

1999 1004 I1 - LPS

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 OAO 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 OAO 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 OAO flight director/meteorologist 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 OAO flight director.]
4. Obtain a copy of the 10-s flight listing from the OAO 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.

On-Board Lead Project Scientist Check List

Date Oct 4 99 Aircraft 43RF Flight ID 991004 I

A. Participants

HRD		OAO	
Function	Participant	Function	Participant
Lead Proj. Sci.	<u>J. Cione</u>	Flight Director	<u>J. Parrish</u>
Cloud Physics	_____	Pilots	<u>D. Tenneson / B. Kennel</u>
Radar	_____	Navigator	<u>C. Newman</u>
SAR Doppler	<u>E. Walsh</u>	Sys. Engr.	<u>D. Leno & Delgado</u>
AXCP/AXCTD Photographer	<u>N. Shay</u>	Data Tech.	<u>S. McMillan</u>
Omegasonde	<u>D. Jacob</u>	El. Tech.	_____
AXBT/AXCP	<u>P. Black</u>	Other	_____

Take-Off	Location	Landing	Location
<u>18:11Z</u>	<u>27°47' 82°31'</u>	<u>2244</u>	<u>27°47' 82°35'</u>

B. Past and Forecast Storm Locations (NO storm - N/A)

Date/Time	Latitude	Longitude	MSLP	Max. Wind
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

C. Mission Briefing

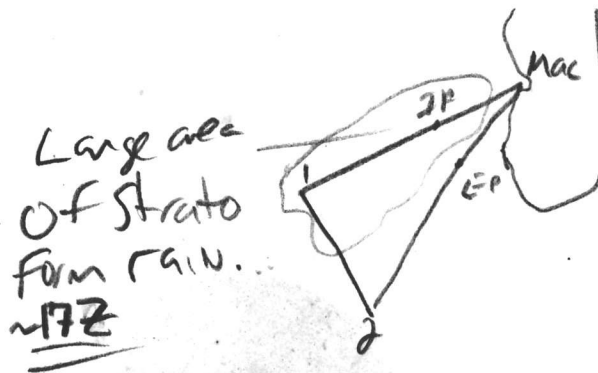
Finishing Air-Sea Mission of 100299
which was aborted due to shattered LF windshield.
9.5h mission simply missed "area of interest. Satellite
imagery shows large area of mostly stratiform
cloud structure w/ embedded areas of mod convection.
Treating this mission like a storm flight. Will transmit
ASD as well as radar, SFMR, Ed Walsh's SAR (in add to ocean
drags.)

D. Equipment Status

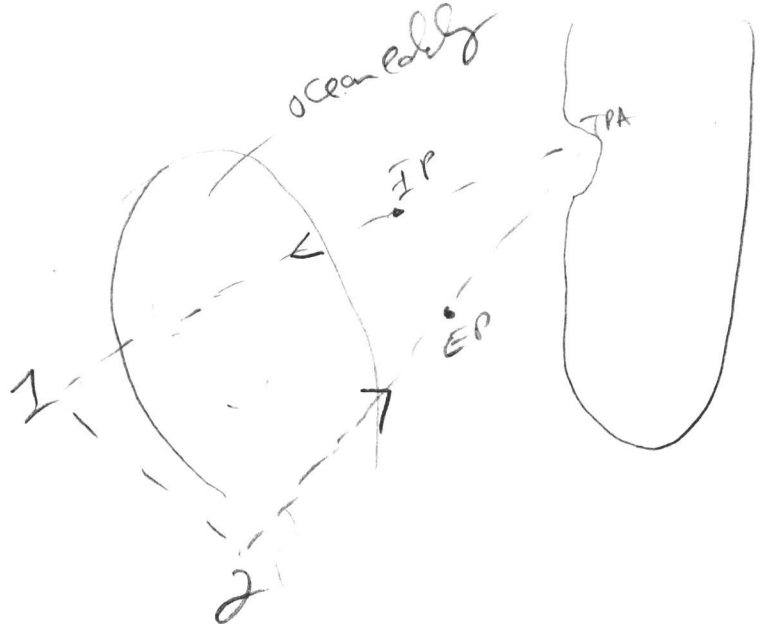
<u>Equipment</u>	<u>Pre-Flight</u>	<u>In-Flight</u>	<u>Post-Flight</u>
Aircraft	✓		
Radar	✓		
Cloud physics	—		
Data system	✓		
Omegasondes	N/A		
AXBT/AXCP/ AXCTD	✓		
Doppler	✓		
Photography	N/A		

