HURRICANE FLOYD SURVEILLANCE

Flight 3 I990914

DATA TYPE	SENSOR or OPTION
INE	2
Accelerometer	2
Temperature Probe	1
Altitude (for vertical wind)	RA159
Static Pressure	Fuselage
Dynamic Pressure	Fuselage
Dewpoint Probe	2

Notes:

This was not one of AOC's better flights. There were many data/time gaps due to major hardware failures of the aircraft data system. These problems occurred during the following time frames:

212051Z - 213550Z
232851Z - 232900Z
232902Z - 232910Z
233551Z - 001010Z
002301Z - 002530Z
004431Z - 004440Z
004442Z - 004450Z
005131Z - 005140Z
005821Z - 005830Z

After 010330Z no flight level data was recorded. N43RF completed its mission and landed in TAMPA ~~Miami~~ at 0322Z.

One small spurious spike in the fuselage static pressure (PSF) data occurred during the following time frame:

1858Z - 1900Z

The spike was removed and patched over.

Small spurious spikes occurred in the radar altitude (RA159) data during the following time frames:

2022Z - 2029Z
2204Z - 2206Z

These spikes were removed and patched over.

The vertical wind had erroneous values resulting from the aforementioned data gaps and from overflying land (Great Abaco Island) while in the center of the storm.

The dewpoint temperature data from DW2 behaved erratically during portions of the flight. Its values were replaced with DW1 values during the following time frames:

210430Z - 215300Z
222930Z - 225230Z

During the penetration of the eyewall, dewpoint temperature values were greater than ambient temperature values.

Aircraft INE positions were renavigated with respect to GPS.

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

	Takeoff	Landing
Aircraft static pressure	1003.7 mb	NA
Corrected tower pressure	1004.2 mb	1002.9 mb

Flight Director: A. Barry Damiano, (813) 828-3310 ext. 3073

FLT ID: I990914	FM: KMCF	TO: ~~[illegible]~~ ~~[illegible]~~ KTPA
FLT NO: 99-054	BLK IN: 0331Z	ATA: 0322Z
ETD: ~~[illegible]~~ 1730Z	BLK OUT: 1803Z	ATD: 1815Z
ETE:	BLK TIME: 9:28	FLT TIME: 9:07
11 SPONSOR ORG: NHC	PROGRAM: HURR. SURV	PURPOSE: H. FLOYD

OAO PERSONNEL

AC	PHILIPPSBORN	SYS ENG	
CP	KENUL ✓	DATA SYS	McNAMARA
NAV	RATHBUN ✓	RADAR	DELGADO
21 FE	WADE/MOORE	BT/ODW	CARPENTER
RADIO	SANS SOUCI	CLD PHYS	
FD	DAMIANO ✓	DOPPLER	

PARTICIPATING SCIENTIST/VISITORS/OAO

LAST, FIRST NAME	ACTIVITY ON A/C	AFFILIATION
31 MARKS ✓	PI	HRD
LANDSEA ✓	ASST. PI	↓
BLACK, M. ✓	HAPS	↓
REASOR, P. ✓	OBS	↓
WALSH ✓	SAR	NASA
PALCA, J. ✓	MEDIA	NPR
BAER, J. ✓	MEDIA	NPR

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

T/O delayed due to APU/HUFFER problems

2230Z tiger to call 1964

2030 Radar up

2110 better TA,LF Presentation

1942Z

2029Z
26°34'
77°15'

2125
7708
932mb

DATA SYS lock up 212819Z

2343 shut CPU A down
went to CPU B.
0002Z
0103Z

2355 dept

59

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

FLT ID: I990914 TIME OFF: 1815Z TIME ON: 0322Z

	A/C T/O	WX STN	A/C LAND	WX STN
PRESSURE	~~1003~~ 1003.7	29.68	1002.2	29.63

	NO	DATA DISPOSITION/DATE/QUALITY
1/SEC FLT LVL TAPES	5	
FAST FLT LVL TAPES		
RADAR TAPES	3	
DOPPLER TAPES		
ODW CASSETTES		
HARD COPIES		
AXBT	8	5 good, 3 bad
AXCP		
~~ODW~~ GPS	26	19 good; 7 bad (no wind); 19 XMIT

PHOTOGRAPHY

	FWD	LS	RS	VERT	
ON					
OFF					
RATE					

REMARKS ~~FBIA~~ 0156Z
MTH
2.6 29.63
22

NOAA FORM 59-4
(2-72)

