

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

FLT ID: 970217H	FM: EINN	TO: EINN
FLT NO: 97-025	BLK IN: 1242	ATA: 1236
ETD: 0300	BLK OUT: 0309	ATD: 0321
ETE: 1230	BLK TIME: 9.6	FLT TIME: 9:15 9.3
SPONSOR ORG: NOAA	PROGRAM: FASTEX	PURPOSE: TOP 16

OAO PERSONNEL

AC KENNEDY, P ✓	SYS ENG LYNCH, T ✓
CP TAGG, RT, B ✓	DATA SYS MCCICCA, S ✓
NAV STRONG, T ✓	RADAR BARR, J ✓
618 E TORREY, R / WADE, S ✓	BT/ODW OFFUTT, D ✓
RADIO ROGERS, M ✓	CLD PHYS
FD WHITE, S ✓	DOPPLER

PARTICIPATING SCIENTIST/VISITORS/OAO

LAST, FIRST NAME	ACTIVITY ON A/C	AFFILIATION
31 JORGENSEN, D -		NSC
SHEPHERD, T -		"
LEMAITRE, Y ✓		CNRS
CAUVAULT, K ✓		"
47		

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

50-600 | 0-152  
 10-22W | "E" 1200Z  
 997.5 210/23 Max 34 10k  
 990.0

U.S. DEPT. COMM./NOAA/OAO - DATA SECTION WORK FORM NO.2 OAOWF2 FII

FLT ID: 970217H

TIME OFF: 0321

TIME ON: 1236

A/C T/O

WX STN

A/C LAND

WX STN

**PRESSURE**

998.0

997.5

988.0

990.0

**NO**

DATA	DISPOSITION	DATE	QUALITY
1	2	3	4
5	6	7	8
9	10	11	12
13	14	15	16
17	18	19	20
21	22	23	24
25	26	27	28
29	30	31	32
33	34	35	36
37	38	39	40
41	42	43	44
45	46	47	48
49	50	51	52
53	54	55	56
57	58	59	60
61	62	63	64
65	66	67	68
69	70	71	72
73	74	75	76
77	78	79	80
81	82	83	84
85	86	87	88
89	90	91	92
93	94	95	96
97	98	99	100

1/SEC FLT LVL TAPES

FAST FLT LVL TAPES

RADAR TAPES

## DOPPLER TAPES

~~DDW CASSETTES~~

HARD COPIES

AXBT

АХСР

ODW

## PHOTOGRAPHY

FWD

LS

RS

VERT

ON

OFF

RATE

REMARKS

# FASTEX FLIGHT #10

FLIGHT #10 H970217

## TYPE OF DATA

## SENSOR OR OPTION

INE	1
Accelerometer	1
Temperature probe	1
Altitude change option (for vertical winds)	RA159
Static pressure	Rosemount fuselage
Dynamic pressure	Rosemount fuselage
Time source	Micro 99
Constants file	CO2971.CON

## Notes:

There were no time/data gaps.

Radar Altitude (APN-159) patched from: 0321:01 - 0321:31,  
0338:01 - 0345:00, 1220:01 - 1227:00, 1235:01 - 1238:00.

Total Temperature #1 (TT1) replaced with TT2: 0328:01 - 0415:00,  
0626:01 - 0640:00.

Dewpointer #1 (DW1) replaced with DW2: 0325:01 - 0328:00,  
0359:01 - 0416:00, 0635:01 - 0815:00.

Downward spikes in radar altimeter data are a result of overflying land.

SPECIAL NOTE!!! Locations 80, 81 and 82 of record five on the standard tape contain vertical ground, vertical air and vertical speeds, respectively, computed using Dave Jorgensen's vertical wind algorithm. It is recommended that these values be used for vertical wind analysis.

	Takeoff	Landing
	-----	-----
Aircraft static pressure	998.0 mb	988.0 mb
Corrected tower pressure	997.5 mb	990.0 mb

