

EMILY #2 19870923I1 - FDR

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

FLT ID: 870923I	FM: SUN	TO: MIA
FLT NO: 87-	BLK IN: 03:21	ATA: 03:14
ETD: 18:00	BLK OUT: 17:45	ATD: 17:52
ETE: 9:00	BLK TIME: 9:36	FLT TIME: 9:22
SPONSOR ORG: HRD	PROGRAM: HURR '87	PURPOSE: EMILY RSRCN

OAO PERSONNEL

AC GUNNOE ✓	SYS ENG JARVI ✓
CP MEYERS ✓	DATA SYS LINO ✓
NAV SECRETAN ✓	RADAR GONZALEZ ✓
FE RICCI/KIRKPATRICK ✓	BT/ODW SCHRICKER ✓
RADIO McCONNATHEA ✓	CLD PHYS
FD MASTERS	DOPPLER

PARTICIPATING SCIENTIST/VISITORS/OAO

LAST, FIRST NAME	ACTIVITY ON A/C	AFFILIATION
BAST, G. ✓	MECH	OAO
DODGE, P. ✓		HRD
FRANKLIN, J. ✓		HRD
MARKS ✓		HRD
MULLIS, P. ✓		HRD
McFADDEN, J. ✓	IN CONTROL	OAO

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

AF FIX 20° 53' 72° 40' 18Z 103 404 10
21 04 72 49

21° 10' 72° 39' at 20:19

NO LIQUID WATER

TD noisy throughout

72.5 41002
72.5

FLT ID: 870923 I

TIME OFF: 03:14

TIME ON:

R/C T/O

WX STN

A/C LAND

WX STN

PRESSURE

TWR 1014.8
R 1014.1

CAL LAB 104.1
R 1013.5 G 1015.7

NO

DATA DISPOSITION/DATE/QUALITY

1/SEC FLT LVL TAPES

1

FAST FLT LVL TAPES

RADAR TAPES

5

DOPPLER TAPES

10

ODW CASSETTES

3

HARD COPIES

D

CLAMP PHYSICS

14

AXBT

АХСР

ODW

30

PHOTOGRAPHY

FWD

LS

RS

VERT

ON

OFF

RATE

REMARKS

Error summary I870923 Emily ODW#1

--Navigation : Renavigation was done using 3 VOR fixes from the navigator's log. INE2 was used.

--Radar altitude : RA was patched 18:34 - 18:40 by a filtering technique that looked at the difference between RA and pressure altitude. A plot of the fix is enclosed.

--Dew Point : After 22:30, the dew point was filtered to reduce an oscillation due to the instrument being out of balance. The instrument is very unreliable through the last half of the flight.

--Liquid Water : No data. Instrument was not turned on.

--Attack angle : Attack pressure sensor was inoperative. AP was modeled as a straight line. This approximation caused up to a 100% error in AP during maneuvers and turbulence, resulting in up to a 2 degree error in attack angle. This attack angle error could cause up to a 2 m/s error in the vertical winds.

	Take off	Landing
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Aircraft static pressure	1013.7mb	1013.0mb
Corrected tower pressure	1014.8mb	1014.1mb

A/C COMMANDER	NAVIGATOR	A/C NO.	MISSION NO.	TIME AIRBORNE	LOCATION	DATE	PROJ. NAME
GUNNOE	SECRETAN	NH3RF	870923 174100	1752 Z	SAN JUAN ↓ MIA	23-SEP 1987	407 EMILY

