

AGAP-S

C-FSJB

December 2008/January 2009

# OPERATOR FLIGHT LOG


Flight Number	F28	Note: removed GPS buffer box from system and run radar without NMEA input for mag compensation.  LiDAR PC has only 5.9GB left
Date (ZULU)	Jan 6, 2009	
Pilot/Co-Pilot	Brian, Rebecca	
Operator(s)	Michael	
Line Numbers	mag compensation	

→ deleted F01-F20

**Start GPS and magnetic base stations at least 30 mins before takeoff. Start recording with aircraft GPS receivers at least 30 mins before takeoff.**

Event	GPS Time	Comments
GPS SJB-1	~ 22:00	Start recording. CF Card:      Job name:
		Battery charge: A:      % B:      % External:      %
		Available memory:      KB.
		No Sat tracked:      L1:      L2:
GPS SJB-2	~ 22:00	Start recording. CF Card:      Job name:
		Battery charge: A:      % B:      % External:      %
		Available memory:      KB.
		No Sat tracked:      L1:      L2:

# Operator Flight Log | F28

AGIS on	23:16	Start recording. Project name: AGAP-F28-computer
	<del>23:16</del>	Engines on
	23:51	Taxi to fuel position, 23:53 at fuel position
	00:13	Takeoff
Laser on	23:19	Start recording. Project name: AGAP-F28
Radar on	23:31	Start recording. Filename(s): Flight-28_2009.....252.raw
<b>Event</b>	<b>GPS Time</b>	<b>Comments</b>
	23:18	Scanner synchronized
	23:34	⇒ fuel pulling out of mag during start up ⇒ repair shut systems down
	23:35	AGIS off, laser off, radar off
	23:45	AGIS on
	23:47	laser on, radar on
	23:55	at fueling: grav inverts 27.8V; 48Amps
	00:00	 on mag 2 during refueling, 10AT not on #1 ~25 sec period
	00:09	unstick ⇒ taxi for take off
	00:13	take off

Event	GPS Time	Comments
	00:17	radio tx on, gear battery → charge
	00:21	tip tanks off (1st when
	22	approach WPZ
	00:27	stopped AGIS → for salu reset.
	3311	WPZ
	3344	Roll 1
	3366	" 2
	3390	" 3
	3421	4
	3458	Yarn 1
	3481	" 2
	3504	" 3
	3547	pitch 1
	3568	" 2
	35 <del>80</del> 80	" 3
	?	switch to T10 100 in AGIS; turn
Seg #2	3843	30sec.
	3872	roll 1
	38 <sup>a</sup>	" 2
	3920	roll 3

Event	GPS Time	Comments
3963		Yam 1
3985		" 2
4007		" 3
4050		pitch 1
4074		" 2
		3
4150		turn and similar to L590
4344		shut 30sec, seg #3
4372		roll 1
4393		roll 2
4417		" 3
4460		Yam 1
4484		" 2
4507		" 3
4550		pitch 1
4573		" 2
4598		" 3
4666		turn to T10090

#3

Event	GPS Time	Comments
		intercept (10 min) turn camp.
SzH4 47 <del>83</del>		
4810		roll 1
4835		" 2
4857		" 3
4900		yaw 1
4923		" 2
4947		" 3
4990		pitch 1
5014		" 2
5038		" 3
5071		new data file
5086		turn to way home
	00:52	tip tanks on } <del>don't see</del>
	00:54	tip tanks off } <del>signal on mag 5</del>
		both mag sensors seem to
		be noisy today
	00:58	radio tx off $\Rightarrow$ grab battery $\Rightarrow$ ups
	01:00	touchdown.

