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

Flt ID: 040912I	From: KMCF	To: KMCF
Flt. No: 04-063	Blk In: 1729 z	Time On: 1720z
ETD: 0900 z	Blk Out: 0846z	Time Off: 0900 z
ETE: 8+30	Blk Time: 8+43 8.7 Hrs	Flt Time: 8+20 8.3 Hrs
Sponsoring Org: NOAA / NHC	Program: HURRICANE 2004	Purpose: H. IVAN

AOC Flight Crew

Aircraft Commander: TE BEEST, R	Data System: LYNCH, T
Co-Pilot: HALVERSON, H / NELSON, M	AVAPS: SMITH, J
Navigator: SIEGEL, P / BRAKOB, D	System Eng:
Flight Eng: FLOYD, D / KLIPPEL, J	A A:
Flight Director: SHEPHERD, T	A A:
Avionics: SANS SOUCI, D	Crew Chief:

Participating Scientists / Visitors

Name (Last, First)	Activity on Aircraft	Affiliation
GAMACHE, J	PI	NOAA / HRD
Dodge, P	RADAR	|
LEIGHTON, P	ASPEN	|
WALSH, E	SRA	NASA Goddard
KASSINGER, T	OBS	DOC HQ
DANA, J	|	DOC HQ
WILSON, J	|	NY TIMES

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

Storm Name: IVAN

Mission ID: NOAA3 2509A

Penetration number and time

1 - 1130

2 - 1316

3 - 1452

Recco Times	Fix #	Fix Time
1- 0925		
3-1021		
12-1246		
1419		
1619		

#30 LAST Report

(See reverse for additional remarks)

TEAL 35 ↗

TEAL 39/99

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

Flight ID: 040912I	Time Off: 0900 Z	Time On: 1720 Z

	A/C - Takeoff	Wx Station - Takeoff	A/C - Land	Wx Station - Land
Pressure	1013.2 mb	1013.0 mb	1013.6 mb	1013.7 mb

ATIS	Time	Observation
Takeoff M	0455Z	080/6 +5005 25/24 A2994
Land I	1655Z	080/9 +5005 32/24 A2996

	Number	Data Disposition / Date / Quality
Flight Level Tapes	2	
Radar Tapes	3	
Cloud Physics Tapes / CDs		
Video Tapes	4	
Dropsondes	26	Good: 25 Bad: 1 Acc to HRD
AXBT	~~0~~	
AXCP	1	
AXCTD	1	

Remarks:

- New JW sensor head at T.O. will only turn on in Temp.
- Radar ↑ 0904, start record

TEAL 35 ↗
TEAC 39/99
15/18/21Z

NOAA P-3 N43RF
CBLAST 2004
FLIGHT #9

Flight ID: I040912

Sensor or system	Number or Name
INE	2
Accelerometer	2
Temperature Probe	1
Dew Point Probe	2
Altimeter (for vertical wind)	RA-159
Static Pressure	Rosemount (fuselage)
Dynamic Pressure	Rosemount (fuselage)
Time Source	Micro 99
Constants File	CO3043.con

Local Met. Data: Not copied at takeoff

Take off: 0900Z
Land: 1720Z

The RA-232 was substituted for the RA-159 during take off and landing due to spiking (T.O. 085701-090140; Land 171511-172300).

The RA-159 had spikes that were removed and patched (153150-153200).

The fuselage differential slip pressure (BPF) had spikes removed and patched (102414-102505). The fuselage dynamic attack pressure (DAP) had spikes removed and patched (102210-102404). The fuselage dynamic slip pressure (DBP) had spikes removed and patched (103015-103226).

There were data gaps noted: 135821-135830; 142308-142311; 145825-142528; 171430-171445.

The Johnson-Williams liquid water sensor was operative after ~1102Z.

There were times during heavy precipitation events (e.g. eye wall penetrations) when the dew point exceeded ambient temperature yielding a RH of greater than 100%. This is probably due to a wet bulb effect on the total temperature probe and/or the dew pointer over heating while trying to remove excess moisture. In these instances, no corrections were attempted.

The aircraft INE positions were re-navigated with respect to GPS.

SPECIAL NOTE: Locations 80, 81, and 82 of record 5 in the standard data contain vertical ground speed, vertical air speed, and vertical wind speed computed using Dr. Dave Jorgensen's vertical wind algorithm. It is recommended that these values be used for vertical wind analysis.

