

19980917H1-LPS

Mission Summary
VSDR Test Flight
980917H1 Aircraft: 42RF

Scientific Crew:

Chief Scientist	Peter Dodge
Doppler Scientist	Kelly Findeisen
Cloud Physics	Eric Uhlhorn
Dropsonde Scientist	Stan Goldenberg
Workstation:	Peter Dodge
VSDR	Ivan Popstefanija Eric Torok

Aircraft Crew:

Cockpit:	CDR Ron Phillipsborn CDR Brian Taggart CAPT Phil Kenul Roc Torrey, Greg Bast
Navigator:	LCDR Dave Rathbun
Flight Director:	Stan Czyzyk
Engineers:	Jim Barr, Jorge Delgado, Dale Carpenter,
Radio:	Damon SansSouci

Mission Briefing:

Originally we had planned a short air-sea interaction and/or landfall flight in the tropical disturbance in the Gulf of Mexico that was progged to develop into a tropical storm. However early Thursday morning the disturbance still had not developed into a depression and the only convection was in rainbands near Tampa. Because the Quadrant Engineering guys were already in Tampa, we decided to ahead and do a brief flight, to test the Vertically Scanning Doppler Radar (VSDR). Areas north of $28^{\circ} 45'$ were closed, excluding the rainbands off the Florida Panhandle, so we planned to fly out to buoy 42036 and then head south to work the rainband, including 5,6 GPS sonde drops to verify the VSDR profiles. NASA was also going to be in the area and we agreed to supply the DC-8 with a good stratiform rain position.

Mission Synopsis:

Takeoff was delayed while Sean MacMillan and Jorge Delgado worked on the cable going from the AVAPS system to the workstation. Our initial take-off at 1743 was quickly aborted when the cockpit hatch door popped open just as we began to accelerate. We taxied back and took from MacDill at 1759. Stan informed us that the flight would have to be shortened because the planes were deploying to Barbados tomorrow at 9 am. We agreed, because the only goal of this flight was to verify VSDR operation in rain. After dropping the first sonde near buoy 42036 at 1840 UTC, we spiraled down from 15,000' to 3,000', right next to a convective cell, and passed over the buoy so Ivan could calibrate the scatterometer. At 1852 we climbed back to 15,000' and headed south the band, located at $26^{\circ} 45'$, 84° . Dave Rathbun passed this location to the DC-8; unfortunately this part of the rainband was perhaps not as stratiform as the NASA scientists would have liked. From 1916 to 1950 we flew legs back and forth through the rain, bouncing along, and Stan called GPS drops in the rain at 1918, 1930, and 1948. We left the rainy area at 1950 and landed back at MacDill at 2017 UTC.

Evaluation:

The main goal of the mission was accomplished: Ivan collected ~1 h of VSDR data and we collected GPS sonde data to verify the profiles.

Acknowledgements:

Pete Black provided up to the minute advice on rainband selection. Kelly and Eric kept me awake on the drive to Tampa, and Eric did all the driving in Tampa. Kelly and Eric also took notes and minded the radar and cloud physics stations. Stan Goldenberg stuck around for a measly 4 GPS drops. The AOC crew was, as usual, flexible and helpful.

Problems:

The radar system was down briefly at the beginning of the flight, 1807-1817 UTC. The workstation continued to have problems communicating with the AVAPS and ASDL computers. Only the second of 4 sondes was received in full, and none of the sondes were transmitted. Stan Goldenberg obtained floppy disks

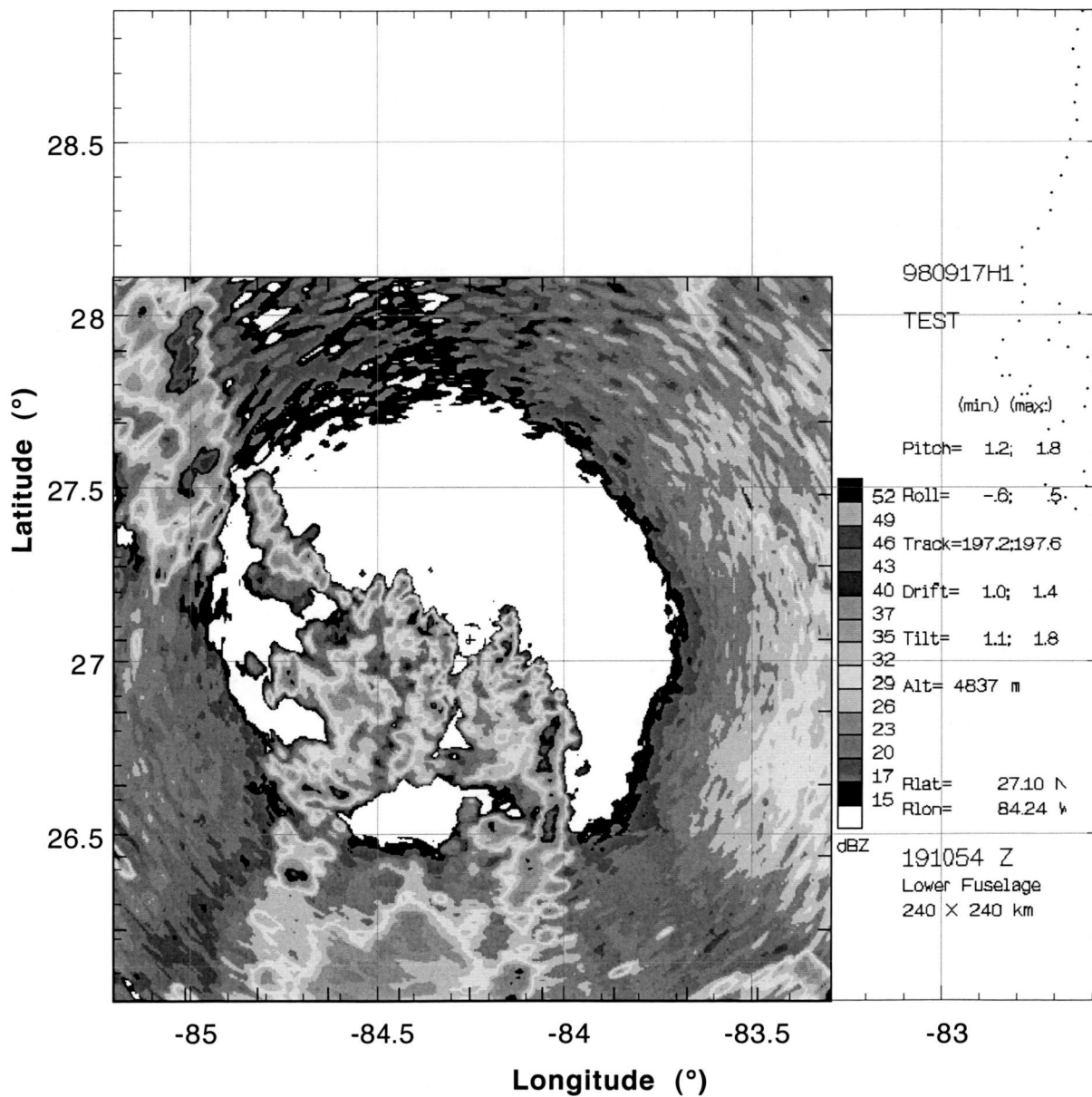
with the raw AVAPS data.

