

19800808 I - LPS

Appendix I

Operational Checklists

MODIFIED EYE WALL EXP

FORM I-1

On-board Lead Project Scientist Checklist

DATE 8 AUG 1980

AIRCRAFT 43RF

FLT 800808 I

A. Participants

<u>Function</u>	<u>Participant</u>	<u>Function</u>	<u>Participant</u>
Lead Proj. Sci.	<u>WILLOUGHBY</u>	Gust Probe	
Cloud Physics	<u>ZIPSE</u>	Omega Sonde	
AXBT	<u>J. HAWKINS</u>	Sys Eng	<u>GOLDSTEIN</u>
Hot Film		Data Tech	<u>BIRVINSON</u>
Radar	<u>MARKS</u>	El Tech	
Flt DIR/MET	<u>DAVIS</u>	Other	

Time Off 081622 Location MIA Time On 090033 Location NEW ORLEANS

B. Past and Forecast Storm Position - Observed Positions

<u>Date</u>	<u>Time</u>	<u>Lat</u>	<u>Lon</u>		<u>Date</u>	<u>Time</u>	<u>Lat</u>	<u>Lon</u>	<u>MSLP</u>
<u>080510</u>		<u>22°31'</u>	<u>88°55'</u>						
<u>080909</u>		<u>23°06'</u>	<u>89°50'</u>						
<u>081144</u>		<u>23°20'</u>	<u>90°24'</u>						

C. Mission Briefing

FLY MODIFIED EYE WALL EXPERIMENT GET

082100Z AND 090000Z FIXES

D. Equipment Status

<u>Equipment</u>	<u>Pre Flt</u>	<u>In Flt</u>	<u>Post Flt</u>	<u>Reports Collected</u>
Aircraft	↑	↑		
Radar ¹	↑	↑		
Cloud Physics ²	↑	↑		
Data Sys	↑	↑		
Omega Sondes	NOB			
AXBT	↑	↑		
Gust Probe	NOB			
Hot Film	NOB			
Photography	↑	↑		