	Take off	**Land**
Aircraft Static Pressure	1013.2 mb	1013.6 mb
Corrected Tower Pressure	1013.6 mb	1013.7 mb

Flight Director: Tom Shepherd
813-828-3310 x3053

N43RF Hurricane / CBLAST '04 Flight Performance Log

Mission IVAN-SFMR Flt ID 040912i

SED Crew Lynch, Sans Souci, Smith

Pre-Flight 0645 Take-Off 09:00 Landing 17:20

	System			Pre-Flight	In-Flight			Post-Flight			
NAV	GPS	FM : 1						LAT	LON	GS	RE
	INE #1	Time On: 1700	Aligned to :					-6.8	+5.5	3	9
	INE #2	Time On: 1700	Aligned to :					+3.8	+0.1	1	4
	Diff GPS			TL							
RADAR	MARS Data	Start	Stop	Ready?	HRD?			# DATs ? 3 Given To: John G.			
	MARS	9:04	1201	TL	Y / N	13:55	16:27				
	MARS Data / Tape Status	12:03	13:55		LFRec	TARec	EOF's				
	MARS LU8	Clean		TL							
	MARS LU9	Clean		TL							
	RADAR R/T SN Tail 202/102		LF 102	TL	Mod Switches		ON	Mod Switches		OFF	
	Nose							Power		OFF	
PMS	FSSP Ref VDC:	Covers	OFF	NI				Covers		~~ON~~	
	Cloud Mono	Covers	OFF					Covers		~~ON~~	
	CIP	Covers	OFF					Covers		~~ON~~	
	SEA Data DAT	Start	Stop:	Ready?	#DATS	Errors	Disk Write	Given To:			
	DAT Clean?						Y / N				
TEMP		Cal High	Cal Low					Cal High		Cal Low	
	Temp #1			TL				30.6		-30.2	
	Temp #2			TL				Power		OFF	
	Temp #3			NI				Power		OFF	
	Dewpoint	#1 #2 #3 (TDL)		TL				Power		OFF	
PRES	Attack / Slip Angle	AP OAP BP OBP						Power		OFF	
	Differential	PQ1 PQ2 PQ3 PQ4		TL				Power		OFF	
	Absolute	PS1 PS2 CBPS		TL				Power		OFF	
FLTLVL	Apn-159 SN: 66-024			TL				Power		OFF	
	Apn-232 SN: 1761			TL				Power		OFF	
	Liquid Water	J&W King			28V WOW : ON ?			Power		OFF	
	Radiometer	CO2 SST		TL	28V WOW: ON ?			Power		OFF	
RAMS	RAMS Data	Start	Stop	Ready?	Errors 8:		Errors 9:	# DATs ? 2 Given To: Shop			
	CPU: A B	08:43	17:29	TL	1		0	Power		OFF	
	RAMS Data / Tape Status				Slow Rec		Fast Rec	Disk Records:			
	RAMS LU8	Clean		TL	3180		31594				
	RAMS LU9	Clean		TL	3180		31594				
	Flight Director Laptop			TL				Power		OFF	
	Network			NI							
	ASDL Mission #: 2509A Name: IVAN			TL	Freq: 30		Block: 10	Power		OFF	
	C.I. Printer	Start	Stop	Ready?	Paper Bin Stores			Given To: Shop			
	PRATE: 10	8:42	17:29	TL	0% 25%	50%	75% 100%	Power		OFF	
MISC	Exterior Walk Around	Plugs	Covers	JAS				Plugs		Covers	
	SATCOM W/S Inmarsat		GlobalStar	JOB				Power		OFF	
	AXBT Internal # Loaded :			NA				# Launched :		—	
	AXBT External # Loaded :			NA	28V WOW			# Launched :		—	
	AVAPS # On Board : 56			JAS				# Dropped : 26			
	Video Cameras	Start	Stop	Ready?	Cameras		Mode	# Tapes ? 4 Given To: Dodge			
	VHS SVHS	08:42	17:30	TL	(N) 2 3 4		2 / (2)	Lens Cap ? :			
	FCU	— B C D —		TL				UPS		OFF	
USER	SFMR HRD AOC			TL				Accelerometers			
	NASA SRA			EW				#1 (2 G) : 8204			
	ARL BAT Probe, SST & IRGA			NA				#2 (2.5 G) : 66BT			
	UW PDA			NA				#3 (3 G) : 5967			
	Scripps MASS, Laser Alt, IR Cam & Sonde			NA				#4 (3.5 G) : 2892			
	RSMAS Licor			TL							