REMARKS:

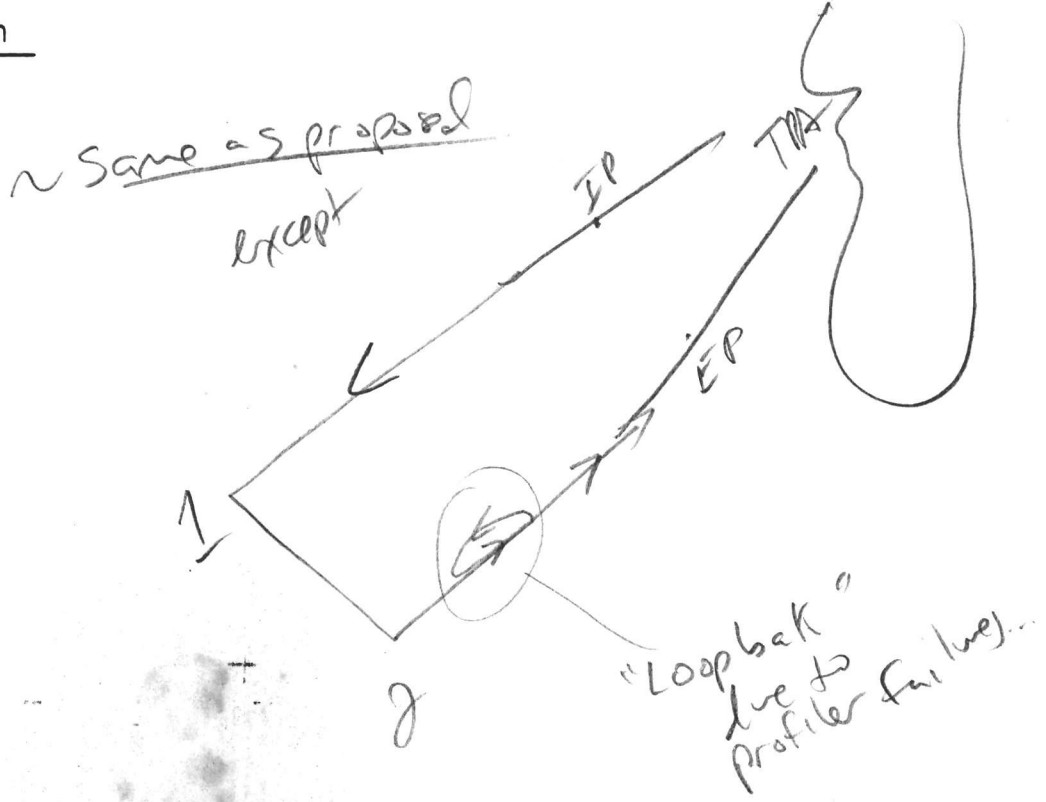
Finishing Air sea mission which was aborted on 10/2/72. Simple & Turly Point ~4.5h mission designed to sample area which was not covered due to early abort.