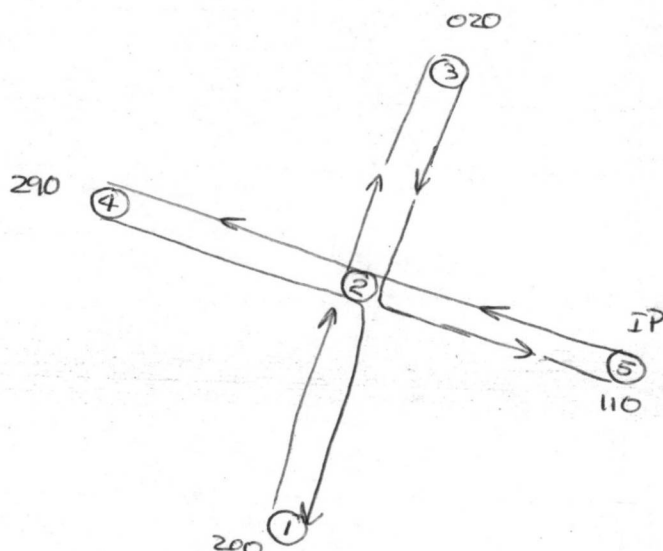
REMARKS

¹ ANTENNA HAS FOCUS AND ALIGNMENT PROBLEMS ON LIR RADAR
PRESENTATION POOR

² HAVE ONLY 5 CLOUD PHYSICS TAPES

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E. Proposed Flight Patterns



FLY 5, 2, 4, 2, 1, 2, 3, 2, 5, 2, 4... FOR DURATION

41C AT 12000 FT
4212F AT 18000 FT
43RF AT 5000 FT

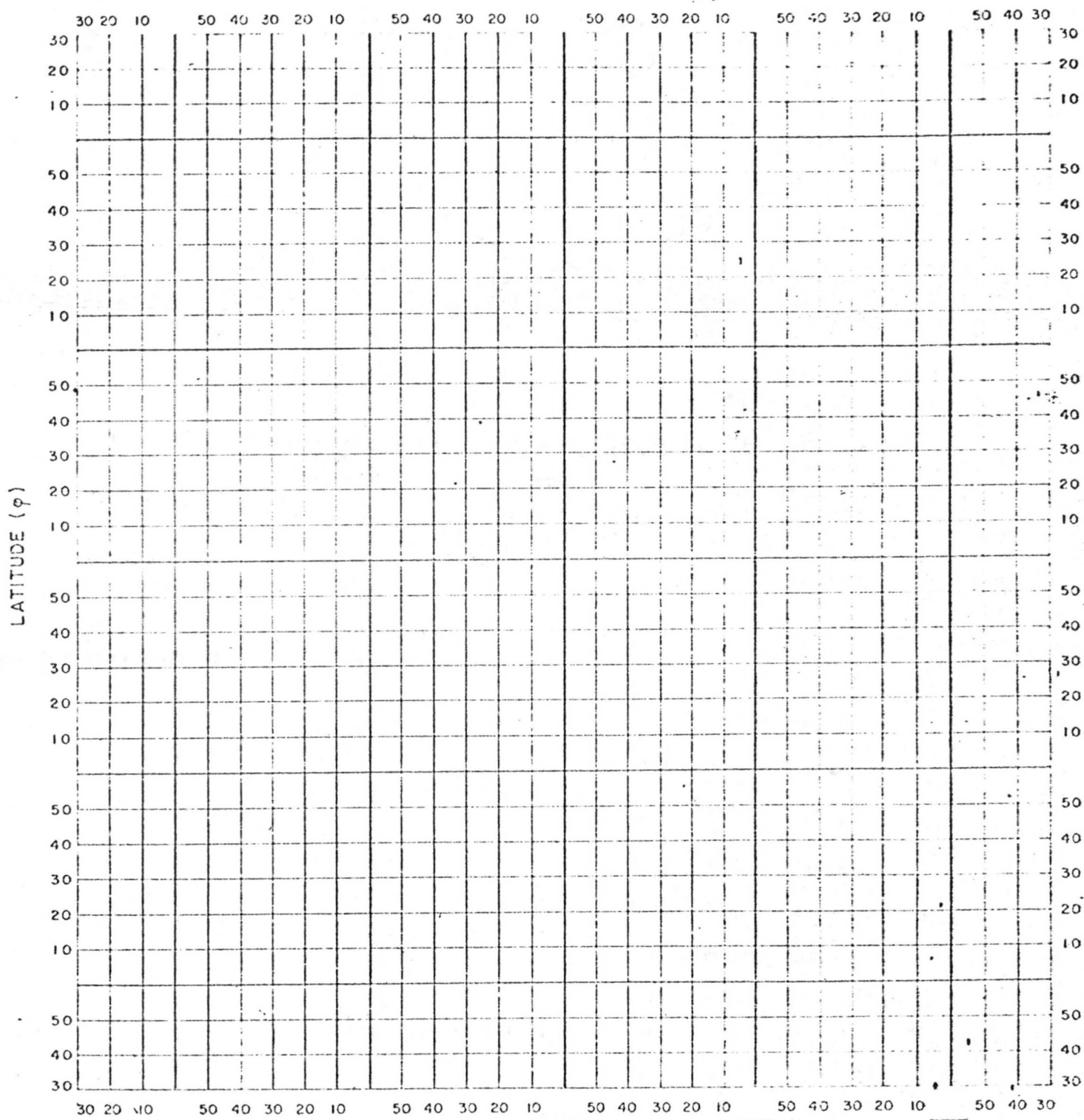
F. Actual Flight Patterns

TIMES AT TURN POINTS & LAT LON OF 6

5	1837			
2	1859	24.04°	92.12°	940 mb
4	1915			
2	1928	24.14°	92.17°	937
1	1943			
2	2000Z	24.17°	92.28°	934
3	2017			
2	2033	24.26°	92.38°	929
5	2055			
2	2118	24.23°	92.60°	924
4	~2150			
2	2202	24.32°	92.74°	921
1	2220			
2	2233	24.31	92.76	917
3	2256			
2	2318	24° 36'	92.84	916 DROP FROM 42 913
5	2340			
	RTB			