Eye = 18½ 30½

Please Note any Discrepencies

Item #	Zulu Time	Problem Description	Initials	Status
1	Pre	JW LWO probe swapped w/ new one		
2	10:00	Vert. Hold pot on sta 5 monitor - swap w/ one from sta-7	TL	
3	11:00	Down VCR (IR cam NTSC as input) goes blank - tapping on VCR brings it back	TL	

150/180

1858 8112

1330

1108

18.7 81.5

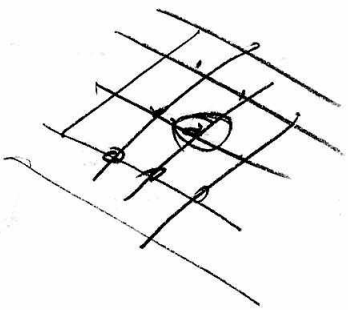
1631 7949

1955 7851

1859 8130

2104 8013

2105 8049

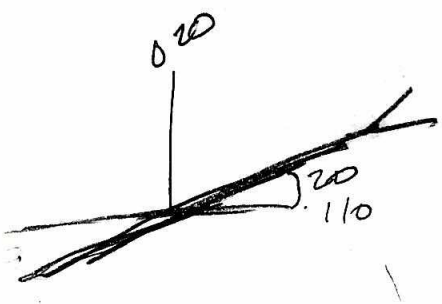


~~2050~~

~~8200~~

2129

8221

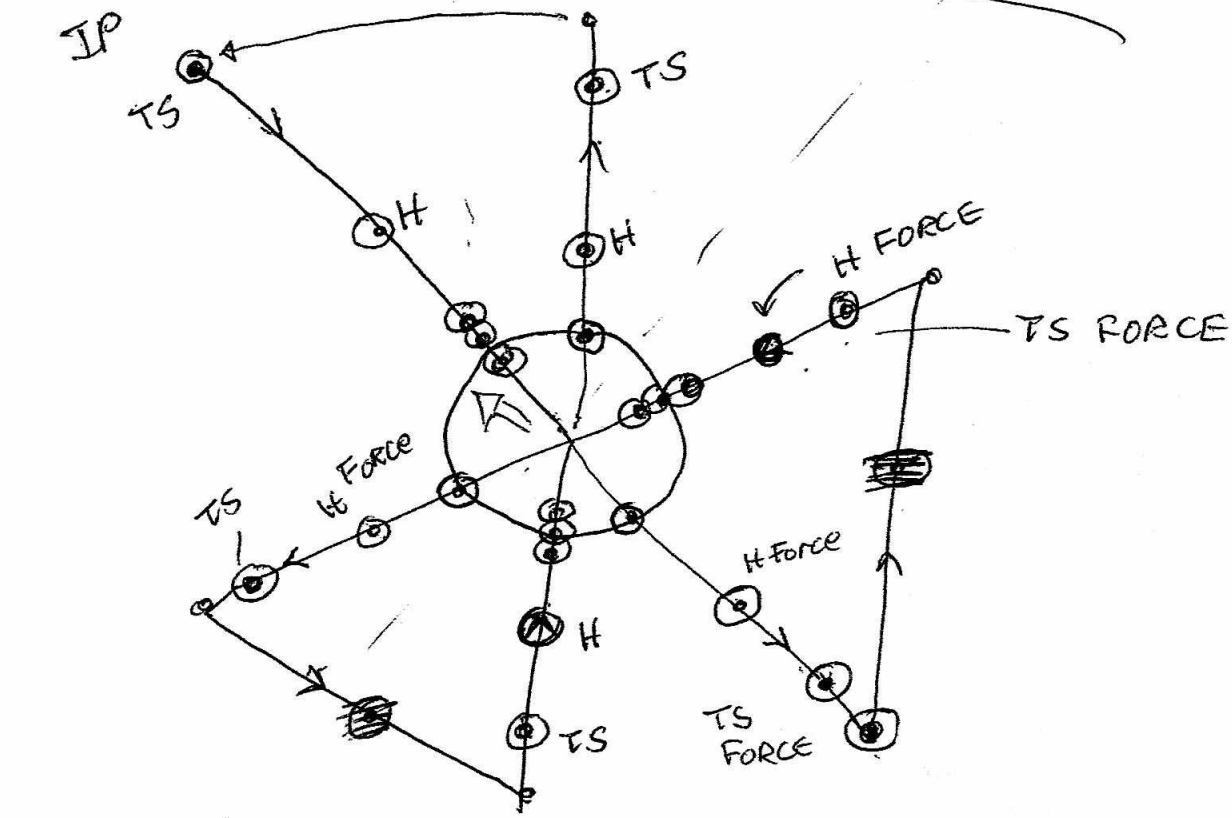


0409121

33 m/s H = Hurricane Force

17m/s TS = TROPICAL Storm force

CUBA EW



ID NOAA3 2509A IVAN

TEAL 35

39 15 18 21 TEAL 99 10K

FIX

0547 1826N 8025W 915 Sonde

133 NW 105 38 mi 700 2344
11 mi

112 SE

74 KT @ 105 miles NE

TED KASSINGER Dep Sec of Comm.