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



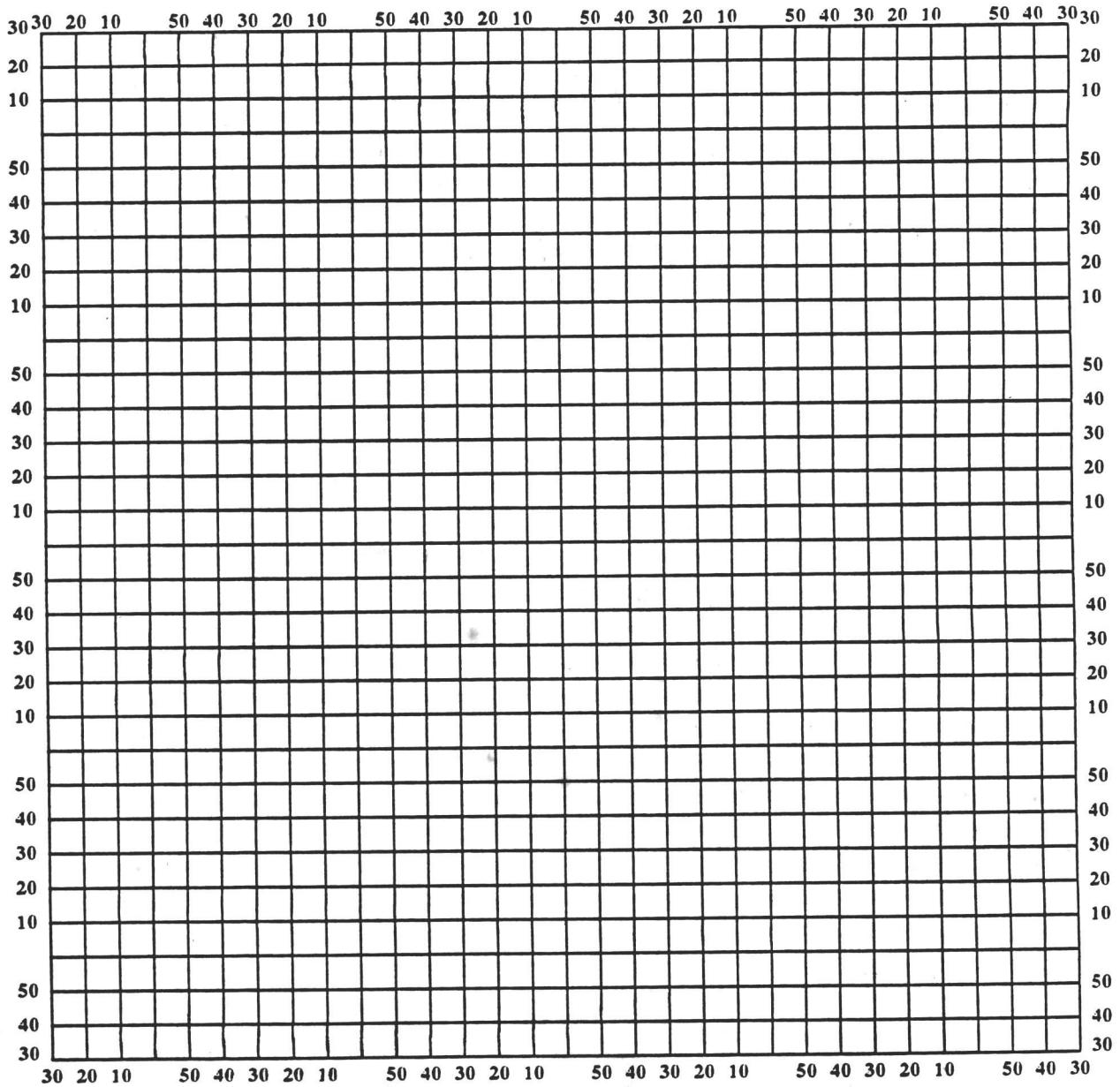
E. II. Actual Flight Pattern



Hurricane Recco Plotting Chart

True at 25° Latitude, in Degrees and Minutes of ϕ and λ .

Date _____ Longitude _____ Observer _____



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

(1)