HURRICANE RECCO PLOTTING CHART

TRUE AT 25° LATITUDE, IN DEGREES AND MINUTES OF ϕ AND λ



DATE _____

LONGITUDE (λ) _____

OBSERVER _____

NOTE: LABEL FULL DEGREES ACCORDING TO LOCATION OF FLIGHT AREA

Flight No. 80808I Julian Day _____ AXBT Contract No. _____
 Takeoff time _____ Landing time _____
 On station time _____ Depart station time _____
 Operator _____
 Time _____
 Rm SE _____
 Vm 100KTS _____
 Pm 940 _____

Penetration ①

AXBT CHECK SHEET

AXBT	Chan- nel#	Lot# yr	Predicted Drop Time (HHMMSS)	Actual Drop Time (HHMMSS)	Predicted Lat Deg Min	Predicted Long Deg Min	Actual Lat Deg Min	Actual Long Deg Min	Surface Temp AXBT IRT	MLD (m)	Comments
1	12	G4		181445	—	—	24.19	89.34	23.9		✓
2	14	B4		182700			23.82	90.09	24.9		✓
3	16	A3		184100			23.60	90.92	27.6		✓
4	12	A4	184450	184450			23.68	91.18	28.5 ^{26.1}		✓
5	14	F3	184830	184830			23.77	91.43	28.1		✓
6	16	F1	185220	185215			23.87	91.68	28.6 (7)		✓
7	12	B3	1855	185520			23.97	91.87	28.6		✓
8	14	C3		190000			24.13	92.15			Eye ✓
9	16	E1		190400			24.22	92.41	28.4		✓
10	14	E3		190800			24.32	92.70			Carrier
11	12	F2		191225			24.43	93.03	28.9		✓
12	12	E2		192040			24.32	92.66	28.8		✓

24.04
92.12

Calibration at beginning + just before last 2 drops
 Last 2 drops are on last fast tape

D3 Bad

Flight No 800808T Julian Day _____ AXBT Contract No. _____
 Takeoff time _____ Landing time _____
 On station time _____ Depart station time _____
 Operator _____

Time _____
 Rm _____
 Vm _____
 Pm _____

203408

	NE	SE	NW		NE	NE	
120 kt	120 kt	120	150 kt		140 kt	180 kt	
937	934	928	923	920	917	916	
②	③	④	⑤	⑥	⑦	⑧	

