:43:19	15:04:00	356	8573	135	1,028.0		23	1.1
	17		61	1	83	0	15:07:45	15:27:16	176	8573	143	1,018.0		22	1.2
	17		1	8	0	9.7	15:32:13	15:34:50	356	8573	137	1,017.0	calibration line	25	1.0
	16		1	61	0	83	15:43:00	16:03:51	356	8573	133	1,006.0	manual start and stop of line; late start will re fly BOL	23	1.1
	15		61	1	83	0	16:08:00	16:27:09	176	8573	143	997.0		21	1.2
	14		1	61	0	83	16:32:17	16:52:01	356	8622	136	987.0		22	1.3
	13		61	1	83	0	16:56:08	17:15:34	176	8622	140	977.0		22	1.2
	16		1	5	0	5.5	17:21:14	17:22:52	356	8573	137	976.0	re flight	19	1.3
							17:23:04	17:25:27					S-turn	19	1.3
							17:30:00	17:35:00					overflight of CORS SFLT	19	1.2
							17:56:18	17:59:18					ground static	18	1.3



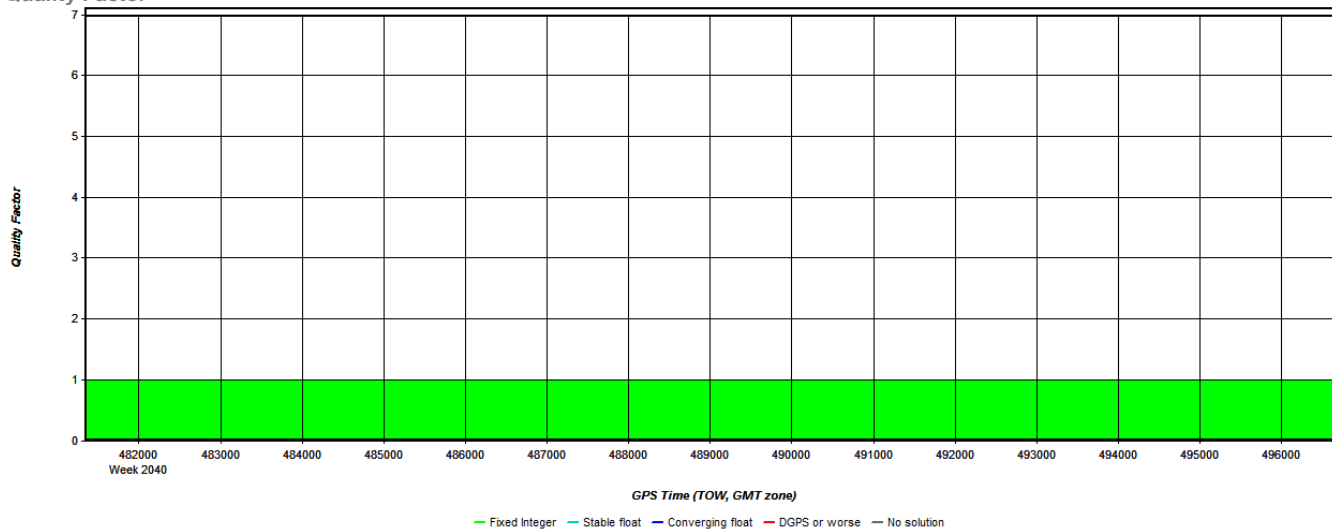
Trajectory and GPS Plots:



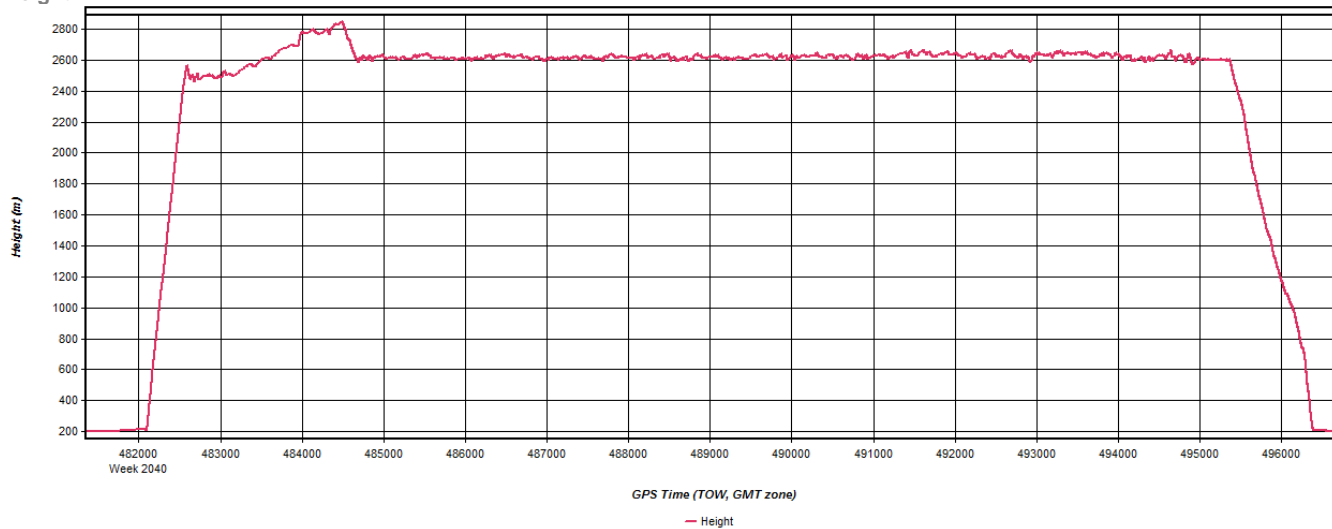
Estimated Accuracy



Quality Factor

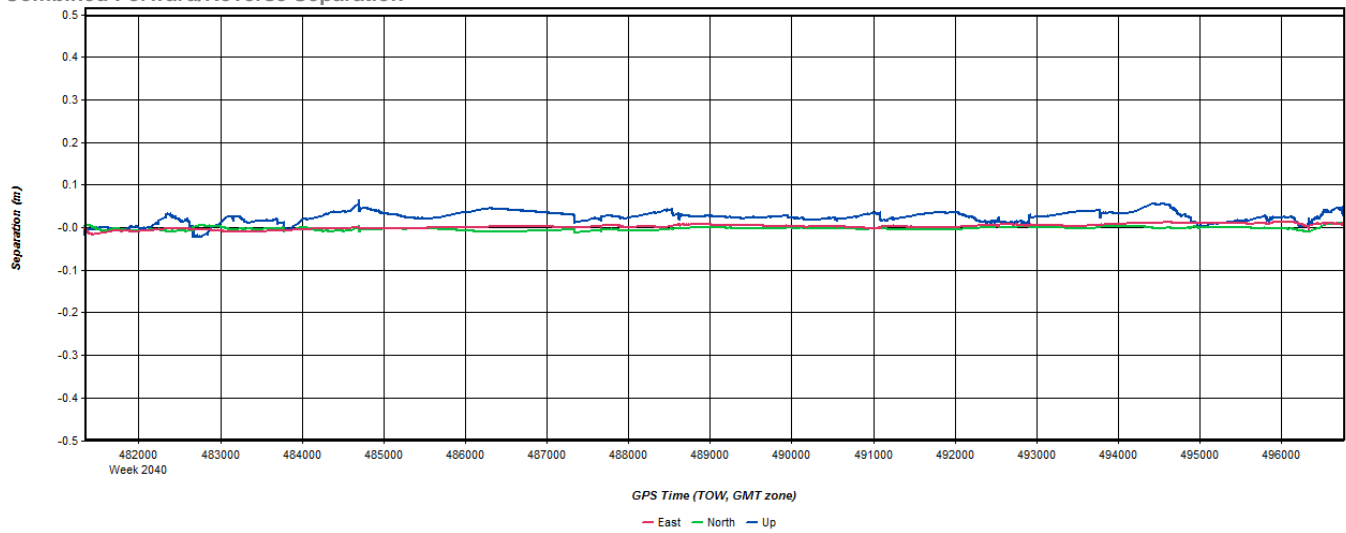


Height

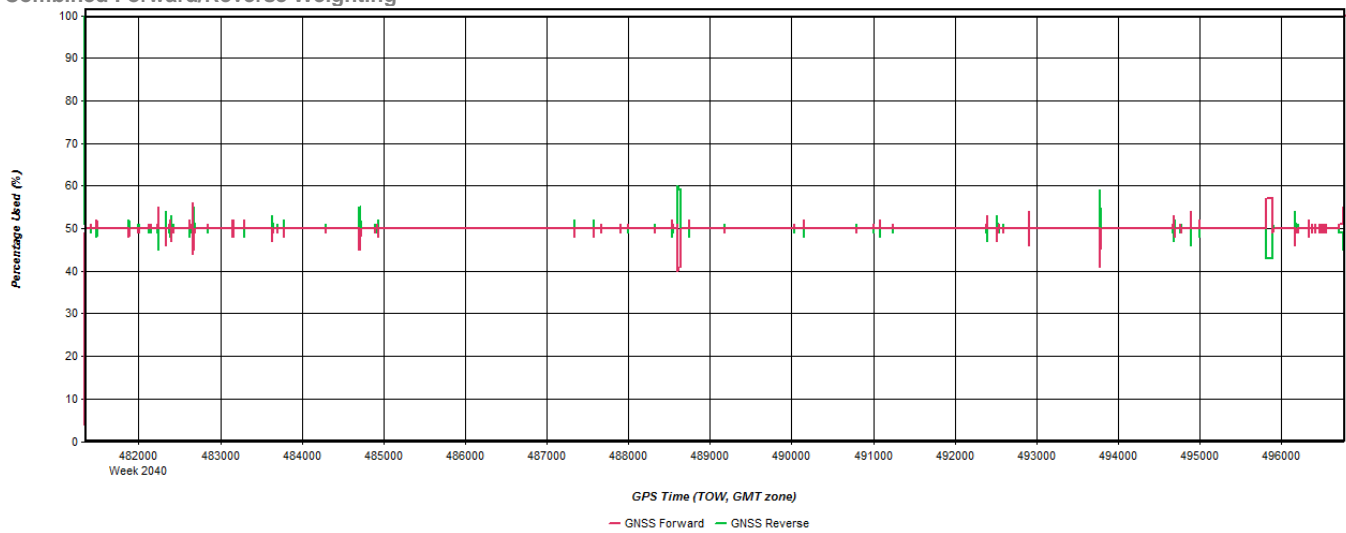


# USGS COLLECTION REPORT

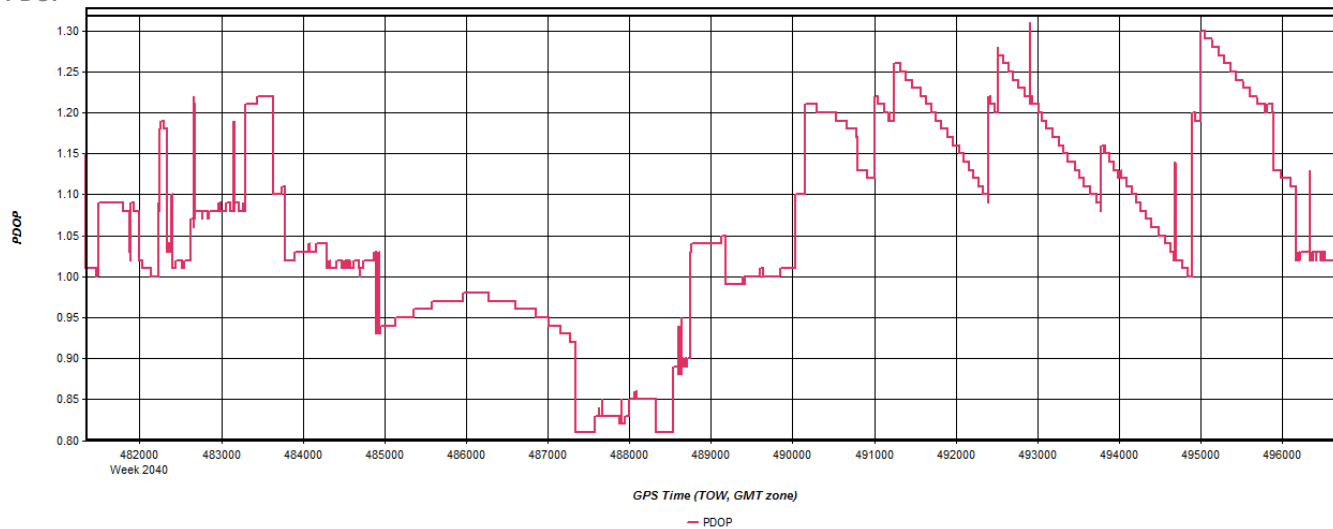
## Combined Forward/Reverse Separation



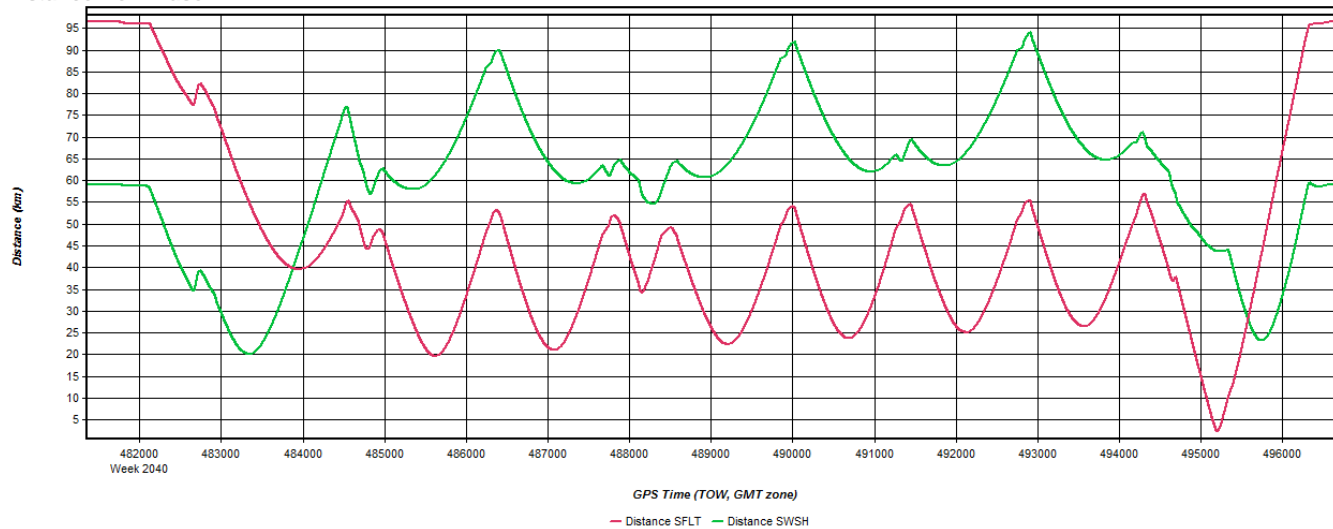
## Combined Forward/Reverse Weighting



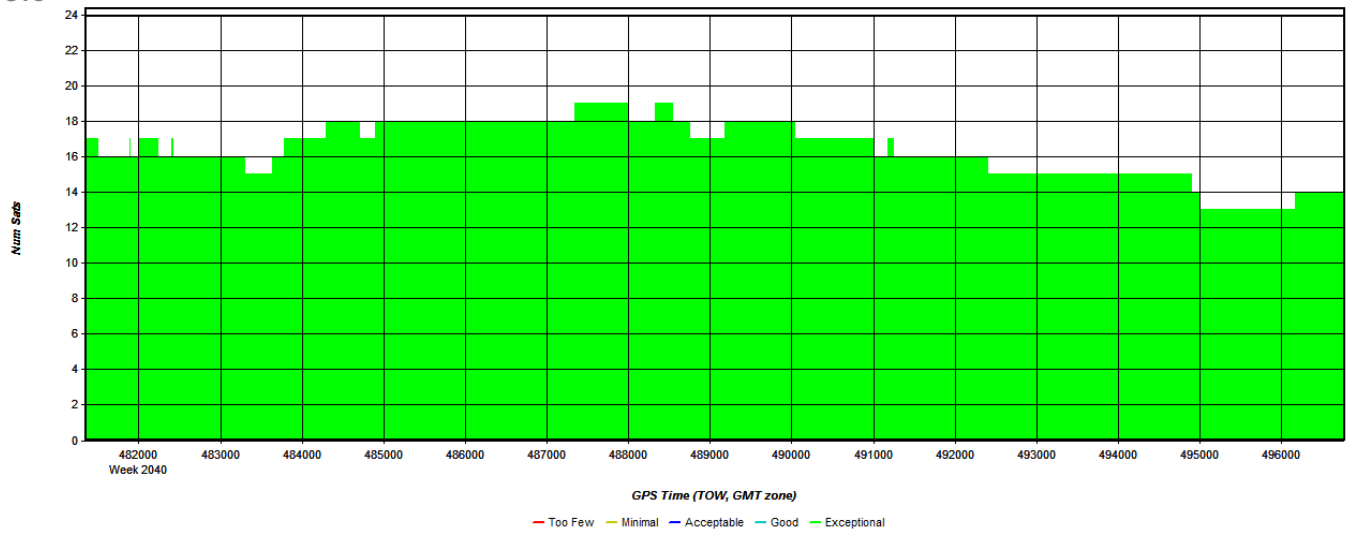
PDOP



Distance from Base



SVs



USGS  
COLLECTION REPORT



Acquisition and Processing details ----- (February 15, 2019)

Log: 190215\_118\_33780084\_30

	Menu	19.023	Lift Begin			Lift End			Flt	Flt	Hobbs		
			Airport	Chocks	Hobbs	Airport	Chocks	Hobbs	Duration	Hrs	Hrs		Activity
	1	KG TU	18:44	3024.7	KG TU	22:35	3028.1	3:51	3:75	3:4	0900-Production		
	2												

Fugro USA Land, Inc.

