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

FLT ID: 980927I	FM: KMCF	TO: KMCF
FLT NO: 99-004	BLK IN: 0309Z	ATA: 0300Z
ETD: 1845Z	BLK OUT: 1837Z	ATD: 1849Z
ETE: 0400Z	BLK TIME: 8.32 8.5	FLT TIME: 8.11 8.2
SPONSOR ORG: NOAA	PROGRAM: HURR-RESEARCH	PURPOSE: HURR MITCH

OAO PERSONNEL

AC PHILIPPSBORN, R ✓	SYS ENG LYNCH, J ✓
CP KENUL, P / KENNEDY, P ✓	DATA SYS
NAV KOZAK, S ✓	RADAR HILL, J ✓
FE BAST, G ✓	BT/ODW CARPENTER, D ✓
RADIO SANS SOUCI, D ✓	CLD PHYS
FD CZYZYK, S / PARRISH J ✓	DOPPLER

PARTICIPATING SCIENTIST/VISITORS/OAO

LAST, FIRST NAME	ACTIVITY ON A/C	AFFILIATION
BLACK, P ✓	P.I.	HRD
FRANKLIN, J ✓	SCIENTIST	〃
LEIGHTON P ✓	〃	〃
GAMACHE, J ✓	〃	〃
ROGERS, R ✓	〃	〃
GEDZELMAN, S ✓	〃	〃
EBERWINE, J ✓	〃	〃
FAGEN J ✓	MEDIA	FOX 13

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

KING CW OUT

BALANCE DWN 1922:30Z

6 PENETRATIONS

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

FLT ID: 981027I TIME OFF: 1849Z TIME ON: 0300Z

	A/C T/O	WX STN	A/C LAND	WX STN
PRESSURE	1018.8	30.12	1019.6	30.15

	NO	DATA DISPOSITION/DATE/QUALITY
1/SEC FLT LVL TAPES	2	
FAST FLT LVL TAPES		
RADAR TAPES		
DOPPLER TAPES		
ODW CASSETTES		
HARD COPIES	1	
AXBT	8	
AXCP		
ODW		
GPS	31	

PHOTOGRAPHY

	FWD	LS	RS	VERT	
ON					
OFF					
RATE					

REMARKS

DATE : 10/27/98

TO : Chief, AOC Flight Operations

FROM : Pilot/Flight Director, Aircraft N43RF ON 0309Z BLOCKTIME
OFF 1837Z 8.5

SUBJECT: Hazardous Duty

PURPOSE OF FLIGHT: HURR. MITCH

Hazardous Duty Pay is required for flight made on 10/27/98 (DATE)

Request based on PENETRATIONS INTO HURRICANE

Personnel on board authorized Hazard Pay:

CZYZYK, S	
PARRISH, J	
BAST, G	
HILL, J	
SANS SOUCI, D	
LYNCH, T	
CARPENTER, D	

PILOT/~~FLIGHT~~ DIRECTOR: Steve Gough

APPROVED: _____ DISAPPROVED: _____

CHIEF, AOC FLIGHT OPERATIONS: _____

URRICANE SYNOPTIC SURVEILLANCE MISSION PLAN: MITCH

repared by the Hurricane Research Division at 01:17:58 PM on 10/26/98.
ile: /users/james/field_prgm/flight_tracks/981027i.ftk

ircraft: N43RF Altitude: FL100-100 Proposed takeoff: 27/1830Z

ROP LOCATIONS

#	LAT (d m)	LON (d m)	RAD/AZM (nm/dg)	TIME (h:mm)
1	22 00	85 30		1:30
2S	17 37	84 07	10/315	2:28
3S	17 36	84 07	9/315	2:28
4S	17 24	83 53	9/135	2:32
5S	17 23	83 53	10/135	2:32
6S	17 30	83 08	50/090	2:48
7S	17 30	83 50	10/090	2:57
8S	17 30	83 51	9/090	2:57
9S	17 30	83 52	8/090	2:57
0S	17 30	84 10	10/270	3:01
1S	17 30	84 52	50/270	3:09
2S	17 23	84 07	10/225	3:25
3S	17 36	83 54	8/045	3:29
4S	17 36	83 53	9/045	3:29
5S	17 37	83 53	10/045	3:30
6S	17 40	84 00	10/000	3:54
7S	17 39	84 00	9/000	3:54
8S	17 38	84 00	8/000	3:54
9S	17 20	84 00	10/180	3:58
0S	16 40	84 00	50/180	4:06
1S	17 21	83 55	10/150	4:20
2S	17 22	83 55	9/150	4:20
3S	17 30	84 00	0/000	4:22
4S	17 39	84 05	10/330	4:24
5S	18 13	84 26	50/330	4:32