Flight Meteorologist: Sean White, (813) 828-3310 ext. 3072

CI>



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TITLE (MAX 21 CHARACTERS) -- EX HURRICANE PAINE
FASTEX IOP16 SYS SURVEY
YYMMDDL FLT I.D.
970217H
HHMMSS START TIME -99999 DEFAULT TO START OF DATA FOR PRINTOUT ONLY
031501
HHMMSS END TIME 999999 DEFAULT TO END OF DATA FOR PRINTOUT ONLY
123800
HHMMSS TAKE OFF TIME
032100
* NUMBER OF TAPES (I2) ...FOR STANDARD TAPE OUTPUT ONLY
10
* -----LOGICAL UNIT OF INPUT DATA (I1) 5, 8 OR 9 FOR TAPE DRIVE
8
* -----LOGICAL UNIT OF OUTPUT TAPE DRIVE (I1) [FOR STANDARD TAPE ONLY]
8
* -----LOGICAL UNIT OF PRINTER (I1)
6
* -----DATE OF PROGRAM (MMDDY)
06094
* -----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
1
* -----ACCELEROMETER (I1) - USUALLY THE SAME AS YOUR INE SELECTION
1
* ----- TOTAL TEMPERATURE PROBE (I1) [1 OR 2]
1
* ----- DEWPOINT 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)
1
* -----PRINTOUT RATE SECONDS (I2)
30
* -----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
CO2971.CON
*****
CI>

```

97021714

START: 0315:01

END: 1238:00

NO REMAIN

NO BAD BLOCKS

RA 159 w/232

0321:01 - 0321:31 ✓

1235:01 - 1238:00 ✓

TT1 w/TT2

0328:01 - 0415:00 ✓

0626:01 - 0640:00 (-0.5) ✓

~~DW1 w/DW2~~

~~0325:01 - 0338:00 (-1.0)~~

~~0359:01 - 0403:00 (2.0)~~

~~DW1 w/DW3~~

~~0315:01 - 1238:00 entire file~~

~~DW3 w/DW2~~

~~0758:01 - 0801:00 (-5.0)~~

RA 159 w 2900

0338:01 - 0345:00 ✓

RA 159 w/GPS

1220:01 - 1227:00 ✓

DW1 w DW2

0635:01 - 0815:00 (-3) ✓

0325:01 - 0328:00 (-1) ✓

0359:01 - 0402:00 (-0.5) ✓

0402:01 - 0416:00 (-1.0) ✓



[illegible]

# FASTEX AIRCRAFT CHIEF SCIENTIST EVENT LOG

Flight Number: 970217H1 Page 1 of

Date: February 17, 1997 Aircraft ID: 42RF Scientist: Jorgensen

## Event Log

Time (UTC)	Approx. Location (Lat,Lon)	Event & Comments
3:06:47	Shannon Shannon	EngineStart This is IOP16, Flight 10, on Low 39a. Pattern will be systematic survey of expected cyclone development in the east-central part of the MSA. C-130 and P-3 will participate in this mission.
3:10:03		Block Out
3:20:42		Takeoff
3:23:33	52.733 -8.594	light precip on take off and climbout
3:38:34	52.272 -10.123	radar system up and recording
3:43:06	52.163 -10.421	flying above a shallow stratiform precip deck echo tops to 10k ft bright band well marked
3:54:42		METMAN59 reports ETA to pt. 1 0514Z
3:57:26	51.784 -11.439	lots of needles, bullets, and rods on the PMS 2-DC probe 1-2 mm in length
4:05:06	51.563 -11.971	precip intensity picking up a bit-well defined bright band now
4:05:36	51.548 -12.008	begin descent to 5k ft
4:07:35	51.492 -12.154	GPS system is not working too well - probably the antenna again-using INE2 as the primary nav system tonight
4:09:03	51.454 -12.258	at 5k ft temps about 3C
4:25:34	51.016 -13.327	over the buoy-turn to track to pt.1
4:31:14	51.297 -13.536	perl #1 to the left in moderate stratiform precip
4:34:09		end of perl #1 resume track to pt.1
4:42:59	51.792 -13.780	sfc pressure has been falling as we move north - was about 995 now it is 992
4:51:22	52.255 -14.081	entering a region of heavier stratiform precip
4:54:26	52.429 -14.194	sfc pressure now 988mb
4:56:49	52.568 -14.285	going through a short east-west oriented band about 60 nm south of pt.1
5:03:25		METMAN reports that the Ops Center suggests moving the pattern 40 nm to the south-will subtract one-half degree from all turn point latitudes-first



5:08:16	52.996	-14.860	point will now become 53.0N 14.9W
5:10:25	53.107	-14.949	at net pt. 1 starting leg 1
5:23:30			precip decreasing in intensity as we move NNW METMAN estimates 0607 UTC for end point of this run - same as us
5:24:02	53.871	-15.545	sfc pressure now 980 mb-still in light precip
5:27:27	54.065	-15.687	LF shows a blob of precip about 120 nm due west of here-near 54N 20W-about where Tim's storm track said it would be
5:38:29	54.707	-16.187	no echo on TA at present
5:46:27	55.161	-16.549	stratiform precip increasing again-sfc press now 975 mb winds 242/40
5:47:56	55.248	-16.624	turbulence has picked up-must be flying near the tops of small convective cells which are showing up on the TA radar
6:05:54	56.272	-17.463	at pt. 2 end of leg 1