I990914

(19)

TIME	LAT	LON	TRK	HD	WI	WS	TA	TD	PA	GA	SP	PS			PO
183200	2738	8124	101	97	27	28	4.9	0.	4063	4189	996.5	611.3	BTN	CLD	76.3
185200	2708	7953	119	111	16	42	5.8	.4	4074	4177	994.0	610.4	CLD	ABV	78.0
192200	2708	7744	89	82	62	87	4.5	5.2	4378	4328	971.6	587.7	RW		71.0
193450	26	77											(23)	DROP	
193581	2657	7710	180	170	98	75	7.9	8.2	4337	4102	943.9		(12)	DROP	
194234	2625	7707										NO W	EYE	DROPS	
194919	25											NOW		DROP	
194929	2555	7707	182	203	265	100	7.1	6.5	4333	4139	956.1	591.7	(16)	DROP	72.0
200600	2602	7617	46	56	200	97	4.5	3.2	4365	4307	972.0	587.6		RW	71.0
202023	2634	7634										NOW	EYEWALL BAD NO W	DROP	
202100	2634	7636												DROP	
202912	2634	7717										NOW	EYE	DROP	
203449	2634	7743										NO W	EYEWALL	DROP	
203459	2634	7744										(10)	NO W	DROP	EYEWALL
205400	2532	7638	202	215	308	55	-.3	-4.4	5432	5569	979.7	508.0	BTN	CLD	63.5
210447	2442	7559	200	212	314	61	-1.2	-16.0	5522	5713	986.3	503.5	(45)	DROP	77.5
212005	2330	7928	111	111	296	31	-2.8	-18.8	5519	5755	994.8	503.9	(49)	DROP	75.4
214348	2326	7710	94	96	262	45	-3.8	-21.7	5698	5944	994.0	491.6	(45)	DROP	78.0
220100	2319	7528	96	100	253	41	-4.7	-14.1	5696	5949	995.9	491.8	BTN	CLD	72.7
220726	2316	7450	96	100	248	40	-4.5	-14.6	5696	5965	996.4	491.7	(38)	DROP	76.0
223239	2305	7231	36	39	190	15	-5.7	-20.0	5831	6131	1000.9	483.0	(15)	DROP	69.9
225044	2419	7130	37	41	170	15	-7.8	-11.4	5970	6285	1003.9	473.7	(14)	DROP	75.5
225900	2453	7101	43	47	151	17	-7.1	-9.2	5968	6283	1002.0	473.9			69.0
230821	2530	7030	334	333	165	15	-7.4	-17.0	5968	6294	1004.8	473.9	JW (37)	CLD DROP	80.9
233229	2532	7245	268	263	192	29	-7.1	-11.7	6120	6435	998.1	464.1	(34)	DROP	79.5
235400	2531	7434	270	262	200	47	-7.1	-7.1	6117	6391	992.8	464.4			70.2
235944	2530	7458			DATA	SYSTEM	DOWN						(4)	DROP	
002453	2755	7428	81	94	173	58	-6.2	-7.1	6120	6388	990.3	464.1	(7)	DROP	72.1
004700	2803	7231	91	99	168	36	-8.3	-9.4	6122	6447	1001.9	463.9			73.5
005847	2806	7130	356	358	165	29	-7.6	-12.5	6121	6461	1002.6	464.0	(32)	DROP	77.3
012639	3030	7235											(35)	DROP	
014906	3027	7459											(30)	BT DROP	
014909	3028	7458	246	236	143	55								BT	
015815	3010	7546	246	236	152	58								BT	
020816	2950	7639	244	233	136	67	-5.5	-7.2	6122	6372	988.2	463.9		BT	
021731	29	77											(26)	BT DROP	
021734	2929	7730	241	233	108	59	-5.6	-6.5	6121	6345		464.0			
022814	2855	7827											(20)	BT SONDE	BUOY 41010
022817	2855	7827	233	230	67	72								BT	
023421	2838	7900												BT	
023953	2836	7933												BT	
024601	28	80												BT	
024605	2833	8007	254	272	21	52	14.0	8.8	2264	2555	993.3	739.4	(35)	SONDE	76.3

NOAA FORM 56-49
(2-95)

MISSION PREFLIGHT LOG

DESTINATION	MISSION	NAVIGATOR	AIRCRAFT COMMANDER	FLIGHT DIRECTOR	SCHEDULED / ACTUAL TAKEOFF Z	DATE OF TAKEOFF
KMCF 7 KTPA	6 FLOYD	RATHBUN	PHILIPPSBORN	DAMIANO	1730Z / 1814Z	14 SEP 99

