

U.S. DEPT. COMM./NOAA/OAO - DATA SECTION WORK FORM NO.1 OAOWF1 FILE

FLT ID: 950801Z	FM: MacD. 11	TO: BOCA ATICA NAS
FLT NO: 95-54	BLK IN: 0259Z	ATA: 0254
ETD: 19Z	BLK OUT: 1859Z	RTD: 1909
ETE: 9	BLK TIME: 8:00 (8.0)	FLT TIME: 7:45 (7.8)
SPONSOR ORG: HAD	PROGRAM: Research	PURPOSE: Land Fall

OAO PERSONNEL

AC Kennedy ✓	SYS ENG Coles ✓
CP O'Mara	DATA SYS Lynch ✓
NAV Bathman ✓	RADAR McMillan
FE Bast / Moore ✓	BT/ODW
RADIO Sme Smei ✓	CLD PHYS
FD Parrish	DOPPLER

PARTICIPATING SCIENTIST/VISITORS/OAO

LAST, FIRST NAME	ACTIVITY ON A/C	AFFILIATION
Coanache ✓	P.I.	HAD
Black, R. ✓	1 Radar ↓	↓
Black, M. ✓	C.P.	↓
Loft, K. ✓	Visitor	Tampa Bay
McKenney, B. ✓	"	Thunderbolt

PROPOSED/ACTUAL MISSION/REMARKS (RECCO, FIXES, STORM, PENET, NHOP #)

FLY OK RA, Rotating Fig 4 on Erin until within range land radars. TD 1 High at Simbout.

0015 - Seen says 1 hr of MINABs didn't go out - he will send word

2012Z 26°30'N, 78°01'W 012805Z 27°08'N, 79°11'W

2054Z 26°31'N, 78°09'W 0150Z 27°11'N, 79°16'W

2209Z 26°33'N, 78°21'W 8 penetrations

2259Z 26°40'N, 78°32'W

2341Z 26°50'N, 78°43'W

0031Z 26°52'N, 79°01'W

NOAA • AOC • SED Flight Performance Log

Aircraft : N43RF

Project: Hurricane '95

Mission : ERINSED Crew: Roles, Lynch, McMillanFlight ID : 950801IPre-Flight: 1658ZTake-Off: 19:08:50Landing: 025356

System			Pre-Flight		In-Flight		Post-Flight		
NAV	INE #11658	Aligned to :			STM		+1	+1.6	7
	INE #21658	Aligned to :			STM		-3.1	+3.6	5
	GPS 1658				STM		Lat	Long	GS
RADAR	Nose		(2) STM		STM				
	L/F	R/T SN : 102	(8)						Mod Switch Off ? ✓
	Tail	R&T SN : 202/201							Mod Switch Off ? ✓
	ASAU's & RCU								
PMS	MARS Data System								# DATs : 1
	2DG-C	Ch 1/64: 2.1 / 2.1	1	QR	(13)				
	2DG-P	Ch 1/64: 2.7 / 2.7		QR					
	FSSP	Ref VDC: 7.917		QR					
	SEA Data System								# DATs : 2
TEMP		Cal High	Cal Low				Cal High	Cal Low	
	Temp #1	+31.0	-30.1	37.8	STM	STM	30.6	-30.2	
	Temp #2	+30.9	-30.1	37.1	STM	STM	30.5	-30.3	
	Temp #3 (Starboard)			TML		STM			
	Dewpoint #1					STM (9)			
PRESS	Dewpoint #2								
	Attack Angle (AP/DAP)			STM		STM			
	Slip Angle (BP/DBP)			STM		STM			
	Differential (PQ1/PQ2/PQ3)			STM		STM			
	Absolute (PS1/PS2)			STM		STM			
FLTLVL	Radome Transducers		Plugs Out?	(2) STM		STM			
	Cabin Transducer (Station 5)			STM		STM			
	Apn-159	SN: 66-024		STM		STM			
	Apn-232	SN: 1699		STM		STM			
	King Liquid Water			N/I		N/I			
MISC	J&W Liquid Water			STM		STM			
	Down PRT-5 (SST)			TML		STM			
	Side PRT-5 (CO ²)			TML		STM			
	RAMS Data System			(3) STM		(6) STM			# DATs : 1
	ASDL			TML		(10) STM (11)			
USE	Exterior Walk Around			STM		TML *			
	Video	(N) (L) (R) D		STM		STM			
	AXBT		# on Board	0		# Dropped:	0		# Good —
	ODW		# on Board :	0		# Dropped :	0		# Good : —
	FCU	-A-B-C-D		STM					
USE	Charge Probe								Accelerometers
	Formvar			N/I		N/I			#1 (2 G) :
	Field Mills	(0) (0) (0) (0)		STM		(7) N/I			#2 (2.5 G) :
	Lawrence Water Collector			N/I		N/I			#3 (3 G) :
	HRD Workstation			N/I		N/I			#4 (3.5 G) :

