



NOAA P-3 N43RF
TD Ingrid
16 Sept 2007



Flight ID: 070916I

Sensor or system

INE
Accelerometer
Temperature Probe
Dew Point Probe
Altitude (for vertical wind)
Static Pressure
Dynamic Pressure
Time Source

Number or Name of Selected Instrument

ine1
accilX
tt1
tdm2 (Edgetech)
ra159 (GPS Aided Inertial Altitude)
psf (Rosemount Fuselage)
pqf1 (Rosemount Fuselage)
Micro 99

<u>Local Met Data:</u>	<u>Takeoff (2030Z)</u>	<u>Landing (0311Z)</u>
Aircraft Static Pressure	1004.5 mb	1006.8 mb
Tower Pressure	1005.0 mb	1006.9 mb

Notes

Data Gap: 231850z-231856z – At the end of this gap many variables have a spike due to the instruments coming back online. These spikes were not removed from the dataset.

There were numerous spikes in the heading due to a calculation error whenever we were on a heading of 180°. I removed these spikes from the **hdgi1** variable and saved the corrections in the **hdgi1X** variable. I then used this corrected **hdgi1X** variable in the calculation of meteorological parameters.

There were 2 anomalous plateau's in the Ashtech GPS lat and lon. However, they were very small and for a very short duration and so were not removed from the dataset. They are at: 231351z-231400z and 232216z-232227z.

There was a spike in the accelerometer data. This anomalous spike doesn't seem to have any corresponding spikes in the data from which it is derived (vertical and ground speeds). It is at 022708z-022711z. I have removed the spike from **accil** and saved the correction in the **accilX** variable. We are still looking into the possible causes of this spike. When a solution has been found an update to the data will be available.

There were periods where the dewpoint temperature exceeded the ambient temperature resulting in RH values > 100%. This was likely due to heavy rain, a wet-bulb effect on the total temperature sensor, and/or an artificial warming of the dewpoint sensor as it tried to burn off excess moisture. Corrections were not made to the data.

Aircraft INE positions were re-navigated with respect to GPS

Radar altitude from the HG9550 radar altimeter is in the RA-232 variable slot. GPS aided INE1 altitude is in the RA-159 variable slot. The RA-232 and RA-159 altimeters are no longer installed on the aircraft.

There is no King Liquid Water Content (KLWC) sensor installed.

There is no Maycomm Water Vapor Sensing System (WVSSII) installed

There is no TT3 installed.

All other instruments appeared to work optimally.

Flight Director:
Phone #:

LTJG Jackie Almeida
(813) 828-3310 ext. 3075

U.S. Dept. of Commerce / NMAO / NOAA / Aircraft Operations Center

Flt ID: 070916I	From: TBPB	To: TBPB
Flt. No: 07 - 033	Blk In: 0315 z	Time On: 0311 z
ETD: 2030 z	Blk Out: 2014 z	Time Off: 2030 z
ETE: 8 hrs	Blk Time: 7 hrs + 1 min (7.0) Hrs	Flt Time: 6 hrs 41 min (6.7) Hrs
Sponsoring Org: NOAA - HRD	Program:	Purpose: Hurricane Research

AOC Flight Crew

Aircraft Commander: Chay, B	Data System: Lynch, T
Co-Pilot: Nelson, M	AVAPS: Smith, J
Navigator: Siegel, P	System Eng:
Flight Eng: Floyd, D	AA: Sans Souci, D
Flight Director: Almeida, J 1 Shepherd, T	AA:
Avionics:	Crew Chief:

Participating Scientists / Visitors

Name (Last, First)	Activity on Aircraft	Affiliation
Rogers, R	Pi	HRD
Black, B	Sci	HRD

Remarks (Storm Name, Mission ID, Recco Times, Fix Times)

Storm Name: INGRID

Mission ID: 0508A

Penetration number and time

Recco Times Fix # Fix Time

U.S. Dept. of Commerce / NMAO / NOAA / Aircraft Operations Center

Flight ID: 070916.I		Time Off: 2030 Z		Time On: 0311 Z	
A/C: Takeoff		Wx Station: Takeoff		A/C: Land	
Wx Station: Land					
Pressure	1004.5 mb	1005.0 mb	1006.8 mb	1006.9 mb	
ATIS	Time	Observation			
Takeoff	2000Z	23011kt 30/23 Q1011			
Land	0300Z	34004kt 24/22 Q1013			
	Number	Data Disposition / Date / Quality			
Flight Level Tapes	2				
Radar Tapes	1				
Cloud Physics Tapes / CDs					
Video Tapes					
Dropsondes	5	Good: 5 Bad: 0			
XBTD					
XCPT					
XCTD					