Lead Project Scientist Event Log

Date Oct 4 '99

Flight 9910047

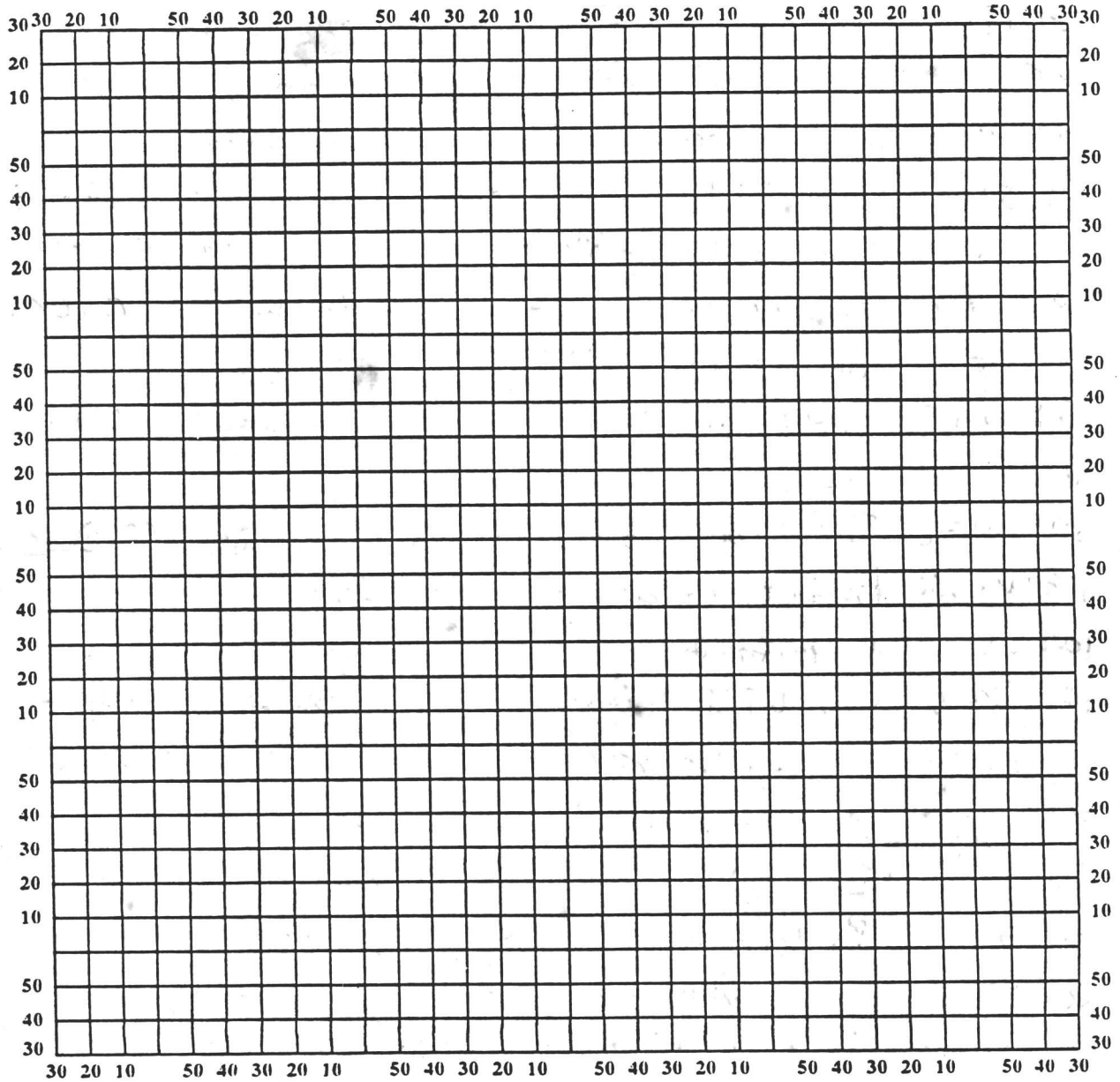
LPS Ciore

Time	Event	Position	Comments
18:11Z	Take off	27518230	begin Ferry to IP
18:46Z	Systems check	27138444	systems ^{all} up + Run (Radar, SFMR, SRA)
18:57Z	RAadar problem	27028542	Auto-Freq Control inoperative on Radar
19:06:01	Drop 1 CTD 14	26498601	launch @ IP (SST-28.5 MLD-43)
19:06:13	Drop 2 Gps 1	26498601	" @ IP (alt 4995ft + AGC)
19:08:00	heavy convection	—	40-45 DBZ + SFMR 16 Kts 14' m/h
19:17:16	Drop 3 CP12	26408646	CP12 launch (MLD-40m SST-28.5)
19:29:03	Drop 4 CP16	26468727	CP16 launch (MLD-50m SST-28.3)
19:33	strong cell	—	DBZ ~ 40 SFMR 20 Kts 13 m/h
19:33:32	B + 12 drop 5	26198751	launch BT SST 28.2 MLD 66
19:42:27	Drop 6 CTD 14	26078827	launch CTD SST 28.8 MLD 85
19:42:34	" 7 Gps 2	26078827	launch
19:48:26	" 8 BT 16	25598851	launch SST 28.3 MLD 67
19:51:54	" 9 CP 12	25548906	launch SST-28.8 MLD 50
19:57	Strong precip	25478933	heavy rain 27 m/h
20:01:23	Drop 10 CP 14	25438947	launch SST 28.3 MLD - 57
19:50	Radar out	—	—
20:02	Radar up again	—	—
20:07:06	Turn point 1	25349009	—
20:08:00	Drop CTD 16	25329006	launch / SST 28 MLD 55
20:08:10	Drop 12 BT 53	" "	launch

Hurricane Recco Plotting Chart

True at 25° Latitude, in Degrees and Minutes of ϕ and λ .

