19980820 HI-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 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.

On-Board Lead Project Scientist Check List

Date 8/20/98 Aircraft 42RF Flight ID 980820H

A. Participants:

HRD		AOC	
Function	**Participant**	**Function**	**Participant**
Lead Project Scientist	P. Black	Flight Director	Stan Cook
Cloud Physics	~~St. Cione~~ Ed Blacken	Pilots	Brian Taggart, R. Phillipsborne
Radar	F. Marks	Navigator	
Workstation	R. Leighton	Systems Engineer	Jim Barr
Photographer		Data Technician	Sean McMillan
~~Omega~~GPS sonde	M. Black	GPS Electronics Technician	George Gonzalez
AXBT/AXCP	J. Cione	Other	

Take-Off: 1745Z Location: St Croix Landing: _____ Location: Barbados

2 PEN.

B. Past and Forecast Storm Locations:

	Date/Time	Latitude	Longitude	MSLP	Maximum Wind
obs	28/1515Z	18.5	59.0	1005	35 kt
prog *	28/21Z	18.7	60.0 → 60.7		

C. Mission Briefing:

3 plane synoptic flow

AFRES recon due at ~18Z: 1500 ft invest.

D. Equipment Status

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

REMARKS:

* still some problems

** 8 AXBT's loaded externally; lost continuity with one in chute 2D - only 7 available for use

1830 - workstation inop - can't send drop data

~~1838 workstation backup~~

1906 - workstation inop - missed first 2 drops

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

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

(1)

Lead Project Scientist Event Log

Date 9808204 Flight 42RF LPS R. Black

Time	Event	Position	Comments
1800	AXBT tube 20		lost continuity with one AXBT; can't launch or it fell out on runway;
~~183113~~	~~Drop#1, turn#1~~	~~16.0 66.0~~	506mb 072/20 kt
1833	did not drop - workstation in op		- circle back & drop anyway
183940	Drop#1	1541 6558	workstation up @ 1838
190147	~~Drop#2~~, turn #2	14.0 6554	506mb 072/07 kt
1904	did not drop		
190555	Drop#2	14.0 6534	no workstation
192615	Drop#3	14.2 6359	workstation good
195648	Drop#4	15.0 6150	sonde #3 sent out
			AFRES at 1500 ft
1005 mb	Orbit N side	1756 6039	50 kt in N quad, 4 in south quad; no circulation center
201940	Drop#5	16.0 6035	sonde #4 sent out
203640	drop#6	1715 6042	
204442	drop #7	1751 6049	near center at sfc → 700 mb
4454	BT #1		SST = 29
2053		1823 6034	
205444	drop #8	1832 6039	
	BT #2		SST = 29
205530	drop #9	1836 6040	~~SST = 28~~
	BT #3		SST = 28.5

AF

(2)