AXBT CHECK SHEET

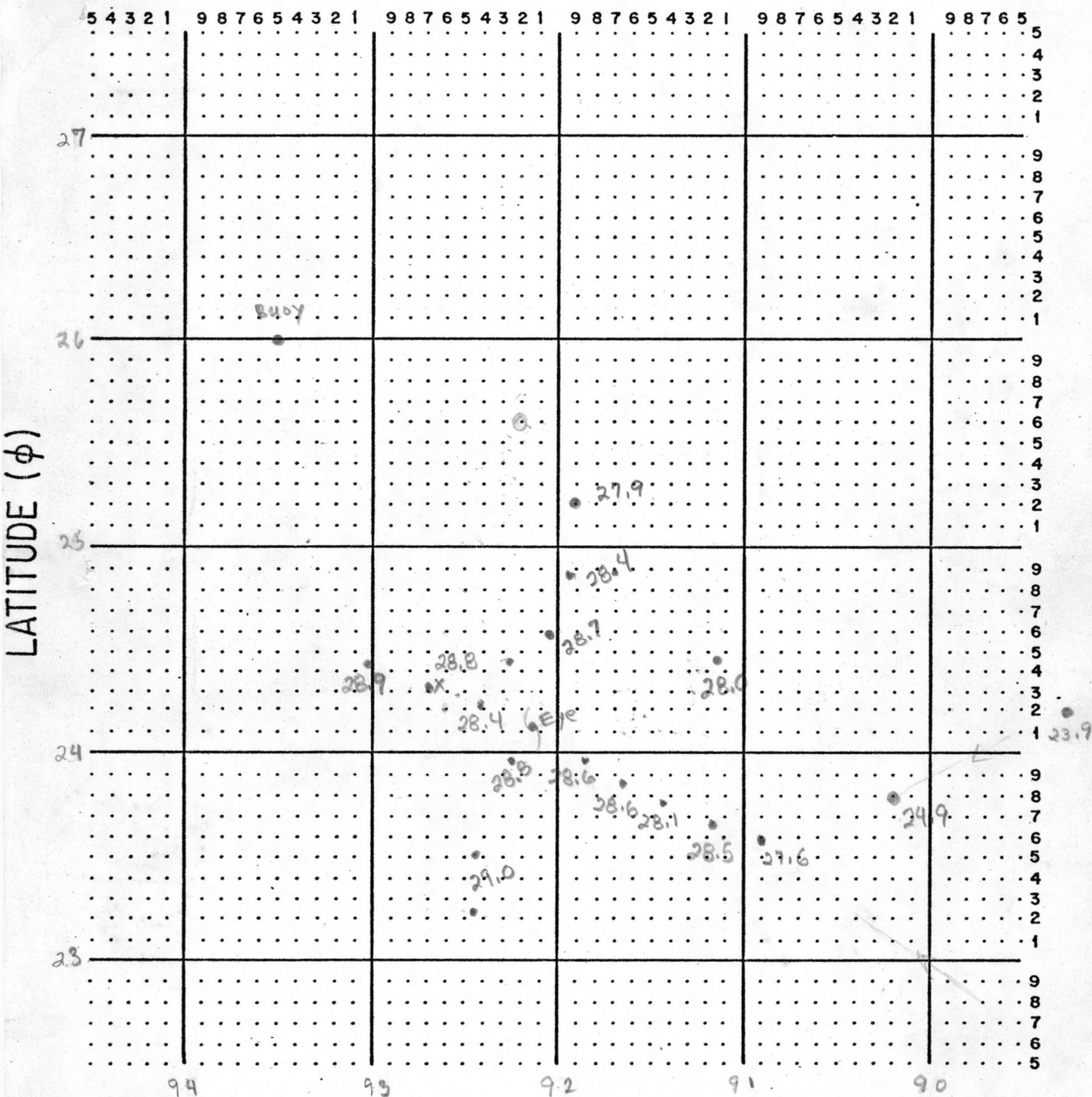
AXBT	Chan- nel#	Lot# yr	Predicted Drop Time (HHMMSS)	Actual Drop Time (HHMMSS)	Predicted Lat Deg Min	Predicted Long Deg Min	Actual Lat Deg Min	Actual Long Deg Min	Surface Temp AXBT IRT	MLD (m)	Comments
13	12	D2		194425	—	—	23.21	92.46	—		Carrier
14	12	C2	194930	194940	—	—	23.51	92.43	29.0		✓
15	16	B2	—	195710	—	—	23.99	92.25	28.8		✓
16	16	D1	200450	200435	—	—	24.45	92.17			Dud
17	14	B1	200850	200735	—	—	24.62	92.08	28.7		✓
18	12	A1		201137			24.88	91.96	28.4		✓
19	14	A2		201700			25.21	91.91	27.9		✓
20	16	C1		234505	—	—	24.48	91.12	28.0		SST off after
21	14	D3		234920			24.54	90.88			Carrier

24.36 }
 92.38 } 203408

HURRICANE RECCO PLOTTING CHART

True at 25° latitude, in degrees and tenths of ϕ and λ

FLIGHT 800808 I LEVEL



LONGITUDE (λ)

DATE 8-8-80

OBSERVER Hawkins

NOTE: LABEL FULL DEGREES ACCORDING TO LOCATION OF FLIGHT AREA.

FLIGHT DATA LOG

FLIGHT: 800808I1 STORM: ALLEN

TIME: Z TO: Z

ON-BOARD LEAD PROJECT SCIENTIST: WILLOUGHBY

Flight summary (include status of instrumentation and recording equipment, as well as any problems, malfunctions or outages with approximate times):

TAIL RADAR NOB

DATA VOLUME

STANDARD METEOROLOGICAL TAPES: _____

FAST TAPES: 0

RADAR TAPES: DIGITAL 9 VIDEO 2 LF ☒ TA ☐ NO ☐

CLOUD PHYSICS/KNOLLENBERG TAPES: 5

FORMVAR? ☐ FOIL? ☐

AXBT's? ☒ NO. of DROPS: 9 PRINTOUT? ☐

OMEGA DROPWINDSONDES? ☐ NO. of DROPS: 0

NO. of CASSETTES _____ PRINTOUT? ☐ STRIP CHARIS? ☐

PHOTOGRAPHY: VERTICAL? ☒ SIDE? ☒ NOSE? ☐

(IF KNOWN) RATE: 1/1 RATE: _____ RATE: _____

SEEDING MISSION? ☐ FROM THIS A/C? ☐ NO. of FLARES: _____

#1

8 Aug. 1980 Allen Eye-wall experiment.

takeoff - ~ 1620 GMT172430 started DITI elev. -1.0°
first sign of rain bands bearing
 $270-340^\circ$ ~ 90 nmi out173330 raised elev. up to 0.5° 173530 " " " " 1.0° getting intermittent radial spokes on the
LF radar. Spoke to Alan. He says he thinks
its noise in the lines. The spokes will probably
be on the tapes.174120 lowered elevation to 0° .