Date _____ Longitude _____ Observer _____



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



Lead Project Scientist Event Log

Date Oct 4/99 Flight 991004I LPS Crane

Time	Event	Position	Comments
20:19:07	Drop 13 BT12	2503 8936	land SST 28.3 MLD 45
20:34:57	Drop 14 BT16	2428 8838	land SST 28.1 MLD 45
20:34:57	" 15 GPS4	"	land
20:50:57	" 16 BT11	23 47 8743	land SST 27.7 MLD 220m
20:52-	Turn point 2	"	note 47 → 47
21:03:13	Drop 17 CP12	2348 8650	land SST (fail) MLD (fail)
21:03:19	Drop 18 GPS5	"	land
21:05	No winds on GPS	Sonde (Failed)	100
21:05	CP12 failed also		13
21:09:40	Drop 19 CTD14	2402 8630	SST (fail) MLD (fail)
21:10	Third failure in row... (CTD14)		14
21:15	loopback		29
21:29:08	Drop 20 CTD14	2400 8630	SST = ? MLD = 70
21:34:03	Drop 21 CP16	2433 8559	SST = 28.9 MLD = 50m
21:34:11	" 22 GPS6	"	land
NOTE: possible failures for CTDs is low sig strength due to us exiting too quickly			
21:39:20	Drop 22 BT12	2499 8543	Dud BT
21:44:13	Drop 23 BT16	2506 8526	land SST 28.1 ~ 30m MLD
21:50:32	Drop 24 BT12	2527 8504	land SST 28 ALD Failure
<u>END</u>			

Failures
1 AXCTD14
1 GPS
2 failed CP
2 failed BT

Backups/subst
Subs last AXCTD14 in its place (loop)
No backup
No backup
Yes Backup w/ BT16 + None on last

go back to 24/8630 + DO CTD14 again (reelin last CTD)

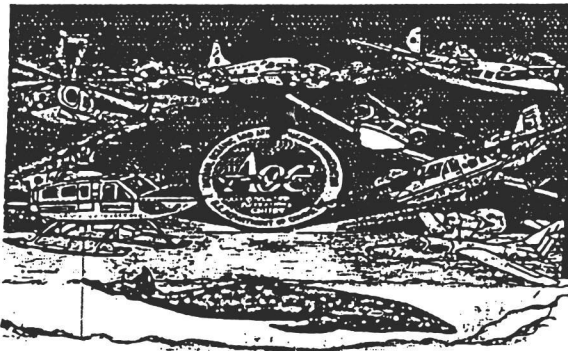
<u>PT</u>	<u>Lat</u>	<u>Lon</u>	<u> expendable</u>	<u>SPS</u>
MacDill	~ 27°47'	~ 82°31'	—	
<u>IP</u>	26°50'	86°00'	CTD14	<u>SPS 7</u>
	26°40'	86°45'	CP12	
	26°25'	87°15'	CP16	
	26°15'	87°50'	BT12	
	26°05'	88°25'	CTD14	<u>SPS 2</u>
	25°55'	88°50'	BT16	
	25°50'	89°05'	CP12	
	25°40'	89°45'	CP14	
<u>Turn P41</u>	25°35'	90°10'	CTD16	<u>SPS 3</u>
	25°10'	89°30'	BT12	
	24°30'	88°40'	BT16	<u>SPS 4</u>
	23°45'	87°45'	BT12	
<u>Turn P42</u>	23°20'	87°10'	—	
	23°40'	86°55'	CP12	<u>SPS 5</u>
	24°00'	86°30'	CTD14	failed + used last <u>CTD14</u>
	24°30'	86°00'	CP16	<u>SPS 6</u>
	24°50'	85°45'	BT12	
<u>EP</u>	25°15'	85°15'	CTD14	BT16

Total - 6 BTs [4-12; 2-16]
 - 6 CTS [3-12; 1-14; 2-16]
 - 5 CTDs [4-14; 1-16]

FAX TRANSMISSION

NOAA AIRCRAFT OPERATIONS CENTER SCIENCE & ENGINEERING DIVISION

P. O. Box 6829
MACDILL AFB, FL 33608-0829
(813) 828-3310
FAX: (813) 828-5061



To: _____

Date: _____

Fax #: _____

Pages: ____, including this cover sheet.