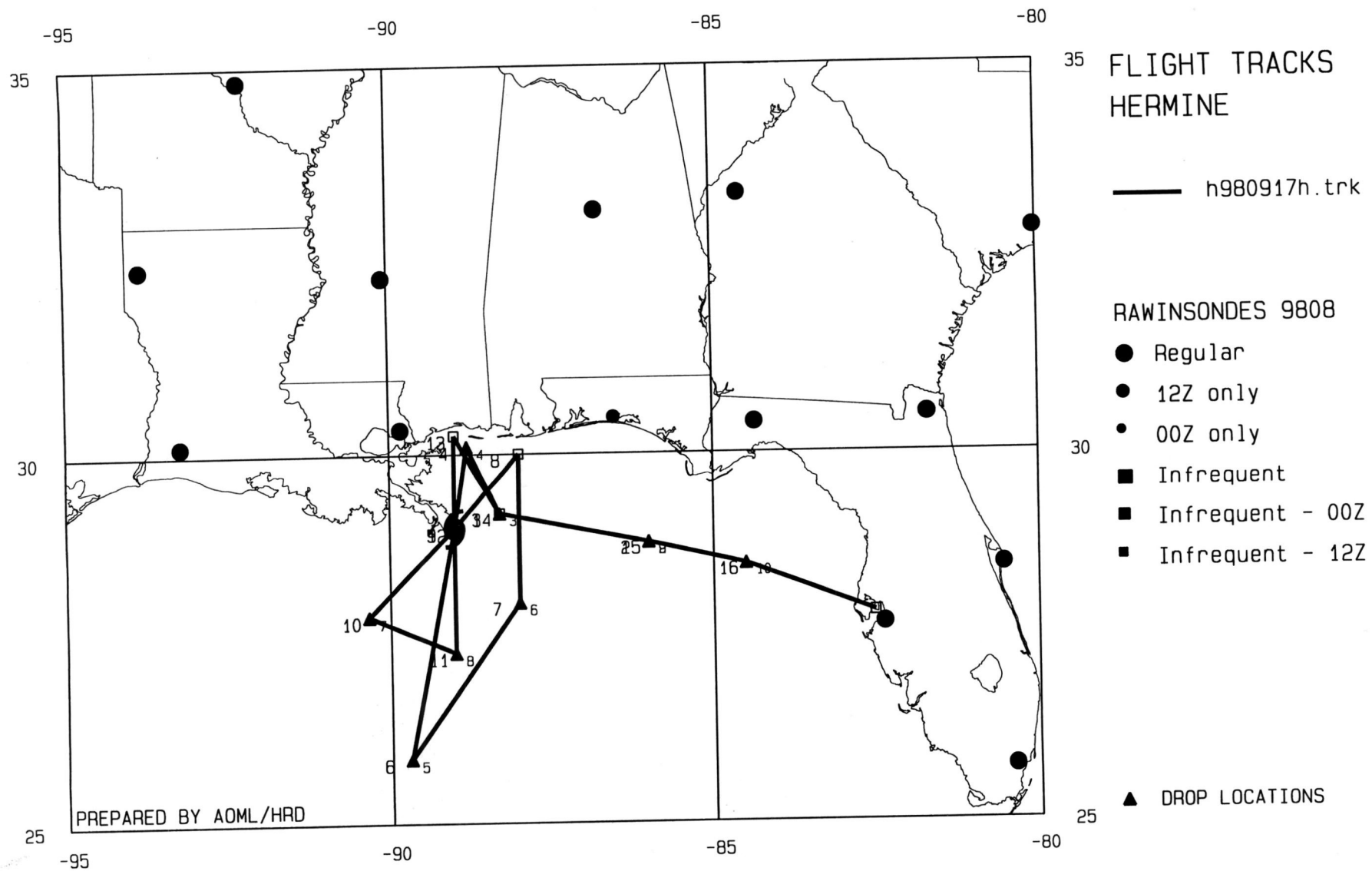
GPS Sondes:

1	981820070	1832	at Buoy 42036
2	981820050	1918	26° 56' 84° 06'
3	981740057	1930	27° 12' 84° 04'
4	981820052	1948	27° 09' 84° 17'

Figure:

1. Representative Lower Fuselage Radar sweep: /hrd/dat/vsdr98/vsdr_lf_1910.tif.





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HURRICANE SYNOPTIC SURVEILLANCE MISSION PLAN: HERMINE

Prepared by the Hurricane Research Division at 02:23:21 PM on 09/16/98.
 File: h980917h.trk

Aircraft: N42RF Altitude: FL 50-150 Proposed takeoff: 17/1800Z

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TRACK DISTANCE TABLE (nm)

#	LAT	LON	LEG	TOTAL	TIME
0	MACDILL		0.	0.	0:00
1	28 30	84 30	112.	112.	0:33
2	28 48	86 00	81.	193.	0:50
3	29 12	88 18	123.	316.	1:15
4	30 06	88 48	60.	376.	1:28
5S	29 00	89 00	67.	443.	1:42
6	25 54	89 42	190.	633.	2:21
7	28 00	88 00	156.	789.	2:53
8	30 00	88 00	120.	909.	3:18
9S	29 00	89 00	80.	989.	3:35
10S	27 49	90 20	100.	1089.	3:55
11S	27 20	89 00	77.	1166.	4:11
12S	29 00	89 00	100.	1266.	4:32
13S	30 15	89 00	75.	1341.	4:47
14	29 12	88 18	73.	1414.	5:02
15	28 48	86 00	123.	1537.	5:28
16	28 30	84 30	81.	1618.	5:45
17	MACDILL		112.	1730.	6:18

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Prepared by the Hurricane Research Division at 02:23:21 PM on 09/16/98.
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DROP LOCATIONS

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#	LAT	LON	TIME
1	28 30	84 30	0:33
2	28 48	86 00	0:50
3	29 12	88 18	1:15
4	30 06	88 48	1:28
5	25 54	89 42	2:21
6	28 00	88 00	2:53
7S	27 49	90 20	3:55
8S	27 20	89 00	4:11
9	28 48	86 00	5:28
10	28 30	84 30	5:45

