

U.S. Dept. of Commerce / NOAA Aircraft Operations Center		
Flt ID: 100916H	From: KMCF	To: KMCF
Flt No: —	Blk In: 2349	ATA: 2341
ETD: —	Blk Out: 1527Z	ATD: 1536Z
ETE: —	Blk Time: 8.5	Flt Time: 8.1
Sponsor Org: EMC/HRD	Program: Radar / WSPA	Purpose: KARL

AOC Personnel	
AC: NEWMAN	Sys Eng: GREENE
CP: KIBBY	Data Sys: BOSKO
Nav: BZAKOB	Radar: —
FE: DARBY / KLIPPEL	GPS/BT: PAUL
FD: SEARS / FLHERTY / WILLIAMS	Cld Phys: —
Avionics: —	—

Participating Scientists / Visitors / AOC		
Name (Last, First)	Activity on Aircraft	Affiliation
ROGERS		
LORSOLO		
MUZILIO		
WALSH		
POPSTEENJA		

3 PENET

Proposed/Actual Mission Remarks (Recco, Fixes, Storm, PENET, NHOP #)

WX13A KARL7
DUPT 2-1 1905

20 mile eyes

1842 978 mb
1930 (E) 974 mb
2042 975 mb

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

AOCWE2

Alt ID: Time Off: Time On:

W/C (Take Off) Wx Station (Take Off) A/C (Land) Wx Station (Land)

Pressure

	Number	Data Disposition / Date / Quality
Flt Lvl Tapes		
Radar Tapes		
Cloud Physics Tapes		
Video Tapes		
AXBT		
AXCP		
AXCTD		
Dropsondes	20	20 Good 18 sent

Video

	Forward	Left Side	Right Side	Down	Remarks
Time On					
Time Off					
Rate					

Remarks

716 1017.3 A/C

16MRTIS 22552 0700412 10 few 055 SCT 095 33/2

PSIM

PSIM LAND 1013.8

ATIS 1755 07012 10 LR 30/24 3004 1016.8

1013.4



NOAA P-3 N42RF
Hurricane Karl, HRD KMCF-KMCF
16 Sep 2010



Flight ID: 100916H

<u>Sensor or system</u>	<u>Variable Name</u>
Inertial	INE1
Accelerometer	ACCI1
Temperature Probe	TT1
Dew Point Probe	TDM1X
Altitude (for vertical wind)	ALT11
Static Pressure	PSFX
Dynamic Pressure	PQF1
Constants File	n42_hur10v2.adc
Project Directory	/acdata/2010/MET

Local Met Data:	<u>Takeoff (1536Z)</u>	<u>Landing (2341Z)</u>
Aircraft Static Pressure	1017.3 mb	1013.3 mb
Tower Pressure	1016.8 mb	1013.4 mb

Notes

There were 3 data gaps from 184700Z-184706Z, 203159Z-203808Z and 211500Z-211502Z.

Alti2, RA9550 altimeter is noisy and has spikes throughout the flight. Novatel Altitude, Altnvl, spikes to 0 at 190002Z and has several minor spikes throughout the flight. Alti1 is default.

PSF exhibited several +/- 1mb stair steps enroute to the IP from 163050Z-163245Z, 163951Z-164057Z, 170451Z-170549Z and 171444Z-171643Z. During these times PSW was used with an offset value to substitute for PSF, since PSF trends with PSW.