	WP	LAT / LON	RTE	MH	VAR +E==>	TH	DR +R==>	TRK	GS 27Φ	WD	WS	ALT	TAS	LEG / TOT DIST 35	LEG / TOT TIME 5:19	PROP ETA 4:33	ETA	ATA	REMARKS
2	LBV	26 49.7 81 23.5						ΦΦ89	27Φ					213 298	+47 1+06	192Φ	1935		
3		26 5Φ 79 25						178	265					10Φ 398	+23 1+29	1943	1956		
4		25 1Φ 77 25						ΦΦ45	32Φ					74 472	+14 1+43	1957	2ΦΦ1	2ΦΦ1	
5		26 ΦΦ 78 25						268	265					108 58Φ	+24 2+Φ7	2Φ21	2Φ39	2Φ39	
6		26 ΦΦ 78 25						2ΦΦ	31Φ					161 741	+31 2+38	2ΦΦ2	2119	2119	
7		23 3Φ 79 3Φ						ΦΦ92	3ΦΦ					387 1128	1+17 3+55	2209	2232	2232	
8		23 ΦΦ 72 3Φ	-3 Φ					ΦΦ32	3ΦΦ					186 1314	+37 4+32	2246	23Φ8	23Φ8	
9		25 3Φ 7Φ 3Φ	-3 Φ					266	27Φ					244 1558	+54 5+26	2346	2356	2357	
1		25 3Φ 75 ΦΦ	-3 Φ					ΦΦ07	3ΦΦ					153 1711	+31 5+57	ΦΦ11	ΦΦ25		
2		28 ΦΦ 74 3Φ	-3 Φ					ΦΦ86	295					159 187Φ	+33 6+3Φ	ΦΦ44	ΦΦ58		
3		28 ΦΦ 71 3Φ	-5 Φ					335	3ΦΦ					159 2029	+32 7+Φ2	Φ116	Φ128		
4		3Φ 3Φ 72 3Φ	-5 Φ					266	3ΦΦ					129 2158	+26 7+28	Φ142	Φ15Φ	Φ149	
5		3Φ 3Φ 75 ΦΦ	-5 Φ					242	3ΦΦ					143 2301	+29 7+57	Φ211	Φ218		
6		29 3Φ 77 3Φ	-5 Φ					253	3ΦΦ					209 2510	+42 8+39	Φ253	Φ305		
7	ORL	28 32.6 81 2Φ.1	-5 Φ					235	265					74 2584	+17 8+56	Φ31Φ			
8	PIE	27 54.5 82 41.1	-5 Φ																
9	TPA	27 58.5 82 32.Φ	-5 Φ																

INS PERFORMANCE

	INS 1	INS 2
BEGIN ALIGN TIME	1636Z →	
ALIGN STATUS (0-5)	Φ	1
END NAV TIME	Φ33ΦZ →	
START NAV TIME	1750Z →	
DELTA T	9+4Φ →	

TERMINAL ERRORS

	INS 1	INS 2
DELTA LAT	+4.8	-7.4
DELTA LON	-3.Φ	-1.1
RGS	5	Φ
RADIAL ERROR	5	7

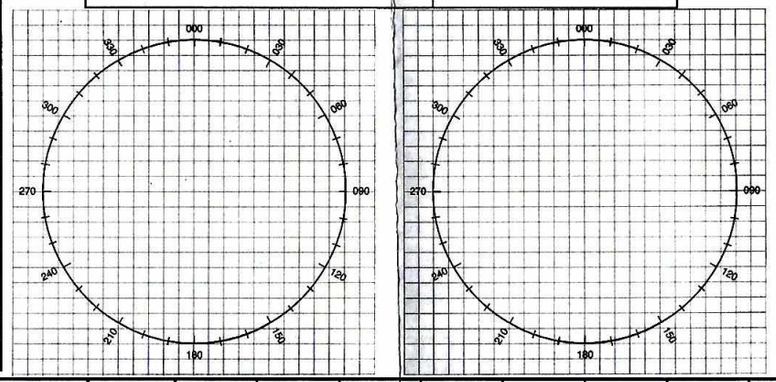
REMARKS

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

237 TEAL 56 2027 932MB 26 34N 77 15W 1ST AND 2ND OBS BUT NOT USING 220058 FLOYD USING RAIN TEST

CLEARANCES			
FREQ	ALT	HDG	OTHER
			110 / 160
			2613N 7705W
			1454 932 MB
6012			325/10 19 KTS
290/160			
			E 8876
340/16			F 10015
			G 13267
210/15			132.95 123.67 119.82