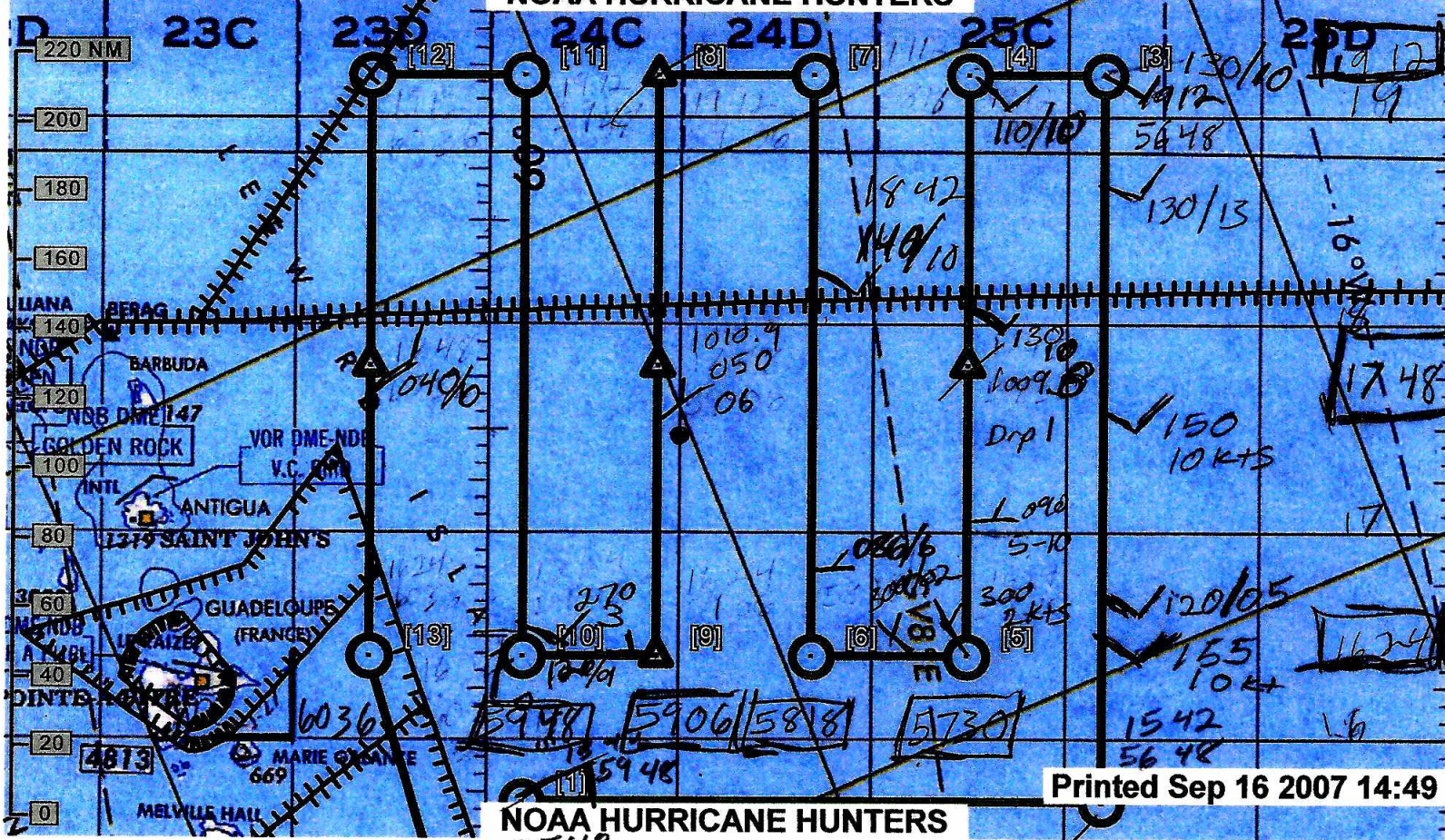
Remarks:

Block
out in
2014 **0315**

T/O Lnd
2030 **0311**

070916I	LAT	LON	TA	TD	TK	SHD	RA	PS	SP	WD	WS	WZ	SFWS	COMMENTS
195922	13. 4.80	-59.28.92	39.1	22.4	90.0	345.7	1.0	1004.6	1010.0	305.8	1.5	-.2	0.0	test
201418	13. 4.80	-59.28.92	40.7	22.9	346.8	345.8	1.0	1004.4	1009.7	265.6	1.3	-12.6	0.0	Block Out
202933	13. 4.50	-59.29.34	29.6	22.6	255.8	256.0	1.0	1005.0	1010.2	259.3	3.2	3.0	0.0	Takeoff
203837	13.29.22	-59.40.62	12.1	.4	357.9	358.8	2965.0	720.0	1009.9	309.4	1.5	1.7	0.0	Radar tape started
210739	15.39.72	-59.47.88	6.4	-.0	358.4	1.8	3953.0	642.5	1009.2	64.7	4.6	1.8	7.8	IP, Turn 1 to East
211556	15.42.12	-59.11.22	7.3	-.9	89.6	89.7	3959.0	642.4	1008.1	55.6	4.1	2.2	4.8	Recco 1
214712	15.46.44	-56.48.18	6.4	-5.9	1.6	1.6	3929.0	642.9	1010.3	216.0	5.2	1.6	2.2	Recco 2, Turn 2 to North
215628	16.28.62	-56.48.00	5.6	1.8	359.5	1.9	3949.0	642.7	1010.7	145.8	6.3	2.2	8.3	EIA-485 InActive error on Air Data Display
Unit (ADDU)														
223227	19.12.00	-56.48.66	5.5	1.0	324.3	323.8	3957.0	643.0	1011.9	148.2	5.9	1.8	7.4	Recco 3, Turn 3 to West
224716	18.45.00	-57.30.12	6.5	-.1	177.8	178.6	3945.0	643.0	1010.9	141.4	1.1	1.8	8.7	Recco 4, Turn 4 to South 5 mins ago
230010	17.47.58	-57.30.00	5.5	2.0	179.9	179.6	3946.0	643.1	1012.2	128.3	4.2	1.9	6.6	Drop 1
231245	16.53.04	-57.30.00	5.6	.6	180.2	179.6	3939.0	643.2	1011.4	83.0	3.8	1.5	1.2	70kt spike in flight level winds
231717	16.33.24	-57.29.94	5.4	1.8	179.5	180.6	3944.0	642.9	1011.9	1.7	3.0	2.0	7.9	More flight level wind data spikes. As much
up to 290kts.														
232027	16.24.12	-57.35.94	6.1	2.2	268.6	269.8	3939.0	643.1	1010.6	73.2	1.0	1.9	1.6	FL winds down to 0.4 kts
232329	16.23.94	-57.49.74	6.1	2.1	268.4	270.5	3948.0	643.1	1010.4	337.8	2.4	1.4	6.7	No flight level data from ADDU
232459	16.23.88	-57.56.46	6.0	6.8	272.1	272.6	3941.0	643.0	1009.5	110.3	5.0	3.8	9.1	Sent Recco 5 and turned to West about 7 mins ago
233057	16.30.18	-58.17.94	6.4	.2	357.9	.5	3941.0	643.2	1010.0	97.7	2.9	1.1	1.4	Recco 6 and turned to North
000019	18.42.06	-58.19.20	6.3	1.3	302.8	302.9	3954.0	643.1	1010.7	102.1	3.1	1.6	6.1	Recco 7, Turn to West
000659	18.41.76	-58.49.50	6.6	2.4	270.2	271.4	3941.0	642.9	1010.4	83.9	4.9	2.4	10.0	Recco 8
001056	18.38.76	-59. 5.82	6.8	.2	182.9	182.9	3947.0	643.1	1009.7	45.8	4.0	1.9	5.5	Drop 2, Turn to South
001318	18.28.38	-59. 5.94	7.1	-.5	180.1	179.6	3945.0	643.1	1009.6	67.4	4.2	1.9	7.7	Another wind spike 1 minute ago
002906	17.17.46	-59. 6.00	6.3	-1.0	180.4	180.6	3941.0	643.2	1010.9	29.5	3.9	1.8	0.0	Drop 3
003500	16.51.42	-59. 6.00	6.5	-.4	180.2	180.7	3933.0	643.0	1010.2	32.2	2.5	2.0	0.0	0034 switched to using nav2
005332	15.32.46	-59. 9.48	6.3	4.0	280.5	280.3	3954.0	643.1	1009.7	234.9	3.9	1.8	10.1	Drop 4, Turn to west
005430	15.33.18	-59.13.74	6.5	1.2	279.1	279.7	3949.0	643.1	1009.5	139.7	1.4	2.3	2.4	Recco 9
005843	15.37.26	-59.32.34	7.8	-8.0	287.5	288.1	3954.0	643.1	1007.9	157.4	1.6	2.2	1.1	Flight reports attitude fail error for about 30 secs
011140	16.13.38	-59.59.82	7.9	-1.1	59.9	59.4	3947.0	643.0	1007.5	358.4	3.7	2.3	0.0	Recco 10
014311	18.24.84	-59.49.02	6.9	.2	301.5	303.4	3953.0	643.3	1010.5	61.4	5.3	2.2	1.9	Recco 11, turn west
014812	18.25.08	-60.12.42	7.1	-.0	269.5	271.8	3952.0	643.0	1009.7	43.7	4.1	2.1	5.2	INS attitude errored about 2 mins ago for about 30 secs
015358	18.21.42	-60.37.02	7.6	-5.3	179.4	178.6	3953.0	643.2	1008.7	39.6	6.5	2.0	2.9	Recco 12, turn south
020817	17.17.22	-60.34.80	7.1	1.8	178.6	177.5	3950.0	642.9	1008.6	39.0	7.6	2.2	0.0	Drop 5
022759	15.49.14	-60.30.54	7.7	-8.8	178.4	179.5	3954.0	643.1	1009.9	156.8	1.1	-.1	2.0	Recco 12, testing our heading through 180deg for glitches.
023139	15.33.90	-60.27.96	4.4	-8.8	156.5	157.5	4301.0	616.0	1011.2	77.2	.4	3.4	0.0	Recco 13 - Last Ob
023853	15. 2.04	-60.15.24	5.0	-15.5	157.9	158.6	4272.0	617.9	1010.3	95.5	.5	1.8	0.0	Stopped recording radar at 0238z
024746	14.23.16	-59.59.34	5.0	-17.6	159.6	160.5	4278.0	617.7	1010.5	207.8	.3	2.5	0.0	Flight reports attitude error
031046	13. 4.32	-59.30.06	26.2	22.9	76.2	73.2	1.0	1007.9	1013.0	304.4	1.6	.9	0.0	Landed
031505	13. 4.80	-59.28.92	25.8	21.6	90.0	345.7	1.0	1006.8	1011.8	350.1	2.9	.0	0.0	Block In