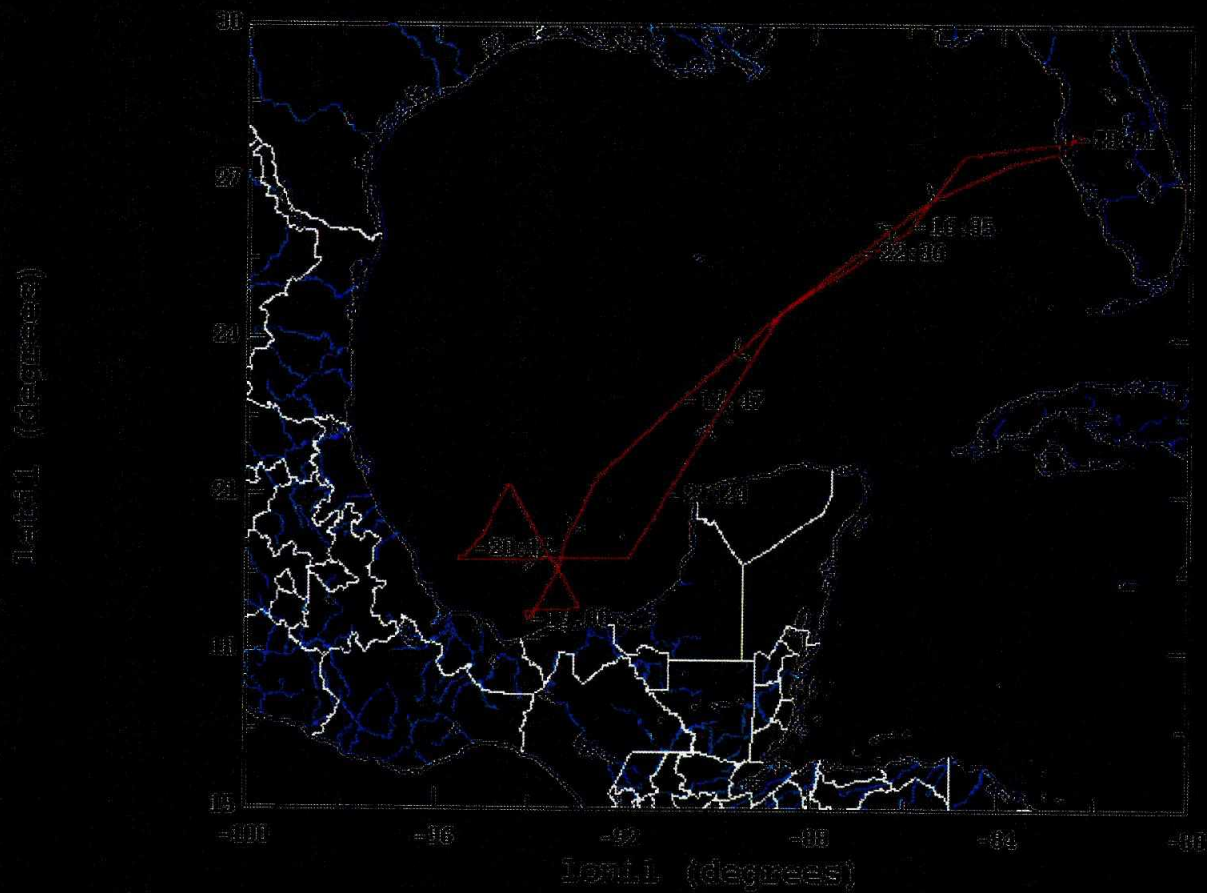
TDM1, though more noisy, represented more accurate TD trends and was used as default. However, TDM2 was substituted for TDM1 during the following times due to overshooting actual dewpoint: 154345Z-154401Z, 162833Z-162843Z, 164050Z-164106Z, 180916Z-180953Z, 183135Z. TDM1 goes out at 230812Z for remainder of flight. TDM2 was substituted in from 230812Z-231142Z, then TDM2 went out and TA1 was used as a reference and TDM1 was fixed using statistical methods from 231142Z-231447Z, the TDM2 came back and was again substituted from 231447Z through land at 2341Z.

All other instruments appeared to work optimally.
20 Dropsondes were released, 20 good and 0 bad. 18 good drops were sent to NHC.

Flight Director: Paul Flaherty / Ian Sears / Jess Williams
Phone #: (813) 828-3310 ext. 3041

HUR KARL - BRD KMCF-KMCF

09/10/2010 UTC, 15:23:21-23:49:00



	lat11 (degrees), 1 sec	lon11 (degrees), 1 sec	int	dir	haz
	29.97	-91.13	1.0	10.0	27.91
	-01.10	0.10	-00.10	-02.10	