TIME OF ENTRY	POSITION	TYPE INE USED	INE #1 POSITION	LAT LON COR'S	INE #2 POSITION	LAT LON COR'S	ALT GS	TH TK	REMARKS
1752	18-27.0 065-59.3	4 2	18-27.0 065-59.3	0.0 0.0	18-27.0 065-59.3	0.0 0.0	↑		TAKE OFF
1825		9 2	20-38.1 067-11.0		20-37.9 067-11.0		17000 300		ODW IL SIGS NO GOOD
1845		9 2	22-01.1 068-04.1		22-00.6 068-04.1				ODW INE'S 053
1903		9 2	22-01.7 069-31.7		22-00.9 069-31.6				ODW INE'S 051
1921		9 2	22-01.1 071-00.9		22-00.0 071-00.9				ODW INE'S 057
1927 ₂₄	21-40 071-19	2 2	21-41.0 071-18.6	-1.0 +0.4	21-40.0 071-18.6	0.0 +0.4			140/16 INES 061
1940		9 2	21-08.6 071-32.3		21-07.2 071-32.5				ODW INE'S 067
1954		9 2	21-23.7 072-37.4		21-22.1 072-37.8				ODW EYE
2005		9 2	21-18.4 073-20.6		21-16.5 073-21.2				ODW
2024		9 2	21-35.1 072-45.8		21-32.1 072-46.3				ODW EYE
2043		9 2	23-07.5 073-07.2		23-03.6 073-07.4				ODW INE'S 094
2058		9 2	24-10.7 073-29.8		24-06.3 073-29.8				ODW

ATC CLEARANCE: 22 69 22 21 15 330° 79000
170 10 10 182.9 3650 717000

ENROUTE CLEARANCES:

TYPE OF FIX: (1) DR (2) RADIO (3) CELESTIAL (4) VISUAL (5) LORAN (6) RADAR (7) DOPPLER - INERTIAL
(8) OMEGA (9) INERTIAL (10) OMEGA - INERTIAL

FLIGHT PLAN

PROPOSED T.O. 1800

ACTUAL T.O. 1752

WAY POINT	TO	RTE	ALT	TAS	TC	W DC	V	TH	VAR	MH	GS	ZONE DIST	TOTAL DIST	ZONE TIME TOTAL	PROPOSED ETA	ETA ATA
1	5410 JAPAN (530) 18-26.9, 065-59.4	—	—	—	—	—	—	—	—	—	—	—	—	—	1752	—
2	22-00, 068-00				332	—	—	—	—	—	270	242	242	+54 +54	1846	1844
3	22-00, 071-00				271	—	—	—	—	—	280	167	409	+36 +36	1922	1920
4	60 NM E of IYE 21-08, 071-50				246	—	—	—	1955	—	"	78	487	+12 +12	1939	—
5	40 NM W of IYE 21-08, 073-42				273	—	—	—	—	—	"	103	590	+22 +22	2001	—
6	40 NM S of IYE 21-28, 073-00				148	—	—	—	—	—	"	67	657	+14 +14	2015	—
7	40 NM N of IYE 21-50, 073-00				360	—	—	—	—	—	"	110	767	+24 +24	2039	—
8	25-30, 074-00				353	—	—	—	—	—	300	193	960	+39 +39	2118	2116
1	27-00, 071-30					—	—	—	—	—	"	168	1128	+34 +34	2152	2150 2149
2	25-00, 067-30					—	—	—	—	—	"	168	1296	+34 +34	2226	2223 2224
3	26-00, 068-00					—	—	—	—	—	"	102	1398	+20 +20	2246	2244 2244
4	29-00, 068-00				360	—	—	—	—	—	"	180	1578	+36 +36	2322	2319 2318
5	31-00, 069-30					—	—	—	—	—	"	141	1719	+28 +28	2350	2346 2347
6	29-30, 072-30					—	—	—	—	—	"	202	1921	+41 +41	0031	0030 0028
7	31-00, 074-30					—	—	—	—	—	"	120	2041	+24 +24	0055	0054 0053
8	31-00, 077-00				270	—	—	—	—	—	"	131	2172	+26 +26	0121	0121 0125
1	25-30, 077-00				180	—	—	—	—	—	"	325	2497	+05 +05	0226	0230
2	MIA (MIA) 25-57.8, 080-27.7					—	—	—	—	—	"	180	2667	+36 +36	0302	—
3	31-51.1, 084-44.8 (BSY) 25-40.3, 080-10.7					—	—	—	—	—						