Jana Dana Acting Gen. Council for DOC

~~Skip O'Rourke St Pete Times~~

JIM WILSON NY times

2123
8254

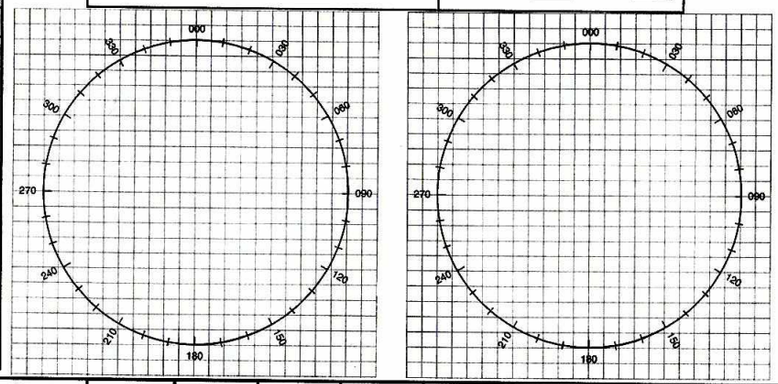
18 SOB

CLEARANCES

FREQ	ALT	HDG	OTHER
			CAF R080 1600
			150000 +05 SQ3706
118.8			
139.52			
133.9			
133.7			

MISSION LOG

PAGE ___ OF ___



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

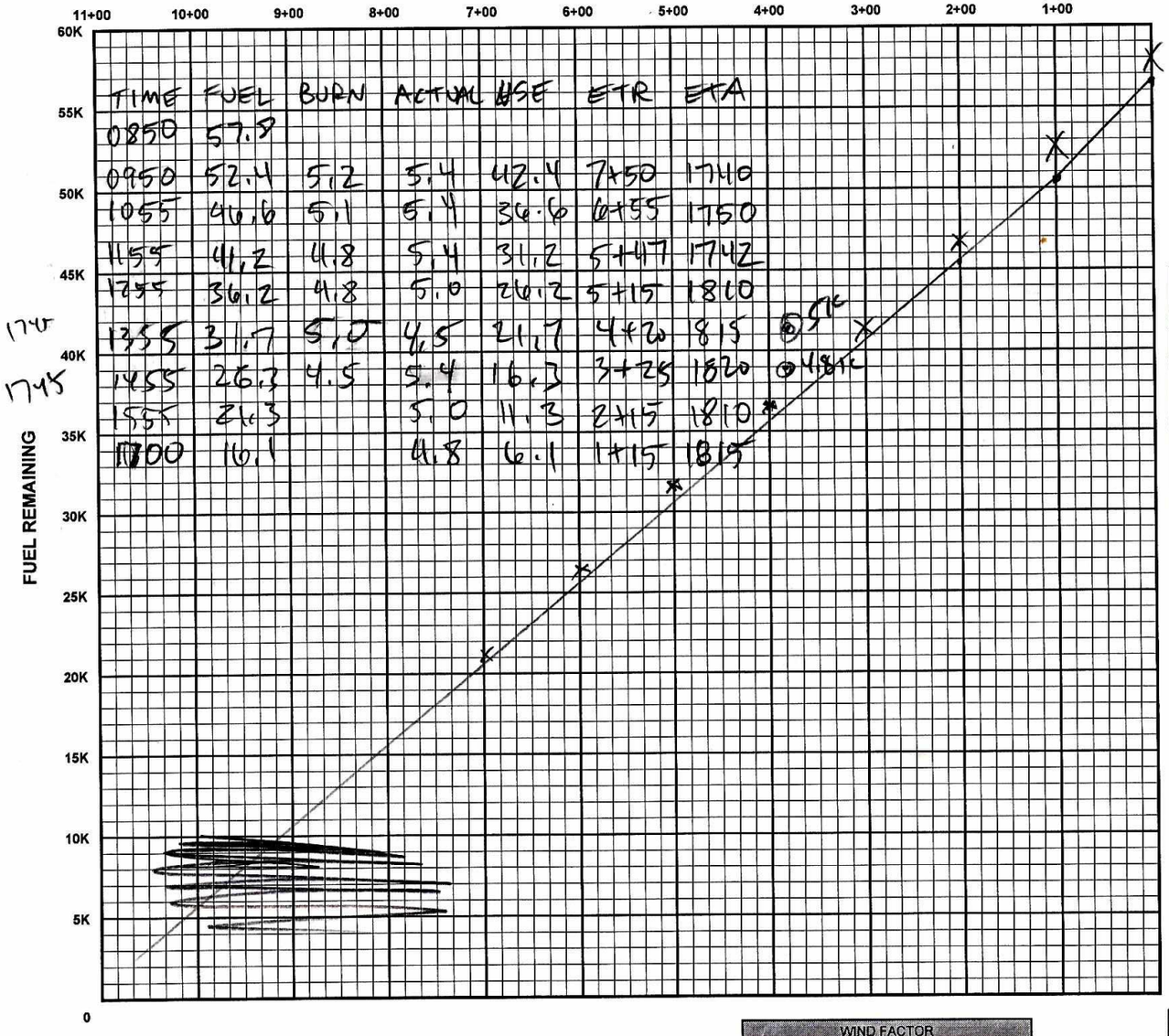
MAYDAY, MAYDAY, MAYDAY
THIS IS NOAA _____, NOAA _____, NOAA 43

- 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 _____ SOULS ON BOARD
- NATURE OF EMERGENCY
- ASSISTANCE DESIRED
- PILOT INTENTIONS
- WE HAVE _____ ENDURANCE REMAINING

TCAS 39

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
0839	ENG																				
0845	TAXI																				
0900	BLOCK T/O																				
0903	×✓	N27 45.3 W82 25.5	27 45.3 82 25.5	0 0	27 45.1 82 25.5	+.2 0	184	5W	179	2R	181	189	144	11	120	230	PARES				
0945	○	24 57.6 81 33.0	24 58.4 81 32.7	-.8 +.3	24 57.7 81 33.0	-.1 0	185	5W	180	3R	183	273	095	14	150	275	TAPPO	60	+13	0958	