DATE 7/16	SCHEDULED RX TIME	AIRCRAFT NUMBER	FLIGHT DIRECTOR SWA
WX MISSION IDENTIFIER			OB NUMBER
VORTEX DATA MESSAGE			
A	16 1842 Z	DATE and TIME of FIX	
B	19 DEG 40 MIN N S	LATITUDE of FIX	
	93 DEG 19 MIN W E	LONGITUDE of FIX	
C	N/A MB A M	MINIMUM HEIGHT of STANDARD LEVEL	
D	67 KT	ESTIMATE of MAXIMUM SURFACE WIND OBSERVED	
E	12 DEG 11 NM	BEARING and RANGE FROM CENTER of MAXIMUM SURFACE WIND	
F	91 DEG 78 KT	MAXIMUM FLIGHT LEVEL WIND NEAR CENTER	
G	10 DEG 13 NM	BEARING and RANGE FROM CENTER OF MAXIMUM FLIGHT LEVEL WIND	
H	978 MB	MINIMUM SEA LEVEL PRESSURE COMPUTED FROM DROPSONDE OR EXTRAPOLATED FROM FLIGHT LEVEL. IF EXTRAPOLATED, CLARIFY IN REMARKS.	
I	8 C / 3660M	MAXIMUM FLIGHT LEVEL TEMP / PRESSURE ALTITUDE OUTSIDE EYE	
J	13 C / 3657	MAXIMUM FLIGHT LEVEL TEMP / PRESSURE ALTITUDE INSIDE EYE	
K	6 C / NA C	DEWPOINT TEMP / SEA SURFACE TEMP INSIDE EYE	
L	CLOSED	EYE CHARACTER: Closed wall, poorly defined, open SW, etc.	
M	E09/25/20	EYE SHAPE/ORIENTATION/DIAMETER: Code eye shape as: C - Circular; CO - Concentric; E - Elliptical. Transmit orientation of the 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	12345 NA	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; 9-925mb; 8-850mb; 7-700mb; 5-500mb; 4-400mb; 3-300mb; 2-200mb; NA-Other	
O	1 / 1 NM	NAVIGATION FIX ACCURACY / METEOROLOGICAL ACCURACY	
P	REMARKS MAX FL WIND 28 KT NE QUAD 1839 Z OUTBOUND SW QUAD 1846		

2 18 39 93 57

3 18 56 92 53

289 8

DATE	9/16	SCHEDULED RX TIME	AIRCRAFT NUMBER	FLIGHT DIRECTOR
WX MISSION IDENTIFIER				OB NUMBER
VORTEX DATA MESSAGE				
A	16 / 1930 Z	DATE and TIME of FIX		
B	19 DEG 42 MIN N S	LATITUDE of FIX		
	93 DEG 28 MIN W E	LONGITUDE of FIX		
C	NA M	MINIMUM HEIGHT of STANDARD LEVEL		
D	66 KT	ESTIMATE of MAXIMUM SURFACE WIND OBSERVED		
E	138 DEG 8 NM	BEARING and RANGE FROM CENTER of MAXIMUM SURFACE WIND		
F	91 DEG 77 KT	MAXIMUM FLIGHT LEVEL WIND NEAR CENTER		
G	138 DEG 8 NM	BEARING and RANGE FROM CENTER OF MAXIMUM FLIGHT LEVEL WIND		
H	29.74 MB	MINIMUM SEA LEVEL PRESSURE COMPUTED FROM DROPSONDE OR EXTRAPOLATED FROM FLIGHT LEVEL. IF EXTRAPOLATED, CLARIFY IN REMARKS.		
I	C / M	MAXIMUM FLIGHT LEVEL TEMP / PRESSURE ALTITUDE OUTSIDE EYE		
J	C / M	MAXIMUM FLIGHT LEVEL TEMP / PRESSURE ALTITUDE INSIDE EYE		
K	5 C / NA C	DEWPOINT TEMP / SEA SURFACE TEMP INSIDE EYE		
L	CLOSED	EYE CHARACTER: Closed wall, poorly defined, open SW, etc.		
M		EYE SHAPE/ORIENTATION/DIAMETER: Code eye shape as: C - Circular; CO - Concentric; E - Elliptical. Transmit orientation of the 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	12345 NA	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; 9-925mb; 8-850mb; 7-700mb; 5-500mb; 4-400mb; 3-300mb; 2-200mb; NA-Other		
O	1 / 1 NM	NAVIGATION FIX ACCURACY / METEOROLOGICAL ACCURACY		
P	REMARKS			