DATE	SCHEDULED RX TIME	AIRCRAFT NUMBER	ARWO

WX MISSION IDENTIFICATION

08 12

(ABBREVIATED) (DETAILED) VORTEX DATA MESSAGE

A	27/2240 Z		DATE AND TIME OF FIX
B	16 DEG 38 MIN (N) S		LATITUDE OF VORTEX FIX
	85 DEG 35 MIN E (W)		LONGITUDE OF VORTEX FIX
C	700 MB 2510	M	MINIMUM HEIGHT AT STANDARD LEVEL
D	NA	KT	ESTIMATE OF MAXIMUM SURFACE WIND OBSERVED
E	NA DEG	NM	BEARING AND RANGE FROM CENTER OF MAXIMUM SURFACE WIND
F	335 DEG 123	KT	MAXIMUM FLIGHT LEVEL WIND NEAR CENTER
G	245 DEG 10	NM	BEARING AND RANGE FROM CENTER OF MAXIMUM FLIGHT LEVEL WIND
H	EXTRAP 932	MB	MINIMUM SEA LEVEL PRESSURE COMPUTED FROM DROPSONDE OR EXTRAPOLATED FROM FLIGHT LEVEL. IF EXTRAPOLATED, CLARIFY IN REMARKS.
I	10 CI 3065	M	MAXIMUM FLIGHT LEVEL TEMP/PRESSURE ALTITUDE OUTSIDE EYE
J	16 CI 3481	M	MAXIMUM FLIGHT LEVEL TEMP/PRESSURE ALTITUDE INSIDE EYE
K	12 CI NA	C	DEWPOINT TEMP/SEA SURFACE TEMP INSIDE EYE
L	CLOSED		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 degree, 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 5NM. CO8-14 - Concentric eye, diameter inner eye 8 NM, outer eye 14 NM.
I	16 DEG 38 MIN (N) S		CONFIRMATION OF FIX: Coordinates and time
	85 DEG 35 MIN E (W)		
	27/2240 Z		
	12345/7		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 - 1500ft; 9-925mb; 8 - 850 mb; 7 - 700 mb; 5 - 500 mb; 4 - 400 mb; 3 - 300 mb; 2 - 200 mb; NA - Other.
	1 / 2 NM		NAVIGATION FIX ACCURACY/METEOROLOGICAL ACCURACY