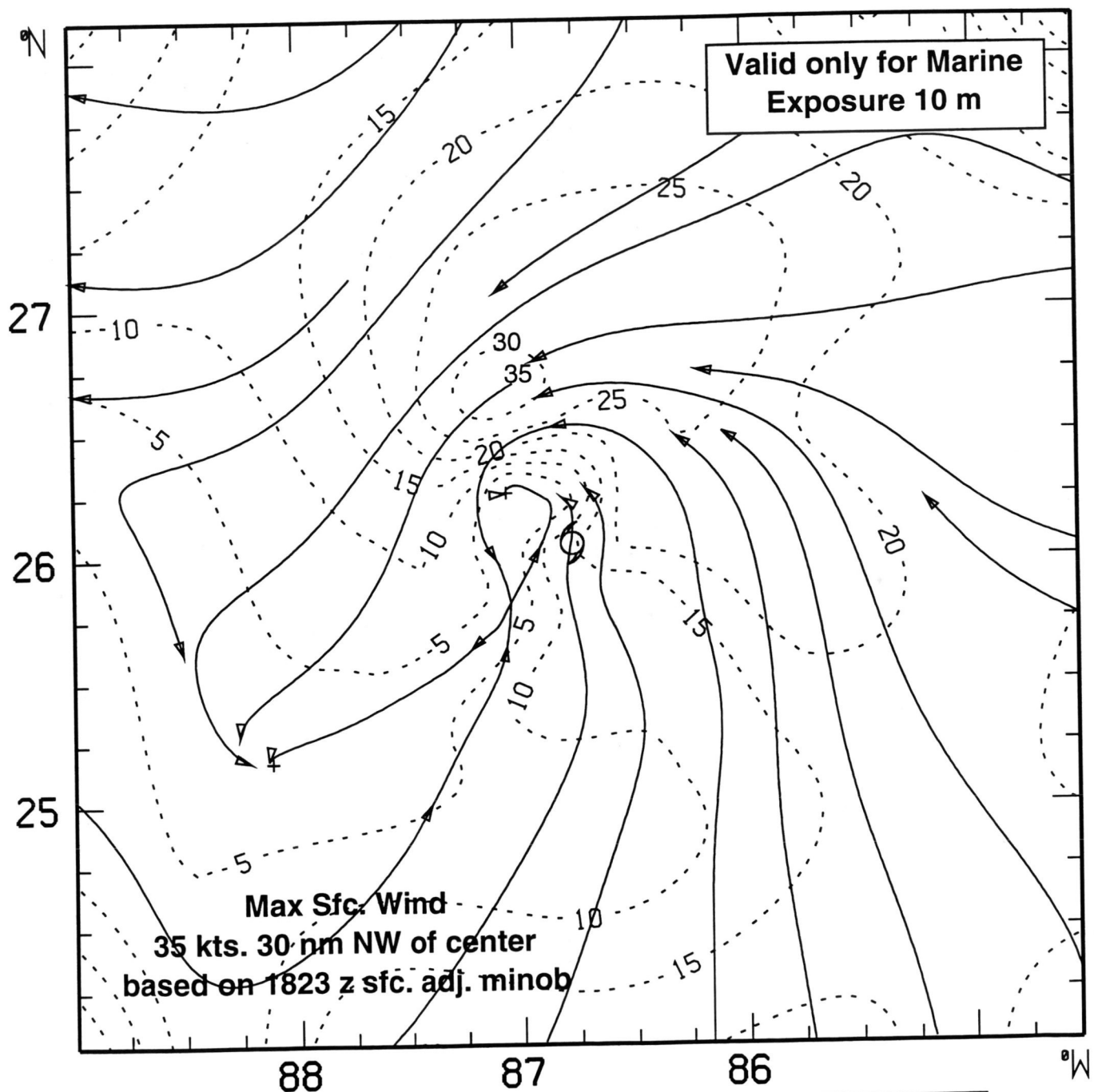
ATTENTION: HURRICANE SPECIALISTS

Invest 07 1930 UTC 16 Sept. 1998

Max. 1-min sustained surface winds (kt) for marine exposure

Analysis based on AFRES Recon data from 450 m adjusted to the sfc. from 1114 -1842z;
buoys and ships from 1114 -1709z;

1930 z position extrapolated from 1600 z est. circulation assuming 345 degrees @ 11 kts.



Experimental research product of :

NOAA / AOML / Hurricane Research Division

On-Board Lead Project Scientist Check List

Date 17 Sept 1998 Aircraft 42 Flight ID 980917I 1

A. Participants:

HRD		AOC	
Function	Participant	Function	Participant
Lead Project Scientist	<u>P. Dodge</u>	Flight Director	<u>S. Czyszek</u>
Cloud Physics	<u>E. Uhlhorn</u>	Pilots	<u>B. Taggart</u> <u>R. Phillips born</u>
Radar	<u>K. Findiesen</u>	Navigator	<u>D. Rathbun</u>
Workstation	<u>S. Goldenberg</u>	Systems Engineer	<u>J. Barr</u>
Photographer/Observer		Data Technician	
^{GPS} Omega sonde	<u>S. Goldenberg</u>	Electronics Technician	
AXBT/AXCP/Guest		Other	<u>Dale Carpenter</u>

Take-Off: 1731 UTC Location: TAMPA

Landing: 201734 Location: _____ Number of Eye Penetrations: _____

B. Past and Forecast Storm Locations:

Date/Time	Latitude	Longitude	MSLP	Maximum Wind

C. Mission Briefing:

E.2 Lead Project Scientist (On-Board)

E.2.1 Preflight

- _____ 1. Participate in general mission briefing.
- _____ 2. Determine specific mission and flight requirements for assigned aircraft.
- _____ 3. Determine from CARCAH or field program director whether aircraft has operational fix responsibility and discuss with AOC flight director/meteorologist and CARCAH unless briefed otherwise by field program director.
- _____ 4. Contact HRD members of crew to:
 - a. Assure availability for mission.
 - b. Arrange ground transportation schedule when deployed.
 - c. Determine equipment status.
- _____ 5. Meet with AOC flight crew at least 90 minutes before takeoff, provide copies of flight requirements, and provide a formal briefing for the flight director, navigator, and pilots.
- _____ 6. Report status of aircraft, systems, necessary on-board supplies and crews to appropriate HRD operations center (MGOC in Miami or FGOC at remote recovery location).

E.2.2 In-Flight

- _____ 1. Confirm from AOC flight director that satellite data link is operative (information).
- _____ 2. Confirm camera mode of operation.
- _____ 3. Confirm data recording rate.
- _____ 4. Complete Form E-2.

E.2.3 Postflight

- _____ 1. Debrief scientific crew.
- _____ 2. Report landing time, aircraft, crew, and mission status along with supplies (tapes, etc.) remaining aboard the aircraft to the appropriate HRD operations center (MGOC or FGOC).
- _____ 3. Gather completed forms for mission and turn in at the appropriate operations center. [Note: all data removed from the aircraft by HRD personnel should be cleared with the AOC flight director.]
- _____ 4. Obtain a copy of the 10-s flight listing from the AOC flight director. Turn in with completed forms.
- _____ 5. Determine next mission status, if any, and brief crews as necessary.
- _____ 6. Notify the appropriate operations center (FGOC or MGOC) as to where you can be contacted and arrange for any further coordination required.
- _____ 7. Prepare written mission summary.

E. (I) **Proposed Flight Pattern** (sketch or designate by number)

E. (II) **Actual Flight Pattern**



D. Equipment Status (Up, Down, Not Available, Not Used)

Equipment	Pre-Flight	In-Flight	Post-Flight
Aircraft			
Radar/LF		✓	
Radar/TA (Doppler)		✓	
Cloud Physics		✓	
Data System		✓	
Omegasondes			
AXBT/AXCP			
Workstation		~	
Videography			

REMARKS: WKSIN-HAPS interface flaky - only rec'd one sonde completely. ALSO - could not send messages to ASDL.