MAX FL WIND 66 KT SW QUAD 1928 Z

OUTBOUND 083 NE 1934

1042

19 47

93 38

21 68

94 23

285-10

1945

2042

289 09

1946

9151

DATE		SCHEDULED FIX TIME	AIRCRAFT NUMBER	ARWO
WX MISSION IDENTIFICATION			STORM NUMBER IDENTIFIER	
VORTEX DATA MESSAGE			OB	
A	16/2042	DATE AND TIME OF FIX		
B	19 DEG 47 MIN N S	LATITUDE OF VORTEX FIX		
	93 DEG 38 MIN E W	LONGITUDE OF VORTEX FIX		
C	NA	MINIMUM HEIGHT AT STANDARD LEVEL		
D	65	ESTIMATE OF MAXIMUM SURFACE WIND OBSERVED		
E	252/06	BEARING AND RANGE FROM CENTER OF MAXIMUM SURFACE WIND		
F	67/1000	MAXIMUM FLIGHT LEVEL WIND NEAR CENTER		
G	264/9	BEARING AND RANGE FROM CENTER OF MAXIMUM FLIGHT LEVEL WIND		
H	975	MINIMUM SEA LEVEL PRESSURE COMPUTED FROM DROPSONDE OR EXTRAPOLATED FROM FLIGHT LEVEL. IF EXTRAPOLATED, CLARIFY IN REMARKS.		
I	10/3658	MAXIMUM FLIGHT LEVEL TEMP/PRESSURE ALTITUDE OUTSIDE EYE		
J	12/3666	MAXIMUM FLIGHT LEVEL TEMP/PRESSURE ALTITUDE INSIDE EYE		
K	5/1 N/A	DEWPOINT TEMP/SEA SURFACE TEMP INSIDE EYE		
L	Open NE	EYE CHARACTER: Closed wall, poorly defined, open SW, etc.		
M	C15	EYE SHAPE/ORIENTATION/DIAMETER. CODE EYE SHAPE AS: C - Circular; CO - Concentric; E - Elliptical. TRANSMIT ORIENTATION OF MAJOR AXIS IN TENS OF DEGREE (i.e., 01-010 to 190; 17-170 to 350). TRANSMIT DIAMETER IN NAUTICAL MILES. Examples: C8 - Circular eye 8 miles in diameter. EO9/15/5 - Elliptical eye, major axis 090-270, length of major axis 15 NM, length of minor axis 5NM. CO8-14 - Concentric eye, diameter inner eye 8 NM, outer eye 14 NM.		
N	12345/NA	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 - 1500ft; 9-925mb; 8 - 850 mb; 7 - 700 mb; 5 - 500 mb; 4 - 400 mb; 3 - 300 mb; 2 - 200 mb; NA - Other.		
O	1/1	NAVIGATION FIX ACCURACY/METEOROLOGICAL ACCURACY		
P	REMARKS MAX FL WIND 78 KT NE QUAD Z MAX OUTBOUND FL WIND KT QUAD Z SLP EXTRAP FROM (Below 1500 FT/ 925 MB/ 850 MB/ DROPSONDE) SFC CNTR NM FROM FL CNTR MAX FL TEMP C / NM FROM FL CNTR SURFACE WIND OBSERVED VISUALLY			
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.				