REMARKS

MAX FL WIND 128 KT SE QUAD 27/2137 Z 1637

SLP EXTRAP FROM ~~(1500 FT/ 925 MB/ 850 MB/ DROPSONDE)~~ 700 MB

SFC CNTR _____ / _____ NM FROM FL CNTR

MAX FL TEMP _____ C _____ / _____ NM FROM FL CNTR

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

DATE	SCHEDULED RX TIME	AIRCRAFT NUMBER	ARWO

WX MISSION IDENTIFICATION PASSEN 08 9

(ABBREVIATED) (DETAILED) VORTEX DATA MESSAGE

A	27/2133	Z	DATE AND TIME OF FIX
B	16 DEG 42 MIN (N) S		LATITUDE OF VORTEX FIX
	85 DEG 36 MIN E (W)		LONGITUDE OF VORTEX FIX
C	700 MB 2486	M	MINIMUM HEIGHT AT STANDARD LEVEL
D	NA	KT	ESTIMATE OF MAXIMUM SURFACE WIND OBSERVED
E	NA DEG	NM	BEARING AND RANGE FROM CENTER OF MAXIMUM SURFACE WIND
F	065 DEG 120	KT	MAXIMUM FLIGHT LEVEL WIND NEAR CENTER
G	320 DEG 16	NM	BEARING AND RANGE FROM CENTER OF MAXIMUM FLIGHT LEVEL WIND
H	931	MB	MINIMUM SEA LEVEL PRESSURE COMPUTED FROM DROPSONDE OR EXTRAPOLATED FROM FLIGHT LEVEL. IF EXTRAPOLATED, CLARIFY IN REMARKS.
I	13 CI 3184	M	MAXIMUM FLIGHT LEVEL TEMP/PRESSURE ALTITUDE OUTSIDE EYE
J	17 CI 3478	M	MAXIMUM FLIGHT LEVEL TEMP/PRESSURE ALTITUDE INSIDE EYE
K	11 CI NA	C	DEWPOINT TEMP/SEA SURFACE TEMP INSIDE EYE
L	CLOSED		EYE CHARACTER: Closed wall, poorly defined, open SW, etc.
M	C22		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	16 DEG 42 MIN (N) S 85 DEG 36 MIN E (W) 27/2133 Z		CONFIRMATION OF FIX: Coordinates and time
O	12345/7		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 - 1500ft; 9-925mb; 8 - 850 mb; 7 - 700 mb; 6 - 500 mb; 4 - 400 mb; 3 - 300 mb; 2 - 200 mb; NA - Other.
P	1 / 2	NM	NAVIGATION FIX ACCURACY/METEOROLOGICAL ACCURACY

REMARKS

MAX FL WIND 120 KT NW QUAD 27/2128 Z

SLP EXTRAP FROM ~~1500 FT/ 925 MB/ 850 MB~~/ DROPSONDE

SFC CNTR _____/_____NM FROM FL CNTR

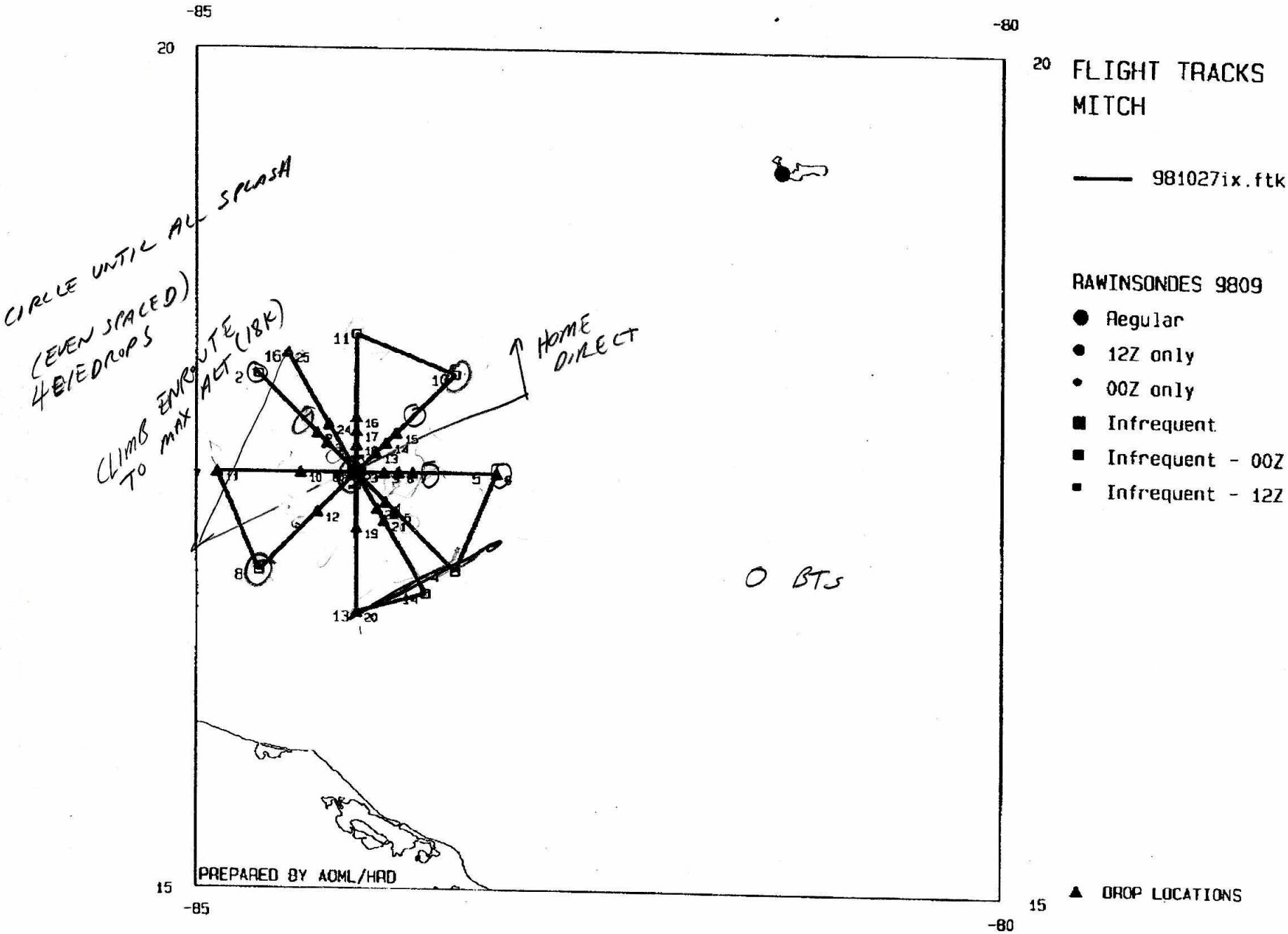
MAX FL TEMP _____C_____/_____NM FROM FL CNTR