Lead Project Scientist Event Log

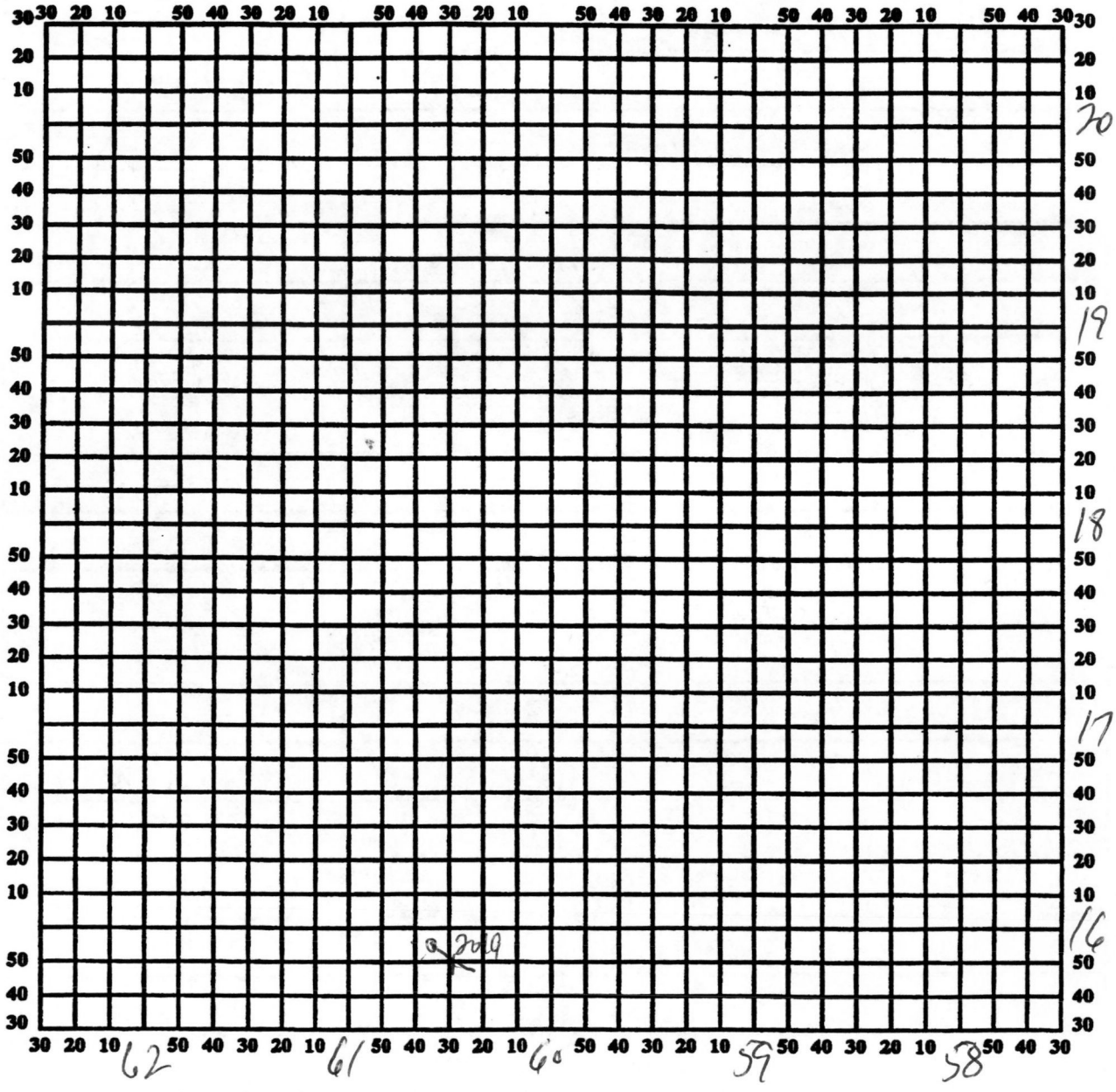
Date _____ Flight _____ LPS B Black

Time	Event	Position	Comments
210353	drop #10	1905 6050	
	BT # 4		SST = 29.1
~~211411~~	~~drop #11~~	~~1824 6102~~	
212353	drop #11	1825 6058	1823 6030 center at 59 MB
	BT #5	NG	radar at center
212931	drop #12	1828 6055	
	BT #6	NG	
~~213228~~			missed inner edge
213339	drop #13	1832 6017	outer edge of band only
	BT #7	~~NG~~ SST = 29.2	no winds
213932	drop #14	1837 5953	
220551	drop #15	1854 5748	rooster tail, SAL boundary
222812	drop #16	1857 5558	
225352	drop #17	1904 5400	

Hurricane Recco Plotting Chart

True at 25° Latitude, in Degrees and Minutes

Date 980820H Aircraft 42RF Observer R. Black



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

Lead Project Scientist Event Log

Date ____________________ Flight ____________________ LPS ____________________

Time	Event	Position	Comments

Mission Summary
980820H Aircraft 42RF
TD#2/Bonnie Three-Aircraft Synoptic Flow

Scientific Crew (42RF)

Lead Scientist	P. Black
Radar	F. Marks
Workstation	P. Leighton
GPS sonde scientist	M. Black
AXBT scientist	J. Cione
Observer	W. Bracken

Mission Briefing:

This flight was part of a 3-plane (two NOAA WP-3D Orion aircraft plus NOAA G-IVSP Gulfstream jet aircraft), synoptic-flow mission to drop GPS sondes in the environment around a developing tropical depression. In addition this mission dropped 6 GPS sonde/AXBT pairs into the inner core of the developing depression. The flight was flown at max altitude 500-450 mb, except for the Figure 4 pattern in the inner core which was flown at 550 mb. The purpose of the flight was to provide improved initial conditions for track models and to discern the inner core structure of a depression as it develops into a tropical storm.