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 GPS	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
1758																					ENG START
1803																					TAXI
1814																					TAKEOFF
1837	FM1	2734.5 8054.7	2734.3 8059.7	+.2 0	2734.4 8059.7	+.1 0			099	7R	105	253	358	25	13K	248					
1929		2709.1 7720.9	2708.2 7720.2	+.9 +.7	2708.9 7721.5	+.2 -.6			089	2R	091	179	089	82	14K	259					
1942		2624.7 7706.7	2624.0 7705.9	+.7 +.8	2624.7 7707.2	0 -.5															932.5 MB
2015		2633.8 7607.1	2632.4 7606.6	+1.4 +.5	2633.7 7608.1	+.1 -1.0			250	21R	271	253	167	95	14K	252					
2029		2634.0 7715.4	2632.3 7715.3	+1.7 +.1	2633.9 7716.8	+.1 -1.4															
2122		2330.5 7916.1	2329.3 7915.9	+1.2 +.2	2331.8 7916.8	-1.3 -.7			085	2R	087	315	276	38	FL180	276					
2205		2316.9 7502.8	2314.1 7502.7	+2.8 +.1	2318.2 7504.4	-1.3 -1.6			100	6L	094	327	240	49	FL190	283					
2233		2305.5 7230.7	2303.0 7229.6	+2.5 +.9	2308.3 7231.6	-2.8 -.9			039	3L	036	296	187	25	FL190	272					
2319		2531.5 7128.8	2527.5 7129.5	+4.0 -.7	2534.2 7131.2	-2.7 -2.4			269	3R	272	309	152	19	FL200	301					
0016		2706.0 7441.2	2702.7 7442.0	+3.3 -.8	2710.8 7442.8	-4.8 -1.6			015	4L	011	348	174	72	FL200	280					
0059		2806.9 7130.0	2802.1 7129.4	+4.8 +.6	2811.9 7131.8	-5.0 -1.8			335	0	335	331	151	37	FL200	293					24K
0142		3029.5 7412.0	3025.2 7413.1	+4.3 -1.1	3035.8 7413.3	-6.3 -1.3			264	7R	271	330	131	57	FL200	284					
0248		2829.4 8018.8	2823.9 8019.4	+5.5 -.6	2836.9 8019.1	-7.5 -.3			266	12L	254	291	029	71	81K	253					
0322		2759.1 8231.7	2754.3 8234.7	+4.8 -3.0	2806.5 8232.8	-7.4 -1.1															LAND
0331																					BLOCK IN

5+46
3+22
9+08

==========

HURRICANE SYNOPTIC SURVEILLANCE MISSION PLAN: FLOYD/SYNOPTIC

Prepared by the Hurricane Research Division at 11:45:22 AM on 09/13/99.
File: 990914ip.ftk

Aircraft: N43RF Altitude: FL180-250 Proposed takeoff: 14/1730Z

==========

DROP LOCATIONS

#	LAT (d m)	LON (d m)	RAD/AZM (nm/dg)	TIME (h:mm)	
1S	27 14	78 06	50/000	0:59	
2S	25 34	78 06	50/180	1:20	
3S	26 24	77 10	50/090	1:35	
4S	26 24	79 02	50/270	1:55	
5	24 55	79 18		2:14	
6	23 30	79 30		2:32	
7	23 20	77 10		2:59	
8	23 10	74 50		3:25	
9	23 00	72 30		3:52	
10	24 15	71 30		4:11	
11	25 30	70 30		4:31	
12	25 30	72 45		4:56	
13	25 30	75 00		5:21	
14	28 00	74 30		5:53	
15	28 00	71 30		6:26	
16	30 30	72 30		6:59	
17	30 30	75 00		7:25	combo
18	29 30	77 30		7:55	combo