NOAA HURRICANE HUNTERS

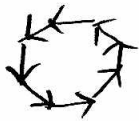


NOAA HURRICANE HUNTERS

Printed Sep 16 2007 14:49

FL 120

Recco's



230
11 KTS

1842

1718 Δ

6036 ← 5948 ← 5906 ← 5818 15 54

Flight ID
070916I

Page
1

20

18

16

1530

61

6030

60

0601Z

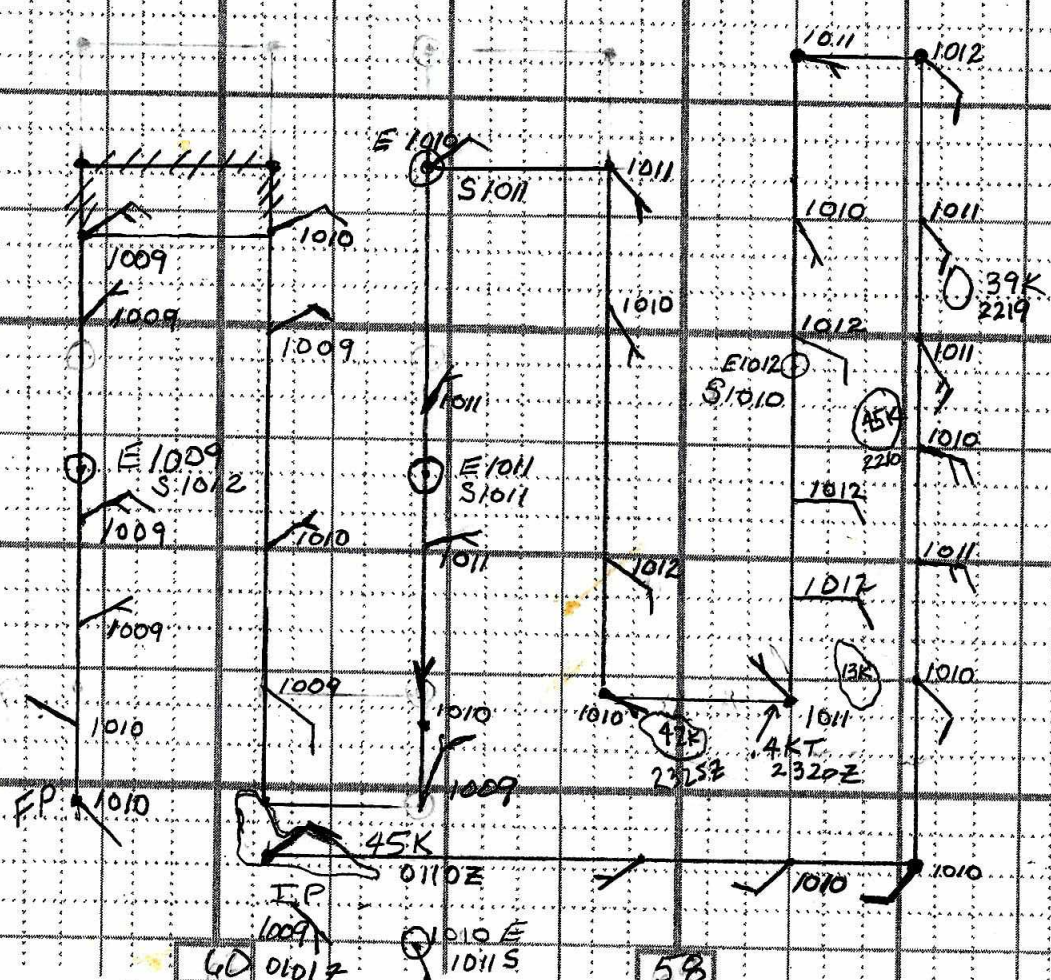
59

01010 E
1011 S

58

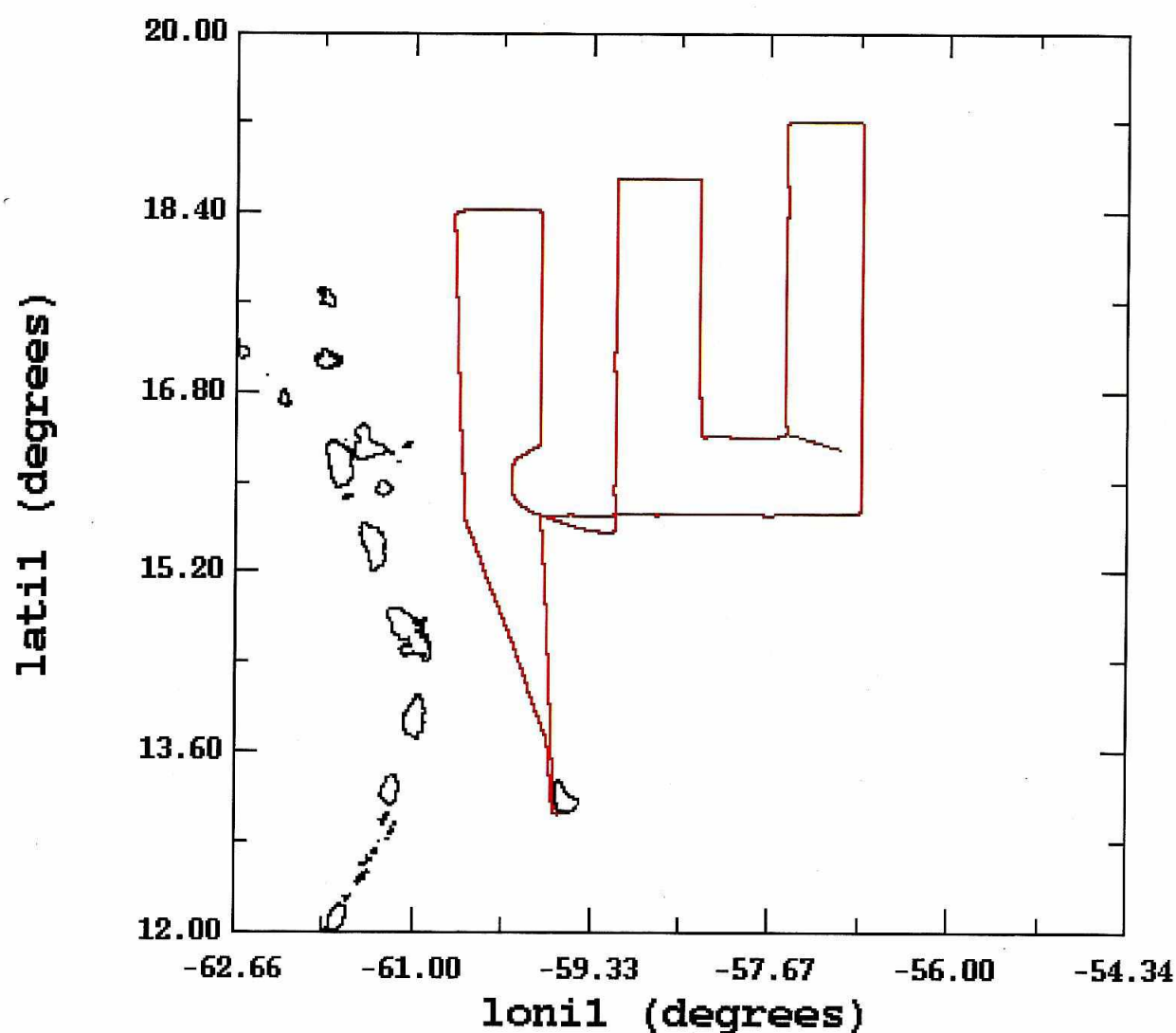
57

56



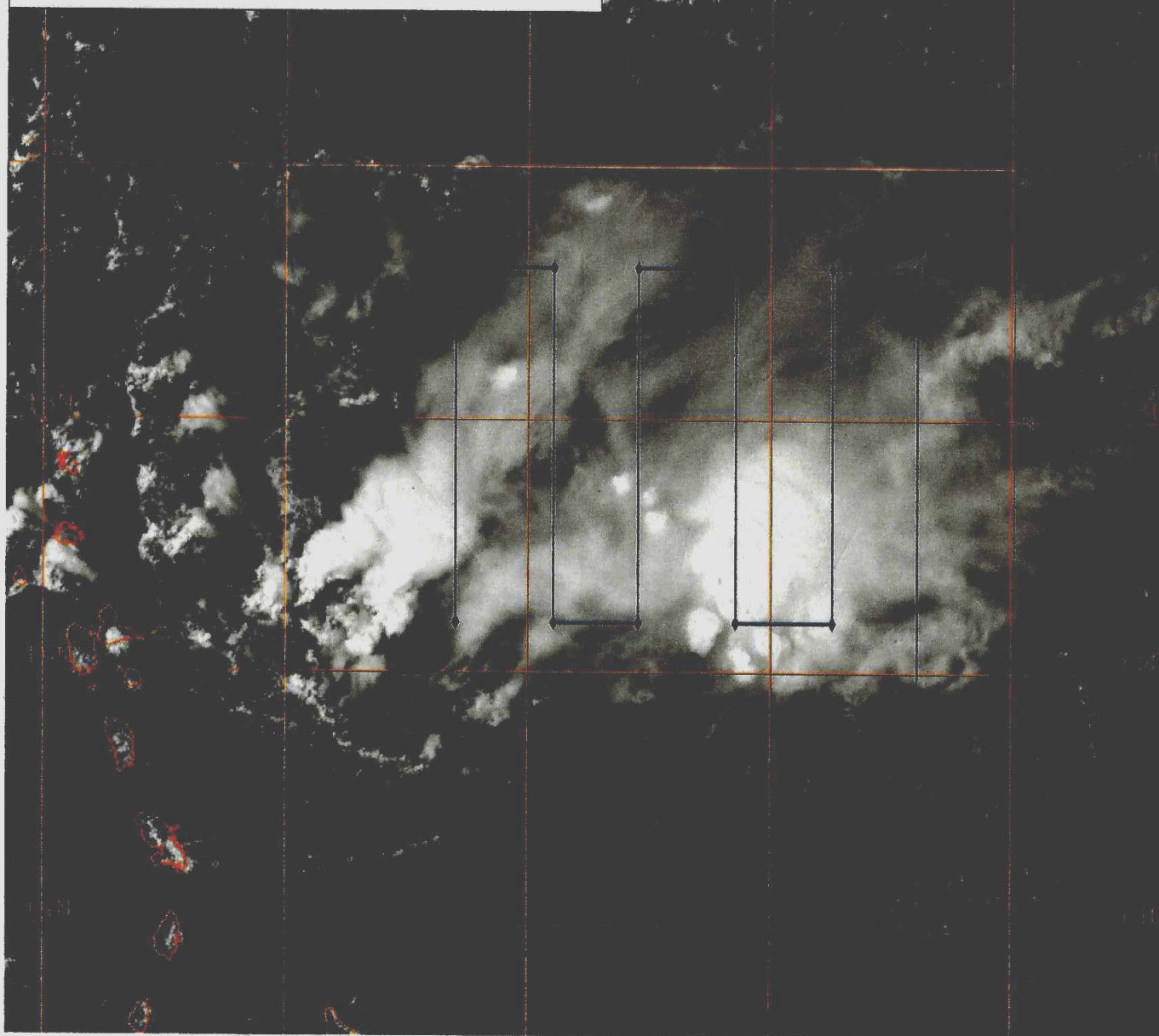