6640

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

S. 813-875-8255)
C 1-800 826-4434 813-870-9630 WYUT KEITH BUNTZ

5


-85
-80
20
15
CIRCLE UNTIL ALL SPLASH
(EVEN SPACED)
4 B/E DROPS
CLIMB ENROUTE TO MAX ALT (18K)
HOME DIRECT
0 BTs
PREPARED BY AOML/HRD
FLIGHT TRACKS
MITCH
981027ix.ftk
RAWINSONDES 9809
Regular
12Z only
00Z only
Infrequent
Infrequent - 00Z
Infrequent - 12Z
DROP LOCATIONS

DATE	SCHEDULED RX TIME	AIRCRAFT NUMBER	ARWO

WX MISSION IDENTIFICATION | 08 16

(ABBREVIATED) (DETAILED) VORTEX DATA MESSAGE

A	27/2340 Z		DATE AND TIME OF FIX
	16 DEG 34 MIN (N) S		LATITUDE OF VORTEX FIX
B	85 DEG 35 MIN E (W)		LONGITUDE OF VORTEX FIX
C	700 MB 2521	M	MINIMUM HEIGHT AT STANDARD LEVEL
D	~~130~~ NA	KT	ESTIMATE OF MAXIMUM SURFACE WIND OBSERVED
E	~~180 [illegible] 30~~	NM	BEARING AND RANGE FROM CENTER OF MAXIMUM SURFACE WIND
F	200 DEG 128	KT	MAXIMUM FLIGHT LEVEL WIND NEAR CENTER
G	110 DEG 15	NM	BEARING AND RANGE FROM CENTER OF MAXIMUM FLIGHT LEVEL WIND
H	933	MB	MINIMUM SEA LEVEL PRESSURE COMPUTED FROM DROPSONDE OR EXTRAPOLATED FROM FLIGHT LEVEL. IF EXTRAPOLATED, CLARIFY IN REMARKS.
I	12 C/ 3051	M	MAXIMUM FLIGHT LEVEL TEMP/PRESSURE ALTITUDE OUTSIDE EYE
J	16 C/ 3449	M	MAXIMUM FLIGHT LEVEL TEMP/PRESSURE ALTITUDE INSIDE EYE
K	13 C/ NA	C	DEWPOINT TEMP/SEA SURFACE TEMP INSIDE EYE
L	CLOSED		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 degree, i.e., 01-010 to 190; 17-170 to 350. Transmit diameter in nautical miles. *Examples*: C8 - Circular eye 8 miles in diameter. EO9/15/6 - Elliptical eye, major axis 090-270, length of major axis 15 NM, length of minor axis 6NM. CO8-14 - Concentric eye, diameter inner eye 8 NM, outer eye 14 NM.
	16 DEG 34 MIN (N) S		CONFIRMATION OF FIX: Coordinates and time
	85 DEG 35 MIN E (W)		
	27/2340 Z		
	12345/7		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 - 1500ft; 9-925mb; 8 - 850 mb; 7 - 700 mb; 6 - 500 mb; 4 - 400 mb; 3 - 300 mb; 2 - 200 mb; NA - Other.
	1 / 1	NM	NAVIGATION FIX ACCURACY/METEOROLOGICAL ACCURACY