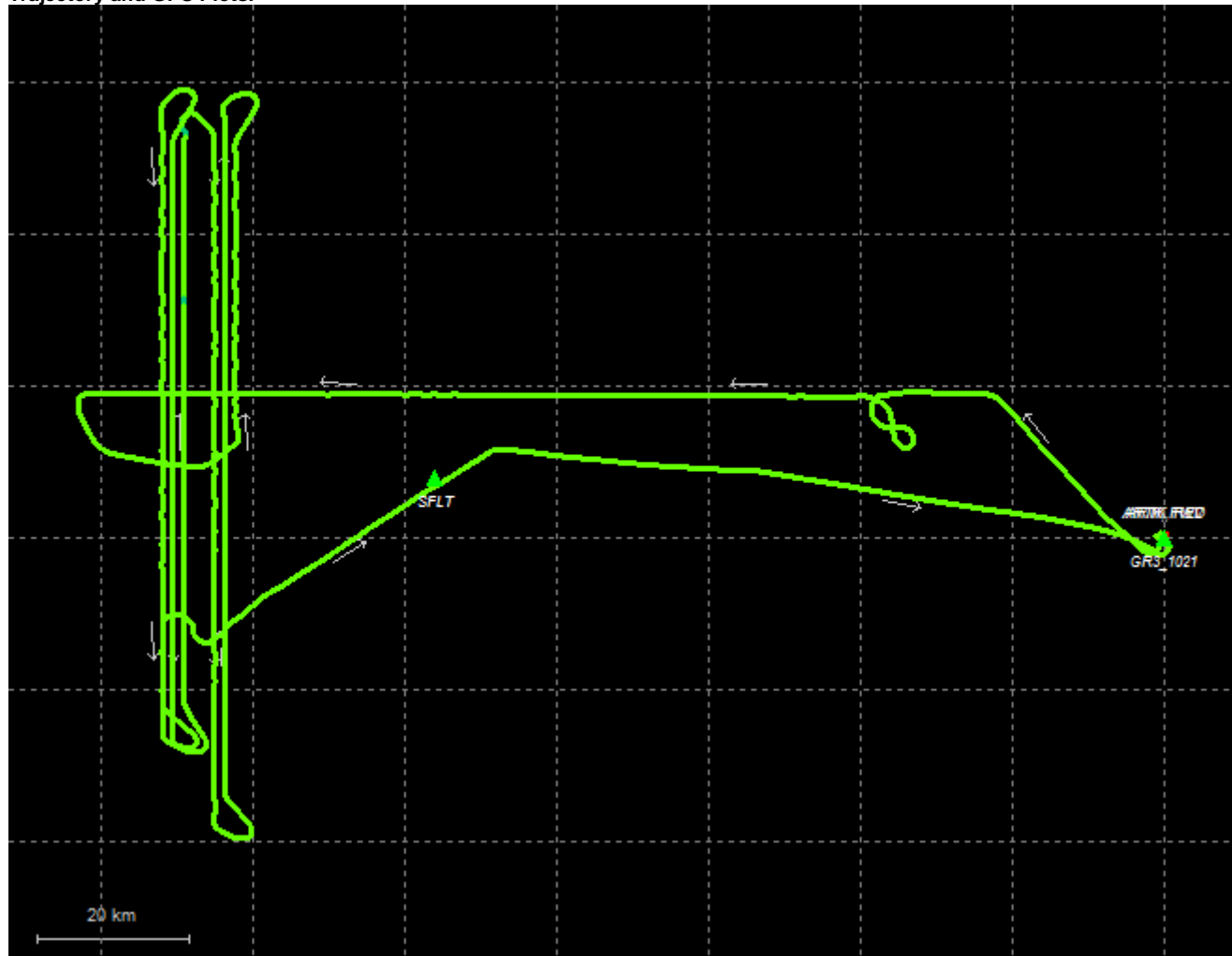
AC80-44-00-02

FGI Job # <b>33780084</b>	Project Name <b>USGS Hurricane Harvey UTM 14</b>		System <b>ALS80</b>	Unit <b>118</b>	IMU <b>uIRS</b>	PIA <b>3</b>	SW1 <b>-</b>	SW2-Gain <b>-</b>	Aper <b>60°</b>	AutoScan <b>Yes</b>	Ground Temp °C <b>27.0</b>	Min Range Gate <b>6244</b>	Data Logger Drive <b>MM70-07</b>
Flight Date <b>15-Feb-19</b>	GPS Day <b>19-046</b>	Lift <b>30</b>		Sun° <b>-</b>	Solar Times (UTC) <b>-</b>		Laser Power <b>100%</b>	Pattern <b>Triangle</b>	Flying Temp °C <b>12.0</b>		Max Range Gate <b>8323</b>	Download Drive <b>APS1TB-52</b>	
Mission ID (ymmdd_Sen_Job_Lift) <b>190215_118_33780084_30</b>		Aircraft <b>N8131</b>	Airport ID <b>KG TU</b>	FMS <b>CCNS 4</b>	UTC <b>-6</b>	AMT (ft) <b>7,550</b>	Speed <b>150</b>	Scan Hz <b>35.0</b>	Pulse Rate <b>352,000</b>	FOV <b>42</b>	km/WPT <b>1.384</b>	Altm Setting <b>29.75</b>	Shipping Track <b>774488202649</b>
Pilot #1 <b>Barry Hansen</b>		Pilot #2 <b>-</b>	Operator #1 <b>Chris Fought</b>		Operator #2 <b>-</b>		Flight/-JOBS/33780084 Hurricane Harvey ALS80-USGS/Data/Base						

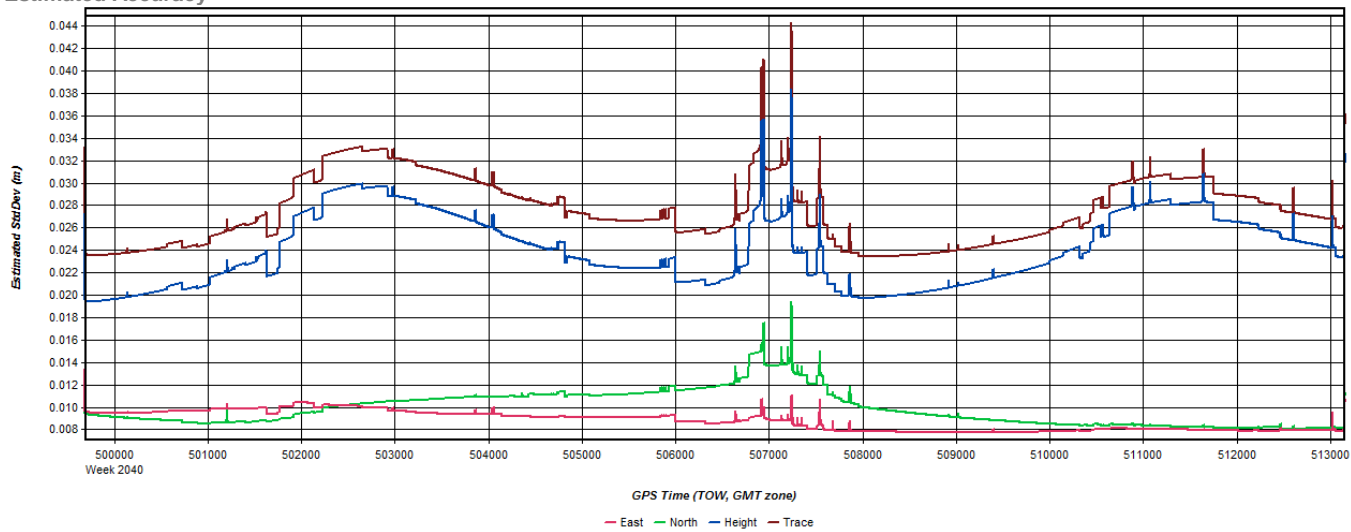
Base 1 ID <b>FED1 1115</b>	Location <b>KG TU</b>	Rec ID <b>GR3#5</b>	Ant ID <b>GR3#5</b>	ARP (m) <b>1.8</b>	Start Time (UTC) <b>2/15/19 1830</b>	Stop Time (UTC) <b>2/15/19 2240</b>	GPS Filename <b>GR3_10215s</b>	Operator <b>Chris Fought</b>	Data <b>FTP</b>
Base 2 ID <b>SFLT</b>	Location <b>LLANO, TX</b>	Rec ID <b>CORS</b>	Ant ID	ARP (m)	Start Time (UTC)	Stop Time (UTC)	GPS Filename	Operator	Data

Area	Flight #		Wpt		Distance		UTC		Fit	Altitude (GPS)	Speed (knots)	Scan Rate	Comments and Conditions	SVs	PDOP
	FGI	Client's	From	To	Begin	End	Start	End							
							18:48:00	18:53:00					ground static	19	1.2
							19:11:15	19:13:29				976GB	S-turn	19	1.2
BLOCK_H	74		60	1	81.7	0	19:20:25	19:41:53	267	8471	130	965.0	cross line	19	1.2
	13		44	61	59.5	83	19:51:09	19:57:05	356	8622	137	962.0	re flight	18	1.4
	12		61	1	83	0	20:01:33	20:22:22	176	8622	140	952.0		18	1.6
	11		1	61	0	83	20:27:19	20:46:31	356	8622	145	942.0		20	1.1
	8		52	1	70.6	0	20:49:15	21:05:41	176	8622	142	934.0		22	1.1
	7		1	52	0	70.6	21:10:33	21:28:11	356	8671	140	925.0		21	1.2
	6		52	1	70.6	0	21:32:24	21:48:49	176	8671	145	917.0		22	1.2
	6		1	8	0	9.7	21:53:30	21:56:00	356	8671	130	915.0	calibration line	22	1.2
							21:56:10	22:00:00					S-turn	23	1.2
							22:01:45	22:06:45					overflight of CORS SFLT	21	1.4
							22:29:03	22:32:03					ground static	24	1.2

Trajectory and GPS Plots:

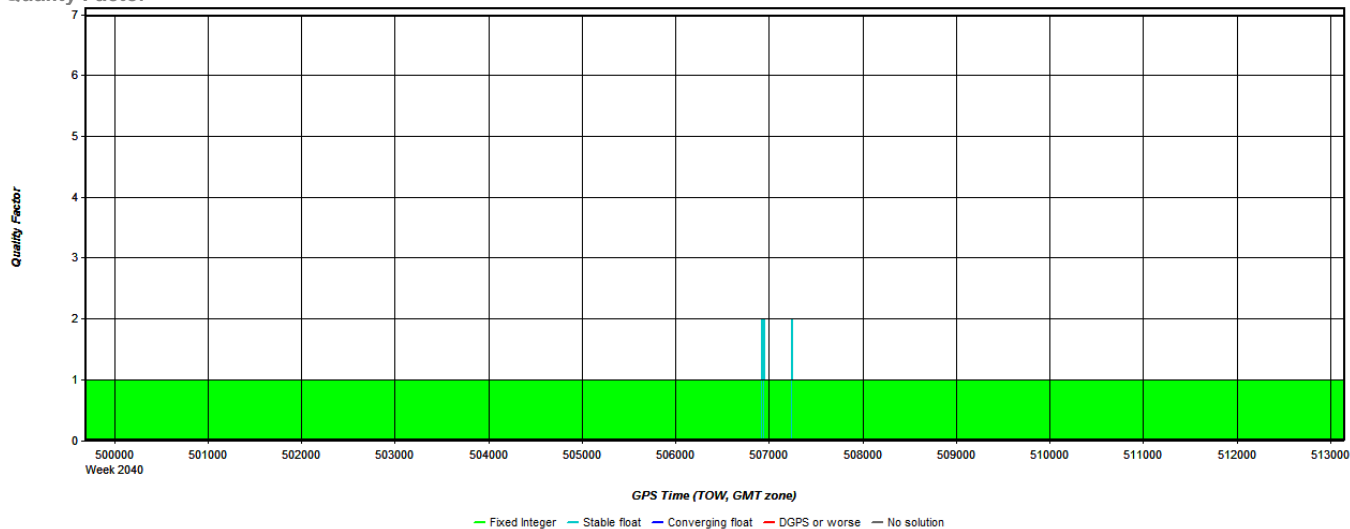


Estimated Accuracy

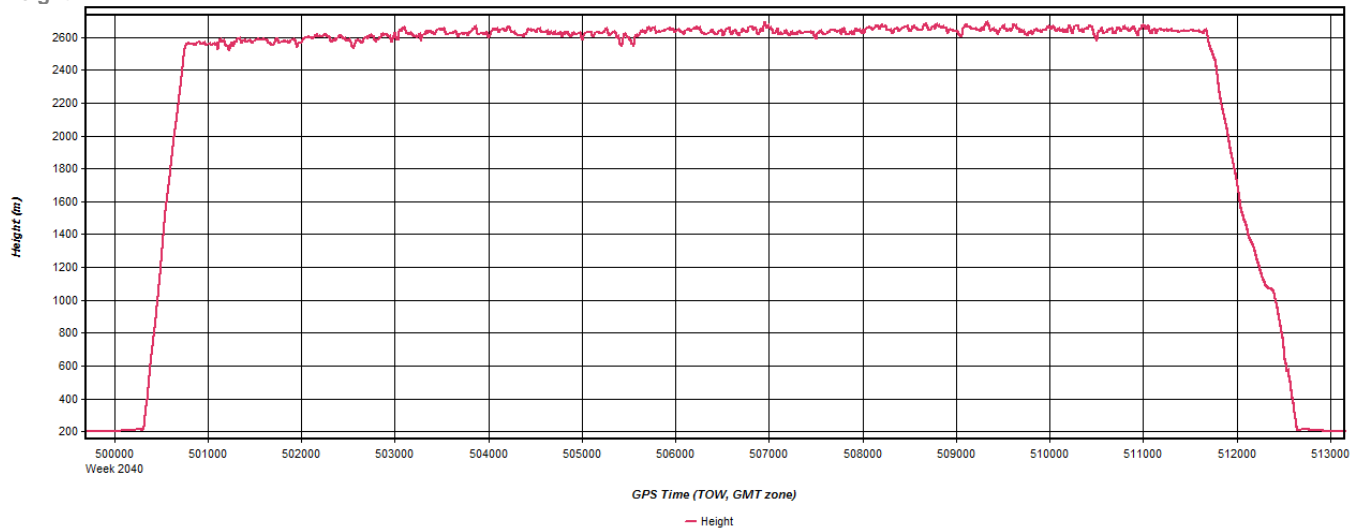




Quality Factor

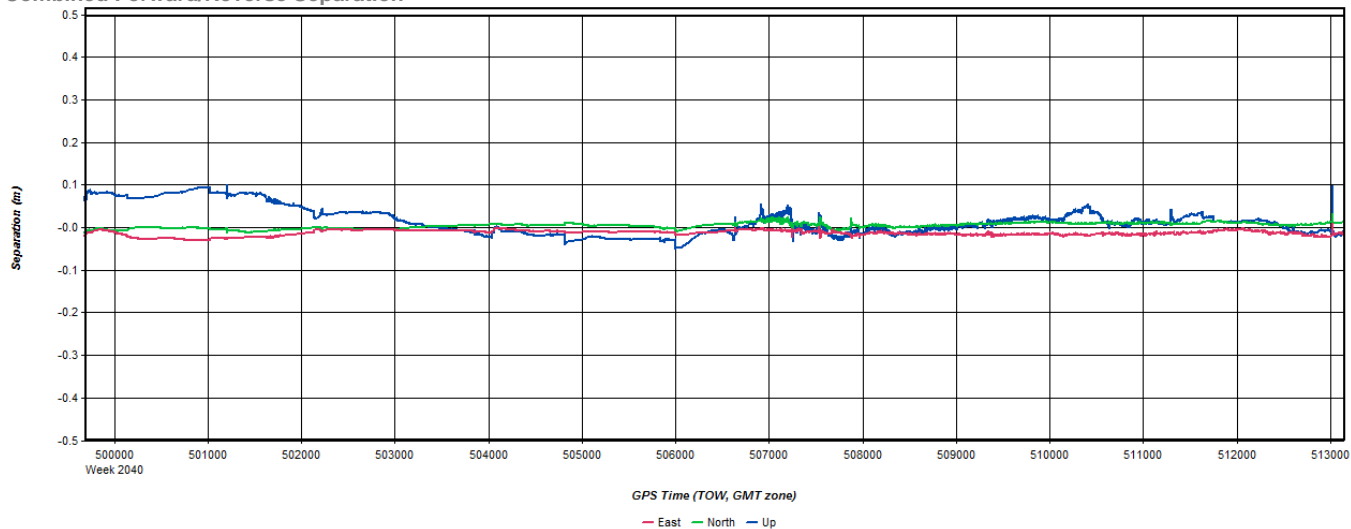


Height





Combined Forward/Reverse Separation

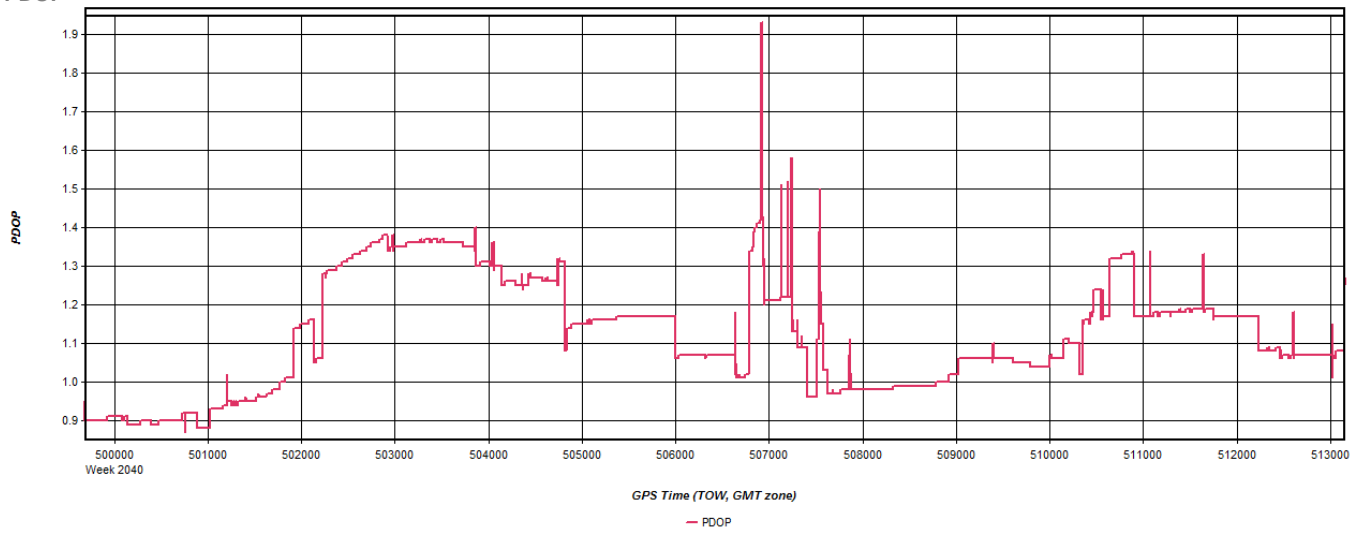


Combined Forward/Reverse Weighting

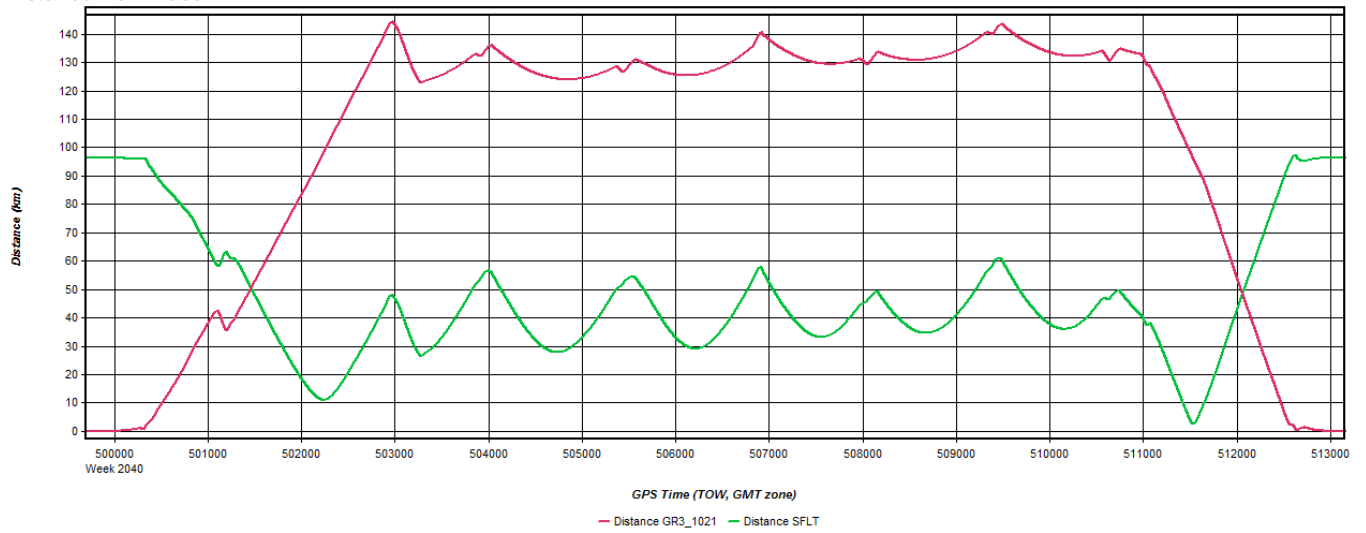


# USGS COLLECTION REPORT

## PDOP

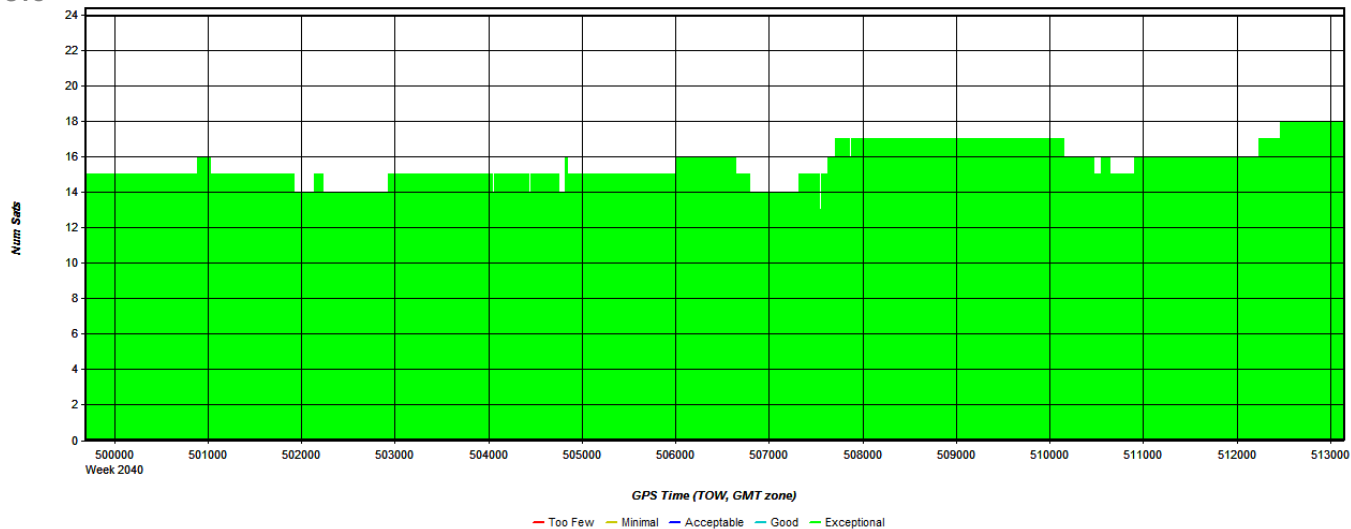


## Distance from Base





SVs



USGS  
COLLECTION REPORT



Acquisition and Processing details ----- (February 17, 2019)

Log: 190217\_118\_33780084\_31

Menu 19.023

**FUGRO**  
Fugro USA Land, Inc.

	Lift Begin			Lift End			Fit Duration	Fit Hrs	Hobbs Hrs	Activity
	Airport	Chocks	Hobbs	Airport	Chocks	Hobbs				
1	KGTU	14:21	3028.1	KT82	15:19	3028.8	0:58	1.00	0.7	0103-Mob/DeMob
2	KT82	16:54	3028.8	KGTU	21:25	3032.9	4:31	4.50	4.1	0900-Production
3										

**ALS**  
Flight Log

AC80-44-00-02

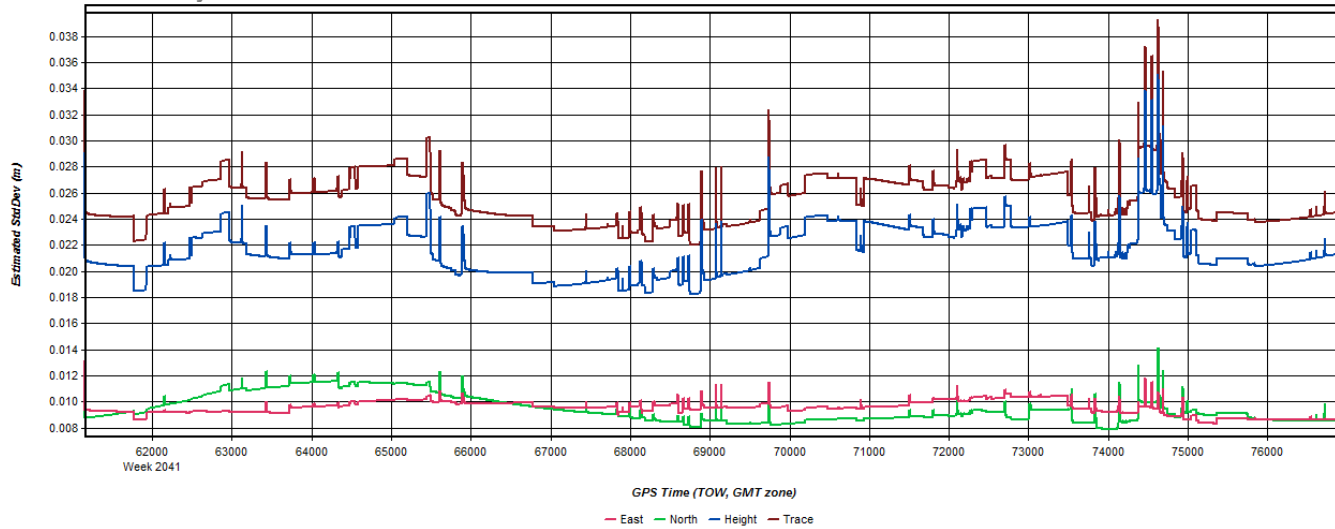
FGI Job # <b>33780084</b>	Project Name <b>USGS Hurricane Harvey UTM 14</b>		System <b>ALS80</b>	Unit <b>118</b>	IMU <b>uIRS</b>	PIA <b>3</b>	SW1 <b>-</b>	SW2-Gain <b>-</b>	Aper <b>60°</b>	AutoScan <b>Yes</b>	Ground Temp °C <b>16.0 14.0</b>	Min Range Gate <b>6244</b>	Data Logger Drive <b>MM70-08</b>
Flight Date <b>17-Feb-19</b>	GPS Day <b>19-048</b>	Lift <b>31</b>		Sun° <b>-</b>	Solar Times (UTC) <b>-</b>	Laser Power <b>100%</b>	Pattern <b>Triangle</b>	Flying Temp °C <b>8.0 8.0</b>	Max Range Gate <b>8323</b>	Download Drive <b>AP1TB#43</b>			
Mission ID (yymmdd_Sen_Job_Lift) <b>190217_118_33780084_31</b>	Aircraft <b>N8131</b>	Airport ID <b>KGTU</b>	FMS <b>CCNS 4</b>	UTC <b>-6</b>	AMT (ft) <b>7,550</b>	Speed <b>150</b>	Scan Hz <b>35.0</b>	Pulse Rate <b>352,000</b>	FOV <b>42</b>	kmWPT <b>1,384</b>	Altm Setting <b>29.91 29.93</b>		Shipping Track <b>774490134858</b>
Pilot #1 <b>Barry Hansen</b>		Pilot #2 <b>-</b>		Operator #1 <b>Chris Fought</b>		Operator #2 <b>-</b>		Flight-JOBS/33780084 Hurricane Harvey ALS80-USGS/Data/Base					
Base 1 ID <b>FEDI 1115</b>	Location <b>KGTU</b>	Rec ID <b>GR3#5</b>	Ant ID <b>GR3#5</b>	ARP (m) <b>1.8</b>	Start Time (UTC) <b>2/17/19 1410</b>	Stop Time (UTC) <b>2/17/19 2132</b>	GPS Filename <b>GR3_10217o</b>	Operator <b>Chris Fought</b>	Data <b>FTP</b>				
Base 2 ID <b>SFBG</b>	Location <b>Fredericksburg, TX</b>	Rec ID <b>CORS</b>	Ant ID	ARP (m)	Start Time (UTC)	Stop Time (UTC)	GPS Filename	Operator	Data				

Area	Flight #		Wpt		Distance		UTC		Fit Dir	Altitude (GPS)	Speed (knots)	Scan Rate	Comments and Conditions	SVs	PDOP
	FGI	Client's	From	To	Begin	End	Start	End							
							16:59:00	17:02:00					ground static	19	1.3
							16:15:30	17:20:30					overflight of CORS SFBG	20	1.3
							17:21:14	17:23:39				1073GB	S-turn	21	1.1
BLOCK_F	8		62	1	84.4	0	17:30:14	17:50:53	176	8816	130	1,062.0		20	1.3
	7		1	62	0	84.4	17:54:57	18:14:32	356	8720	140	1,052.0		19	1.3
	7		62	56	84.4	77	18:20:09	18:22:31	176	8720	130	1,051.0	calibration line	21	1.1
	6		62	1	84.4	0	18:30:04	18:49:56	176	8622	135	1,041.0		21	1.1
	5		1	62	0	84.4	18:54:26	19:13:59	356	8596	147	1,031.0		21	1.2
	4		62	1	84.4	0	19:19:13	19:40:22	176	8596	135	1,020.0		21	1.3
	3		1	62	0	84.4	19:44:44	20:04:22	356	8596	142	1,010.0		19	1.5
	2		24	1	31.8	0	20:09:02	20:17:23	176	9121	130	1,005.0		21	1.2
	1		1	24	0	31.8	20:21:06	20:28:50	356	9121	148	1,002.0		21	1.1
BLOCK_H	73		10	1	12.5	0	20:35:38	20:40:06	266	9117	110	999.0	X line; manual start/stop of line	22	1.1
							20:40:19	20:42:20					S-turn	22	1.1
							20:44:30	20:49:30					overflight of CORS SFBG	23	1.0
							21:19:00	21:22:00					ground static	22	1.2

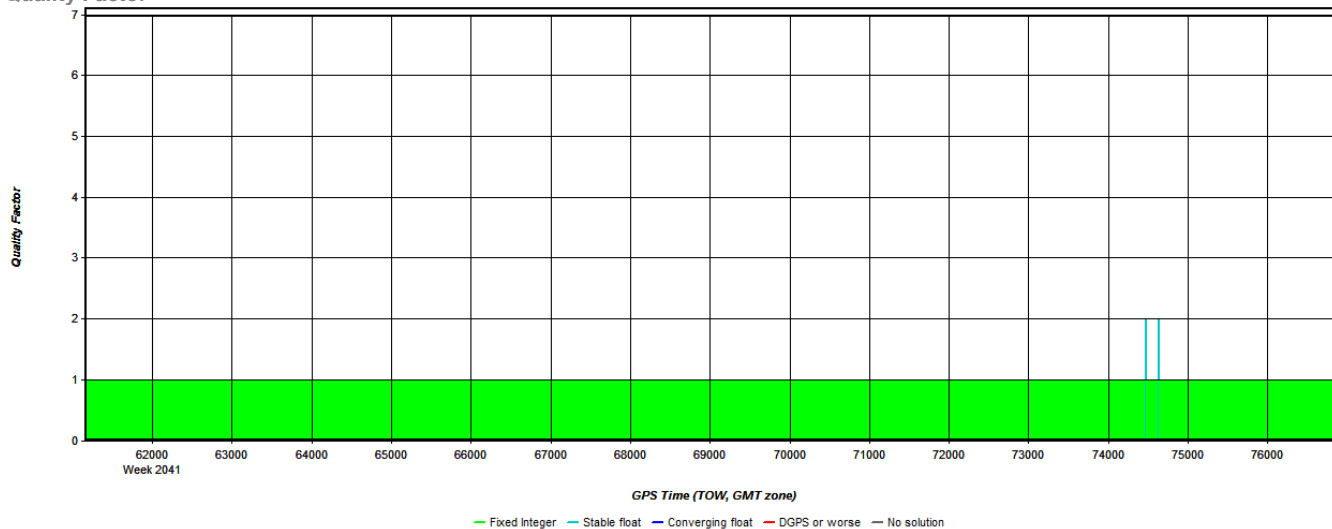
Trajectory and GPS Plots:



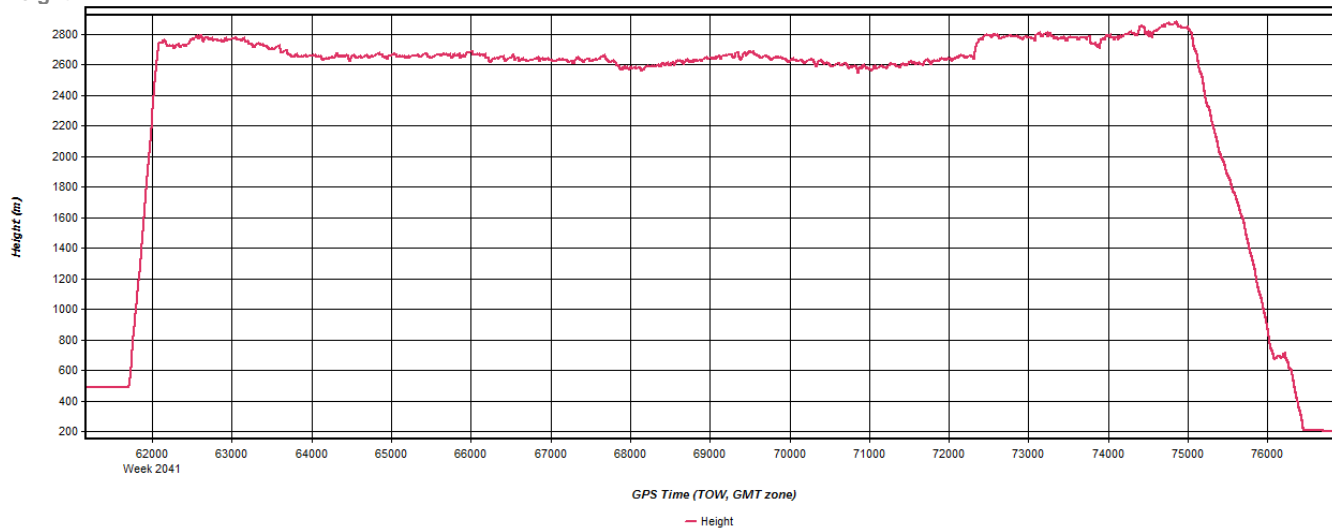
Estimated Accuracy



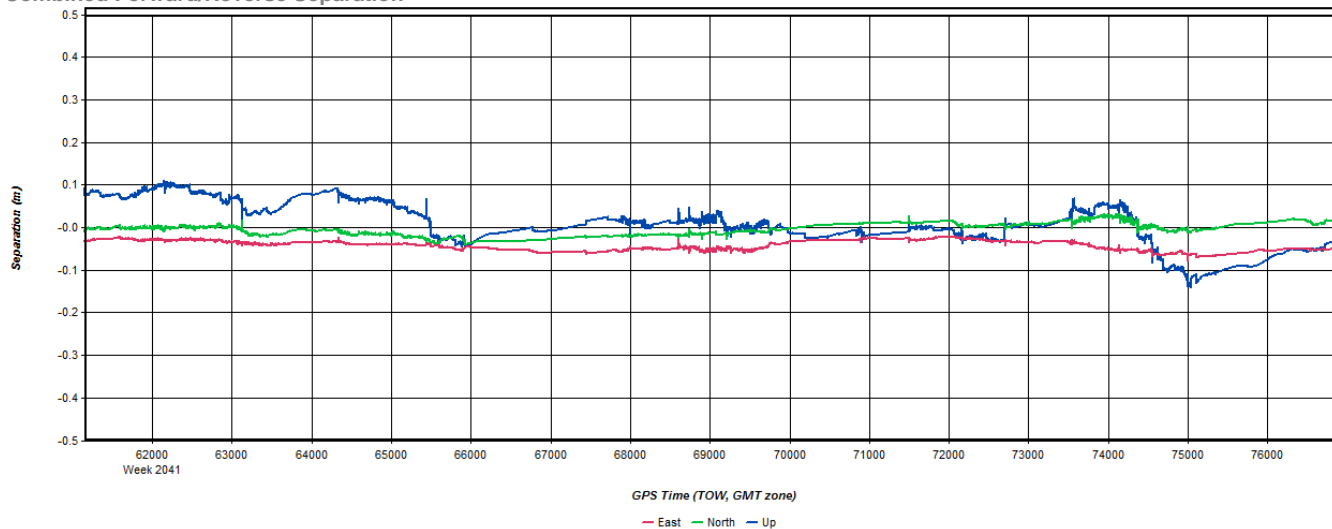
Quality Factor



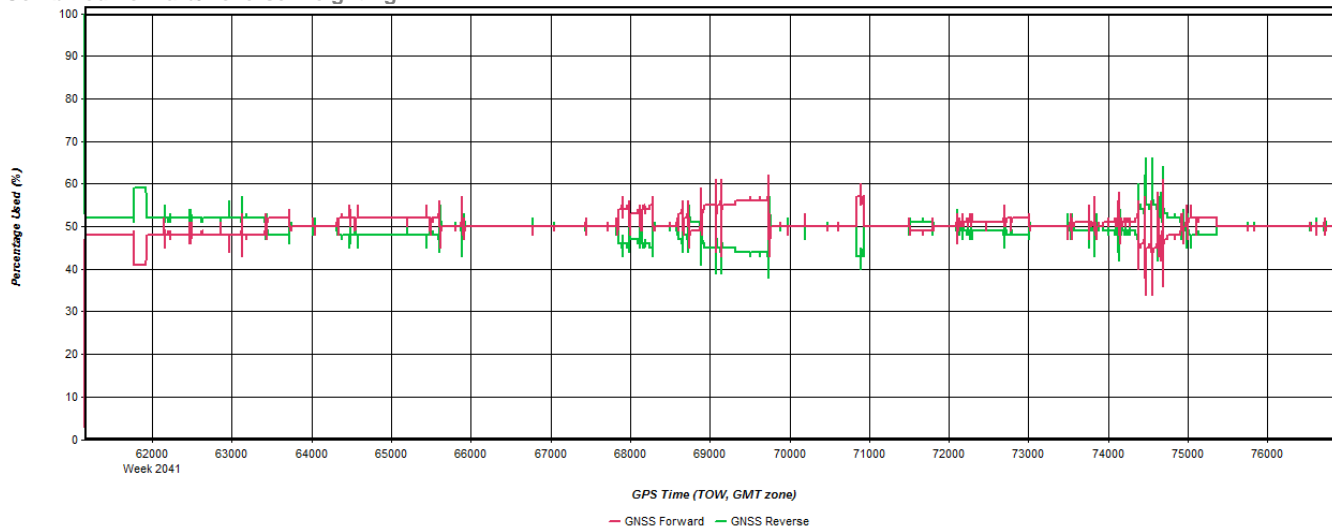
Height



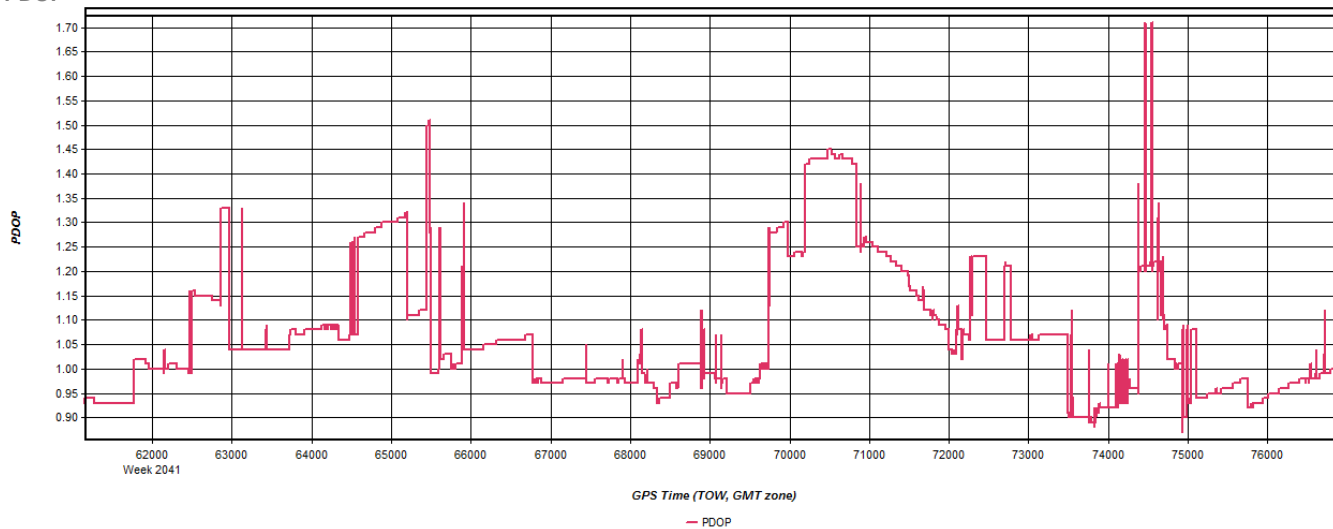
Combined Forward/Reverse Separation



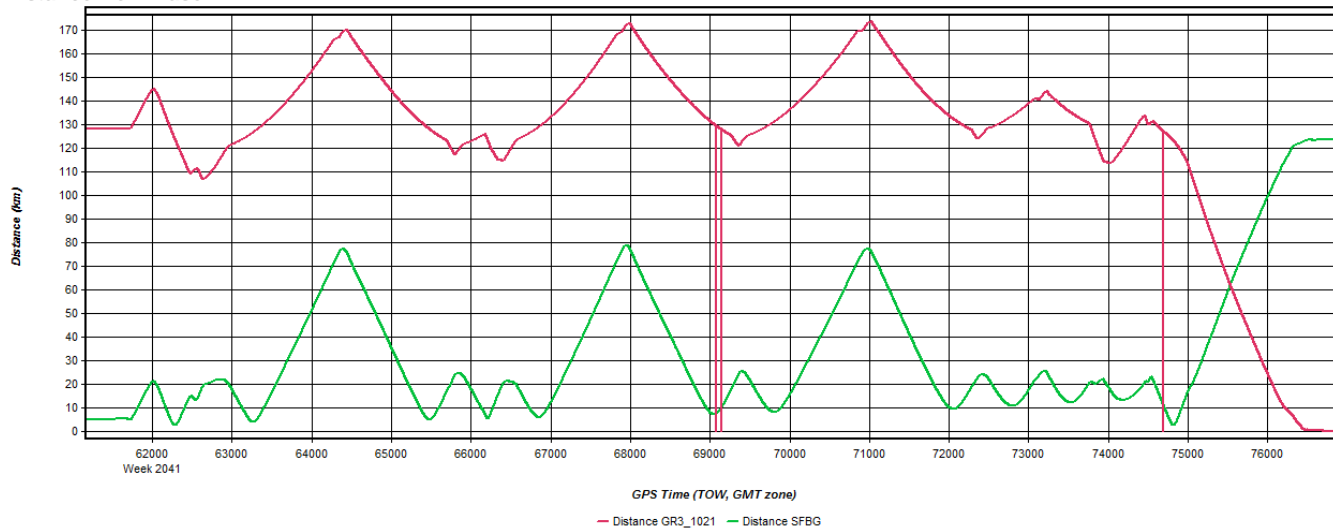
Combined Forward/Reverse Weighting



PDOP



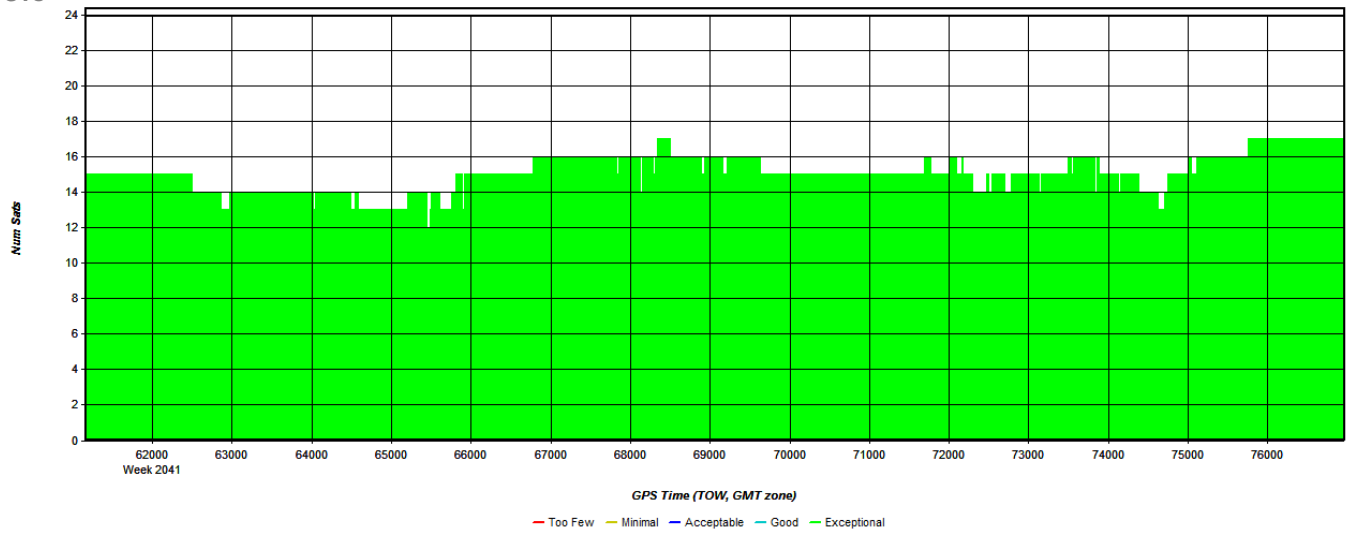
Distance from Base







SVs



USGS  
COLLECTION REPORT



Acquisition and Processing details ----- (February 18, 2019)

Log: 190218\_118\_33780084\_32

Menu
19.023
ALS  
Flight Log

	Lift Begin			Lift End			Fit Duration	Fit Hrs	Hobbs Hrs	Activity
	Airport	Chocks	Hobbs	Airport	Chocks	Hobbs				
1	KGTU	13:56	3032.9	KT82	16:39	3035.0	2:43	2.75	2.1	0900-Production
2										
3										

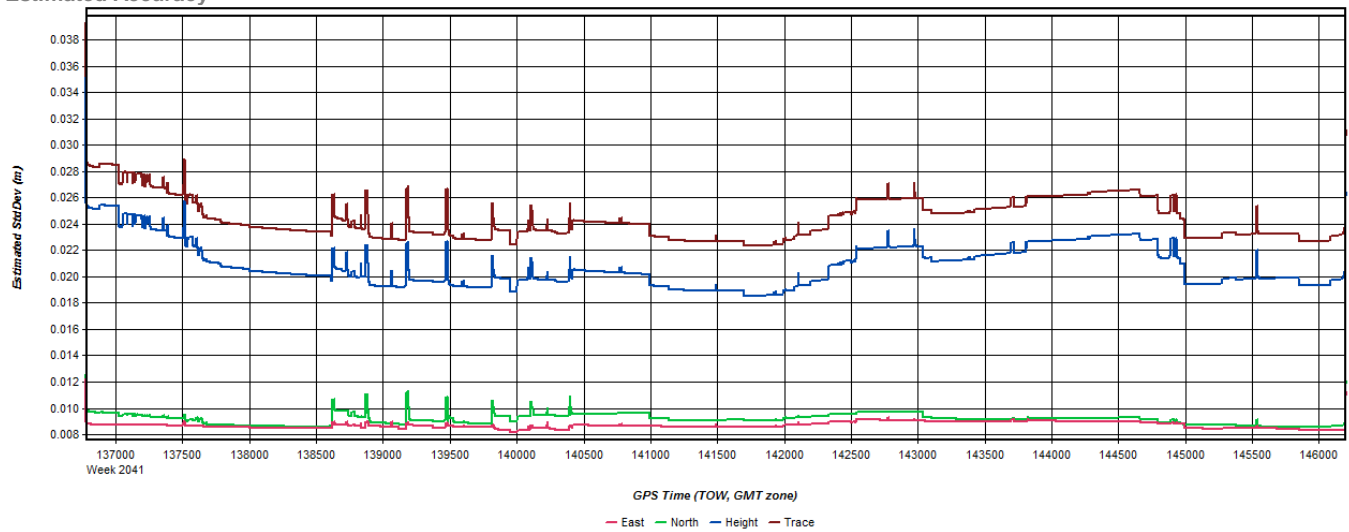
FGI Job # <b>33780084</b>	Project Name <b>USGS Hurricane Harvey UTM 14</b>		System <b>ALS80</b>	Unit <b>118</b>	IMU <b>uRS</b>	PIA <b>3</b>	SW1 <b>-</b>	SW2-Gain <b>-</b>	Aper <b>60°</b>	AutoScan <b>Yes</b>	Ground Temp °C <b>6.0 6.7</b>	Min Range Gate <b>6244</b>	Data Logger Drive <b>MM70-01</b>
Flight Date <b>18-Feb-19</b>	GPS Day <b>19-049</b>	Lift <b>32</b>		Sun° <b>-</b>	Solar Times (UTC) <b>-</b>	Laser Power <b>100%</b>	Pattern <b>Triangle</b>	Flying Temp °C <b>3.0 6.0</b>	Max Range Gate <b>8323</b>	Download Drive <b>NS2TB-15</b>			
Mission ID (yymmdd_Sen_Job_Lift) <b>190218_118_33780084_32</b>	Aircraft <b>N8131</b>	Airport ID <b>KGTU</b>	FMS <b>CCNS 4</b>	UTC <b>-</b>	AMT (ft) <b>7,550</b>	Speed <b>150</b>	Scan Hz <b>35.0</b>	Pulse Rate <b>352,000</b>	FOV <b>42</b>	kmWPT <b>1,384</b>	Altm Setting <b>30.21 30.26</b>	Shipping Track <b>774495166020</b>	
Pilot #1 <b>Barry Hansen</b>		Pilot #2 <b>-</b>		Operator #1 <b>Adam Mueller</b>		Operator #2 <b>-</b>		Flight-JOBS/33780084 Hurricane Harvey ALS80-USGS/Data/Base					
Base 1 ID <b>FEDI 1115</b>	Location <b>KGTU</b>	Rec ID <b>GR3#5</b>	Ant ID <b>GR3#5</b>	ARP (m) <b>1.8</b>	Start Time (UTC) <b>18-Feb-19 13:04</b>	Stop Time (UTC) <b>18-Feb-19 16:44</b>	GPS Filename <b>GR3_10218n</b>	Operator <b>Adam Mueller</b>	Data <b>With AB</b>				
Base 2 ID <b>SWSH CORS</b>	Location <b>TX</b>	Rec ID <b>CORS</b>	Ant ID <b>-</b>	ARP (m) <b>-</b>	Start Time (UTC) <b>-</b>	Stop Time (UTC) <b>-</b>	GPS Filename <b>CORS</b>	Operator <b>-</b>	Data <b>-</b>				