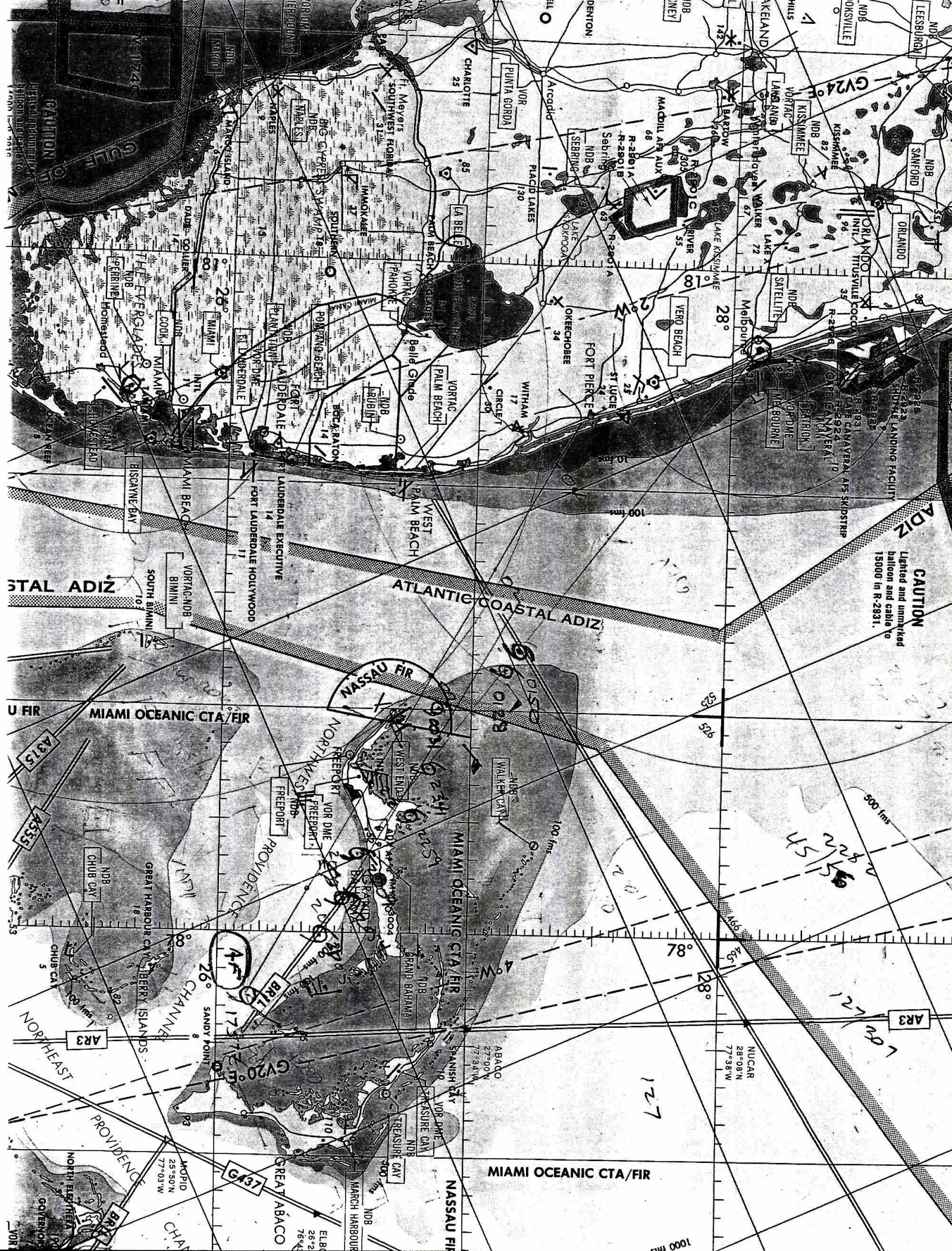
23:01:01 ASDL-31

Please Note any Discrepancies

Item #				
1		Cloud Probe mounted inboard pylon position Precip Probe " outboard " " DAScables Reversed	OK	/
2		Flight Director NOSE RADAR Indicator No display Initially, suspect circuit breaker	OK	OK
3	17532	Flight Director Outboard Monitor has a flaky brightness knob	STM	OK
④		Gerber Liquid Water is installed and is being recorded on channels 26, 27, 28 See the vortex assignments for analog collection	STM	/
5		DATA LOG		OK
6	1926	Switched to Dewpoint #2 #1 is bad. #1 reading out to lunch	STM	/
7		Right Field mill is noisier than Left? Check spinner + bearings - etc	TL	OK
8		SN 102 LF RT would not take on Feeg in AFG		/
9		Dewpointer #1 is back and is reselected as Primary	STM	/
10		ASDL - % of RECCO messages sent to ASDL kick back error * ASDL COMM Prog ASDL VI error: -31 - Comm. link timeout. Message failed to be sent and was not received by ASDL. In order to send message we needed to copy file as a G.E.D file vice G.EA31 then resend it to the ASDL. ALL other messages seemed to work fine	STM	/
11	2300	ASDL went down hard to communications Back on line at 2340.Z	STM	/
12	0026	HVPS PDT on Field mill control Panel only Allows HVPS to reach 10,000 volts (.9)		OK
13		Stuck diode on Cloud probe ~ #8 or so	TL	OK