SYS	BEGIN ALIGN TIME	NCS CONN	Ω AID	TIME OUT OF COARSE ELAPSE ALIGN POST TIME	ALIGN STS 0-5	(1) TIME INTO NAV.	(2) TIME OUT NAV.	ΔT (2)(1)	TERMINAL ERRORS		
									LAT	LONG	GS
INS 1	1633	Y	N		0	1740	0320	9+40	-24.6	+12.7	8
INS 2 IMU	1633	Y	N		0	1740	0320	9+40	-7.1	+3.8	6

ALIGN REMARKS:

OTHER REMARKS: NO DOPPLER USED BECAUSE OF ODW'S

TIME OF ENTRY	POSITION	TYPE INE USED	INE #1 POSITION	LAT LON COR'S	INE #2 POSITION	LAT LON COR'S	ALT GS	TH TK	REMARKS
2117		9/2	25-40.2 073-57.7		25-34.9 073-57.8				ODW
2135		9/2	26-28.3 072-35.3		26-21.8 072-35.4				ODW INE'S 147
2150		9/2	27-04.8 071-24.6		26-57.1 071-24.9				ODW INE'S 159
2209		9/2	26-01.5 070-20.4		25-52.4 070-21.5				ODW INE'S 178
2224		9/2	25-11.8 069-25.0		25-01.7 069-26.9				ODW
2244		9/2	26-15.9 067-56.8		26-04.9 067-59.1				ODW INE'S 219
2300		9/2	27-41.9 068-02.2		27-30.2 068-04.6				ODW INE'S 237
2318		9/2			29-01.6 068-00.0				ODW
2334		9/2	30-21.4 068-46.5		30-07.6 068-48.9				ODW INE'S 266
2358		9/2	30-51.9 070-12.2		30-37.6 070-14.8				ODW INE'S 288
0007		9/2	30-30.2 070-59.5		30-15.9 071-02.2				ODW INE'S 297
0027		9/2	29-46.7 072-30.7		29-32.1 072-34.1				ODW INE'S 311
0041		9/2	30-31.3 073-27.1		30-16.3 073-31.1				ODW INE'S 321
0055		9/2	31-15.7 074-26.7		31-00.1 074-31.1				ODW INE'S 334
0125		9/2	31-13.4 076-55.4		30-52.0 076-59.9				ODW INE'S 366
0142		9/2	29-45.3 076-56.3		29-28.9 077-01.5				ODW/TRES CAY 162 DME INE'S 387
0202		9/2	28-06.8 076-54.3		27-50.1 077-01.1				ODW 187/63 TRES CAY INE'S 411
021456 0215	26-43 077-00	2/2	27-06.0 076-48.1	-19.0 +11.9	26-48.9 076-56.0	-5.9 +4.0			270/20
0219		9/2	26-43.7 076-49.0		26-26.5 076-57.3				ODW INE'S 434