Area	Flight #		Wpt		Distance		UTC		Fit Dir	Altitude (GPS)	Speed (knots)	Scan Rate	Comments and Conditions	SVs	PDOP
	FGI	Client's	From	To	Begin	End	Start	End							
							14:03:06	14:08:06					ground static	25	1.0
							14:26:29	14:31:29					overflight of CORS SWSH	23	1.1
							14:31:50	14:34:38					S-turn	23	1.1
Block H	54		9	1	12	0	14:41:23	14:44:22	S	8271	140	35.0		23	1.1
	55		6	12	6	15.2	14:50:28	14:52:51	N	8221	145	35.0		22	1.2
	55		12	6	15.2	6.9	15:01:21	15:03:51	S	8221	130	35.0	Calibration line	23	1.1
	57		15	19	19	25	15:11:23	15:13:21	N	8343	145	35.0		23	1.1
	73		55	39	74.7	52.6	15:32:05	15:38:06	W	8697	125	35.0	Cross line	22	1.1
Block F	37		38	14	51.2	18	15:45:34	15:54:12	S	8471	130	35.0	Switched to Block F	20	1.3
							15:54:42	15:57:11					S Turn	21	1.3
							16:09:28	16:14:28					overflight of CORS SWSH	22	1.2
							16:31:00	16:36:00					ground static	22	1.1

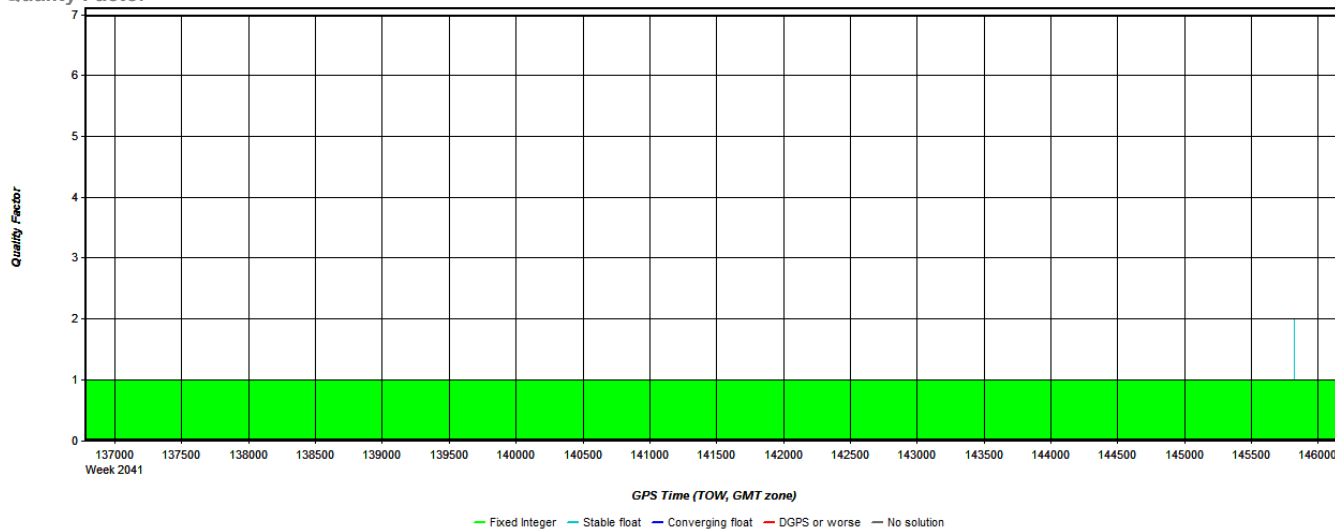
Trajectory and GPS Plots:



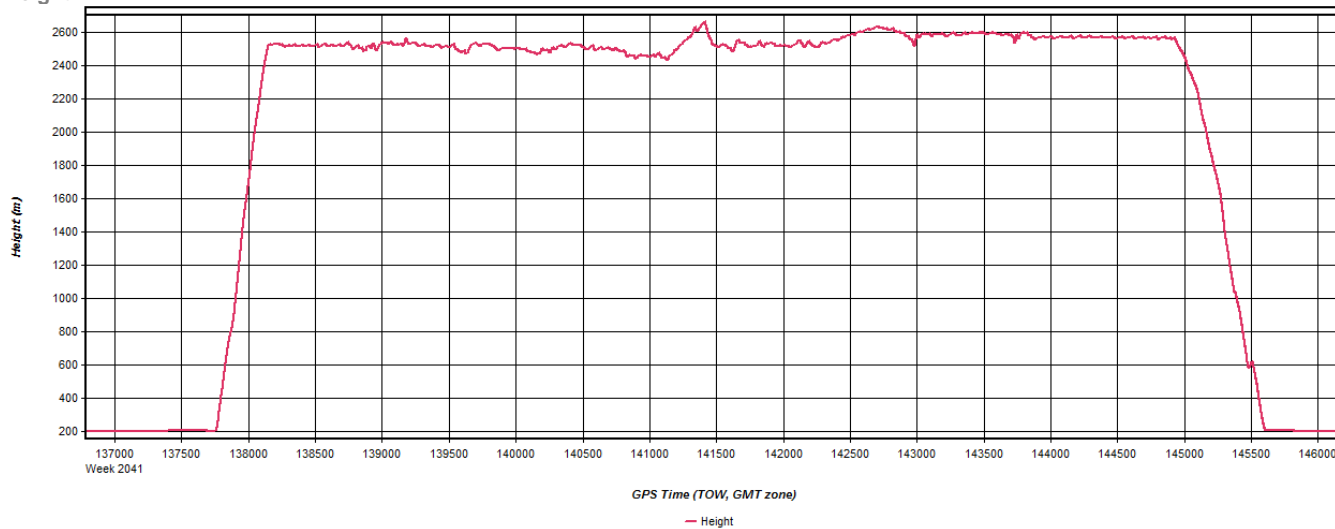
Estimated Accuracy



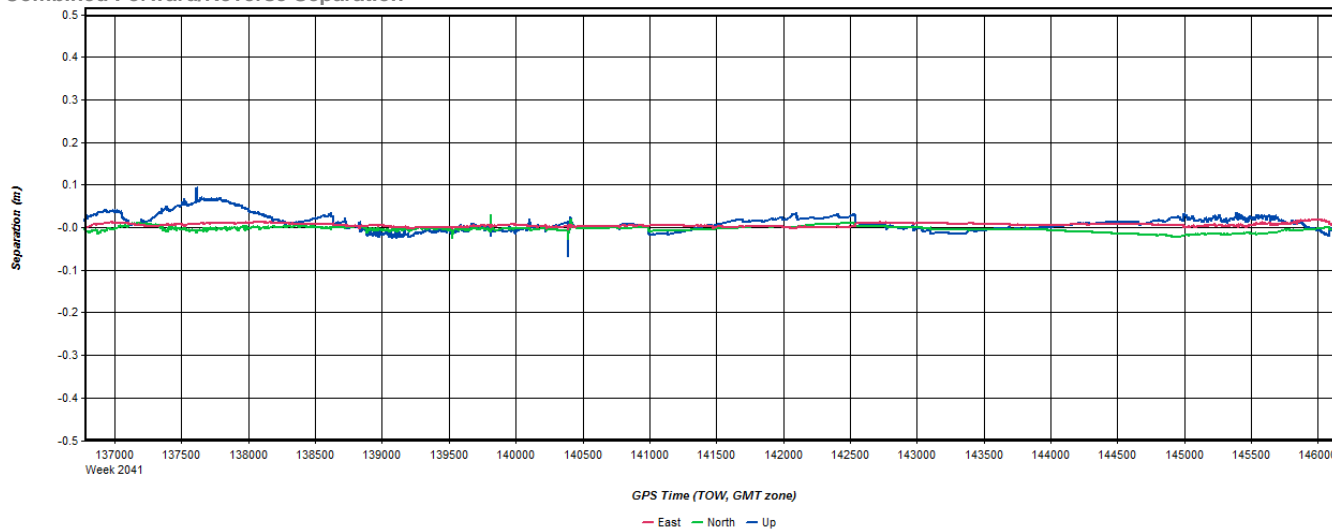
Quality Factor



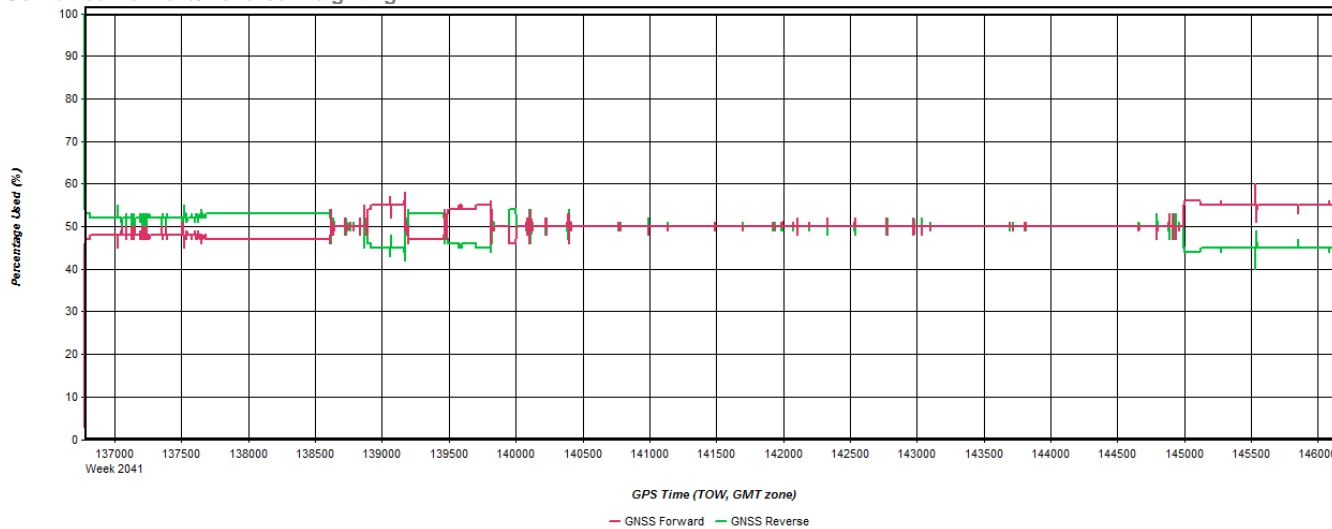
Height



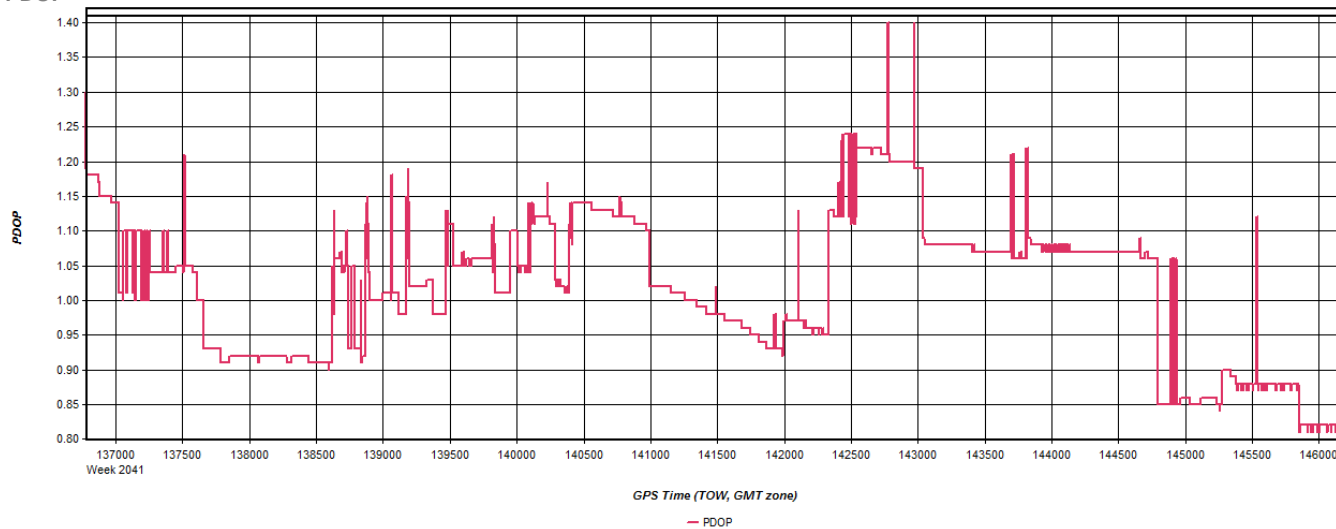
Combined Forward/Reverse Separation



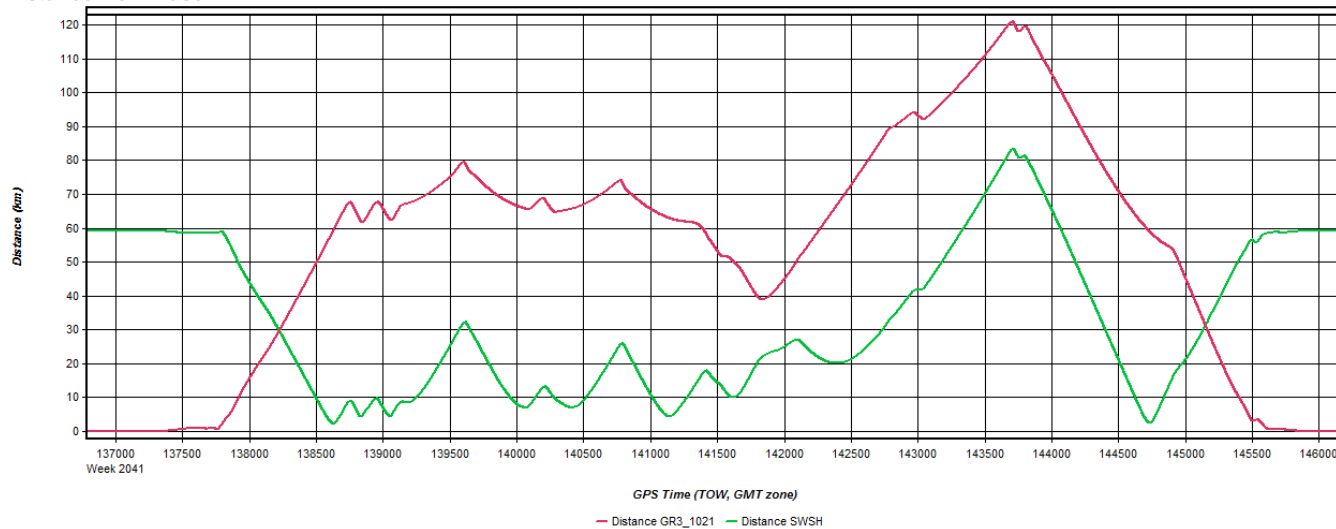
Combined Forward/Reverse Weighting



PDOP



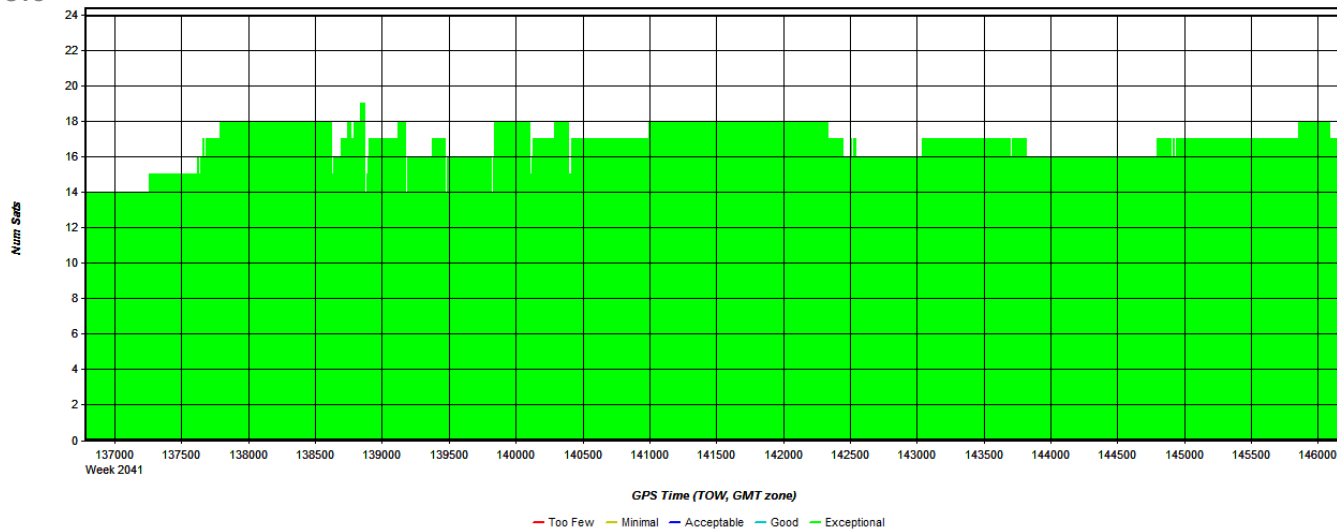
Distance from Base



# USGS COLLECTION REPORT



SVs



USGS  
COLLECTION REPORT



Acquisition and Processing details ----- (February 18, 2019)