Figure 5-4. Vortex Data Message Worksheet

MAX OUTBOUND (AND) FL WIND 79

NE

1947

MAX FL WIND 78 KT NE QUAD

1839-2

new IP: 21 17 92 32

eye 19 48 93 27

AF fix 17112 19 36W 93 08W
ext 982m

19 48N 93 27W

19 40N 93 19 W 1842Z
289 / 08

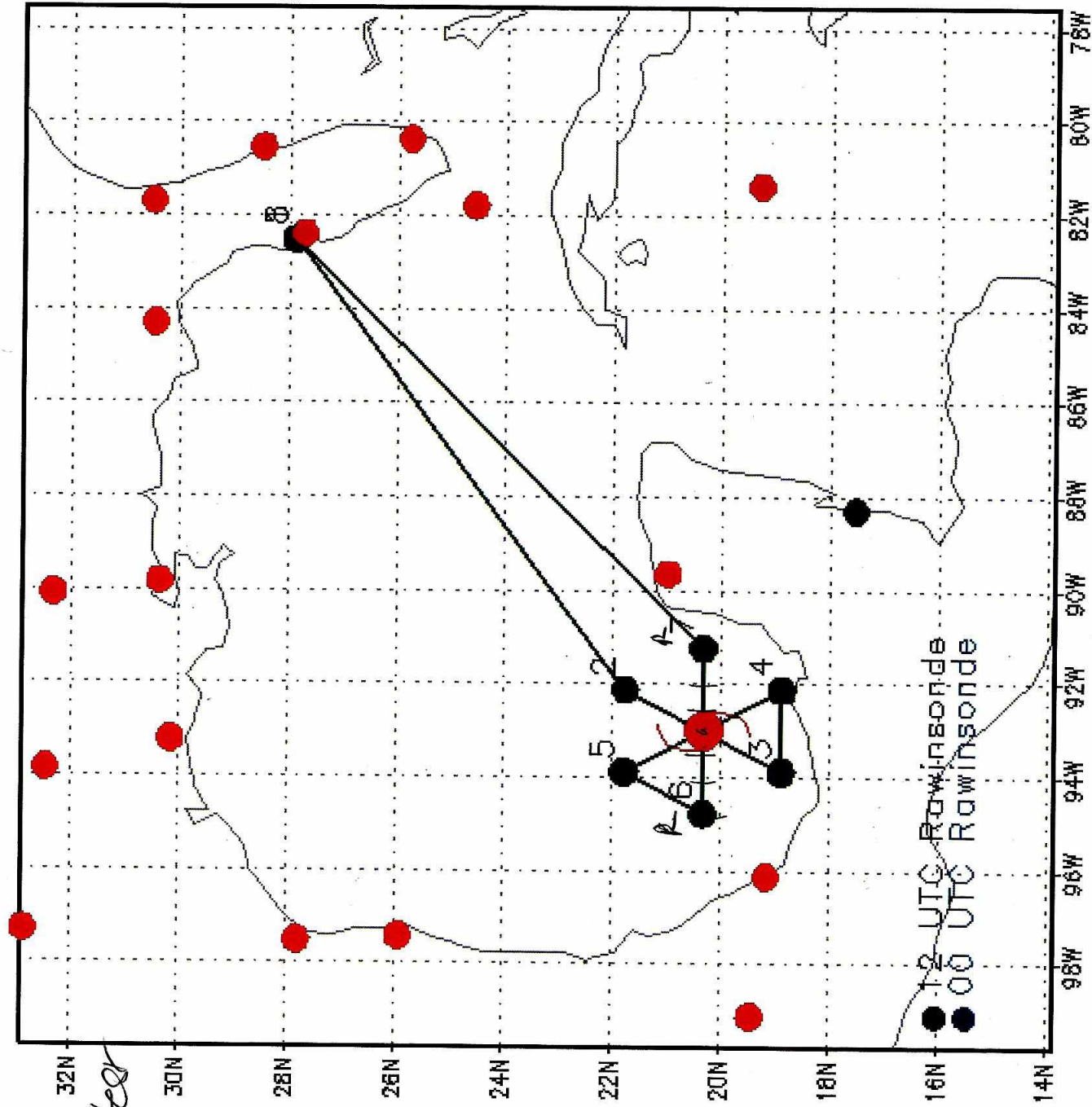
19 42N 93 28 W

1930Z 285/10

19 44 95 30

2038

15NM C



debuster

gating

-reco-

ep-

mp-

ew

cntr

ew

mp

ep

-reco-

100916H

data gaps 184700-184706

203859-203808

211500-211502

alt nvl spike down 5m 1718352, spike to 1900022

alt spike 4m 232151-232156

nvl geom H spike to 8 times

spikes w/ Alt nvl

radome instr go at - 2201342-2301302

PSF stair steps +/- 1mb

1630502-163245 +5.04 ✓

163951-164057 - +5.06 ✓

170451-170549 +5.07 ✓

171444-1716432 +4.68 ✓

H1 ↑ @ 1823292

tdm2 at 21272-22302 + a gain on desc

tdm1

sub 1 → 154345-154401

162833-162843 +5.03 ✓

164050-164058 1641062 -

180916-180953 =

183135-183156 -

RX CAL MET

ALTZ1 ⇒ RX.MC

✓

tdm2 goes off 2311512 & out for rest of FH

23082 + 23112 use tdm2 → 230812-231142

23112-23142 ?? fixed w/ tal 2

23142 - end use tdm2

231447-234100

-3.48

-5.24

-4.36

974.5 sonde

204737.5
204213

red = AlTi

blue = AlTiVCL

green = 9550

yellow = 9550 - cor

HOU 135.77 MINOW 11330 8846 132.65
MER 128.2 SWARD

"D": 1355Z 06/10 VIO CLR 28/24 30.04 -104 IL504

CLEARANCES			
FREQ	ALT	HDG	OTHER
10.9	1.6	080	CN 2340
	102+10		
	140		
12375			
10.4			
12812			
133.9	SWARD		
118.8			

MER

MER

MINOW

18002

MISSION LOG

POSITION REPORT

PAGE 1 OF 2

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 8384 KHZ 500 KHZ

MAYDAY, MAYDAY, MAYDAY
THIS IS NOAA, NOAA, NOAA

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 _____