Thunderstorm Ingrid - 070916I

09/16/2007 UTC, 20:30:01-27:11:00



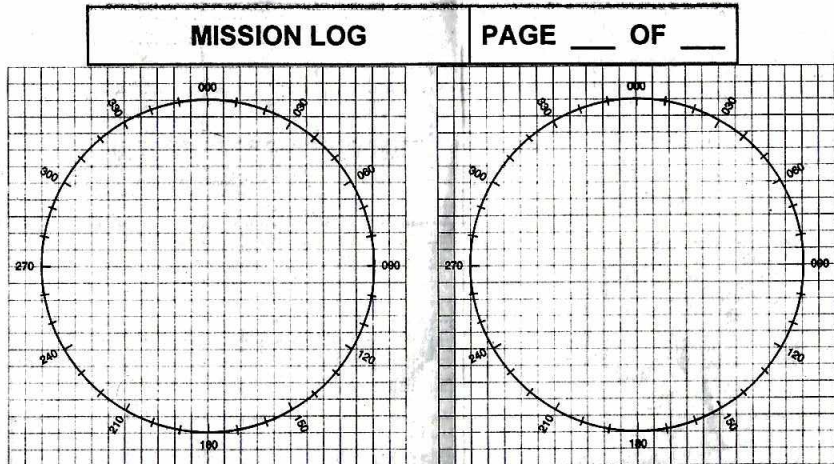
	mean	sigma	min	max
lati1 (degrees), 1 s/sec	16.59	1.57	13.04	19.22
loni1 (degrees), 1 s/sec	-58.86	1.23	-60.62	-56.80

09/16/07 1200Z 08L INGRID
09/16/07 1815Z GOES-12 VIS



Naval Research Lab http://www.nrlmry.navy.mil/sat_products.html
<-- Visible (Sun elevation at center is 48 degrees) -->

CLEARANCES			
FREQ	ALT	HDG	OTHER
			CAT 715000
			R TUIA
			1073
			Piaco 123.7
			Pri 8825
			Sec 11309



POSITION REPORT

1. POSITION

2. TIME

3. ALTITUDE

4. NEXT POSITION

5. ETA

6. NEXT POSITION

EMERGENCY MESSAGE

TRANSMIT THE FOLLOWING MESSAGE TO ANY AGENCY ON THE AIR-GROUND FREQUENCY IN USE. IF UNABLE TO ESTABLISH COMMS, ATTEMPT CONTACT ON ANY OF THE FOLLOWING EMERGENCY FREQUENCIES:

UHF/VOICE 243.0 VHF/VOICE 121.5 MF/VOICE 2182 KHZ HF/CW 8364 KHZ MF/CW 500 KHZ

MAYDAY, MAYDAY, MAYDAY
THIS IS NOAA ____, NOAA ____, NOAA 43

- POSITION _____ N/S
E/W AT _____ Z

- HEADING _____ TRUE/MAG
- AT _____ KTS TRUE/INDICATED
- FLIGHT LEVEL OR ALTITUDE _____
- WE ARE A P-3 AIRCRAFT WITH 11 SOULS ON BOARD
- NATURE OF EMERGENCY _____
- ASSISTANCE DESIRED _____
- PILOT INTENTIONS _____
- WE HAVE _____ ENDURANCE REMAINING _____

TIME	FIX TYPE	POSITION	INS 1 POSITION	K ERR	INS 2 POSITION	K ERR	MH	VAR +E==>	TH	DR +R==>	TRK	GS	WD	WS	ALT	TAS	NEXT PT	DIST	TIME	ETA	REMARKS
2007	START																				
2014	TAXI																				
2014	Block																				
2030	112																				
2037	X✓	13 23.6 59 40.4	13 23.7 59 40.4	-1 0	13 23.7 59 40.5	-1 +1	014	15W	359	1	358	233	095	4	1100	234					343/22 ✓
2130	△	13 42.5 58 05.6	13 42.2 58 05.7	-3 +1	13 42.6 58 05.8	-4 +1	017	16W	391	1	390	266	294	9	1100	242					
2230	△	19 00.8 56 48.3	19 01.0 56 47.7	-1.2 +1.6	19 01.0 56 48.2	-1.2 +1	018	16W	202	3	359	274	133	16	120	263					
2330	△	16 25.3 58 16.9	16 23.2 58 16.7	+2.1 +1.2	16 23.0 58 15.9	+2.3 +1.9	285	16W	269	2	269	263	055	11	1100	254					
0030	△	17 13.5 59 06.0	17 11.5 59 07.2	+2.0 -1.2	17 09.1 59 07.3	+4.4 -1.3	197	16W	181	1	180	265	352	10	120	250					
0130	△	17 28.1 59 48.0	17 27.6 59 46.9	+0.5 +1.1	17 27.2 59 47.4	+0.9 +0.6	UP R N														
0230	△	15 34.2 60 28.1	15 32.1 60 26.5	+2.1 +1.6	15 30.8 60 28.1	+3.4 0	174	15W	159	1	158	278	337	7	135	279					
0311	LAND	13 04.6 59 29.4	13 03.7 59 29.7	+0.9 -0.3	13 03.0 59 30.9	+0.6 -0.9															
0315	Block																				

✓
Piaco
..
..
..

RANGE CONTROL GRAPH

2200 220 1020 52.4

6
5
22.5
33.5

2.5
5
22.5

ENROUTE FUEL	
ENROUTE TIME	7400
ENROUTE FUEL (6K, 5K, 4.5K RULE)	33.5
RESERVE AT DESTINATION	10.0
REQUIRED RAMP	43.5
ACTUAL RAMP FUEL	52.4