24 25

combo — { 2 AXBT evenly spaced

first 10 — 7 had no winds

145

2 AXBTs near buoys

1-2 near axis of Gulf stream

8 total AXBT

OCT 98

3 145 12 25

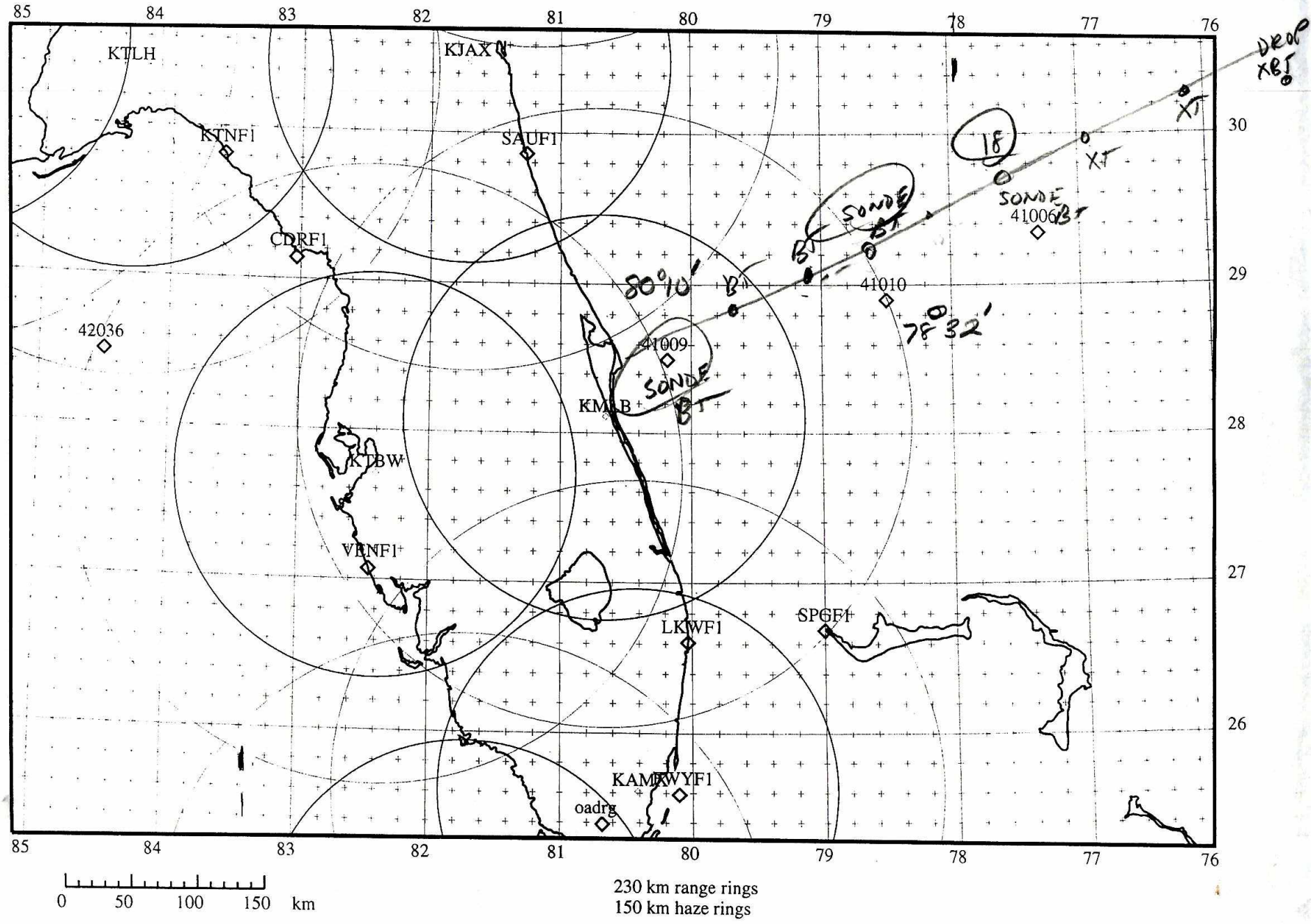
48

50

145 48 98

98 49

48


mlb_map.ps Center Lat: 28.00 Lon: -80.60
85
84
83
82
81
80
79
78
77
76
30
29
28
27
26
KTLH
KJAX
KTNF1
SAUF1
CDRF1
42036
41009
41010
41006
KMLB
KTBW
VENF1
LKWF1
SPGF1
KAMKWYF1
oadrg
SONDE
XBT
DROP
18
80°10'
78°32'
0 50 100 150 km
230 km range rings
150 km haze rings

Marks
Landsea
Reasor
M. Black
Walsh

50 nm N 𝟼 50 N

𝟼 1830Z 26.0 77.4

14 kft for 𝟼 penetrations
as high as possible afterward