Log: 190218\_130\_33780084\_18

Menu
18.165

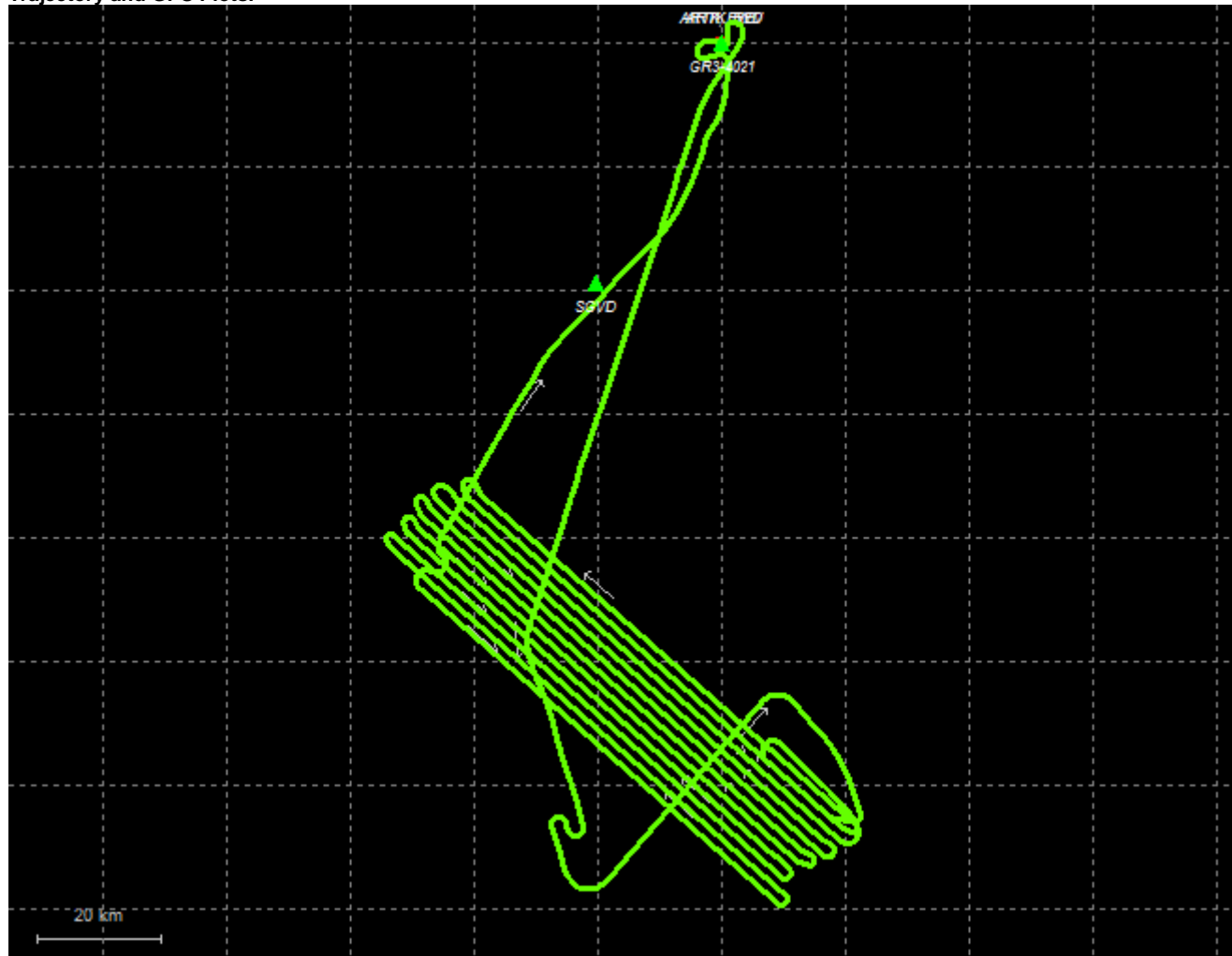
Lift Begin			Lift End			Fit Duration	Fit Hrs	Hobbs Hrs	Activity	
Airport	Chocks	Hobbs	Airport	Chocks	Hobbs					
1	KHYI	12:50	1401.7	KHYI	18:21	1406.7	5:30	5.50	5.0	0900-Production
2										
3										

**ALS**  
**Flight Log**  
 AC80-44-00-02

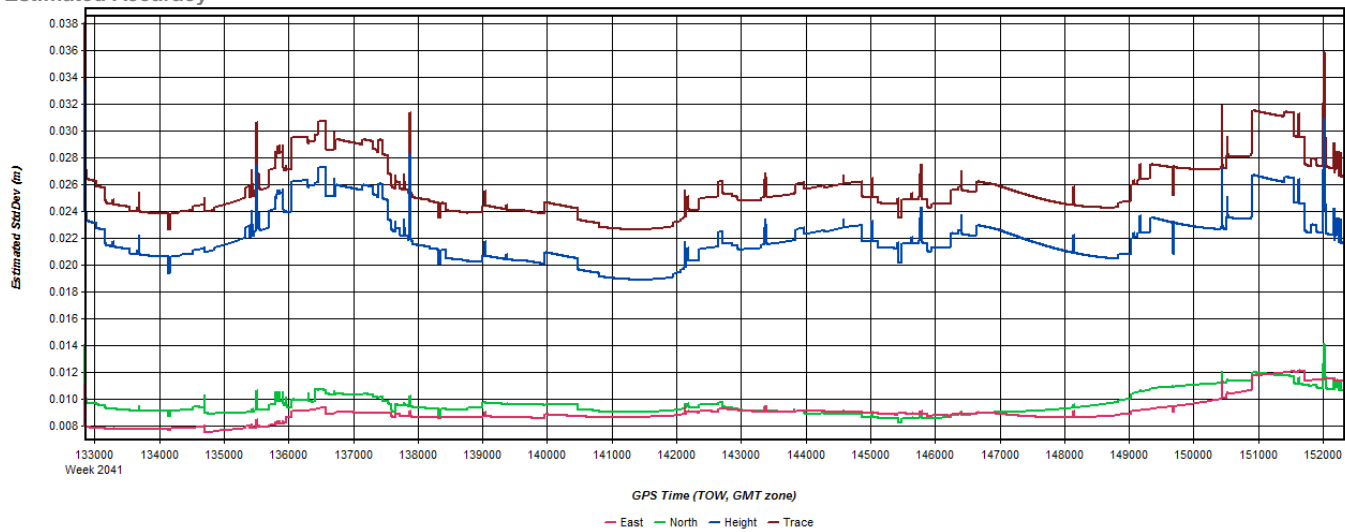
FGI Job #		Project Name				System	Unit	IMU	PIA	SW1	SW2-Gain	Aper	AutoScan	Ground Temp °C		Min Range Gate	Data Logger Drive
04.33780084		Hurricane Harvey				ALS80	130	uIRS	4				No	7.0	14.0	7322	LG 102
Flight Date		GPS Day		Lift		Sun°	Solar Times (UTC)		Laser Power		Pattern		Flying Temp °C		Max Range Gate	Download Drive	
18-Feb-19		19-049		18		N/A	N/A		96%		Triangle		11.0 9.0		8830	NS1TB-48	
Mission ID (yyymmdd_Sen_Job_Lift)		Aircraft		Airport ID	FMS	UTC	AMT (ft)	Speed	Scan Hz	Pulse Rate	FOV	km/WPT	Altm Setting			Shipping Track	
190218_130_33780084_18		N97HC		KHYI	CCNS 8	-6	7,550	150	34.0	442,600	46	1.448	30.12 30.21			7744 9644 3859	
Pilot #1		Pilot #2		Operator #1		Operator #2											
Grant Cassell				Jacob Amundson													
Base 1 ID	Location		Rec ID	Ant ID	ARP (m)	Start Time (UTC)		Stop Time (UTC)		GPS Filename		Operator		Data			
1045	KHYI		GR3 U4	Unit 4	1.8	18-Feb-19 12:35		18-Feb-19 18:30		GR3-40218m.tps		Jacob Amundson		Shipped			
Area	Flight #		Wpt		Distance		UTC		Fit Dir	Altitude (GPS)	Speed (knots)	Scan Rate	Comments and Conditions		SVs	PDOP	
	FGI	Client's	From	To	Begin	End	Start	End									
							12:54:29	12:59:29					GROUND STATIC		23	1.3	
							13:24:59	13:29:59					OVERFLIGHT TXFL CORS		23	1.1	
							13:36:51						ALIGNMENT TURNS		25	1.0	
BLOCK_C	26		1	26	0	34.6	13:43:17	13:51:35	NE	8024	131	34.0	CROSSING LINE		25	1.0	
	17		1	51	0	69.2	13:59:34	14:16:25	NW	8046	137	34.0			23	1.1	
	16		51	1	69.2	0	14:18:59	14:35:46	SE	8085	140	34.0			23	1.1	
	16		1	7	0	8.3	14:39:11	14:41:45	NW	8049	137	34.0	CALIBRATION LINE		24	1.1	
	15		1	53	0	72	14:49:07	15:06:36	NW	8006	140	34.0			24	1.1	
	14		54	1	73.4	0	15:09:40	15:27:28	SE	7990	144	34.0			24	1.1	
	13		1	55	0	74.7	15:29:50	15:48:01	NW	8089	141	34.0			24	1.0	
	12		54	1	73.4	0	15:50:34	16:08:15	SE	8039	140	34.0			21	1.3	
	11		1	53	0	72	16:10:55	16:28:23	NW	8076	143	34.0			22	1.2	
	10		52	1	70.6	0	16:30:31	16:47:30	SE	8109	139	34.0			23	1.1	
	9		1	54	0	73.4	16:50:06	17:07:58	NW	8147	138	34.0			19	1.3	
	8		55	1	74.7	0	17:09:57	17:27:57	SE	8131	140	34.0	OVERCAST CLOUDS BELOW AT WPT 1, KM 1		19	1.3	
	7		1	51	0	72.4	17:29:58	17:46:43	NW	8120	139	34.0	OVERCAST CLOUDS BELOW AT START - WPT 5, KM 4		19	1.2	
							17:46:56						ALIGNMENT TURNS		17	1.4	
							18:13:31	18:18:31					GROUND STATIC		18	1.3	



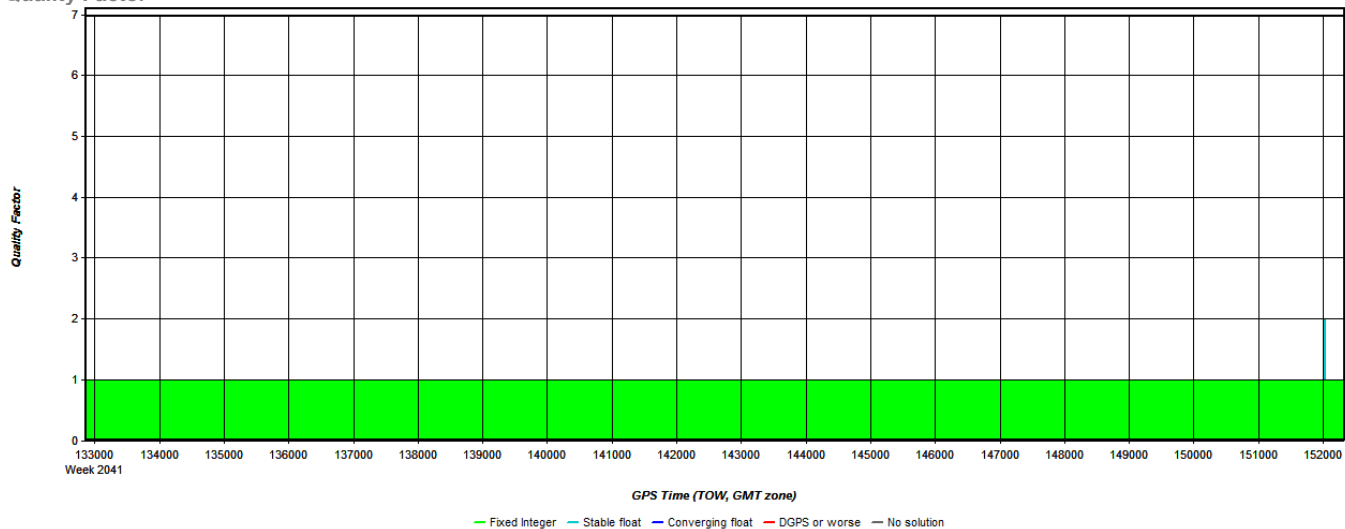
Trajectory and GPS Plots:



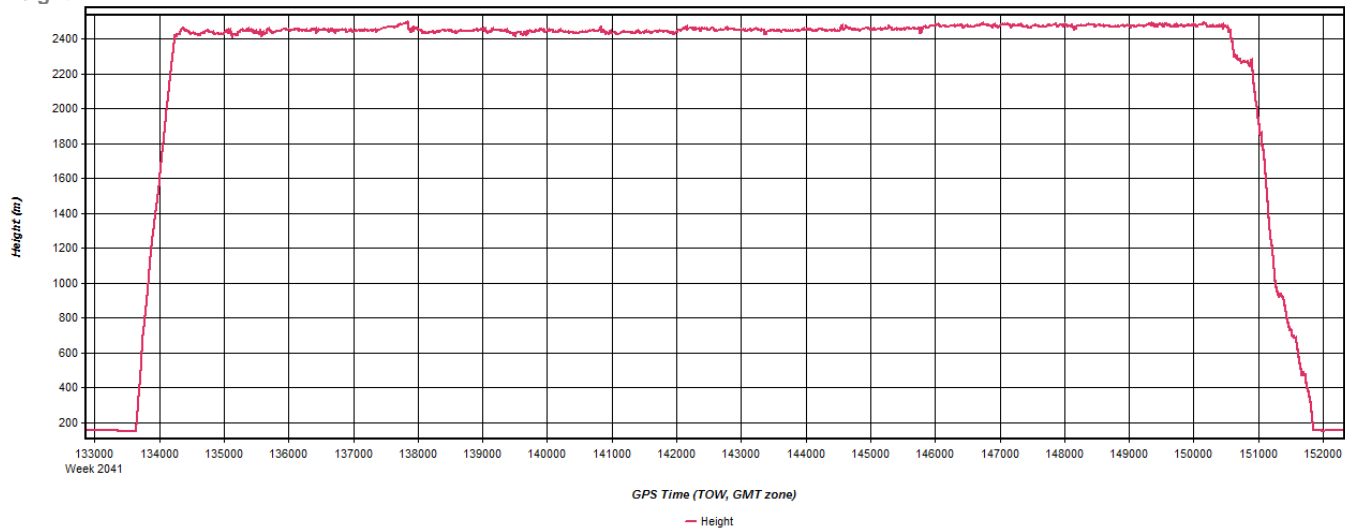
Estimated Accuracy



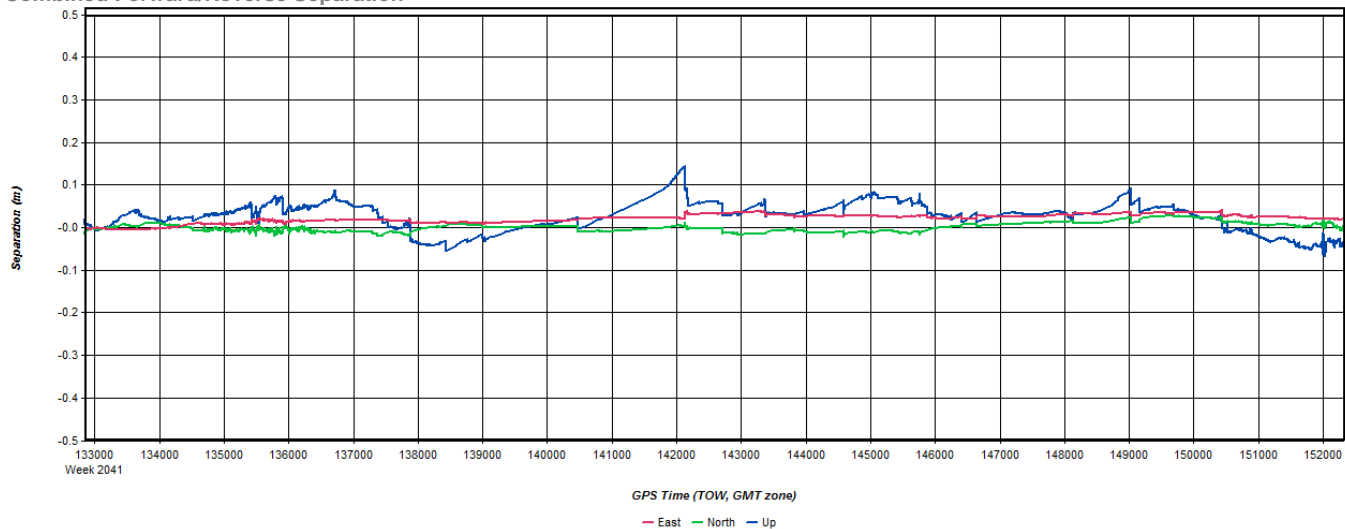
Quality Factor



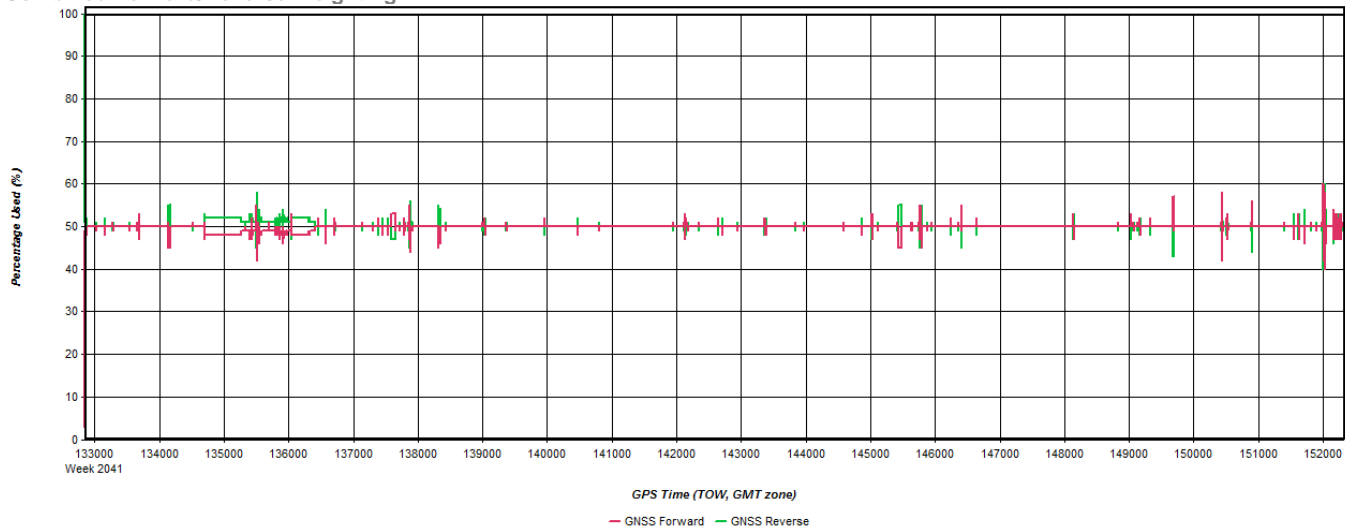
Height



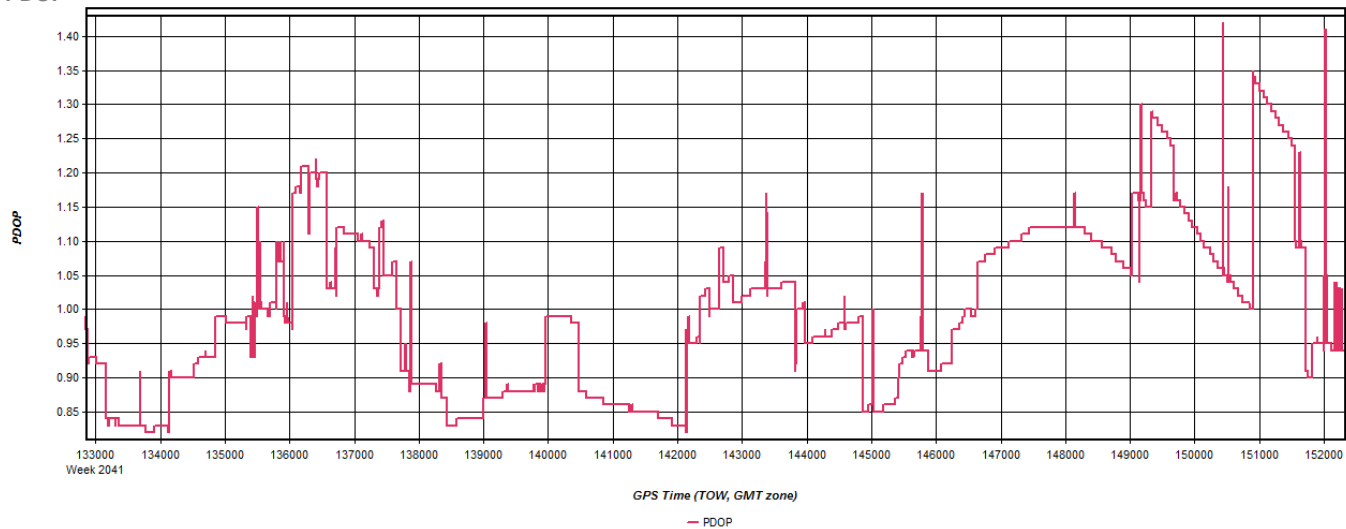
Combined Forward/Reverse Separation



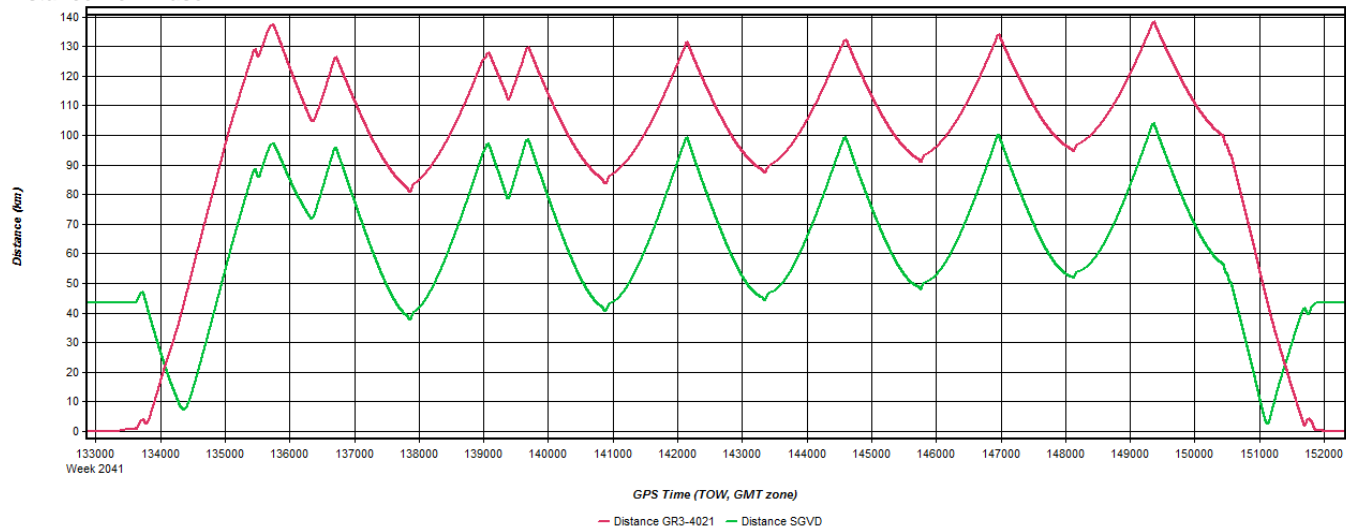
Combined Forward/Reverse Weighting



PDOP



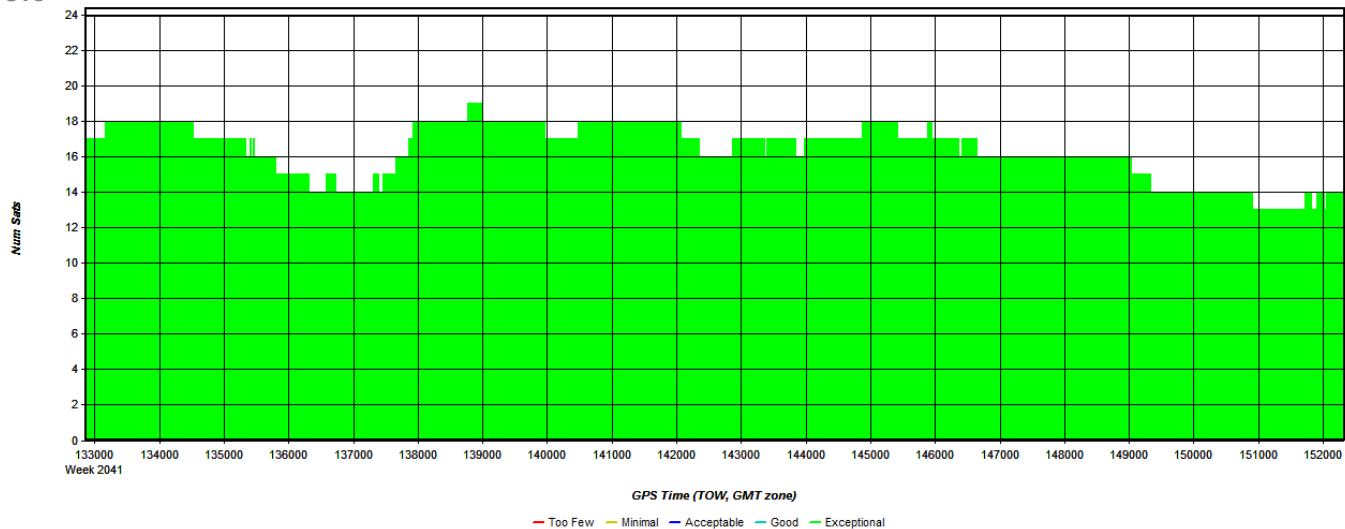
Distance from Base



# USGS COLLECTION REPORT



SVs



USGS  
COLLECTION REPORT



Acquisition and Processing details ----- (February 20, 2019)

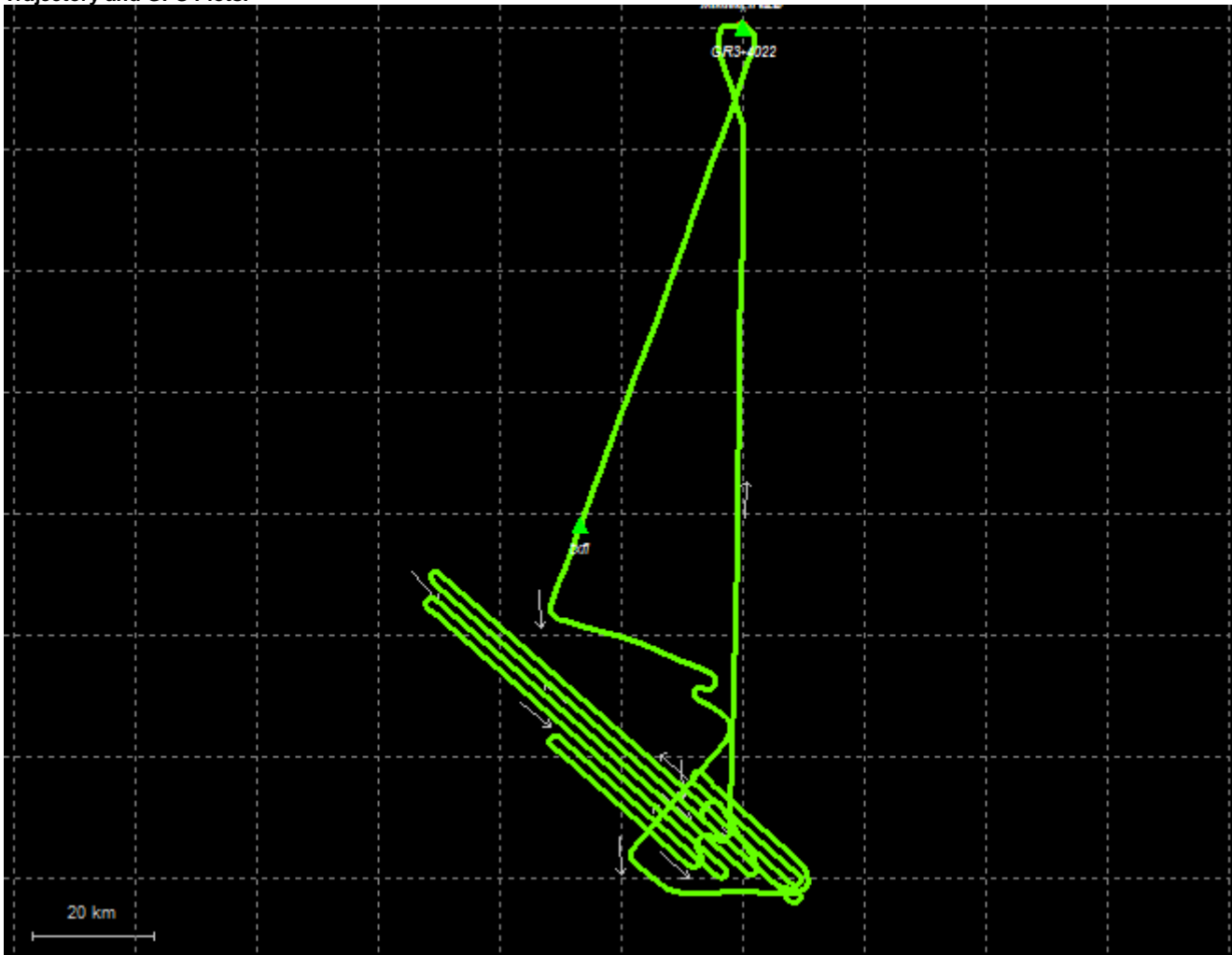
Log: 190220\_130\_33780084\_19

Menu
18.165

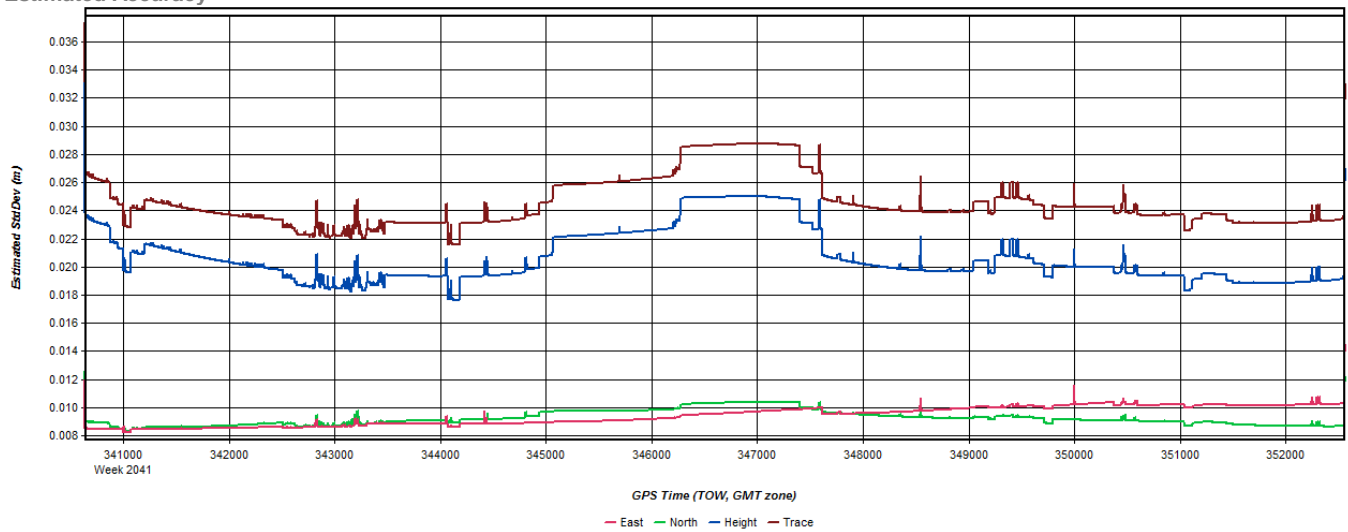
**ALS**  
**Flight Log**  
 AC80-44-00-02