89508011 H. Erin Landfall Experiment 41010 28.9 78.5
41009 28.5 80.2
3/6/11

Time	LAT	LONG	TR	DD	DB	PA	GA	HA	TD	SP	PS	
1859	2750.9	8229.5				6		237	17.2		1012.5	B312
191315	2747	8217	124	63	31	1734	1729	17.4	21.5	1007.0	808.2	
192315	2732	8141	110	38	33.2	4400	4625					
1927	2727	8125	110	37	31	4622	4832	0.1	-2.5	1006.5	568.0	
194430	2700	8093	110	54	23.3	0.3	+0.4	4615	4824	004.8	568.6	
200430	2630	7834	90	9	49	3078	3093	10.8	10.2			
201200	2630	7801	90	90	12	3070	3007					off - 5 mi. N
201715	2631	7737	92	175	65	3058	3050	7.7	13.0	991.3	696.0	
2024	2631	7707	70.0	NW								
2032	2639	7734	34	184	63.2	3072	3119	8.2	7.2	999.8	694.8	
204115	2723	7810	180	88	61.2	3067	3136	8.8	5.8	1001.4	695.0	Heading S
204830	2656	7810	180	95	64	3054	3042	10.9	8.3	988.7	695.5	
2054	2638	7809.0										
2105	2546	7810	180	253	43	3049	3114	10.0	7.9	969		
213915	2710	7850	270	274	49	3048	3103	8.9	7.0	999.5	696.9	Old of
2147	2642	7900	181	28	58	3048	3080	9.9	8.4	995.3	696.8	Our W End
220845	2631	7816	45	213	22	3048	3007	14.8	10.6	981.6	697.1	2633N 7821W
222630	2707	7744	271	134	65	3059	3109	8.3	5.7	1000.7	695.5	
223530	2707	7909	307	Flying reciprocal	Fm dir eye toward MCB							
224615	2715.6	7916.7	128	50	41	3065	3127	9.1	7.8	999.9	696.3	FLYING MCB LAD
225845	2645.8	7832.1						15	11	980		
2307	2628.5	7801.0	127	197	53	3062	3110	10.3	8.7	996.2	696.0	
232215	2724	7754	230	130	65	3062	3129	8.9	6.2	1000.9	695.5	4 FM DE
234050	2650	7843				3045		16.2	12.3	980		
000320	2533	7930	97	300	21	3065	3156	9.2	6.7	1003.9	695.6	FLYING 095 MIA LADNHC
001345	2547	7850	0	263	32	3062	3147	10.4	7.2	1000.9	695	
003046	2652	7901										bad fix - Center in hub off to W
0053	2756	8020	Turn near	35 mi. rad	MLB, MCB TO LAKE WORTH							
0105	2714.6	8002	178	26	47	3049	3121	10.7	7.6	1000.3	696.7	
011235	2635	8001	LAKE WORTH	E-MIA	-TURN	NE TO STORM						
012805	2708	7911.1				3052		15.1	10.7		980	
0150	2711	7916									982	
0203	8006.0	OUT										
021115	2712.6	8022.4	206	205	47	3138	3209	9.9	7.0	998.5	688.7	to back office
022445	2610.5	8055.4	206	355	15	3138	3240	9.5	6.4	1003.0	688.7	



950801I N43RF Hurricane Erin HRD Landfall

<u>Sensor or system</u>	<u>Number or Name</u>
INE	2 (See note)
Accelerometer	2
Temperature Probe	1
Dew Point Probe	1
Altimeter	APN-159
Altitude change option (for vertical winds)	RA
Static Pressure	Rosemount Fuselage
Dynamic Pressure	Rosemount Fuselage
Time Source	Micro 99
Constants File	CO2951.CON

Notes:

INE 2 positions were corrected periodically with good GPS positions. No corrections were made to groundspeeds.

Removed several Dewpoint #1 spikes early in the flight.

Special note. Locations 80, 81 and 82 of the Type 5 record on the Standard Tape contain vertical groundspeed, vertical airspeed and vertical wind, respectively, computed using Dave Jorgensen's vertical wind algorithm. It is recommended that these values be used for vertical wind analysis.

Jack Parrish, Flight Director


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TITLE (MAX 21 CHARACTERS) -- EX HURRICANE PAINE
HRD ERIN LANDFALL
YYMMDDL FLT I.D.
950801I
HHMMSS START TIME -99999 DEFAULT TO START OF DATA FOR PRINTOUT ONLY
185901
HHMMSS END TIME 999999 DEFAULT TO END OF DATA FOR PRINTOUT ONLY
025900
HHMMSS TAKE OFF TIME
190900
* NUMBER OF TAPES (I2) ...FOR STANDARD TAPE OUTPUT ONLY
01
* -----LOGICAL UNIT OF INPUT DATA (I1) 5, 8 OR 9 FOR TAPE DRIVE
1
* -----LOGICAL UNIT OF OUTPUT TAPE DRIVE (I1) [FOR STANDARD TAPE ONLY]
9
* -----LOGICAL UNIT OF PRINTER (I1)
6
* -----DATE OF PROGRAM (MMDDY)
06093
* -----STATIC PRESSURE PROBE (I1)
* 1 = PSW (WINGTIP)
* 2 = PSF (CO-PILOT/FUSELAGE)
* 3 = FUTURE USE
2
* -----DYNAMIC PRESSURE PROBE (I1)
* 0 = PQW(WINGTIP)
* 1 = PQF1 (FUSELAGE 1281)
* 2 = PQF2 (FUSELAGE 1221)
* 3 =FUTURE US
1
* -----INE SELECTION (I1)
* 1 = INE 1
* 2 = INE 2
2
* -----ACCELEROMETER (I1) - USUALLY THE SAME AS YOUR INE SELECTION
2
* ----- TOTAL TEMPERATURE PROBE (I1) [1 OR 2]
1
* ----- DEWPONT TEMPERATURE PROBE (I1) [1 OR 2]
1
* -----ALTIMETER OPTION (I1) - FOR VERTICAL WIND COMPUTATION
* 0 = PRESSURE ALTITUDE (OVER LAND)
* 1 = RADAR ALTITUDE APN-159 (OVER WATER)
* 2 = RADAR ALTITUDE APN-232 (OVER WATER)
0
* -----PRINTOUT RATE SECONDS (I2)
10
* -----WINDSPEED/DIRECTION RUNNING AVERAGE TIME, SECONDS (I2)
10 ! FOR STANDARD TAPE OUTPUT ONLY
* -----TIME OPTION (I1)
* 1 = MICRO 29
* 2 = TIME BASED GENERATOR #1
* 3 = TIME BASED GENEATOR #2
1
* -----NAME OF CONSTANTS FILE EX CO3863.CON
CO3956.CON
*****

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$$-30.8 - (-29.7) =$$

$$-30.8 + 29.7 = -1.1$$

950801I H. Erin Land Full 10E#2

190900	-0.1	+0.1	51.5	30.7	51.5	30.7
201200	-0.7	-0.6	30.4	00.6	30.4	00.6
205330	0.0	-0.1	37.6 ^{35.5}	10.0	35.5	9.9
213100	+0.1	-1.5	58.8	7.4	58.8	7.4
220900	-0.1	0.0	31.1	15.6	31.1	15.6
225900	-0.5	-1.1	44.9	30.8	44.9	30.8
234230	-1.3	-0.8	43.9	46.5	43.9	46.5
003100	-1.0	-1.8	56.6	50.3	56.6	50.3
0100	-2.9	-0.4	34.8	08.2	34.8	08.2
0129	-2.0	-2.2	10.5	14.8	10.5	14.8
0150	-2.3	-2.9	12.5	16.3	12.5	16.3
(2) 0259	-3.0	-4.1	34.4	41.7	34.7	41.3

On initial climbout, TD lagged ^{and was warmer than} TA, and did not fully recover until 1932Z.