Page 2

DATE		SCHEDULED FIX TIME		AIRCRAFT NUMBER		ARWO	
MANOP HEADING (PRECEDENCE IMMEDIATE)							
MISSION IDENTIFIER AND OBSERVATION NUMBER NOAA3 0912A EMILY 06 14 07							
(ABBREVIATED) (DETAILED) VORTEX DATA MESSAGE							
A	23/20:25 Z		DATE AND TIME OF FIX				
B	21 DEG 34 MIN (N) S		LATITUDE OF VORTEX FIX *				
	72 DEG 48 MIN E (W)		LONGITUDE OF VORTEX FIX *				
C	500MB 5450 M		MINIMUM HEIGHT AT STANDARD LEVEL				
D	40 KT		ESTIMATE OF MAXIMUM SURFACE WIND OBSERVED				
E	210 DEG 8 NM		BEARING AND RANGE FROM CENTER OF MAXIMUM SURFACE WIND				
F	230 DEG 40 KT		MAXIMUM FLIGHT LEVEL WIND NEAR CENTER				
G	180 DEG 10 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	-3 c/ 5482 M		MAXIMUM FLIGHT LEVEL TEMP/PRESSURE ALTITUDE OUTSIDE EYE				
J	0 c/ 5501 M		MAXIMUM FLIGHT LEVEL TEMP/PRESSURE ALTITUDE INSIDE EYE				
K	-8 c/ N/A C		DEWPOINT TEMP/SEA SURFACE TEMP INSIDE EYE				
L	OPEN S		EYE CHARACTER: Closed wall, poorly defined, open SW, etc.				
M	C 20		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	21 DEG 34 MIN (N) S		CONFIRMATION OF FIX: Coordinates and Time *				
	72 DEG 48 MIN E (W)						
	20:25 Z						
O	123/5		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	7 / 13 NM		NAVIGATION FIX ACCURACY/METEOROLOGICAL ACCURACY				
Q			REMARKS SSW SURFACE CENTER 10 NM SSW OF FLIGHT LEVEL CENTER SURFACE PRESSURE 990 MB EXTRAPOLATED FROM 18,000 FEET				

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.

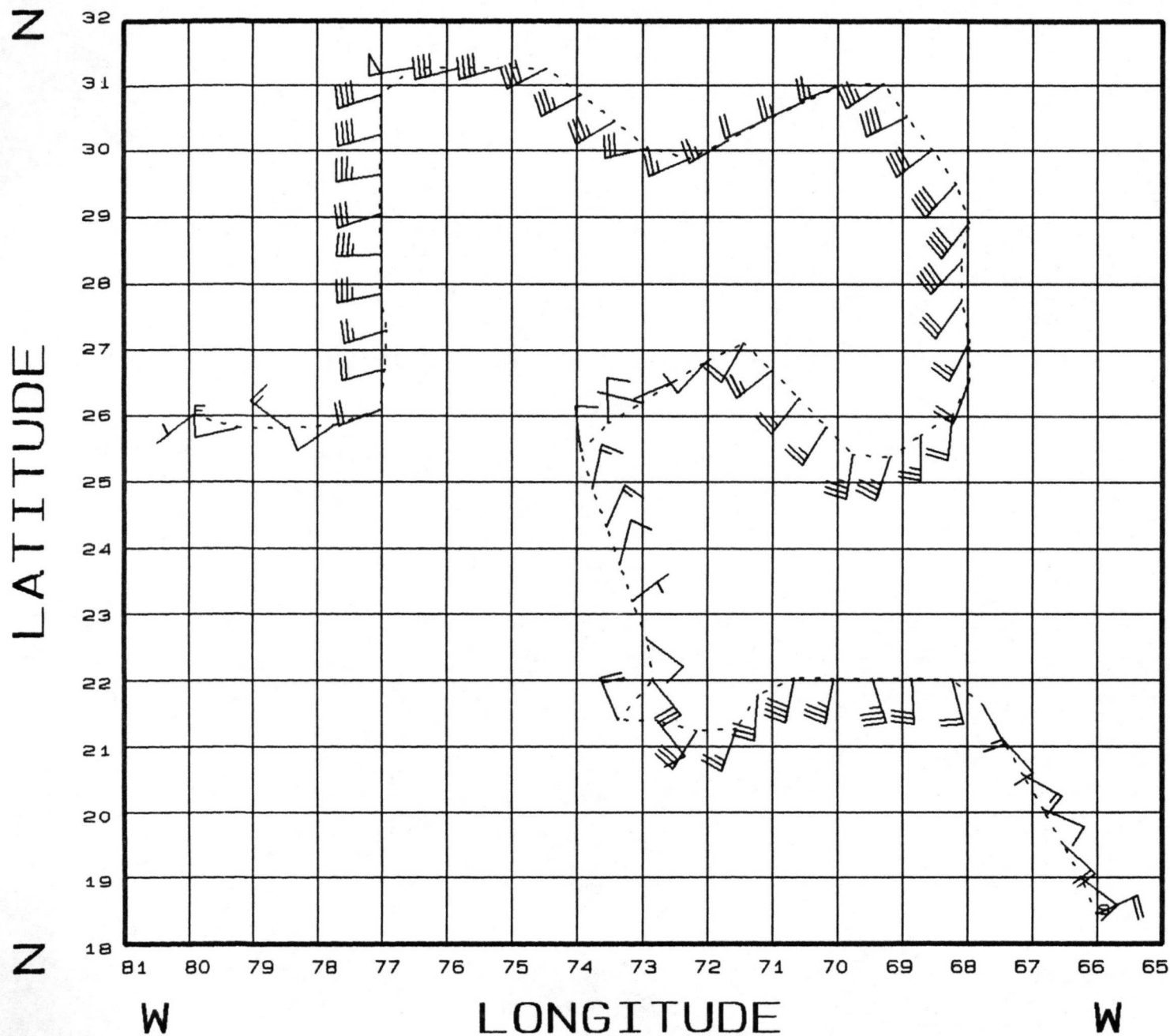
* CHECK SUM REQUIRED IN WESTPAC.