6:11:18	56.162	-17.891	sfc press continues to decline, temps too, now T=-3.2C
6:16:58	56.014	-18.358	at pt. 3, start of leg 2-head for pt. 4
6:22:35	55.776	-17.935	upper cloud deck on TA, slopes down toward the south
6:29:14	55.473	-17.378	entering heavier stratiform precip now
6:31:46	55.361	-17.173	radar system froze up
6:32:31			radar system back up again
6:39:27	55.030	-16.559	heavy stratiform precip now-LF shows east-west oriented band of precip extending to about 60 nm ahead-we're apparently just on its eastern edge
6:52:22	54.471	-15.563	start perl #2 in heavy stratiform precip
6:53:22			METMAN suggests moving all points another 30 miles farther south to capture frontal wave a bit better
6:55:19			end of perl #2 resume track to original pt. 4, then will track 30 miles farther south
7:01:46	54.183	-15.058	very heavy precip now-bright band in excess of 30 dBZ
7:06:43	54.003	-14.642	start perl #3 in heavy precip
7:09:02			end perl #3-resuming track to original pt. 4, 53.4 -13.8. Will then track south to new point 4 at 52.9 -13.8
7:13:58	53.755	-14.355	wind speeds and temps have jumped as we went through the band-precip now weakening
7:23:59	53.263	-13.816	past the old pt. 4, now tracking 180 to get to new pt. 4 end of leg 2
7:30:38	52.909	-13.817	at new pt. 4 - tracking to new pt. 5 at 52.6 14.7
7:35:10			precip zone of front is over 100 nm wide-now oriented from NE to SW
7:43:12	52.607	-14.662	at new pt. 5 start of leg 3- turn to track 347 through frontal zone at 1500 ft to mark the location



			of the sfc position of the wind shift and temp discontinuity
7:46:28	52.786	-14.797	at 1500 ft now entering precip zone
8:04:37	53.865	-15.559	pretty turbulent down here at 1500 ft - temps still 9C so we're on the warm side
8:11:33	54.277	-15.870	narrow ribbon of enhanced echo on LF 20 miles ahead - narrow cold frontal rainband?
8:21:25	54.852	-16.327	through the rainband - the temps have dropped a bit and the winds subsided some
8:23:26	54.967	-16.418	another band of precip 19 nm ahead
8:24:05	55.007	-16.456	winds have subsided to 11 knots and temps down to 5.5C
8:27:10	55.181	-16.594	perl #4 while we climb to 5000 ft bright-band to 35 dBZ
8:30:24			end of perl at 5k ft-resume trk to new pt. 6
8:37:08	55.627	-16.923	precip weakening as we move north
8:42:49	55.967	-17.186	at pt. 6 end of leg 3
8:54:32	55.583	-18.162	at pt 7 doing a couple of perls #5-6 while METMAN catches up
8:58:17	55.555	-18.089	start of leg 4 trk 133 to pt. 8 ETA 0954 Z
9:11:54	54.988	-16.977	somewhat more turbulent-top of front?
9:15:06	54.849	-16.696	begin perl #7 in moderate precip
9:18:14	54.856	-16.633	end perl #7 resume 128 track
9:23:14	54.621	-16.211	going passed a line of convective cells most intense reflectivities on LF to date >45
9:26:30	54.468	-15.960	that line was the narrow cold frontal rainband-temps have come up to 2.5C and winds now 233/70 knots.
9:32:14	54.205	-15.542	begin perl #8 in moderate precip near a convective cell on nose radar
9:35:06			end of perl #8 resume 130 track
9:45:10	53.788	-14.698	start of perl #9 in moderate stratiform precip
9:48:42			end of perl #9 resume track
10:00:22	53.234	-13.880	winds now 238/70 knots
10:04:48	53.021	-13.537	at pt. 8 end of leg 4
10:19:11	52.710	-14.364	at pt. 9 begin leg 5
10:21:29			light stratiform precip along this track so far
10:31:51	53.430	-14.895	precip mass has move to our NE
10:32:35	53.473	-14.924	passing through line of convective cells - apparently not the cold frontal rainband which is still about 40 km ahead
10:40:39	53.959	-15.279	going through the narrow cold frontal rainband - pretty intense reflectivity cores >50 dBZ
10:46:07	54.287	-15.512	begin perl #10 in stratiform region north of narrow cold frontal rainband

10:49:30		end perl #10 resume track to pt 10
10:51:43	54.428 -15.595	getting out of precip
11:02:34	55.042 -16.072	going through a narrow line of very shallow convective cells-pretty turbulent yet the echo tops do not reach our level
11:06:19	55.257 -16.241	at modified pt. 10 - end of leg 5-pt. 10 and 11 where cut off by 40 miles or so to save time and get back to SNN on time
11:07:33	55.252 -16.352	slanted precip contours on TA velocity display from south to north