Radar seemed to work OK,

Cutoff Pattern early so crew would have time to work on engines problem - and so would not cut into crew rest for tomorrow's deployment to Barbados

Lead Project Scientist Event Log

Loc Deep
Loc Strat
area con

Date 17 Sept 1998

Flight 980917H1

LPS P. Dodge

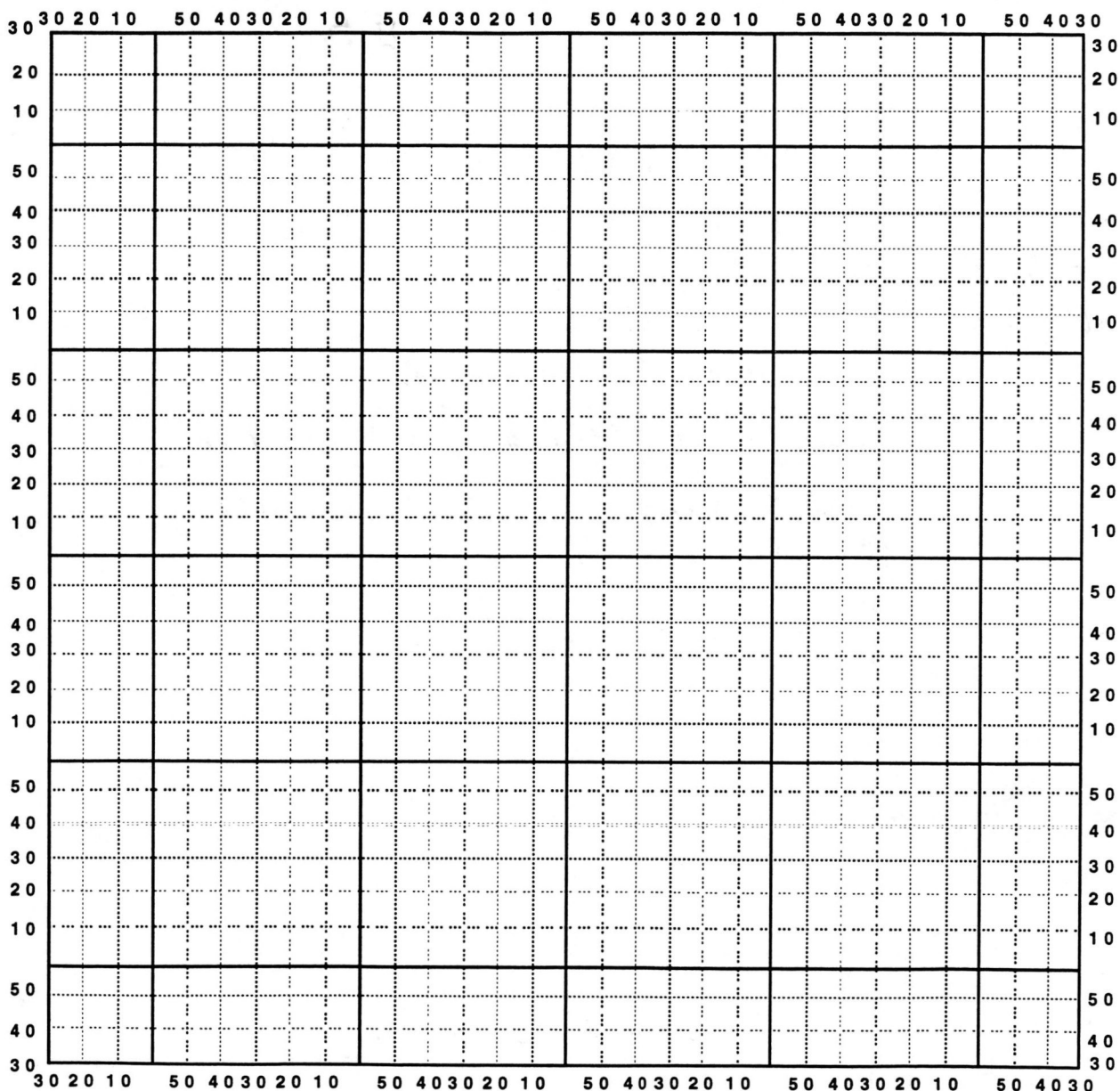
Time	Event	Position	Comments
1743	Take off ADP	door popped open	
		cockpit hatch	
1754	Stans told us 42 & 43 going to Barbados tomorrow so our flight today will only be 3 hours.		
1759 27	Take off for real		
1821	Sonde System OK!		
1843	Spiraling down over 42036 (after dropping sonde)		
	to cto 3000' run for VSDR	28°30' 84°32'	
	Stan talked to Zipser. gave him band and		
	stratiform positions - we will work same		
	region		
1851	Passing at		
1852	Climbing again		
1906	27°23' 84°08' hdg for proc		
1916	26°43' 84°16' turn		
191832	drops	26°50' 84°06'	
192008	26°56' 84°01' turn		
1921	heavy rain		
1920	back into band	27°12 84°04'	
193046	drop "	"	
1942	turned, hdg back to band		
1954	hdg N		

UNFOLD Before removing go's speed

Hurricane Recco Plotting Chart

True at 25° Latitude, in Degrees and Minutes

Date _____ Flight ID _____ LPS _____



Note : Label full degrees according to location of the flight area.