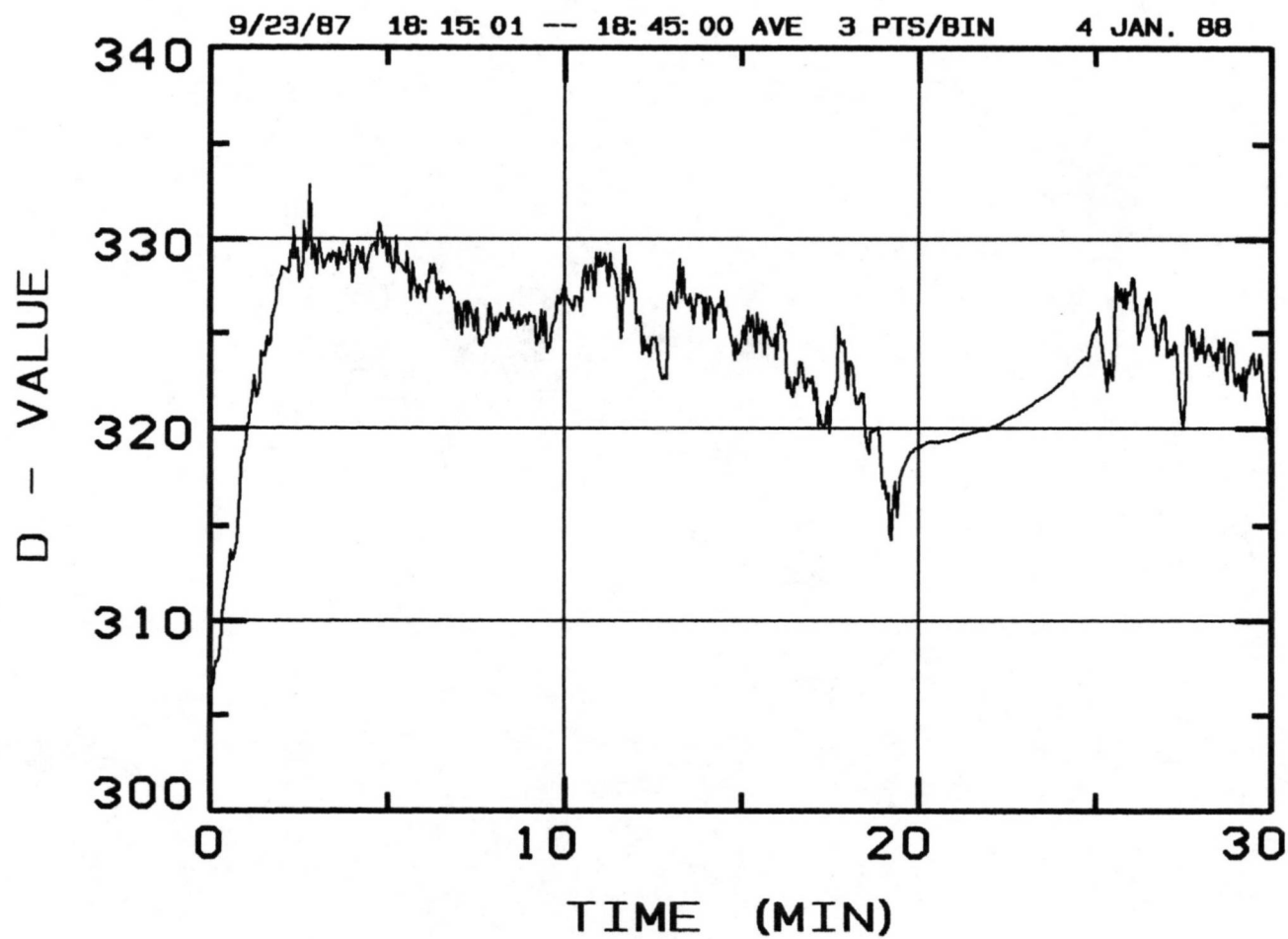
EMILY #2

INE #2

TIME	LAT	LONG	TK	WD	WS	PA	BA	TA	TD	RD	RS	W			
17:56	18 36	66	331	150	18	1075	1179	20	16	27	20				
18:07	19 19	66 26	333	140	20	3719	3963	6	-29	26	6	-14			
18:25:20	20 37.9		67	11.0		SONDE 1									
18:40			332	153	22	3183	5502	-3	-37	26	-4	-4			
18:44:30	22 01	68 04	SONDE 2												
19:02:40	22	69 32	SONDE 3												
19:21:30	22	71	SONDE 4												
19:39:40	21 07	71 32	SONDE 5												
19:54:10	21 22	72 38	SONDE 6		EYE										
20:05	21 16	73 21	SONDE 7												
20:23:45			center												
20:24	21 35	72 46	SONDE 8												
20:43	23 03	73 07	SONDE 9												
20:58	24 11		SONDE 10												
21:15	25 21	73 57	344	0	11	6116	6453	-9	-22	25	-11	-3			
21:17:25	25 35	73 58	SONDE 11												
21:35	26 22	72 35	SONDE 12												
21:50	26 57	71 25	SONDE 13												
22:08:25	25 52	70 21	SONDE 14		2126	6113	6462	-9	-10	4	-10	-3			
22:24:30	25 02	69 27	SONDE 15												
22:43:52	26 05	67 59	SONDE 16		2020	6113	6475	-9	-31	23	-13	-2			
23:00	27 30	68 05	SONDE 17		2130	6112	6469	-9	-12	22	-11	-1			
23:18	29 01	68 00	SONDE 18		2340	6109	6450								
23:34:25	30 07	68 49	SONDE 19												
23:58	30 38	70 15	SONDE 20		2441	6713	7066	-14	-16	14	-15	-3			
00:07	30 16	71 02	SONDE 21												
00:27	29 32	72 34	SONDE 22												
00:41:04	30 16	73 31	SONDE 23												
00:55	31	74 30	SONDE 24												
01:25	30 57	77	SONDE 25												
01:42:30	29 24	77 01	SONDE 26												
02:02:45	27 50	77 01	SONDE 27		2739	6735	7101	-13	-14	-8	-15	0			
02:19:15	26 26	76 57	SONDE 28												
02:31:00	25 47	77 04	SONDE 29												
02:45	25 31	78 21	SONDE 30												