10E2 removed.



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Rockville, MD 20852-3019

OFFICE OF NOAA CORPS OPERATIONS

Aircraft Operations Center
P.O. Box 6829
Tampa, Florida 33608-0829

MEMORANDUM FOR:

Dr. HUGH WILLOUGHBY, NOAA
Acting Director, HAD, ADML

FROM:

CAPT George C. Player III, NOAA
Acting Director, Aircraft Operations Center

SUBJECT:

Hazard Duty Flight

The mission flown on AOC aircraft # N432F on 1 August 95 has been declared hazardous. The following personnel from you laboratory participated in this mission.

John Gamache
Robert Black
Michael Black

For purposes of computing allowable hazard duty time, the hazard period during this mission was from 1459 local time on 1 Aug until 2259 on 1 Aug.



William R. McKenna

Wing Public Affairs

Please read this
and check for factual error.
The parts in bold I am not
sure about the info.
I need to know your
correct spellings of your
name, middle
initial and
correct title.

~~It has been said with every negative there is a positive close behind.~~

~~After violent thunderstorms, do we not see a rainbow?~~

~~After struggling for justice, do we not find freedom?~~

In all aspects of life something good can always be found from the bad, even if the bad happens to be a hurricane.

Last week, residents along the Florida coastlines watched closely the movements of hurricane Erin as she slowly inched her way across the radar screen.

For many it was a time of prayer, to secure their homes and to keep safe their families.

For others, it was a time to go to work.

The National Atmospheric Administration did not run, but rather gassed up the plane, checked the equipment and charted their course with the final destination lying within the eye of the storm.

According to Jack Parrish, ~~research scientist~~, this is done in an attempt to solve the mysteries of the hurricane.

"Everything we do applies to the forecast problem," Parrish said. "The forecast problem is both where it is going to go and how ~~strong~~ it is going to be ~~when~~ it gets there. Those are the two big questions."

In order to come up with the solution, the researchers require data on the pressure, temperature, humidity and winds at the center of the storm.

With high-tech equipment set up on the perimeter of the plane recording information and sending it to the data bases inside the craft, collecting the data usually does not take much time, Parrish said.

"You want to get to the center and you want to get your reference information, and it takes all of a second or two to get that, then you just keep on going," he said.

Although the flight requires the penetration of the eye wall several times, to paint a complete picture the aircraft must venture away from the center.

With Erin, NOAA made eight penetrations and flew back and forth in 50-mile lines away from the center, Philip R. Kennedy, NOAA pilot said.

Staying within the eye researchers only see half the picture. By flying around the radius from the center, information on the ~~direction of the storm~~ *strength and size of the total wind field* can be found, Parrish said.

However, if flying in and out of the hurricane was all that was required to complete the mission, then the mysteries would probably be solved. Unfortunately it is not quite that simple.

All the research recorded has to be compared and validated with previously recorded information from other hurricanes, as well as information from satellites and ground based radar systems, he said.

The mission with Erin was to test new Doppler radar systems set up along the coasts of Florida, he said.

"You want to be measuring the eye wall wind field," he said. "What we want to see happen is for the eye of a strong storm to come within quantitative range of that radar range. The range is between 30 to 100 miles."

He added charting Erin was very frustrating for the researchers since only part of the eye wall appeared within the radar's range located in Melbourne.

"If they get the same answer we get, as far as winds, then that ground base radar is doing the job," he said. "What we are doing is we are validating the information compiled by the Melbourne radar. If they are not getting the right answer, then we help them get the right answer."

The same goes for the satellites.

Satellites are able to record much of the information as do the ground based systems. But satellites are hampered by the ~~Shoers Shield (the third level of atmosphere?)~~ *Cirrus near the top of the troposphere, the layer in which weather is* ~~continued~~ prevents them from getting a clear view of the center.

accurately
"The wind field and pressure field ~~satellites~~ *was calculated* are so far unable to calculate any of those," he said. "We know if everything ~~works out perfectly~~ *works out perfectly* between the satellites and the ground base radar we might not need aircraft." *when the storms are close to shore.*

But he does not expect this to happen any time soon.

How the information recorded from Erin fits into the big picture will not be known for a couples years, he said.

What is known is predicting the precise path of a hurricane is difficult.

"There is always a range and the accuracy falls off with the increase in a forecast period," he said. "The 12-hour forecast error for the center of the storm is probably 40 to 50 miles, not a very big spread. At 72-hours it is ~~probably 220 to 300~~ ^{around 250 350} miles.

"The uncertainty is easy to quote. Are we getting to the uncertainty less? Only a little bit at a time."

For the past two decades, researchers have been able to reduce the mysteries of the storm by 20 percent, he said.

"It is a very gradual process that will never go to zero," he said.

But to get the needed information, researchers must take the good out of the bad, and the bad is what they are hoping to get, Parrish said.

"We want to fly a big storm, with a strong eye wall and we want to fly near one of these radars," he said.