Event	GPS Time	Comments
	01:01	at fuel position
	01:04	laser off
	01:05	radar off
	01:07	AGIS off
	01:11	left engine on / inverter bulk head off
	01:12	mustache; taxi to parking position
	01:14	at parking position
	01:24	SIB 1 + 2 off because of trouble shooting

## Mission Profile for Magnetic Compensation Flights

flight elevation: > 2500 m AGL (8200 ft) in a magnetically quiet area (low gradients).

also: only minor diurnal variation

orientation: parallel to flight lines and tie lines, does not have to be located on survey lines, just parallel.

itches:  $\pm 5^\circ$  minimal use of rudder

rolls:  $\pm 10^\circ$  make sure not to increase  $10^\circ$  so Cs sensor does not enter the dead zone

yaws:  $\pm 5^\circ$  rudder only

auto pilot turned off

10 Hz sampling, 2Hz bandwidth

turn off systems that consume large amounts of power (heaters etc)

other equipment in normal operating conditions

prepare flight log

### Compensation Maneuvers

Period of each maneuver: 5 - 10 seconds

Each orientation: 3 roll, 3 yaw, 3 pitch with level flight in between  
keep order of motions consistent.

no rough movements

altitude change less than 50 m

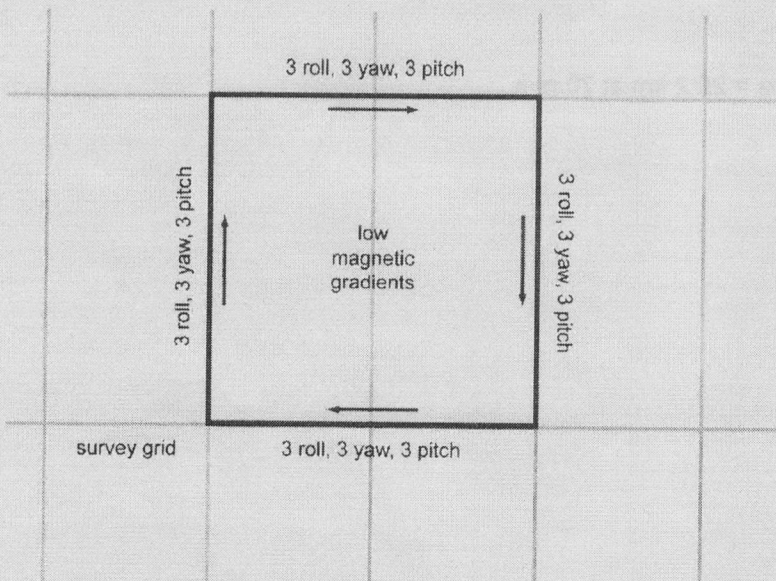


Figure 1: Flight pattern for magnetic compensation flights. The flight directions are parallel to the orientations of the survey grid lines.

09E RAR 390

estimated flight duration for 1 segment:

level flight after turn: > 10 sec better 60 sec  
stable flight in between maneuvers: 3 sec. better 10.

1 sequence:

Turn	45 sec
level flight:	30 sec
1x roll	10 sec
stable flight	10 sec
1 x roll	10 sec
stable flight	10 sec
1 x roll	10 sec
level flight:	30 sec
1x yaw:	10 sec
stable flight:	10 sec
1 x yaw	10 sec
stable flight:	10 sec
1 x yaw	10 sec
level flight:	30 sec
1x pitch:	10 sec
stable flight:	10 sec
1 x pitch	10 sec
stable flight:	10 sec
1 x pitch	10 sec
level flight:	30 sec
turn	45 sec

total: 360 sec = 6 mins = 25.2 km at 70 m/s



MAGNETIC COMPENSATION FLIGHT AGAP-S

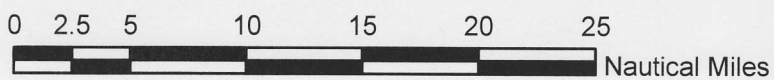
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WP	LATITUDE	LONGITUDE	DISTANCE ALONG FLIGHT (NM)	AGIS LINE LINE NUMBER
1	84° 29.40' S	77° 21.18' E	0.00	AGAP-S
2	84° 15.76' S	77° 19.01' E	13.74	L540
3	83° 57.67' S	77° 26.95' E	31.97	T10100
4	83° 58.01' S	79° 34.48' E	45.47	L590
5	84° 16.12' S	79° 33.15' E	63.69	T10090
6	84° 15.76' S	77° 19.01' E	77.19	TRANSIT TO AGAP-S
7	84° 29.40' S	77° 21.18' E	90.93	AGAP-S

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TOTAL FLIGHT DISTANCE: 91 nm



Compensation Flight:  
 Total flight distance: 91 nm