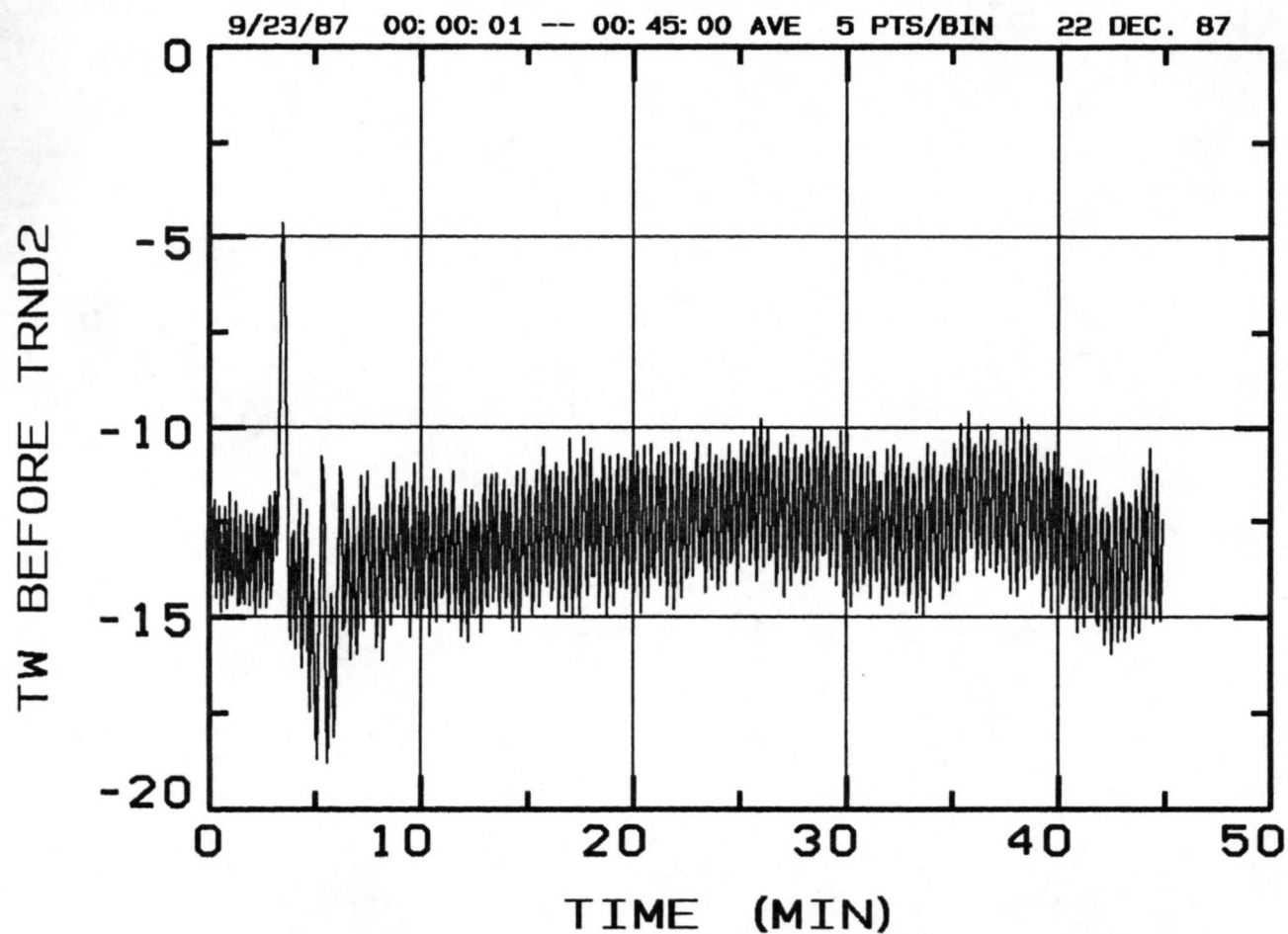
FLIGHT TRACK FOR 870923I START: 17: 44: 01 END: 03: 20: 00 DATE RUN: 1 APR. 83





Plot of D-Value after radar altitude fix

18:34 - 18:40



A filtering algorithm (named TRND2) was used to smooth the dewpoint data after 22:30 Z. The spike is due to balancing of the dewpoint.

TW AFTER TRND2