FGI Job #		Project Name				System	Unit	IMU	PIA	SW1	SW2-Gain	Aper	AutoScan	Ground Temp °C		Min Range Gate	Data Logger Drive
<b>04.33780084</b>		<b>Hurricane Harvey</b>				<b>ALS80</b>	<b>130</b>	<b>uIRS</b>	<b>4</b>			<b>60°</b>	<b>No</b>	<b>18.0</b>	<b>9.0</b>	<b>7322</b>	<b>LG 102</b>
Flight Date		GPS Day	Lift				Sun°	Solar Times (UTC)		Laser Power		Pattern	Flying Temp °C		Max Range Gate	Download Drive	
<b>20-Feb-19</b>		<b>19-051</b>	<b>19</b>				<b>N/A</b>	<b>N/A</b>		<b>96%</b>		<b>Triangle</b>	<b>8.0 9.0</b>		<b>8830</b>	<b>AP1TB#19</b>	
Mission ID (yymmdd_Sen_Job_Lift)		Aircraft	Airport ID	FMS	UTC	AMT (ft)	Speed	Scan Hz	Pulse Rate	FOV	km/WPT	AltM Setting		Shipping Track			
<b>190220_130_33780084_19</b>		<b>N97HC</b>	<b>KHYI</b>	<b>CCNS 8</b>	<b>-6</b>	<b>7,550</b>	<b>150</b>	<b>34.0</b>	<b>442,600</b>	<b>46</b>	<b>1.448</b>	<b>29.94</b>	<b>29.93</b>	<b>7745 2147 9199</b>			
Pilot #1		Pilot #2		Operator #1			Operator #2										
<b>Grant Cassell</b>				<b>Jacob Amundson</b>													
Base 1 ID	Location	Rec ID	Ant ID	ARP (m)	Start Time (UTC)		Stop Time (UTC)		GPS Filename			Operator		Data			
<b>1045</b>	<b>KHYI</b>	<b>GR3 U4</b>	<b>Unit 4</b>	<b>1.8</b>	<b>20-Feb-19 22:13</b>		<b>21-Feb-19 02:02</b>		<b>GR3-40220w.tps</b>			<b>Jacob Amundson</b>		<b>Shipped</b>			
Area	Flight #		Wpt		Distance		UTC		Fit	Altitude	Speed	Scan	Comments and Conditions			SVs	PDOP
	FGI	Client's	From	To	Begin	End	Start	End	Dir	(GPS)	(knots)	Rate					
							22:37:16	22:42:16					GROUND STATIC			28	1.1
							23:07:47	23:12:47					OVERFLIGHT TXFL CORS			25	1.1
							23:18:15						ALIGNMENT TURNS			24	1.1
BLOCK_C	26		14	1	18.8	0	23:22:49	23:27:02	SW	7981	141	34.0	CROSSING LINE			24	1.1
	8		1	12	0	15.9	23:35:10	23:38:49	NW	8060	140	34.0	REFLIGHT			22	1.2
	7		12	1	15.9	0	23:41:22	23:45:08	SE	8155	136	34.0	REFLIGHT			21	1.2
	6		1	50	0	71	23:47:19	0:03:55	NW	8081	139	34.0				22	1.2
	5		49	1	69.5	0	0:05:49	0:22:00	SE	8131	143	34.0				19	1.5
	5		1	10	0	13	0:25:01	0:28:01	NW	8084	144	34.0	CALIBRATION LINE			19	1.4
	4		1	44	0	62.3	0:33:45	0:48:17	NW	8154	142	34.0				21	1.1
	3		32	1	44.9	0	0:53:04	1:03:53	SE	8140	138	34.0				21	1.1
	2		1	21	0	29	1:05:21	1:12:08	NW	8105	142	34.0				22	1.0
	1		14	1	18.8	0	1:15:20	1:19:50	SE	8144	141	34.0				22	1.0
							1:20:03						ALIGNMENT TURNS			22	1.0
							1:50:36	1:55:36					GROUND STATIC			20	1.1

Trajectory and GPS Plots:

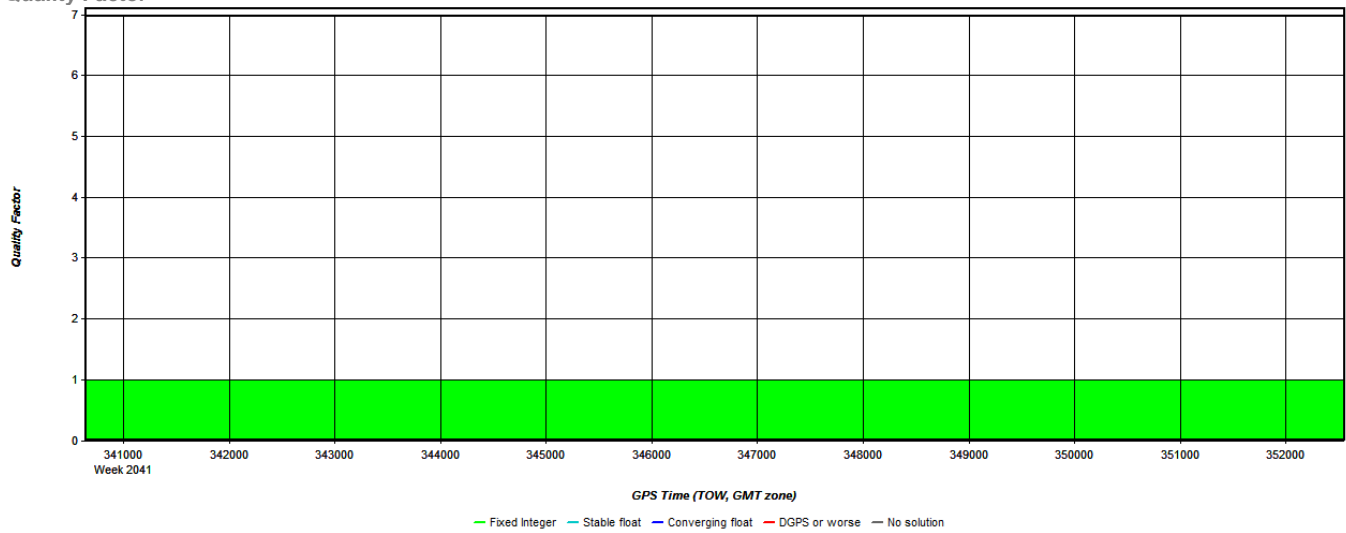


Estimated Accuracy

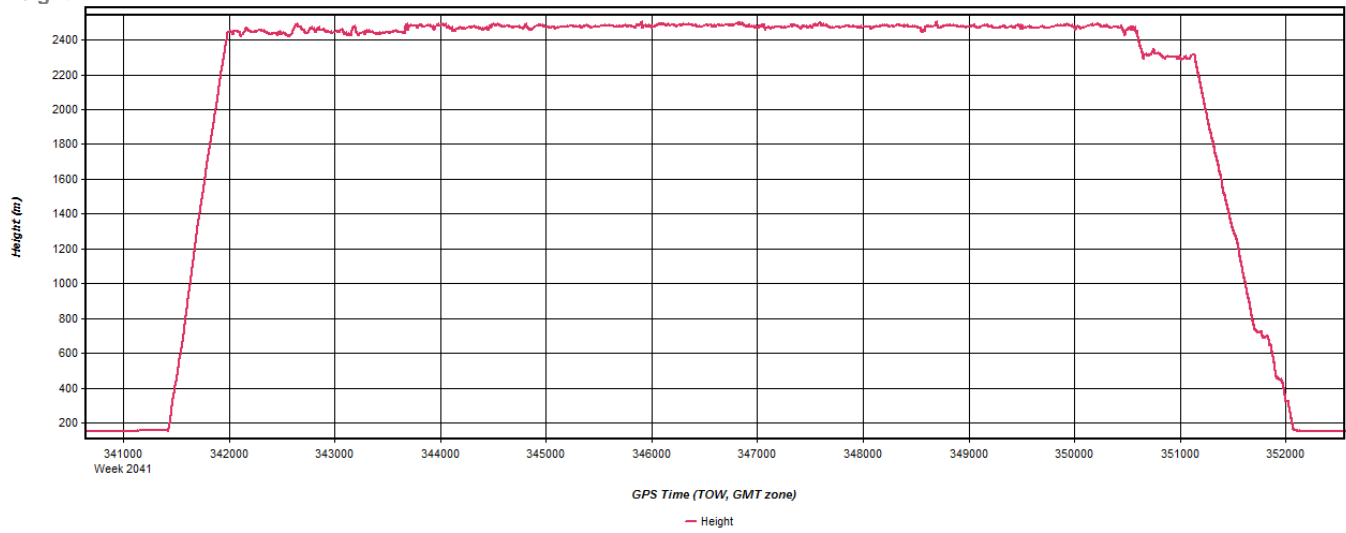


# USGS COLLECTION REPORT

## Quality Factor

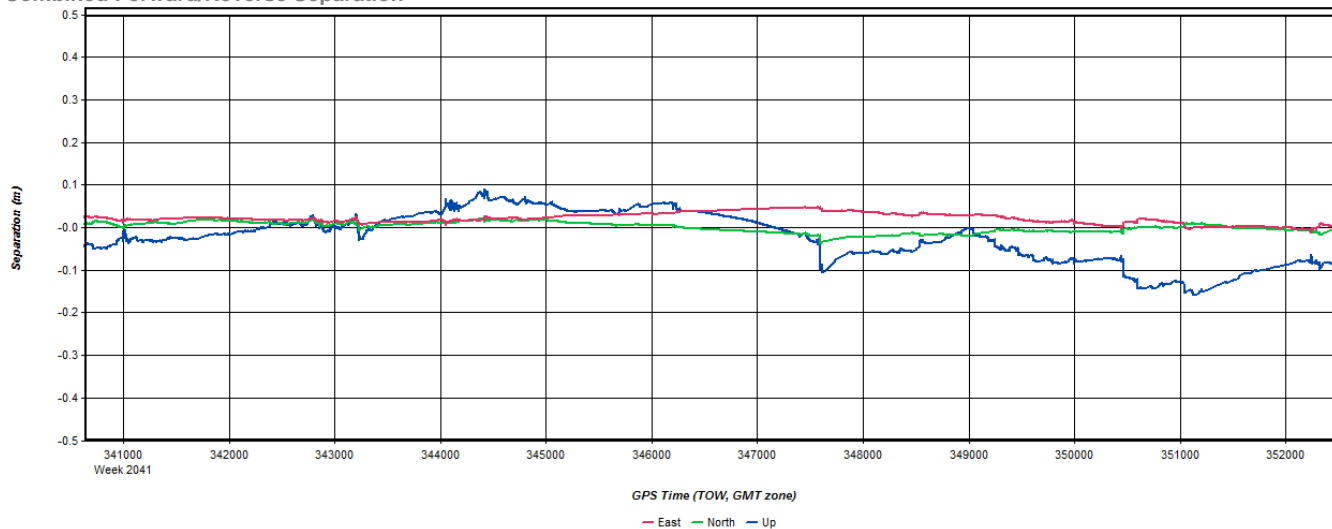


## Height

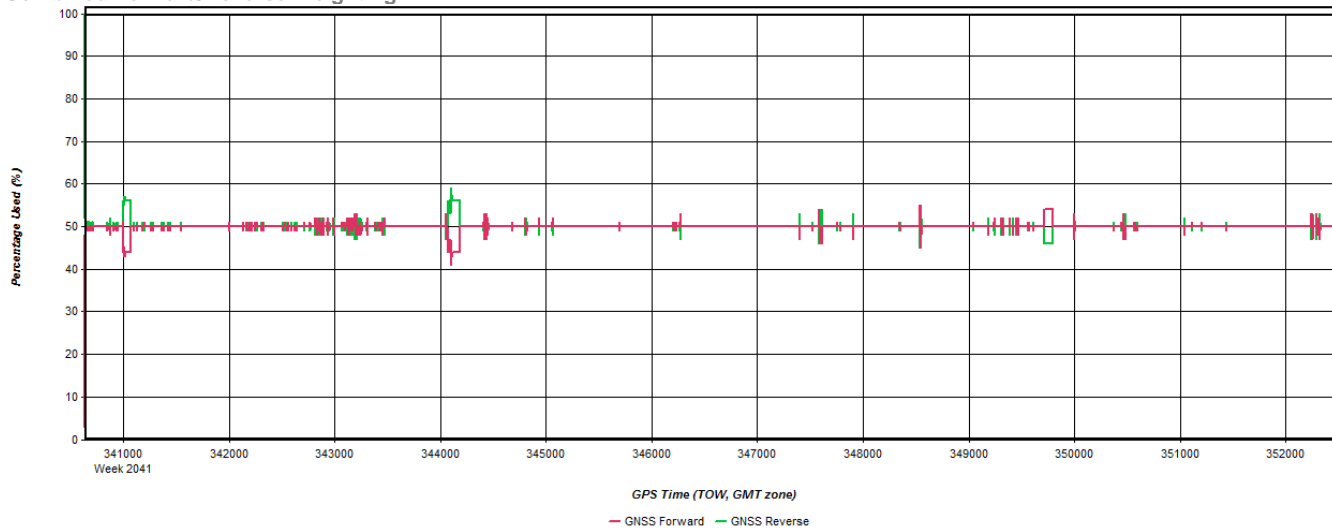




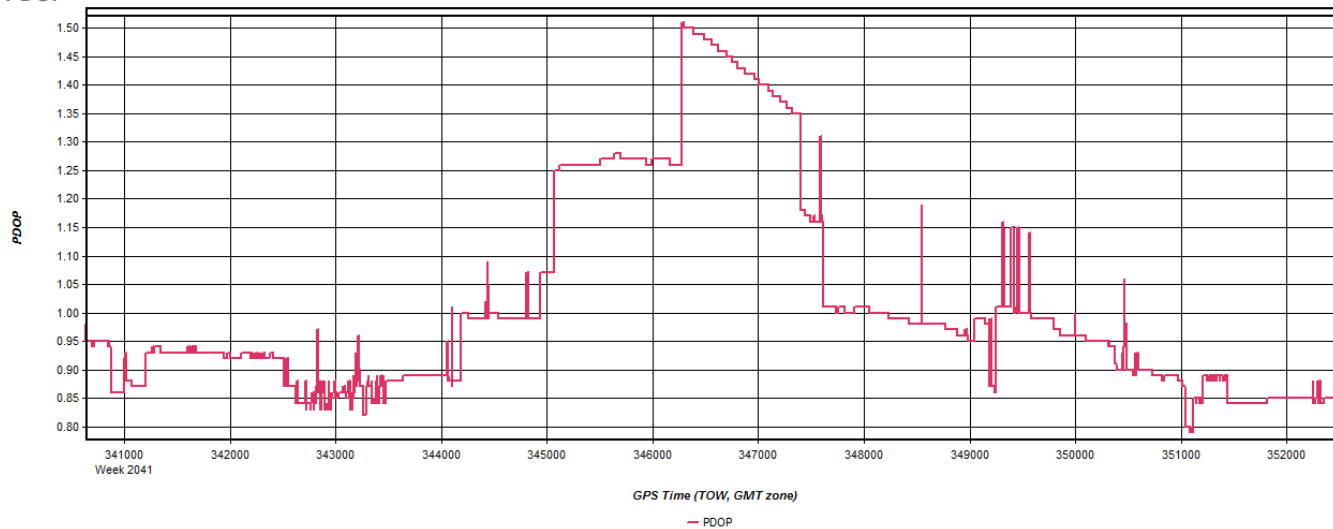
Combined Forward/Reverse Separation



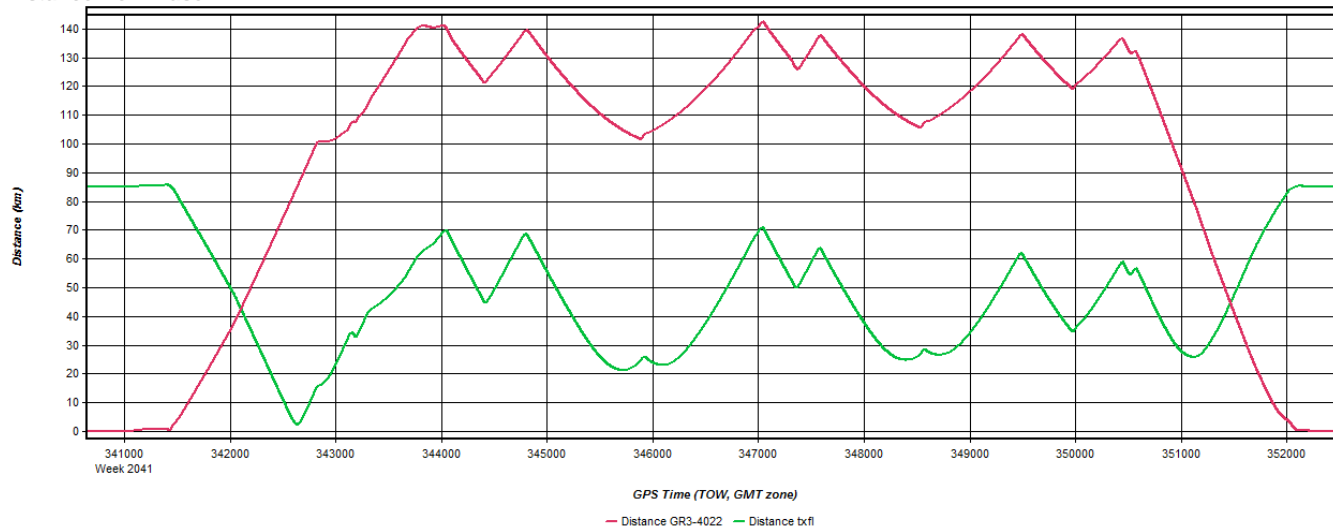
Combined Forward/Reverse Weighting



PDOP



Distance from Base



# USGS COLLECTION REPORT



SVs