1804 plane dropped to 2600m (RA)

180720 raised the antenna up to 2.0° 181012 descending to 1500' for surface wind
runs. raising elev. to $\sim 3.5^\circ$ 181454 1st AXBT dropped from 444 m (RA)
elev. to 4.0° wind $143/28 \text{ ms}^{-1}$

1833 climbed to 5000'

LF

1834 navigator took LF

1835 LF Gach.

183630 look like the eye at bearing 70° 8 nmi.183811 LF shows eyewall 75 nmi bearing 20°

1st crossing

1839 starting inbound run from IP

diameter of eye look ~ 18 nmi in
diameter

1841 X BT dropped.

184245 polaroid of LF

184700 " of nose

~~184800 " " LF~~

184833 X BT dropped.

184859 went to nose for VTR.

184920 back to LF

185045 polaroid of nose PPI scope

185218 X BT dropped.

eye diameter ~ 10-12 ^{nmi} diameter

1853 went to zoom X3 for VTR

eyewall
appears strong on SE based NW side of eyewall
eye looks square on LF

185630 moderate rain at d/c

185700 heavy rain at d/c

max wind, in eyewall

230 /

N West side eyewall has extensive level 3's

185820 in eyewall turning.

eyewall closed completely
reasonably smooth inside.

190000 starting second penetration

5000'

8 Aug. 1980 #2

190120 in heavy rain good level 3

max winds ~~027~~ / 56 m s⁻¹

center 24° 4' 92° 12'

Calculation.

190840 528 counter on VTR,

Not much precip. outside of eyewall

major outer rainband south and east of storm about 80 nm; out seems very strong. NW of storm no major activity.

2nd pass in X-pattern

191315 turning to go back at 500' heading track ~ 920°

1923 list outer rainband starting,

winds NW 025 / 37 m s⁻¹

192435 max 028 / 41 m s⁻¹
SE → 030 / 45

1925 getting level 3 in eyewall
eyewall diameter

192540 polaroid of LF

max wind 015 / 60 m s⁻¹

192705 polaroid of LF : 192800 polaroid of LF

192710 in eye holding about turning SW

192910 heading SW level 3 in S eyewall
eye diameter ~ 12-15 nm
width 6-8 nm

193110 appears to be small
outer rainband on SSE side of center
coming into eyewall on east side of
storm. only 8-10 km outside eyewall
large strong rainband about 50 mi
south of storm coming around toward
NE side of the eye.

194015 - VTR counts 810

25° elevation appears to be having
unusually ~~large~~ large problems with sea
clutter.

194350 turning to track NNE again.
3rd track of X-pattern heading NNE

195230 set level 1 counts of 5

195300 switch to nose for VTR nose

appears to be set at level 2⁽³⁾ only.

195430 took polaroid of nose at level 2.

195545 " " of nose PPI scope

entering first outer rain band

265/35 ms⁻¹

outer rain band appears to come in
on N side of eyewall.
eyewall

peak wind 240/45 ms⁻¹

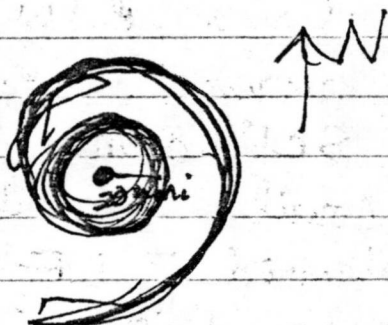
195920 polaroid in eye.

elev. 40°

8 Aug. 1980

3

200030 turning in eye a little.
good level 3



200120 max wind

level 4 115/67 ms^{-1}

dropped 6 mb since first run (E. Zipser)
eye diameter still between 15-20 ^{4 mi} ~~mi~~
width ~5-6 mi.