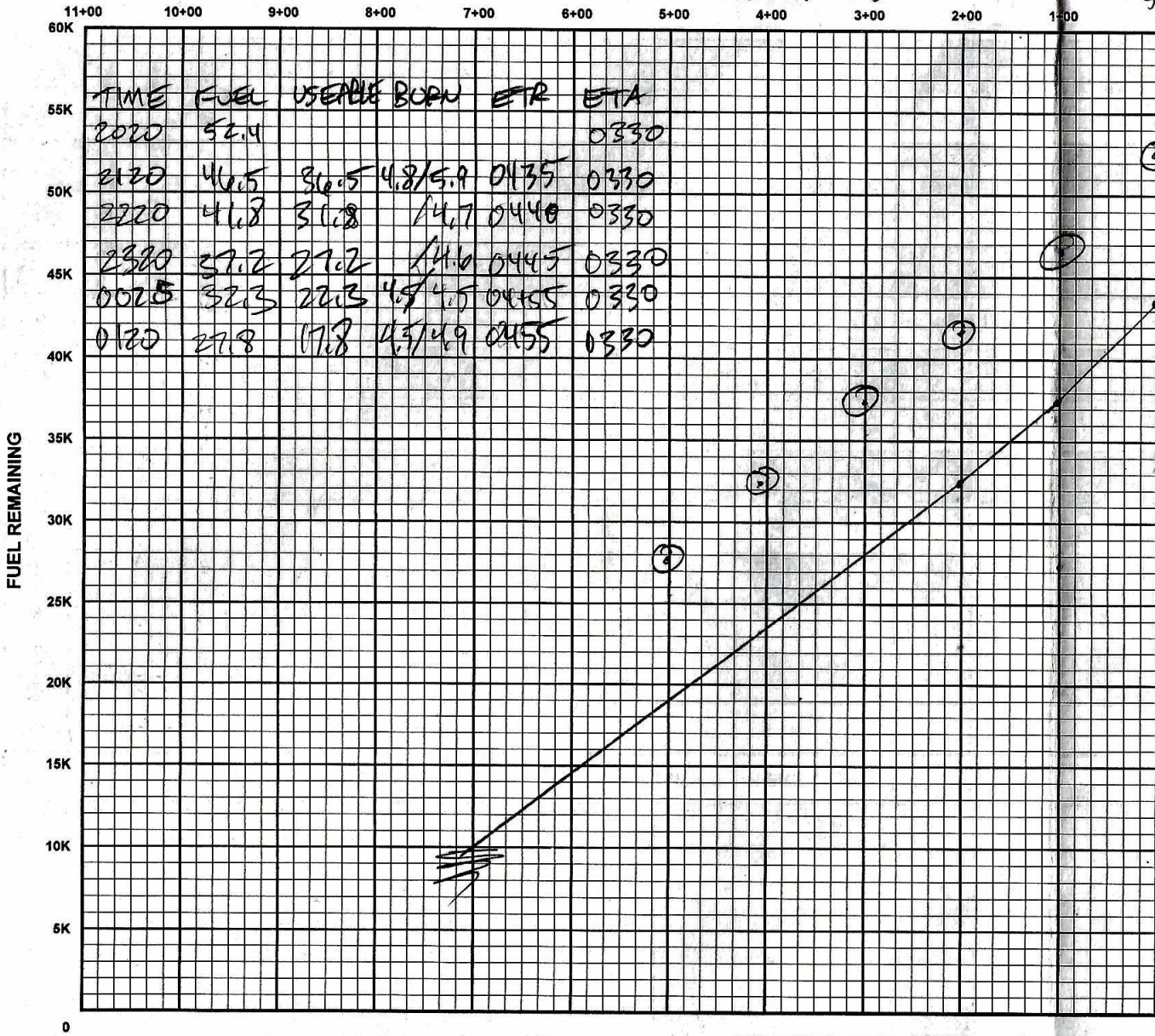
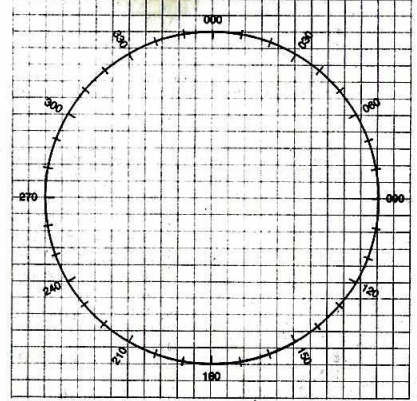
CEX - TRUE BEARING METHOD			
COMPASS TYPE	INS1	INS2	WET
MCH (READING)			
MTH (SEXTANT)			
CE			
VAR			
DEV			

CEX SIGHT	
GMT	
GHA	
CORR	
GHA	
LONG +W -E	
EXACT LHA	
LAT	
BODY	
DEC	
HC/D	
CORR	
HC	
Z	
ZN	

TACTICAL (OFFSTA TO DESTINATION)		
	4 ENG	3 ENG
DISTANCE (OFFSTA TO DEST)		
ENROUTE TIME (OFFSTA TO DEST)		
BURN RATE (LBS/HR)	4500	5500
ENROUTE FUEL REQUIRED		
RESERVE AT DESTINATION		
FUEL AT OFFSTA		

CEX - ERB METHOD			
COMPASS TYPE	INS1	INS2	WET
MERB (DIAL 000)			
+ ZN			
= MTH			
MCH (READING)			
CE			
VAR			
= DEV			

POINT OF SAFE RETURN		
	4 ENG	3 ENG
ETP DISTANCE (TO DEPARTURE)		
ENROUTE TIME (TO DEPARTURE)		
BURN RATE (LBS/HR)	4500	5500
FUEL REQUIRED		
RESERVE AT DEPARTURE		
PSR FUEL		



ETP = .5(TOTAL DISTANCE x OUTBOUND WIND FACTOR)

WIND FACTOR		
WINDSPEED	HEADWIND	TAILWIND
10	1.03	.97
20	1.06	.94
30	1.10	.92
40	1.14	.89
50	1.18	.87
60	1.22	.85

PRESS ALT	200	250	300	350	
	10,000	1.0	1.0	.99	.99
	20,000	.99	.98	.97	.97
	30,000	.97	.96	.95	.94
	40,000	.96	.94	.92	.90

TRUE AIRSPEED CROSS-CHECK							
TIME	IAS	PRESS ALT	"F" FACTOR	EAS	OAT	TAS	ITAS
2158	214	120	X	X	5	258	254

242