REMARKS

MAX FL WIND 130 KT S QUAD 27/2314 Z

SLP E~~XTRAP~~ FROM (~~1500 FT/ 925 MB/ 850 MB/~~ DROPSONDE)

SFC CNTR _____/_____NM FROM FL CNTR

MAX FL TEMP _____C_____/_____NM FROM FL CNTR

MAX SFC WIND 110 KTS S QUAD 15~~30~~ NM FROM CTR

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

1160 1307

981027I

1845-0307

RENAV

202300	-0.2, 0.1	22 1.6	-85 28.5
213300	0.0, -0.2	16 41.8	-85 36.1
220800	0.0, 0.4	16 40.8	-85 35.2
224000	0.2, -0.1	16 38.1	-85 36.1
231100	0.8, 0.1	16 34.8	-85 35.8
234000	0.8, 0.4	16 34.2	-85 35.2
001600	1.0, -0.3	16 31.0	-85 36.3
030800	2.0, -0.9	27 51.0	-82 29.8

RA-159 SPIKE @ TAKEOFF REPLACE W/232 1844:01 - 1852:26 ✓

RA-159 DROPOUT, REPLACE W/232 WITH OFFSET OF +21.0, 2325:30 - 2327:00 ✓

RA-159 PROBLEM, ~~REPLACE W/~~ REMOVE ~~SPIKE~~ BAD DATA + PATCH 0136.40 - 0137.10 ✓

RA-159 SPIKE @ LANDING, SET TO ZERO 0259:29 - 0308:00 ✓

PSF SPIKE 0151:00 - 0152:00 ✓

DW1 BALANCED 1922:30 - 1929:00 ✓

RA-159 O/P DUE TO OVERFLYING LAND 2223:00 - 2223:40, 2235:00 - 2235:40, ✓

TT2 DROPOUT (HEAVY PRECIP) 2048 - 2052, 0008 - 0013, 0034 - 0042,

WR FROZE 2043 - 2047

AIR FAILE 0039 - 0250

PSW SPIKE 1955 - 1958, 0148:30 - 0149:30

DW2 FROZE 2112 - 2125

DW2 WET INEVE 2207-2211, 2309-2316,

DEI, AVI, DWI, TTI

981027I'

orm 413-50
-93

TIME	LAT	LON	TK	HD	TA	TD	WD	WS	PA	GA	PS	SP	REMARKS
192130	26 39	83 29	200	201	-5.6	33.5	350	10.8	5501	5811	505.4	1011.5	LEVEL 18K PA
194630	24 43	84 14								VERY OUTER EDGE CLOUDS ABV SC BELOW			
202334	21 59	85 30	206	207	-3.8	-13.5	23	16.7			504.4	1004.9	DROP #1
2040	20 34	85 43											
2113	1752	86 08	189	181									1ST RAINBAND
211830													OFFSHORE
214138	1722	8610											LEVEL 10K PA
212440	1708	8556											BT 1
212858													BT 2
213322	1642	8536											DROP 2
213730	1631	8524											3 DROP
213910	1625	8518											DROP
215315	1641	8442											DROP
220005	1642	8502											DROP ICE SLICK
220327	1642	8516											BT
220350	1642	8517											DROP
220419	1642	8519											DROP
220818	1638	8535											DROP
222103	1635	8626											5
222751	1612	8616											DROP
223945	1629	8534											BT
2240	1638	8535											DROP
224022	1639	8534											6
224247	1646	8526											BT
224309	1647	85											DROP
224331	1648	8525											DROP
224644	1655	8517											DROP
225946	1719	8536											BT
230558	1655	8536											BT
230630	1653	8531											DROP
230727	1649	8536											DROP
2311	1638	8536											DROP
231350	1622	8536											5
232122	1600	8526											DROP
232849	1615	8455											DROP
233544	1628	8519											BT 8
233638	1629	8522											DROP
233709	1630	8524											DROP
2340	1634	8535											DROP
234435													5 DROP
001450													DROP
001605	1632	8535											DROP
001707	1635	8532											5
001756	1638	8531											DROP
002201	1644	8534											DROP
003142	1658	8534									18K PA		→ CLIMB
0038													CIRCLE INTO EYE
													DROP
													DROP
													CLIMB