Mission Synopsis

The flight departed St. Croix International (TISX) at 1745 UTC, 20 August and landed at Grantly Adams International in Barbados at 0300 UTC, 21 August. A total of 22 GPS sondes and 7 AXBTs were dropped during this mission, from 20 kft (15 kft in the inner core), 7 of which were coincident. Two GPS sondes were partial failures (no winds or no PTH) and 2 AXBTs failed (no signal). The Figure 4 legs were oriented N-S and E-W. Maximum flight-level wind in the inner core was 40 kt at 850 mb, making it a tropical storm technically. Minimum central pressure was 1004 mb and the eye-like diameter was 40 nm. Storm motion was 285° at 18 kt.

Little convection was observed as we approached the system from the south. Major N-S bands to the west of the center and E-W bands north of the center were observed. The low level center was marked by a round clear feature within the rain area surrounding the center. The surface center was about 40 nm south of the flight level (16 kft) center, which was imbedded in the convection on the N side of the surface center. A very interesting interlocking spiral was observed in the small scale features of the banding in the N side 'eyewall-like' feature. The flight level center was exactly at the center of the spiral, while 40 kt NE surface winds were estimated below.

Excellent tail Doppler and lower fuselage radar data were also obtained (3 radar composites were transmitted to NHC in real-time, but no EVTD wind fields were sent). We also collected some good F/AST data along an WNW-ESE line of convection 10 nm E of the center (part of the "rooster tail" along the SAL boundary), containing a strong wind maximum at flight level. We put a dropsonde down on the N side of the band. Cloud microphysics data were also(good ice data in the rainbands E of the center and rain data in the inner core).

The 5 successful AXBT launches reported SSTs between 28.8-29.3C. Estimates of ocean mixed layer depth ranged between 42-56 m. All AXBTS were launched within the Figure 4 pattern within active regions of convection.