1045	△	21 09.5 82 43.9	21 11.0 82 43.2	-1.5 +.7	21 09.2 82 43.7	+.3 +.2	189	3W	186	6R	150	262	069	27	080	263					
1145	△	17 56.6 80 34.4	17 59.3 80 33.3	-2.7 +1.1	17 56.0 80 34.2	+.6 +.2	177	4W	173	17L	146	233	228	72	080	240					
1245	△	19 40.0 79 27.5	19 43.8 79 26.2	-3.8 +1.3	19 39.3 79 27.9	+.7 -.4	241	5W	236	12R	248	265	115	50	080	252					
1345	△	17 54.6 83 29.4	18 00.3 83 27.5	-5.7 +1.9	17 54.2 83 30.4	+.4 -1.0	242	2W	240	10L	230	258	330	38	080	242					
1442	△	18 13.6 81 48.0	18 19.6 81 45.0	-6.0 +3.0	18 12.0 81 47.7	+1.6 +.3	007	3W	004	15R	019	259	270	80	080	242					
1540	△	21 34.8 81 06.1	21 41.7 81 02.8	-3.9 +3.3	21 33.3 81 07.1	+1.5 +1.0	274	4W	270	1R	271	311	044	54	080	246					
1640	OVHD/△	25 07.2 81 29.6	25 16.1 81 25.1	-9.2 +4.5	25 06.6 81 30.1	+.6 +.5	355	5W	350	4L	351	310	114	24	160	292	RSW				
1720	Land	KMCF																			
		27 51.1 82 31.2	27 57.9 82 25.7	-6.8 +5.5	27 49.3 82 31.1	+3.8 +.1															