201110 switched to nose for VTR to show
rainband structure north of the storm.

Nose has been showing better detail than
LF so far.

201500 back to LF for VTR.

201620 turning back to eye.

→ 4th penetration. from NNE to SSW, turn in eye to

202447 went to nose for VTR. 202500 back to LF

elev. 4.0° 202615 raised elev. to 3.5° ~~etc.~~

202710 went to nose for VTR 202718 back to LF

202828 entering first outer rainband.

NE 110/43 ms^{-1}

in 107/48 ms^{-1}

SW

203000 polaroid LF good level 3 in eyewall

winds and radar eye aren't matched.

203257 polaroid of LF

203310 " " "

203400 turning in eye to SE

203600 SCD down

VTR 1260 counter 204220Z

204300 polaroid of LF

nice rain band south and east of the eye.
70 mi.

204517 polaroid of LF

204912 entering outer rainband.

205145 moderate rain outside a/c
level 2 with flecks of level 3

good attenuation in rainband.

205325 switched to nose for VTR.

205459 switched to LF for VTR

205515 turn for NNW track.

5th pass

outer rainband good level 3's

210020 polaroid of LF in outer rainband.

210225 switch to nose for VTR

210249 polaroid of nose

210400 switch to LF for VTR.

210715 polaroid of LF

210838 " " "

211058 navtg. took LF

8 Aug. 1980

#4

d.

+4°

211435z got LF back.

211510 took polaroid of nose PPI.

211650 good level 3's in eye wall

211726 polaroid of LF

211750 turning.

211850 polaroid of LF

good level 4 in S and north eye wall

211933 what a bump everything crashed.
clock radar computer,

212520 radar up again.

NW side eye wall is getting much stronger.
peak gust ~80 m s⁻¹

orbiting on north west side of the storm
until we get the data system back up again.
seem to be in the middle of a rain band.

winds 066 / 40-45 m s⁻¹

VTR on nose.

214430 turning back for another pattern
elev. 24.0°

~~6th~~ pass toward BSE

VTR on nose.

220200 Polaroid of LF

220345 " " "

220425 SCR out

220602 SCR up

220717 polaroid of LF

221818 Switched to NOSE for VTR.

222102 Started second VTRZ

222335 polaroid of NO

✓ 22246 went to NO on VTR

NOSE very good on this run again.

222810 LF on VTR

222840 NO on VTR

~~222920~~ NO on polaroid bad.

223000 " " "

223030 LF on VTR.

223140 polaroid of NOSE

SSW eyewall Very strong. level 4
on LF level 6 on NO.

15-17 nmi eye diameter

Very symmetric.

rainbands have moved to south side

eyewall were we penetrated the last two
times.

SCR down 223630

up 224035

224250 VTR to nose.

big rainband north of eyewall ~ 60-70 nmi.

224830 entering outer rainband.

225612 turning in outer rainband,

225900 heading S for 2nd pass

230128 VTR on NOSE

probably not on VTR
no polaroids left.
7th pass - heading SSW. 8 Aug. 1980
winds in rainband

230220 106/50 ms^{-1} sustained,
on NOSE for VTR

230230 to LF for VTR

231300 to NO for VTR

eye diameter $\sim 10^{-12}$ mi wide

231426 to LF for VTR

231654 eye looks ruff. side of NOSE
to NO for VTR

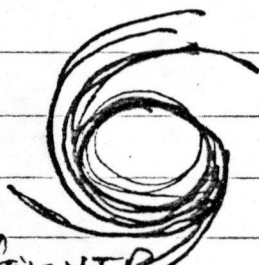
231800 in eye diameter less than 10 mi.

231835 turning in eye.

917 mb (from Hugh) 913 mb from C-130 drop.

231955 out we gooooo!!!
to ESE

232050 to LF for VTR
to NO for VTR



eyewall structure
on last penetration

to LF for VTR

heading toward ESE

2335 in ~~ESE~~ rainband.

turned ENE from pt. 5 track 070°

2341 into second ~~ENE~~ rainband.

good here! 4's changed tapes
moderate rain at a/o good attenuation.

000750 started climb to Ferry height.

003710 going through little cloud line.

0035 painting Southern Louisiana.