"It is no coincidence that these radars are near population centers, ^{they are there to warn & protect the coastal citizens.} ~~radars.~~ ~~population centers.~~

"So what do we want? We want a big storm coming in on one of these ~~population centers~~. That is not a good thing to want, but to get the quantitative information to validate our research we do need that."

Kennedy added, "I don't get excited about hurricanes like scientists do. I think when they say that was a good hurricane it is a bad hurricane for everybody else.

"I don't like the idea we have hurricanes, but we have them. I am hoping that our job will sometime in the future provide a better way to predict where the hurricane is going to hit so that people can evacuate."

Because Erin had a poorly defined eye wall due to the circulation of winds and the fact very little of the storm was tracked within range of the ground based systems, Parrish does not think this will be the best ^{the} study of season.

"What we are trying to do is clearly a good thing, even though it is the validation of a bad thing."

If you could get back with me before the end of the day I would appreciate it because of deadline.

Also, this is a long shot, but if there is a chance you have photos of the flight could I use a couple?

Billy McKenna
888-2215

DATE 1 Aug 95	SCHEDULED FIX TIME —	AIRCRAFT NUMBER D43RF	ARWO Perrish
MANOP HEADING (PRECEDENCE IMMEDIATE)			
MISSION IDENTIFIER AND OBSERVATION NUMBER JOAA3 WxWx ERIN OB			
(ABBREVIATED) <u>DETAILED</u> VORTEX DATA MESSAGE			
A	01/2054 Z	DATE AND TIME OF FIX	
B	26 DEG 31 MIN (N) S	LATITUDE OF VORTEX FIX *	
	78 DEG 09 MIN E (W)	LONGITUDE OF VORTEX FIX *	
C	700 MB 2950 M	MINIMUM HEIGHT AT STANDARD LEVEL	
D	N/A KT	ESTIMATE OF MAXIMUM SURFACE WIND OBSERVED	
E	N/A DEG N/A NM	BEARING AND RANGE FROM CENTER OF MAXIMUM SURFACE WIND	
F	85 DEG 75 KT	MAXIMUM FLIGHT LEVEL WIND NEAR CENTER	
G	360 DEG 35 NM	BEARING AND RANGE FROM CENTER OF MAXIMUM FLIGHT LEVEL WIND	
H	N/A MB	MINIMUM SEA LEVEL PRESSURE COMPUTED FROM DROPSONDE OR EXTRAPOLATED FROM WITHIN 1500 FT OF SEA SURFACE	
I	10.5 CI 3055 M	MAXIMUM FLIGHT LEVEL TEMP/PRESSURE ALTITUDE OUTSIDE EYE	
J	15.5 CI 2960 M	MAXIMUM FLIGHT LEVEL TEMP/PRESSURE ALTITUDE INSIDE EYE	
K	11.5 CI N/A C	DEWPOINT TEMP/SEA SURFACE TEMP INSIDE EYE	
L	OPEN S	EYE CHARACTER: Closed wall, poorly defined, open SW, etc.	
M	C20	EYE SHAPE/ORIENTATION/DIAMETER. Code eye shape as: C - Circular; CO - Concentric; E - Elliptical. Transmit orientation of major axis in tens of degrees, i.e., 01-010 to 190; 17-170 to 350. Transmit diameter in nautical miles. Examples: C8 - Circular eye 8 miles in diameter. E09/15/5 - Elliptical eye, major axis 090-270, length of major axis 15 NM, length of minor axis 5 NM. CO8-14 - Concentric eye, diameter inner eye 8 NM, outer eye 14 NM.	
N	26 DEG 31 MIN N S	CONFIRMATION OF FIX: Coordinates and Time *	
	78 DEG 09 MIN E W		
	2054 Z		
O	1,2,3,4,5/7	FIX DETERMINED BY/FIX LEVEL FIX DETERMINED BY: 1 - Penetration; 2 - Radar; 3 - Wind; 4 - Pressure; 5 - Temperature. FIX LEVEL (Indicate surface center if visible; indicate both surface and flight level centers only when same): 0 - Surface; 1 - 1500 ft; 8 - 850 mb; 7 - 700 mb; 5 - 500 mb; 4 - 400 mb; 3 - 300 mb; 2 - 200 mb; 9 - Other.	
P	2 / 5 NM	NAVIGATION FIX ACCURACY/METEOROLOGICAL ACCURACY	
Q	REMARKS PEAK WINDS ITEMS F Y6 AT 2046Z. EXTAP SUR PRESS 981 MB FROM 700 MB. EYE OPEN S SIDE.		

INSTRUCTIONS: Items A through G (and H when extrapolated) are transmitted from the aircraft immediately following the fix. The remainder of the message is transmitted as soon as available for scheduled fixes and at the ARWO's discretion for unscheduled (intermediate) fixes.

* CHECK SUM REQUIRED IN WESTPAC.