RANGE CONTROL GRAPH



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

ENROUTE FUEL	
ENROUTE TIME	9+00
ENROUTE FUEL (6K, 5K,4.5K RULE)	46.0
RESERVE AT DESTINATION	10.0
REQUIRED RAMP	56.5
ACTUAL RAMP FUEL	57.8

2.5
6
35
43.5

6
0.0

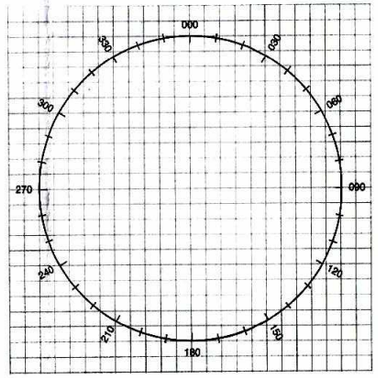
TACTICAL (OFFSTA TO DESTINATION)	4 ENG	3 ENG
DISTANCE (OFFSTA TO DEST)		
ENROUTE TIME (OFFSTA TO DEST)		
BURN RATE (LBS/HR)	4500	5500
ENROUTE FUEL REQUIRED		
RESERVE AT DESTINATION		
FUEL AT OFFSTA		

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		

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

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

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



"F" FACTOR	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
0925	220	150	X	X	+10	282	273

NOAA FORM 56-49
(2-95)

MISSION PREFLIGHT LOG

DESTINATION	MISSION	NAVIGATOR	AIRCRAFT COMMANDER	FLIGHT DIRECTOR	SCHEDULED / ACTUAL TAKEOFF Z	DATE OF TAKEOFF
KMCF	IVAN #3	BRAICOB / SIEGEL	TEBEEST	SHEPHERD	0900 / 0900	12SEP04

	WP	LAT / LON	RTE	MH	VAR +E==>	TH	DR +R==>	TRK	GS	WD	WS	ALT	TAS	LEG / TOT DIST	LEG / TOT TIME	PROP ETA	ETA	ATA	REMARKS
KMCF	8	N 27 51.0 W 82 31.3	✓											------	------				
PAIRS		27 34.2 82 28.8												------	------				
MURDO		27 19.1 82 19.8	✓											------	------				
SASEE	7	27 05.3 82 11.5	✓											------	------				
CHARO	6	26 57.7 82 05.8	✓											------	------				
ERRIN	5	26 48.5 81 58.9	✓											------	------				
RSW	4	26 31.8 81 46.6	✓											------	------				
DEEPS	3	25 58.7 81 14.0	✓											------	------				
MTH	2	24 42.7 81 05.7	✓											------	------				
TADPO	1	24 00.0 81 13.0	✓											------	------				
UVA	9	23 01.5 81 27.2	✓											------	------				
UNG		21 45.4 82 52.7	✓											------	------				
IP		21 23.0 82 54.4	✓											------	------				
1														------	------				
2		19 55.4 78 51.3												------	------				
3		17 57.7 83 47.9												------	------				
4		16 32.0 82 28.1												------	------				
5														------	------				
6														------	------				
EYE		18 48.9 81 38.9												------	------				
BRDGE	5	27 27.2 82 08.1												------	------				
ROGAN	6	27 15.1 81 53.6												------	------				

INS PERFORMANCE

	INS 1	INS 2
BEGIN ALIGN TIME	0645	0645
ALIGN STATUS (0-5)	0	0
END NAV TIME	1720	1720
START NAV TIME	0827	0827
DELTA T	8+20	8+20

TERMINAL ERRORS

	INS 1	INS 2
DELTA LAT	-6.8	+3.8
DELTA LON	+5.5	+0.1
RGS	3	1
RADIAL ERROR	9	4

REMARKS

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
AIRCRAFT OPERATIONS CENTER

MISSION LOG

PAGE ___ OF ___

FIX TYPES
(G) - GPS (I) - INS (R) - RADIO (V) - VISUAL (C) - CELESTIAL (D) - DR

	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
EYE1	1130	(·)	18 41.6 81 07.7																			
EYE2	1316	(·)	18 48.9 81 21.9									294	9									
EYE3	1452	(·)	18-56.1 81-38.5									295	11									
	1418	wg	16-39 82-19																			