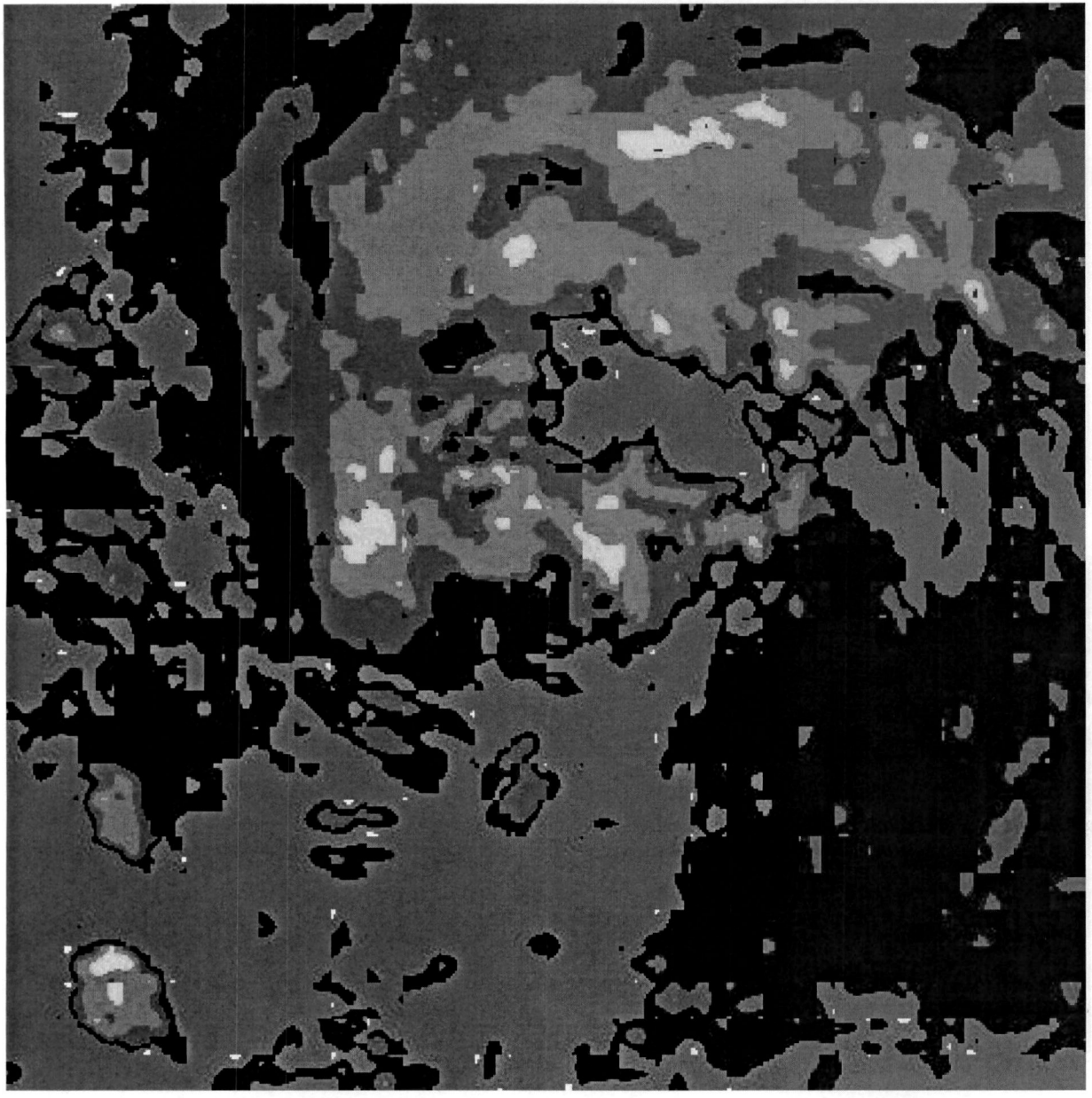
Evaluation:

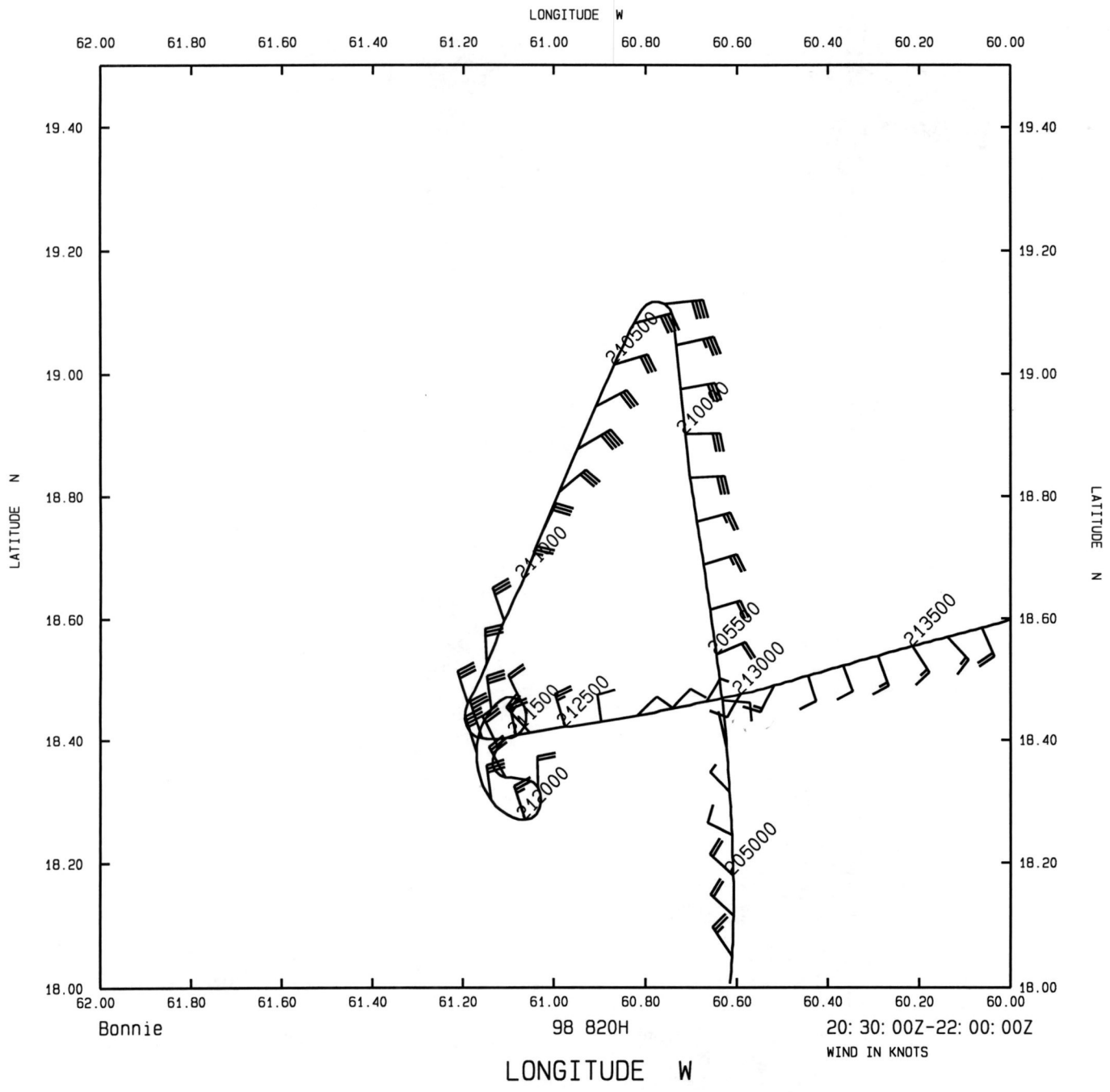
This flight is part of a landmark 3-plane synoptic flow experiment for determining the environmental flow structure of the atmosphere around a developing TC while also determining the oceanic thermal structure beneath the inner core.

Problems:

All systems functioned nominally, with the exception of the sonde and AXBT failures noted above. Occasional difficulties were encountered with the operation of the HRD workstation for transmission of GPS sonde data in real time.

Peter G. Black


980820h1
TD #2
212407 Z to
213917 Z
48
41
35
28
21
15
dBZ
Alt 4780 m
Slat 18.50 N
Slon 60.53 W
360 X 360 km
produced by
HRD / AOC