DATE 6 95	SCHEDULED FIX TIME —	AIRCRAFT NUMBER D43AF	ARWO Perrish
MANOP HEADING (PRECEDENCE IMMEDIATE)			
MISSION IDENTIFIER AND OBSERVATION NUMBER JOAA3 12XWX ERIN OB			
(ABBREVIATED) (DETAILED) VORTEX DATA MESSAGE			
A	01/2054 Z	DATE AND TIME OF FIX	
B	26 DEG 31 MIN (N) S	LATITUDE OF VORTEX FIX *	
B	78 DEG 09 MIN E (W)	LONGITUDE OF VORTEX FIX *	
C	700 MB 2950 M	MINIMUM HEIGHT AT STANDARD LEVEL	
D	N/A KT	ESTIMATE OF MAXIMUM SURFACE WIND OBSERVED	
E	N/A DEG N/A NM	BEARING AND RANGE FROM CENTER OF MAXIMUM SURFACE WIND	
F	85 DEG 75 KT	MAXIMUM FLIGHT LEVEL WIND NEAR CENTER	
G	360 DEG 35 NM	BEARING AND RANGE FROM CENTER OF MAXIMUM FLIGHT LEVEL WIND	
H	N/A MB	MINIMUM SEA LEVEL PRESSURE COMPUTED FROM DROPSONDE OR EXTRAPOLATED FROM WITHIN 1500 FT OF SEA SURFACE	
I	10.5 C/ 3055 M	MAXIMUM FLIGHT LEVEL TEMP/PRESSURE ALTITUDE OUTSIDE EYE	
J	15.5 C/ 2960 M	MAXIMUM FLIGHT LEVEL TEMP/PRESSURE ALTITUDE INSIDE EYE	
K	17.5 C/ N/A C	DEWPOINT TEMP/SEA SURFACE TEMP INSIDE EYE	
L	OPEN S	EYE CHARACTER: Closed wall, poorly defined, open SW, etc.	
M	C20	EYE SHAPE/ORIENTATION/DIAMETER. Code eye shape as: C - Circular; CO - Concentric; E - Elliptical. Transmit orientation of major axis in tens of degrees, i.e., 01-010 to 190; 17-170 to 350. Transmit diameter in nautical miles. Examples: C8 - Circular eye 8 miles in diameter. E09/15/5 - Elliptical eye, major axis 090-270, length of major axis 15 NM, length of minor axis 5 NM. CO8-14 - Concentric eye, diameter inner eye 8 NM, outer eye 14 NM.	
N	26 DEG 31 MIN N S 78 DEG 09 MIN E W 2054 Z	CONFIRMATION OF FIX: Coordinates and Time *	
O	1,2,3,4,5/ 7	FIX DETERMINED BY/FIX LEVEL FIX DETERMINED BY: 1 - Penetration; 2 - Radar; 3 - Wind; 4 - Pressure; 5 - Temperature. FIX LEVEL (Indicate surface center if visible; indicate both surface and flight level centers only when same): 0 - Surface; 1 - 1500 ft; 8 - 850 mb; 7 - 700 mb; 5 - 500 mb; 4 - 400 mb; 3 - 300 mb; 2 - 200 mb; 9 - Other.	
P	2 1 5 NM	NAVIGATION FIX ACCURACY/METEOROLOGICAL ACCURACY	
Q	REMARKS PEAK WINDS ITEMS F + G AT 2046Z. EXTAP SUR PRESS 981 MB FROM 700 MB. EYE OPEN S SIDE.		
INSTRUCTIONS: Items A through G (and H when extrapolated) are transmitted from the aircraft immediately following the fix. The remainder of the message is transmitted as soon as available for scheduled fixes and at the ARWO's discretion for unscheduled (intermediate) fixes. * CHECK SUM REQUIRED IN WESTPAC.			

DATE 2 AUG 95		SCHEDULED FIX TIME —		AIRCRAFT NUMBER N438F		ARWO Parrish	
MANOP HEADING (PRECEDENCE IMMEDIATE)							
MISSION IDENTIFIER AND OBSERVATION NUMBER NOAA3 WXXW EWIN							
(ABBREVIATED) (DETAILED) VORTEX DATA MESSAGE							
A	02/0128		Z	DATE AND TIME OF FIX			
B	27 DEG 08 MIN (N) S			LATITUDE OF VORTEX FIX *			
	79 DEG 11 MIN E (W)			LONGITUDE OF VORTEX FIX *			
C	700 MB 2965		M	MINIMUM HEIGHT AT STANDARD LEVEL			
D	N/A		KT	ESTIMATE OF MAXIMUM SURFACE WIND OBSERVED			
E	N/A DEG N/A		NM	BEARING AND RANGE FROM CENTER OF MAXIMUM SURFACE WIND			
F	320 DEG 46		KT	MAXIMUM FLIGHT LEVEL WIND NEAR CENTER			
G	240 DEG 23		NM	BEARING AND RANGE FROM CENTER OF MAXIMUM FLIGHT LEVEL WIND			
H	N/A		MB	MINIMUM SEA LEVEL PRESSURE COMPUTED FROM DROPSONDE OR EXTRAPOLATED FROM WITHIN 1500 FT OF SEA SURFACE			
I	10.5 C/ 3045		M	MAXIMUM FLIGHT LEVEL TEMP/PRESSURE ALTITUDE OUTSIDE EYE			
J	15.0 C/ 3052		M	MAXIMUM FLIGHT LEVEL TEMP/PRESSURE ALTITUDE INSIDE EYE			
K	11.0 C/ N/A		C	DEWPOINT TEMP/SEA SURFACE TEMP INSIDE EYE			
L	OPEN S.			EYE CHARACTER: Closed wall, poorly defined, open SW, etc.			
M	C25			EYE SHAPE/ORIENTATION/DIAMETER. Code eye shape as: C - Circular; CO - Concentric; E - Elliptical. Transmit orientation of major axis in tens of degrees, i.e., 01-010 to 190; 17-170 to 350. Transmit diameter in nautical miles. Examples: C8 - Circular eye 8 miles in diameter. E09/15/5 - Elliptical eye, major axis 090-270, length of major axis 15 NM, length of minor axis 5 NM. CO8-14 - Concentric eye, diameter inner eye 8 NM, outer eye 14 NM.			
N	27 DEG 08 MIN (N) S			CONFIRMATION OF FIX: Coordinates and Time *			
	79 DEG 11 MIN E W						
	0128.		Z				
O	1,2,3,4,5/ 7			FIX DETERMINED BY/FIX LEVEL FIX DETERMINED BY: 1 - Penetration; 2 - Radar; 3 - Wind; 4 - Pressure; 5 - Temperature. FIX LEVEL (Indicate surface center if visible; indicate both surface and flight level centers only when same): 0 - Surface; 1 - 1500 ft; 8 - 850 mb; 7 - 700 mb; 5 - 500 mb; 4 - 400 mb; 3 - 300 mb; 2 - 200 mb; 9 - Other.			
P	2 / 5		NM	NAVIGATION FIX ACCURACY/METEOROLOGICAL ACCURACY			
Q	<div style="border: 1px solid black; padding: 2px;">REMARKS</div> <p>SUR PRESS 982 MB, EXTRAP FM 10,000 FT MODERATE EYEWALL NW QUAD PEAK WIND 115 DEG/65 KNOTS NW EYEWALL AT 0144Z.</p>						