NE NW 15-20 miles

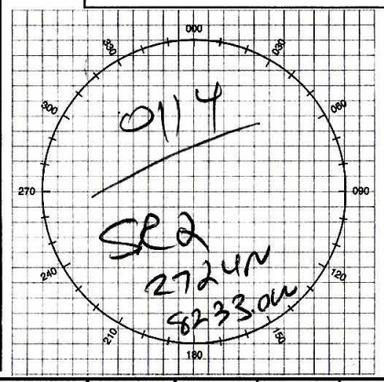
0200 1830 8520W

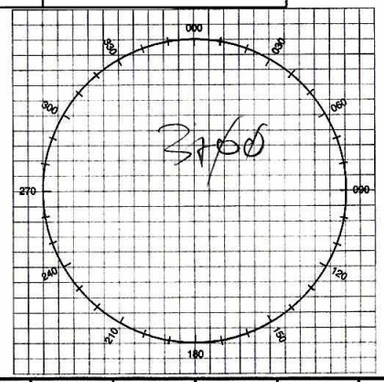
CLEARANCES

FREQ	ALT	HDG	OTHER
			1653N 2026
			086 53W
			1649N 1920Z
			6534W 130 Knots
			928nm
			1645N 20482
			8535W 927

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 _____

- 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

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
1632	VIS	2750.9N 8220.6W	"		"																Enb STA
1855	TOX	RW	"	AUX	3012																
1849	TOFF	MCP																			
1924	6	2628.8N 8332.9W	2628.9N 8332.0W	-1 -1	2628.6N 8333.0W	+2 -1			200	1L	194	296	358	9	18K	286					Post
2023	PS	2159.0N 8529.6W	2159.2N 8529.6W	-2 Ø	2159.0N 8530.4W	Ø -.6			184	Ø	184	294	026	10	18K	285					SM 1 NM
2133	GPS	1641.4 N 8535.6W	1641.4 N 8535.7 W		1641.6 N 8536.6 W										18K						Smith
2206	GPS	1640.9 N 8534.8 W	1640.8 N 8534.4 W		1640.7 N 8535.5 W										101K						Smith
2240	GPS	1638.4 N 8535.8 W	1638.2 N 8535.9 W		1638.5 N 8537.1 W										10K						Smith
2311	GPS	1636.8 N 8536.1 W	1635.9 N 8535.9 W		1636.3 N 8537.3 W										10K						Smith
2340	GPS	1634.0 N 8534.5W W	1633.2 N 8534.1W W		1633.1 N 8535.4 W										10K						Smith
0016	GPS	1631.7N 8535.6W	1630.7N 8535.9 W		1631.7N 8537.3W										18K						Smith
0350	LAND	MCP																			
	VIS	2750.9 8229.6W	2748.9N 8230.5 W	+2.0 -.9	2750.4N 8231.6W	+1.5 -2.0															Chaos

1726Z
8612
16 16W
8457W

NOAA FORM 56-49
(2-95)

MISSION PREFLIGHT LOG

DESTINATION	MISSION	NAVIGATOR	AIRCRAFT COMMANDER	FLIGHT DIRECTOR	SCHEDULED / ACTUAL TAKEOFF Z	DATE OF TAKEOFF
MCF→MCF	99-01	Kozak	P+11	CzycyK	1845	981027

2+25 2+30 (2+40) 2+45

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	23.2 N 84.4 W	MK9											306 306					
2	22.8 83.0												92 398					
3	17.5 N 86.1 W	IP											278 676					
4	22.05 N 84.13 W	MJ																

INS PERFORMANCE

	INS 1	INS 2
BEGIN ALIGN TIME	1706	1708
ALIGN STATUS (0-5)	0	0
END NAV TIME	0310	0310
START NAV TIME	1832	1832
DELTA T	8+38	8+38

TERMINAL ERRORS

	INS 1	INS 2
DELTA LAT	+2.0	+1.5
DELTA LON	-.9	-2.0
RGS	0	0
RADIAL ERROR	2	2.

REMARKS

OEO ↗ 1,600
FL 150 10 M ~
110.9 5707

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