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Lead Project Scientist Event Log

Date 980917H

Flight 17 Sept 1998

LPS Dodge

[illegible]

Date _____

Flight _____

LPS _____

[illegible]

True at 25° Latitude, in Degrees and Minutes

86

85

84

83

82



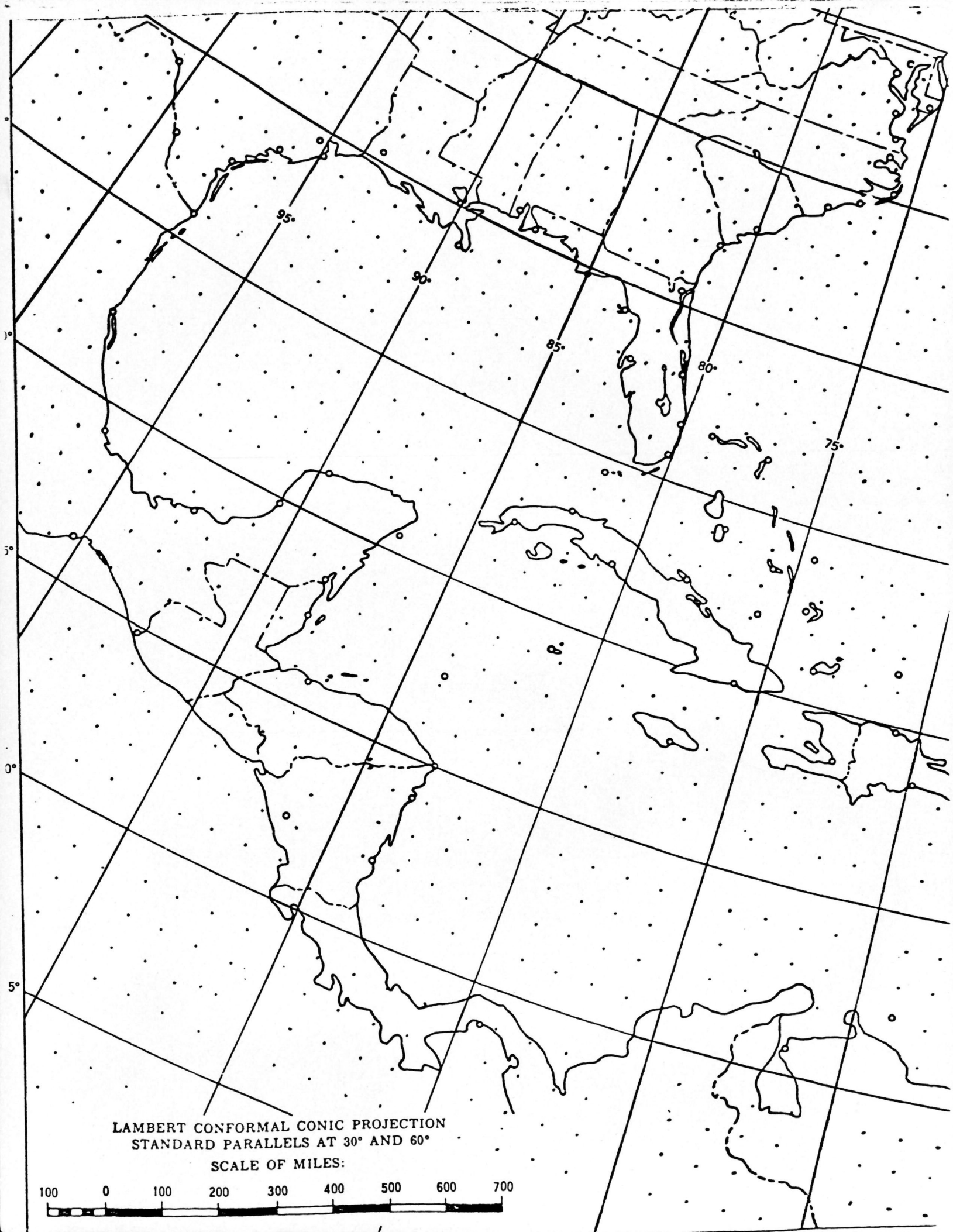
Lead Project Scientist Event Log

Date _____ Flight _____ LPS _____

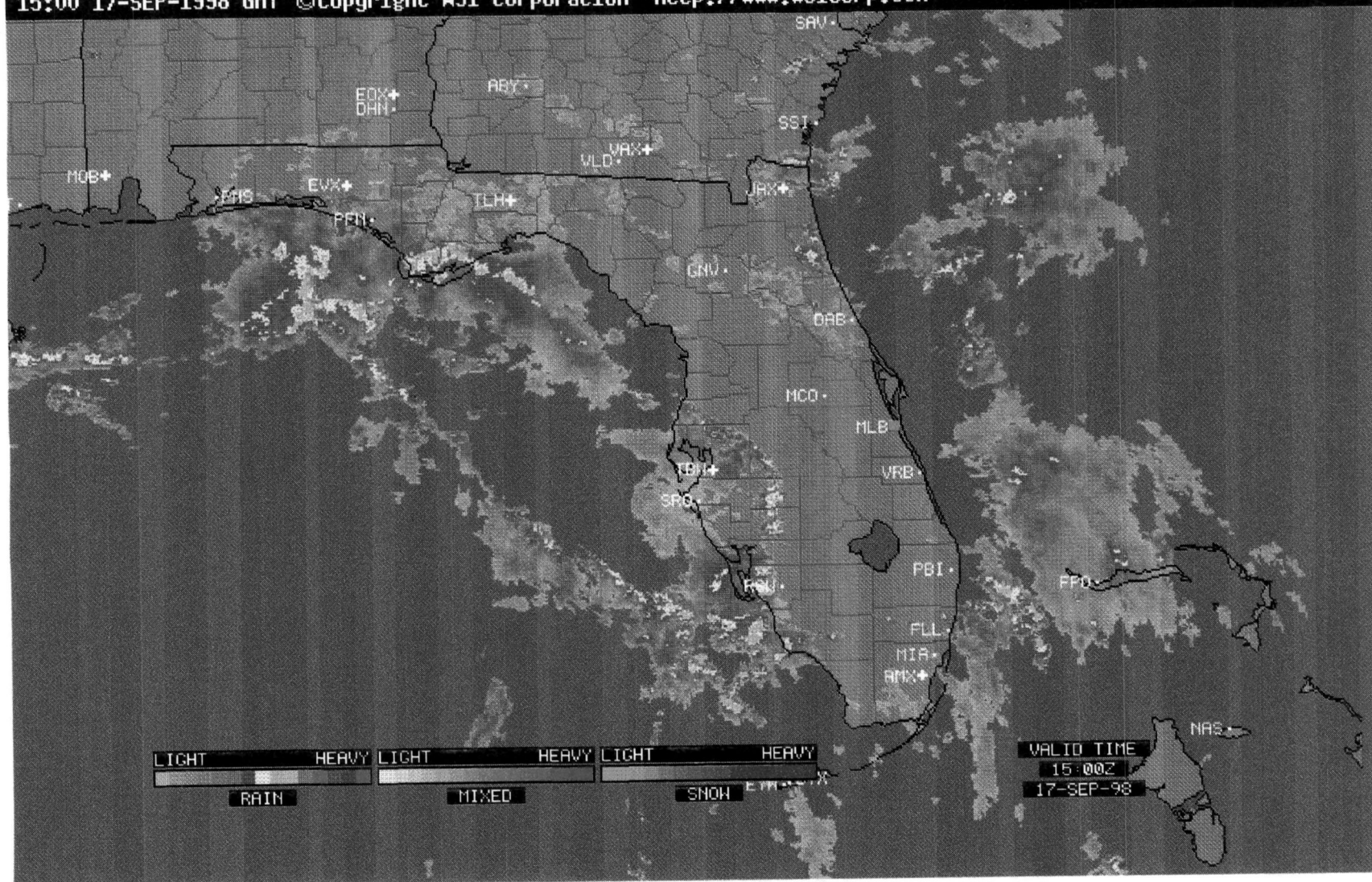
[illegible]

13MPcat

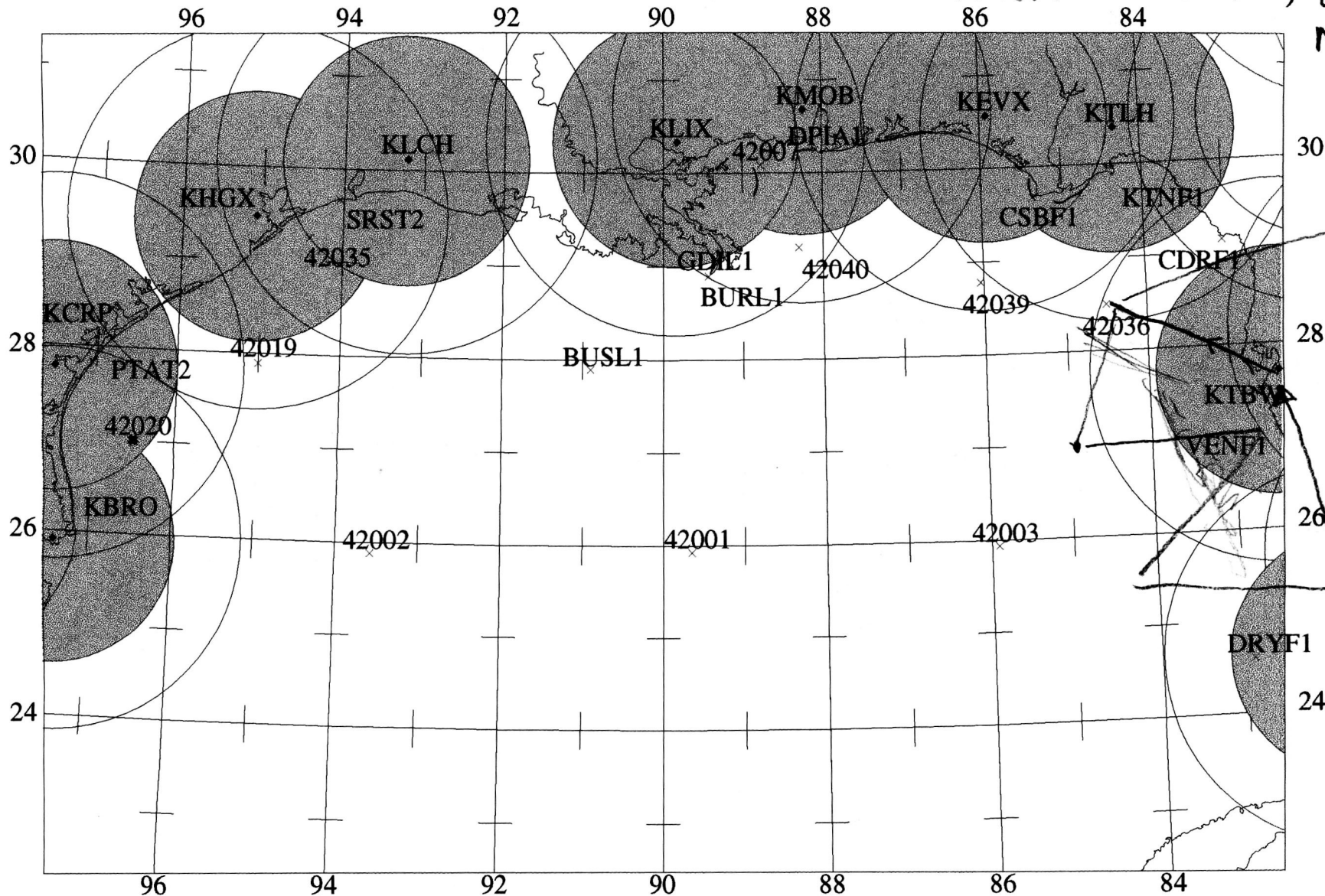
1846 descending 42036 right next to convective cell.