11:11:55	55.143 -16.721	at pt. 11 start of leg 6
11:12:47	55.096 -16.723	in moderately deep precip no bright band though
11:25:56	54.482 -15.540	field of small convective cells below-anvil above
11:43:18	54.482 -15.540	passing through a small convective line
11:44:21		apparently we passed west of the narrow cold frontal rainband
11:49:06	53.405 -13.674	pretty turbulent-will try to climb a 2k ft to 7k ft to avoid the tops of these cold air convective cells
11:55:12	53.117 -13.225	at pt. 12, end of leg 6, turn for SNN and climb to 9k ft
12:07:50	52.964 -11.549	still in fairly good stratiform rain bright band well marked below
12:09:36	52.953 -11.288	winds 95 knots-about a 65 knot tailwind
12:26:32	52.884 -8.835	radar recording suspended on final to Shannon
12:36:11		Land
12:41:14		Block In

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#### MSA Coordinator Summary Report

9702017H IOP16 (Flight109) on Low 39a  
Aircraft Involved: P-3, UK C-130

#### Summary Description of Mission:

The planned primary mission was a "systematic survey" LOW 38 using the P-3 and UK C-130. The wave cyclone was expected to develop near the southwest of the MSA and move very rapidly to the northeast (055 degrees 27.4 m/s). The plan called for the C-130 and P-3 to have virtually identical tracks to insure that dropsondes were collected within the 100 km wide swath of dual-Doppler data. Leg lengths were 400 km to allow for uncertainty in the forecast track position. Six legs were planned.

Shortly after departure from Shannon the P-3 and C-130 met at the initial point of the first leg at about 0508 UTC. Just prior to joining up the C-130 relayed a message from the Ops Center that



satellite imagery indicated the principal development area may be up to 40 nm farther south. Just prior to beginning the first leg, the aircraft patterns were shifted 30 nm (one-half degree) south. Rainbands associated with the frontal zone were clearly evident to the P-3s LF radar, and a "blob" of precipitation was near the forecasted track of the wave cyclone to the SW. Following the completion of Leg 1, the flight patterns were further shifted another half-degree of latitude southward to better capture the frontal band in the C-130 cross-sections. One leg 3, the P-3 descended to 1500 feet to better locate the cold front. The front was seen near 54.8N, confirming the desirability of shifting the patterns 60 nm south. On legs 3-6, the P-3 flew through a strong narrow cold frontal rainband. Reflectivities sometimes exceeded 50 dBZ. Stratiform precipitation existed to the south of the rainband. The last P-3 leg was cut about 40 nm short because of endurance limitations.

#### Communications and Coordination:

1. No problems with VHF. The Sat Comm e-mail system on the C-130 worked well in getting information from the Ops Center.

#### P-3 Equipment Problems Encountered:

1. The P-3 radar system froze once for a few minutes, no important data was missed.
2. The P-3s GPS navigation system became unreliable soon after takeoff. The P-3s primary navigation source was switched to INE #2. Apparently the GPS antenna needs repair again.

#### Recommendations & Evaluation:

1. Very good coordination on what appears to be a weak cyclone development case. Several transects of a very strong narrow cold frontal rainband were made.
2. 10 "perl" patterns were completed by the P-3 in moderate to heavy precipitation associated frontal wave and stratiform precipitation near the narrow cold frontal rainband.

--Dave Jorgensen & Yvon Lemaitre

DATE : 17 FEB 1997

TO : Chief, AOC Flight Operations

FROM : Pilot/Flight Director, Aircraft 1242RT ON 1236 BLOCKTIME  
OFF 0321 9.6

SUBJECT: Hazardous Duty

PURPOSE OF FLIGHT: FASTEX

Hazardous Duty Pay is required for flight made on 17 FEB 97  
(DATE)

Request based on HAZARDOUS FLIGHT  
INTO REGION OF CYCLOGENESIS  
ALONG A FRONT AT LOW ALTITUDES

Personnel on board authorized Hazard Pay:

TORREY, R

WADE, J

ROGERS, M

LYNCH, T

MCMEICAN, J

BARR, J

OFFUTT, D

PILOT/FLIGHT DIRECTOR: LCDR S.R. WHITE

APPROVED: \_\_\_\_\_

DISAPPROVED: \_\_\_\_\_

CHIEF, AOC FLIGHT OPERATIONS: \_\_\_\_\_



## PAGE OF

## 6. NEXT POSITION

## ENDURANCE REMAINING

[illegible]