LONGITUDE W
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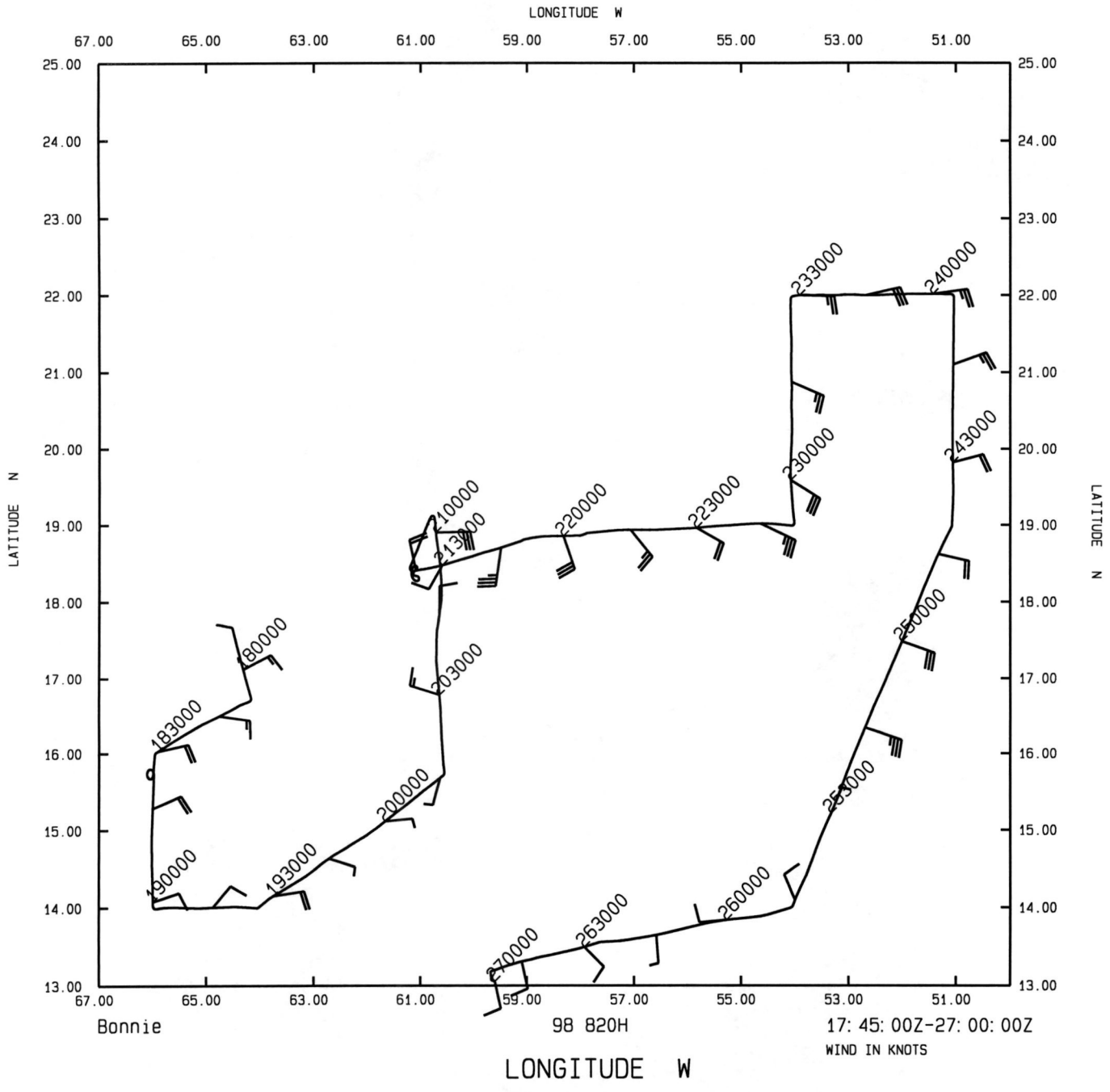
61.80
61.60
61.40
61.20
61.00
60.80
60.60
60.40
60.20
60.00
19.40
19.20
19.00
18.80
18.60
18.40
18.20
18.00
LATITUDE N
210500
210000
211000
205500
213500
213000
211500
212500
212000
205000
Bonnie
98 820H
20: 30: 00Z-22: 00: 00Z
WIND IN KNOTS
LONGITUDE W