From: _____

Phone #: (813) 828-3310, Ext. _____

Subject:

COMMENTS:

HURRICANE RESEARCH
DIVISION AOML/NOAA

XXXX 991004I

10/ 1/99 18 UTC

LBAR - - - ● - - -
CLIP - - - ● - - -
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Pre-storm Pt II

30

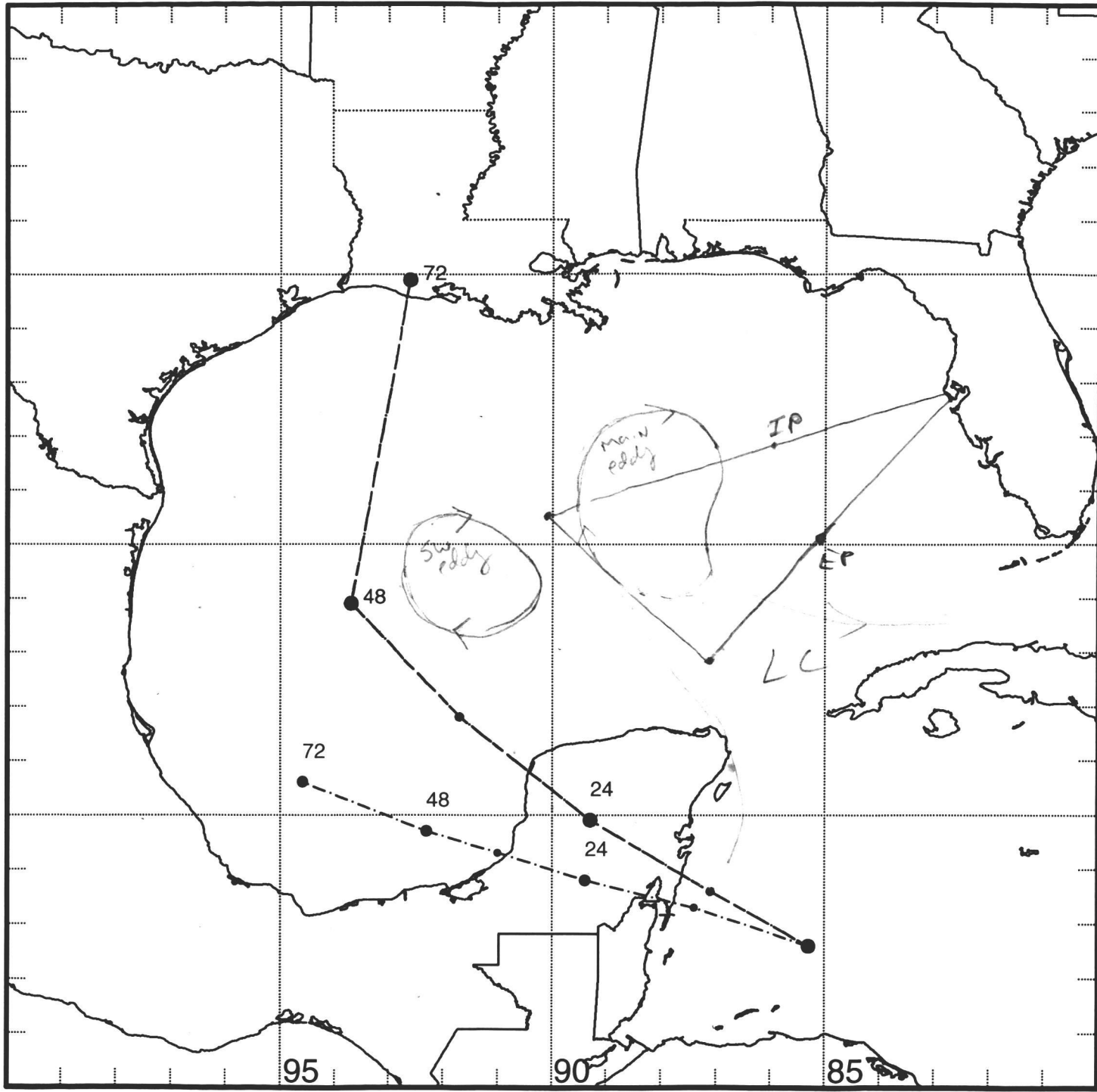
25

20

95

90

85



PLOTTED AT LOCAL TIME
15:40:42 1-OCT-99

G-2 Div

17-5

10-6

Best

Realistic

W
W
W

12-4

Best possible

W
W
W

Now 2-2
plus 7-5
9-7

Bel Now

W
L
W

Performance

W SDW

W SDA

W Spat

W SpA

L GB

L Min

L Dan

L Don A

W KCH

L KCA A

W TB

L TCA A

L Jots

L WIT

W Shc

L MIA A

Actual

L

L

W

next

Luis
0582-9672
305 585

US
22/2
2/2/2

Mission Summary
991004I Aircraft 43RF
Tropical Cyclone Air-Sea Interaction
Gulf Loop Current/Eddy “Pre-Storm 2” Flight