NATURE OF EMERGENCY _____

ASSISTANCE DESIRED _____

PILOT INTENTIONS _____

WE HAVE _____ ENDURANCE REMAINING

1. POSITION

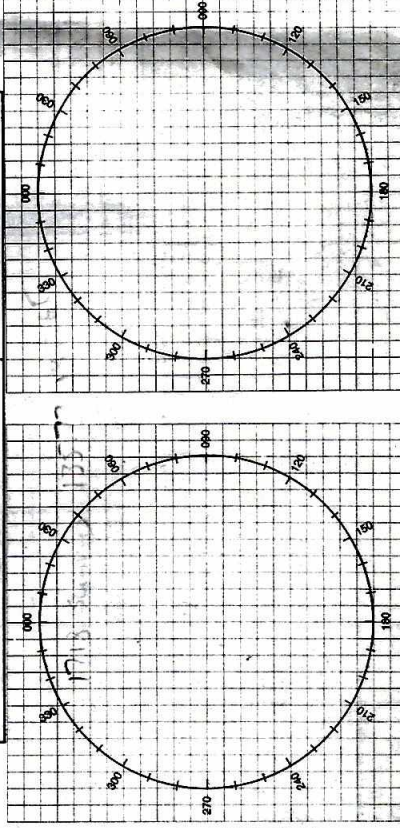
2. TIME

3. ALTITUDE

4. NEXT POSITION

5. ETA

6. NEXT POSITION



TIME	FIX TYPE	POSITION	INS 1 POSITION	KERR	INS 2 POSITION	KERR	VAR +E=>	TH	DR +R=>	TRK	GS	WD	WS	ALT	TAS	NEXT PT	DIST	TIME	ETA	REMARKS
1521	ENV	N	N		N															
1526	BLK	W	W		W															
1540	XV	27-53.8 82-21.0	27-53.8 82-21.0	0	27-53.8 82-21.0	0	230 SW	225	0	225	230	080	9	5.5	227	CLM	134	+30	1610	MCF 08519
1630	HF	SWARD	SWARD	0	SWARD	0														
1635	A	26-06.5 85-56.7	26-06.5 85-56.7	-1.4	26-06.5 85-56.7	-1.4	227 W	225	1R	226	272	105	12	11.0	266	FLUM	106	+22	1657	
1639	HF	SWARD	SWARD	0	SWARD	0														
1702	HF	SWARD	SWARD	0	SWARD	0														
1732	A	23-34.8 89-47.5	23-34.8 89-47.5	-1.3	23-34.8 89-47.5	-1.3	224 IE	225	4R	229	271	114	22	140	262	1	196	+45	1817	
1839	A	20-16.2 93-06.7	20-16.2 93-06.7	-1.6	20-16.2 93-06.7	-1.6	193 SE	196	13R	269	270	105	65	120	257	EXE	22	+06	1840	
1939	A	20-15.5 93-49.8	20-15.5 93-49.8	-1.8	20-15.5 93-49.8	-1.8	338 SE	341	10L	331	269	080	45	120	256	4	65	+14	1954	
2032	A	19-49.7 90-41.5	19-49.7 90-41.5	-1.0	19-49.7 90-41.5	-1.0	177 SE	080	10R	040	285	001	50	120	251	EXE	34	+08	2000	
2131	A	21-30.3 90-41.5	21-30.3 90-41.5	-1.2	21-30.3 90-41.5	-1.2	633 IE	034	3L	031	308	160	20	230	295	SWARD	205	+40	2211	
2239	A	22-13.2 90-41.5	22-13.2 90-41.5	-1.0	22-13.2 90-41.5	-1.0														
2259	A	22-13.2 90-41.5	22-13.2 90-41.5	-1.0	22-13.2 90-41.5	-1.0														
2309	A	23-34.8 89-47.5	23-34.8 89-47.5	-1.4	23-34.8 89-47.5	-1.4														

SWARD

ASDA-UWAW

720

SWARD