LONGITUDE W
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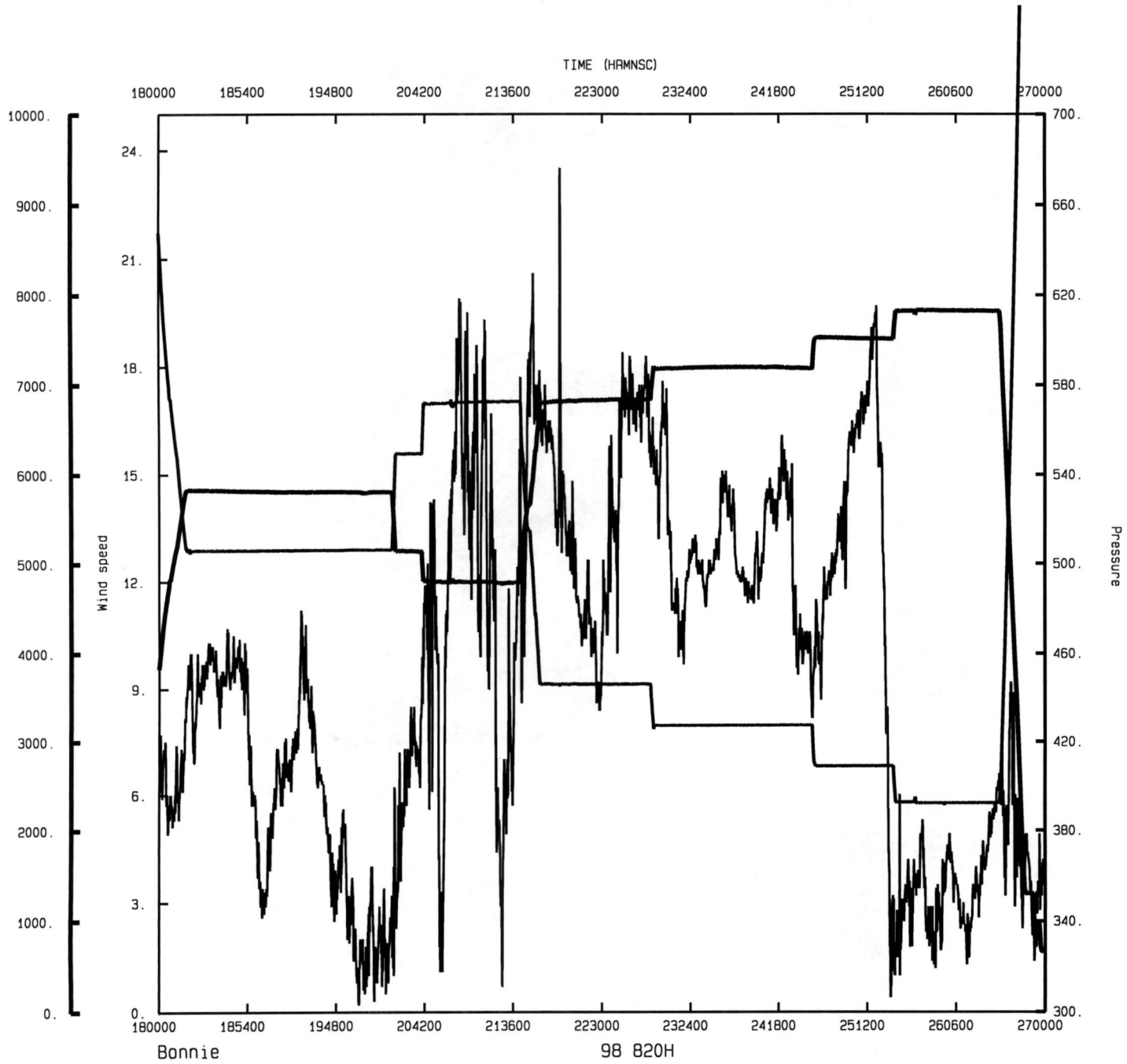
65.00
63.00
61.00
59.00
57.00
55.00
53.00
51.00
25.00
24.00
23.00
22.00
21.00
20.00
19.00
18.00
17.00
16.00
15.00
14.00
13.00
LATITUDE N
180000
183000
190000
193000
200000
203000
210000
213000
220000
223000
230000
233000
240000
243000
250000
253000
260000
263000
270000
Bonnie
98 820H
17: 45: 00Z-27: 00: 00Z
WIND IN KNOTS
LONGITUDE W


TIME (HRMNSC)
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194800
204200
213600
223000
232400
241800
251200
260600
270000
10000.
9000.
8000.
7000.
6000.
5000.
4000.
3000.
2000.
1000.
0.
24.
21.
18.
15.
12.
9.
6.
3.
0.
Wind speed
700.
660.
620.
580.
540.
500.
460.
420.
380.
340.
300.
Pressure
Bonnie
98 820H
TIME (HRMNSC)
NOAA/HRD