Scientific Crew (43RF)

Lead Scientist	J. Cione
AXBT Scientists	P. Black
AXCP/AXCTD Scientists	N. Shay, D. Jacob
SAR Scientist	E. Walsh

Mission Briefing:

This was a follow on to the “Pre-Storm 1” mission conducted 2 days earlier. This flight was necessitated due to the cracked windshield incurred on the 10/02/99 flight. The goal was to conduct a simple triangle flight pattern that sampled the areas missed as a result of aborted 10/02 mission. As with the 10/2 mission (as well as the early-season AXBT air-sea interaction flights 990803H and 990806H) the mission goal to map the boundaries of the Gulf Loop Current and associated warm anticyclonic eddies and obtain estimate of heat content anomalies associated with these features. Also similar to the 3 previous eddy flights, AXBTs (measures temperature vs. depth), AXCPs (measures temperature and current vector vs. depth) and AXCTDs (measures temperature and conductivity (salinity) vs. depth) probes were deployed in order to determine detailed vertical ocean structure.

Mission Synopsis

The flight departed MacDill AFB at 1811 UTC on 10/4 and landed there at 2244 UTC, on 10/5 a duration of ~4.5 hours. This relatively short flight pattern consisted of a NE-SW oriented flight leg out of MacDill followed by a short NW-SE leg followed by the last SW-NE leg which eventually took us back to MacDill (see LPS sketch of ‘flight triangle’ for more detail). In all the approximate distance of the flight pattern was just over 900 nm. The main region that was to be sampled was the core and gradient regions of the main Loop Current/Eddy region (MLCER) located in the eastern Gulf. The eddy located to the south and west of the MLCER was not sampled on this mission. As with the 991002H pre-storm mission, flight level throughout the experiment was maintained at 5 K ft. In addition, AXCTDs and AXCPs were deployed at 190 kt indicated air speed.

A total of 20 ocean profilers were deployed, 8 AXBTs, 7 AXCPs and 5 CTDs. Clean signals were observed below the mixed layer for 6 AXBTs and good signal strength (below 1000 m) was noted for 6 AXCPs and 4 AXCTDs. There

were 2 AXBT, 1 AXCP and 1 AXCTD failures. In all a 20% (4/20) failure rate was observed for the ocean profilers. In addition to the 20 ocean probes, 6 GPS dropsondes were deployed. One of which did not receive winds (although PTH was ok). Also, Ed Walsh's SAR was in operation during this mission. SFMR was also turned on due to the slightly higher surface winds present (~15-20 kts on average). No problems with either system were reported. SFMR surface wind estimates varied widely and approached 25 kts in and around areas of convection and fell to ~ 5 kts south and east of the convection (southernmost leg of the pattern as well as near turning point 1). Due to the presence of both convective and stratiform precipitation (mostly on the outbound leg), both Doppler and C-band radar systems were turned on for this mission. The belly radar went down shortly into the flight but coverage was quickly restored. No other problems were reported. ASDL transmissions (including SFMR surface wind speed estimates) were transmitted throughout the flight.

Ocean mixed layer depths (MLD) ranged from 85m near the central regions of the warm core structure to minimum values ~40m closer to the coastal shelf and outside the MLCER. Similar to the 10/2 flight, SSTs did not exhibit a large degree of variability and ranged between 27.7-28.9°C.

Problems:

There were only a few problems reported. As mentioned above, the C-band radar system was down between 1950-2002Z. The final leg of the 'triangle' pattern was where all of the 5 probe failures occurred. Of these 5 failures, 2 were backed up with additional probes (1 AXCTD and 1 AXBT). Exactly why all 5 failures occurred along this leg is unclear (maybe we discovered a new 'Gulf triangle' phenomenon?) In any event, the mission was a success and should provide excellent initial conditions for the 'Eddy storm flight' which will hopefully follow in the coming days/weeks.