INSTRUCTIONS: Items A through G (and H when extrapolated) are transmitted from the aircraft immediately following the fix. The remainder of the message is transmitted as soon as available for scheduled fixes and at the ARWO's discretion for unscheduled (intermediate) fixes.

* CHECK SUM REQUIRED IN WESTPAC.



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Rockville, MD 20852-3019

OFFICE OF NOAA CORPS OPERATIONS

Aircraft Operations Center
P.O. Box 6829
Tampa, Florida 33608-0829

MEMORANDUM FOR: *Dr. HUGH WILLOUGHBY, NOAA
Acting Director, HAD, ADML*

FROM: CAPT George C. Player III, NOAA
Acting Director, Aircraft Operations Center

SUBJECT: Hazard Duty Flight

The mission flown on AOC aircraft # N43ZF on 1 August 95 has been declared hazardous. The following personnel from your laboratory participated in this mission.

*John Gamache
Robert Black
Michael Black*

For purposes of computing allowable hazard duty time, the hazard period during this mission was from 1459 local time on 1 Aug until 2259 on 1 Aug.



DATE : 3 Aug 95
TO : Chief, AOC Flight Operations
FROM : Pilot/Flight Director, Aircraft ON 0259Z BLOCKTIME
043ZF
SUBJECT: Hazardous Duty OFF 1809Z 8.0

PURPOSE OF FLIGHT: HURRICANE ERIN HED RESEARCH

Hazardous Duty Pay is required for flight made on 1 Aug 95
(DATE)

Request based on penetration of hurricane eye.

Personnel on board authorized Hazard Pay:

Moore, H.

Bast, G.

Sans Souci, D.

Parrish, J.

Roles, J.

Lynch, T.

McMillan, S.

PILOT/FLIGHT DIRECTOR: [Signature]

APPROVED: _____

DISAPPROVED: _____

CHIEF, AOC FLIGHT OPERATIONS: _____

DATE : 3 Aug 95
TO : Chief, AOC Flight Operations
FROM : Pilot/Flight Director, Aircraft ON 14422 BLOCKTIME
0431ZF
SUBJECT: Hazardous Duty OFF 1330Z 1.2

PURPOSE OF FLIGHT: H. ERIN FERRY

Hazardous Duty Pay is required for flight made on 3 Aug 95
(DATE)

Request based on penetration of towering cumulus
clouds for cloud physics tests.

Personnel on board authorized Hazard Pay:

Moore, H.

Bast, G.

Sans Souci, D.

Aoles, J.

Lynch, T.

McMillan, S.

PILOT/FLIGHT DIRECTOR:

APPROVED:

DISAPPROVED:

CHIEF, AOC FLIGHT OPERATIONS:

AOC DAILY FLIGHT LOG

AIRCRAFT TYPE: WP-3D	AIRCRAFT I.D.: N43RE	MISSION(S): HURRICANE ERIN		
DATE: 01 AUG 95	FLIGHT No.: 95-54	4 OPERATIONAL TRAINING	FERRY MAINTENANCE	SIMULATOR OTHER:

FLIGHT INFORMATION

LEG	DEP. TIME (GMT)	LOCATION	ARR. TIME (GMT)	BLOCK TIME	MISSION	TASK No.	USE CODE
1	1900	MCF					
2		NQX	0300	8.0	RESEARCH	SP3A434X	
3							
4							
5							

TOTAL

8.0

WEATHER BRIEF FROM:

NOTAMS CHECKED WITH:

FLIGHT PLAN ON FILE AT:

AIRCREW DATA

CREW POSITION	FLIGHT CREWS LAST NAME, INITIAL	FLIGHT HOURS TOTAL			FLIGHT HOURS	LANDINGS		INSTRUMENTS			APPR's	
		PIC	SIC	IP		DAY	NIGHT	HOURS			PREC	NP
					NIGHT			ACT	HOOD	SIM		
AC	KENNEDY, P			8.0	3.0		1	6.0	0.3			1
P	CIMARA, T	4.0	4.0		3.0			6.0				
CP												

NAV

RATHBUN, D

8.0

REMARKS:

15 SQB.

NAV

RADIO OR
PHOTO

SANKS, D

8.0

FE

BAST, G

8.0

FE

MOORE, H

8.0

WEIGHT & BALANCE

ATTACHED
ON FILE

MECH

AC SIGNATURE

ADDITIONAL AIRCREW/PASSENGERS

LAST NAME, INITIAL	ORGANIZATION/PHONE	LEGS FLWN	LAST NAME, INITIAL	ORGANIZATION/PHONE	LEGS FLWN
PARRISH, J.	AOC	1	LOFT, K.	Trish	1
LYNCH, J.			McKeown, B.	Base Dispatcher	1
ROLES, J.					
McMINN, S.					
GAMACHE, J.	WAD				
BLACK, M.					
BLACK, L.					