15:00 17-SEP-1998 GMT ©Copyright WSI Corporation <http://www.wsicorp.com>



NASA ~~117~~ 817, ER2
86 84
MAY



- Descend
to 3000,
Then
back to
15 000'

Approx,
dep
on line
location.

0 100 200 km
Center Lat: 27.00 Lon: -90.00

230 km range rings
150 km haze rings

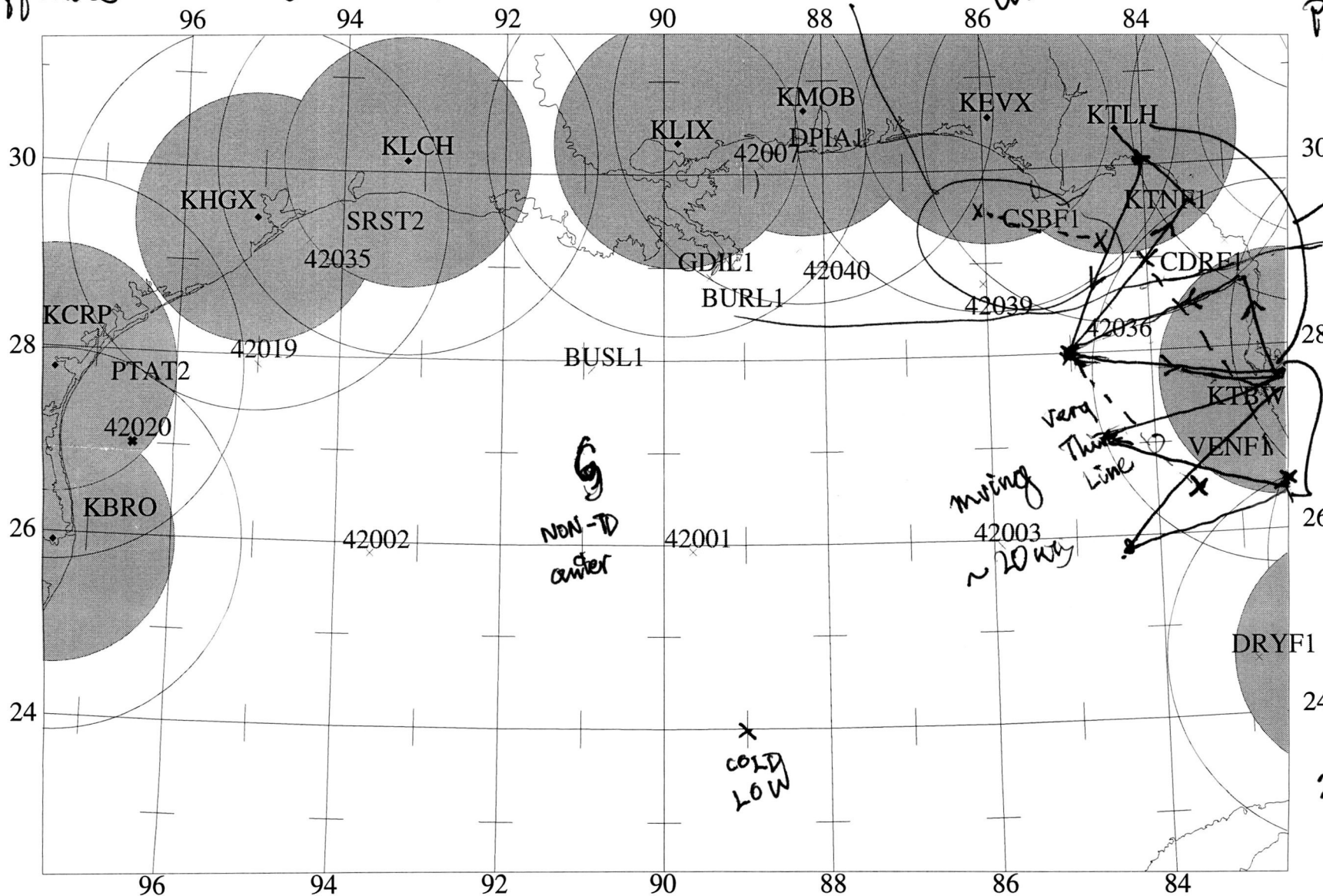
Other possibility
offshore Broward...

15,000' avoid coral
over land?

Drop to 3000' at 42036

Warning Area
Until 21z

VENFI
Naples
Pier



0 100 200 km
Center Lat: 27.00 Lon: -90.00

230 km range rings
150 km haze rings

Call PB at 1215 Beep Him.

Transmit ASDL
& all drops
1 pm take off

[15,000'
6-8 GPS
NO BTS - load them for
P3 deploy Saturday

NO PLAN B