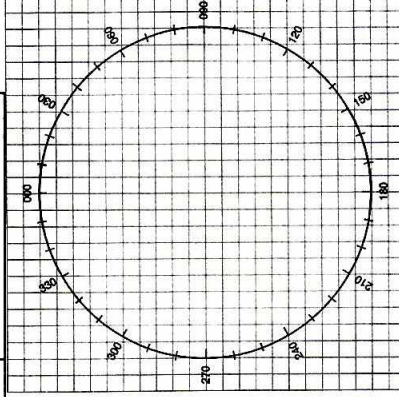
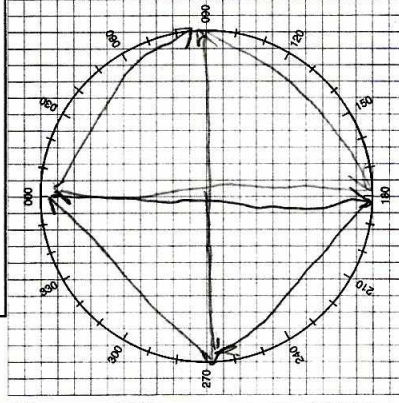
110/120

CLEARANCES

[illegible]

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**

• POSITION _____ N/S _____
E/W AT _____

- 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 DESIN

- PILOT INTENTIONS
- WE HAVE

ENDURANCE REMAINING

TIME	FIX TYPE	POSITION	INS 1 POSITION	K ERR	INS 2 POSITION	K ERR	VAR +E==>	TH	DR +R==>	TRK	GS	WD	WS	ALT	TAS	NEXT PT	DIST	TIME	ETA	REMARKS
1855																				ENG START
1859																				TAKE
1908	GPS FM 1																			TAKE OFF
1934		2714.9 8049.5	2715.4 8049.5	-1.5 0	2715.0 8049.4	-1.1 +1.1		102	612	100	260	013	28	15K	257	ENG PORT				
1955		2644.4 7917.2	2644.8 7916.8	-4 +4	2644.9 7916.7	-5 +5		105	412	109	265	359	21	15K	256					
2011	SMILES SOUTH	2630.4 7802.3	2630.6 7801.8	-2 +5	2631.1 7801.7	-2.7 +1.6		103	15L	088	233	175	66	10K	239	EAST RUN				5 MILES SOUTH
2039		2727.6 7805.4	2728.0 7804.9	-4 +5	2728.0 7804.8	-4 +1.6		168	1212	180	229	093	50	10K	236	SOUTH RUN				
2054	6 FM 1 MILE	2631.3 7810.0	2632.4 7809.6	-1.1 +1.4	2631.2 7809.9	+1.1	TRACKING 311/12	186	0L	180	261	289	30	10K	256	SOUTH RUN				1 MILE EAST
2107		2538.6 7809.9	2539.8 7809.9	-1.2 0	2538.1 7810.0	+1.5 -1.1		043	212	045	280	236	38	10K	240	NORTH EAST RUN				
2140		2710.3 7856.1	2709.7 7856.2	+1.6 -1.1	2710.8 7854.8	-1.5 +1.3		173	812	181	268	045	44	10K	236					HEADING FOR WEST END BUOY
2147		2641.3 7859.9	2640.9 7859.8	+1.4 +1.1	2641.8 7858.9	-1.5 +1.0														NOT WEST END BUOY
2208:45		2630.0 7816.8	2631.2 7816.7	-1.2 +1.1	2630.2 7816.8	-1.2 0		049	5L	044	268	189	37	10K	236		TRACKING 300/11			N 2633 W 7821
2242		2723.9 7929.4	2724.7 7928.7	-1.8 +1.7	2724.6 7927.9	-1.7 +1.5		118	712	127	239	049	43	10K	248					
2258:45	5	2645.8 7832.1	2646.2 7832.6	-1.4 -1.5	2646.2 7830.9	-1.4 +1.2		131	4L	127	252	221	20	10K	248		TRACKING 314/14			5
2326		2726.0 7751.3	2726.5 7751.6	-1.5 -1.3	2726.4 7750.5	-1.4 +1.8		218	1212	230	249	135	50	10K	246					
2340:30	3 MILES WEST	2647.9 7841.4	2649.4 7840.0	-1.5 +1.4	2649.2 7840.6	-1.3 +1.8		239	10L	229	238	313	40	10K	243					N 2650 W 7843
2403:20		2533.2 7930.0	2534.6 7928.6	-1.4 +1.4	2534.4 7928.7	-1.2 +1.3		005	12	004	267	256	21	10K	245					

PAGE OF

FIX TYPES

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

[illegible]

NOAA FORM 56-49
(2-95)

MISSION PREFLIGHT LOG

DESTINATION
MLF 7 N QX

MISSION
EJIN #1
95054

NAVIGATOR
RATHBUN

AIRCRAFT COMMANDER
KENNEDY

FLIGHT DIRECTOR
PARRISH

SCHEDULED / ACTUAL TAKEOFF Z
1900Z '1900Z

DATE OF TAKEOFF
1 AUG 95

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

1

MLF

2751.0 N
8229.6 W

2

MLF

2633.3 N
7841.9 W

3

MLF

2622.2 N
7812.2 W

3

MLF

2624.4 N
7759.6 W

3

MLF

2625.4 N
7802.3 W

INS PERFORMANCE

INS 1

INS 2

BEGIN ALIGN
TIME

1658Z

1658Z

ALIGN
STATUS (0-5)

5

5

END NAV
TIME

0255

0255

START NAV
TIME

1855Z

1855Z

DELTA T

8+00

8+00

TERMINAL ERRORS

INS 1

INS 2

DELTA LAT

4.1

-3.1

DELTA LON

4.6

43.6

RGS

7

5

RADIAL
ERROR

1

5.

REMARKS

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

2644N 2311
7841W

26 27 N 78 16 W 2137

WEST END 26.69
79.0

LAKE WORTH 26.61
80.03

26 24
77 59

26
316