AIR-SEA INTERACTION CHECK LIST

790912H2

FLIGHT 19790912H2 - AXBT

Jeff Hawkins

Pre-deployment (following 48 hour alert)

1) Check radiometer calibration; if points deviate by more than .15°C, recalibrate

42RF..... NA

43RF.....

2) Arrange for deployment of needed AXBT units to staging base ..... ✓

3) Participate in flight crew, flight director briefing on proposed flight plan and AXBT drop sequence. ..... ✓

Pre-flight (following 24 hour alert)

1) Inventory AXBT stocks, log quantities on AXBT check sheet summary ..... ✓

2) Check that 3 antennas are in place and secured ..... ✓

3) Turn on receiver and run through calibration sequence - check for proper operation ..... ch #1 won't register calib freq #3

4) Check operation of strip chart recorder; set chart drive on .1"/sec; set scale on 0-5V; set pens on zero; set receivers on calibrate position 3 and adjust pen to voltmeter reading ..... NA

5) Check that required number of AXBT's are loaded externally and internally (remove tape from these) and that externally loaded tubes are labelled according to channel and year of manufacture number on the launch control panel ..... ✓

6) Clean radiometer lens ..... NA

7) Check proper operation of radiometer-compare meter reading and output of digital system while performing field calibration check at 3 temperatures ..... NA

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8) Obtain best estimate of radius of max wind, Rm, maximum wind, Vm, and minimum pressure, Pm ..... Rm 22 nm, Pm 950 mb, Vm 120 Kt

9) Set up receives 1 and 3 (left hand and right hand) on strip chart ..... NA

Post takeoff

1) Log takeoff time 222150

2) Turn on radiometer ..... NA

3) Turn on AXBT receiver, check for proper operation ..... ✓

4) Turn on strip chart recorder, setting chart rate at .1"/sec and voltage scale at 0-5 V, adjust 0 and 5 volt readings to edges of paper ..... NA

5) Have line printer turned on and set at one sample per second rate, run through three calibration frequencies on all AXBT receivers ..... NA

6) Set up graphics via terminal ..... ✓

7) Enter necessary programs via terminal ..... ✓

In flight

1) Run through AXBT calibration at the beginning and end of each flight leg ..... 232700 - 233300, 060100 - 060300

2) Make sure flight pattern is oriented according to direction of prior tasks ..... ✓

3) Update estimate of R_{max} and storm intensity at least 1/2 hour prior to first AXBT drop ..... Will drop first sequence before 1st pass

4) Check radiometer every 1/2 hour between AXBT legs ..... NA

5) Log times of all ascents and descents ..... 222150 A 20000, 010100 A 5000

6) Label head and tail of strip chart with flight number, number each AXBT trace. Turn chart on before each leg, off at end of leg ..... NA

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7) Encode AXBT traces between AXBT legs, deliver logs to flight director for transmission, log time of transmission on the log ..... NA

During AXBT Legs

1) Before and after each leg, switch receivers to calibrate mode and step through the calibration points, pausing 10 sec at each position ..... ✓

2) Drop AXBT's in sequence according to channel no. (12-14-16-12, etc). Make sure channel selector switch on each receiver matches the AXBT channel number to be dropped. ..... ✓

3) In the case of 2 AXBT's in the water at the same time, switch receivers 1 and 2 to the proper channel for the new AXBT, leaving receiver 3 set to the channel for the AXBT in the water ..... ✓

4) Key AXBT drops to time. Memorize interval (in nm) between each drop along the leg 1 from Table E.1); compute time to next drop from Table E.2. Predicted time should thus always equal drop time. As time permits, check AXBT positions with HP-25 program ..... ✓

5) Fill in as much of AXBT check sheet as possible before the drop. i.e., log latitude and longitude degrees before drop, then fill in tenths and hundredths (or minutes) of degrees just after dropping ..... ✓

6) If available, punch right hand event button at drop time and again just after modulation begins. ..... ✓

7) Estimate mixed layer depth (MLD) by estimating elapsed time from strip chart recorder, or by again hitting event button, when the temperature just begins dropping at bottom of isothermal layer (change of > .2°C in 1 sec). Convert elapsed time to depth using Table E.3. ..... ✓

8) Estimate time to first AXBT drop following a known turn point, using the average ground speed achieved after the turn ..... ✓

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9) If AXBT drop is a manual one using internal sondes released from free-fall chute:

   1) Check with flight engineer to be sure that the aircraft is depressurized

   2) Be sure the sleeve is inserted in the free-fall chute ..... NA

10) For external launching (legs through the hurricane center) be sure pilot has armed the system, you arm the system with key, select AXBT chute to be fired (row and column switches), arm the system with toggle switch and then fire at predetermined time. Copy info., label strip chart, set switches for next AXBT chute and compute time of next drop ..... ✓

11) From a flight altitude of 300 m, about 90 sec elapse between AXBT launch and the beginning of carrier transmission. For the rotor chute sondes, modulation begins about 60 seconds later. For the parachute sondes, modulation begins about 80 seconds after the carrier begins. The sonde is to be considered a failure if modulation does not begin 90 seconds after the carrier begins or, depending upon altitude, about 3 minutes after launch. If the planned AXBT spacing is 15 nm, or greater, a second sonde should be launched immediately after the above time is exceeded ..... ✓

After Landing

1) Turn off all equipment

   IRT .....
   AXBT .....
   Strip chart .....

2) Turn in forms and check sheets to Lead Project Scientist .....

3) Sketch flight pattern and approximate locations of AXBT drops .....

4) Sketch surface temperature and mixed layer depth analysis .....

5) Itemize problems ..... No strip chart
   No line printer col.

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Flight No 790912H2 Julian Day _____ AXBT Contract No. _____
Takeoff time 222150 Landing time _____
On station time _____ Depart station time _____
Operator J. Hawkins

Time	1500'	1500'	5000'	5000	5000					
Rm										
Vm	120	120	125	100						
Pm	941	946	946	94?	946					
	#1	#2	#3	#4	#5					

Penetrations

AXBT CHECK SHEET

AXBT	Channel#	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
				LEG ON		SE side	into	center			
H 1	14	A1	—	235605	—	—	28.99	87.21	25.8	-	✓
H 2	16	A2	235956	235956	—	—	29.11	87.44	25.6	-	✓
H 3	14	A3	000336	000336	—	—	29.24	87.62	26.5	-	✓
H 4	16	A4	—	001217	Wind	E'E	29.63	88.07	26.7	-	✓
(WSW → ENE)			Cancelled	leg	from	2-3	only	100'	deep		
H 5	14	B1		022540			29.24	87.52	27.2	-	✓
H 6	16	B2	022840	022845	Leg 7-8		29.38	87.65	26 ?	-	✓ Died
7	14	B3	023200	023220			29.53	87.35	27.3	-	✓
8	16	B4		023745	e - 2		29.97	87.64		▲	Nothing
H 9	14	C1		033015	w-E		29.38	87.70	26.4		✓
H 10	16	C2		033600	w-E		29.61	87.24	27.8		✓

H - Hermos (otherwise magnavox)

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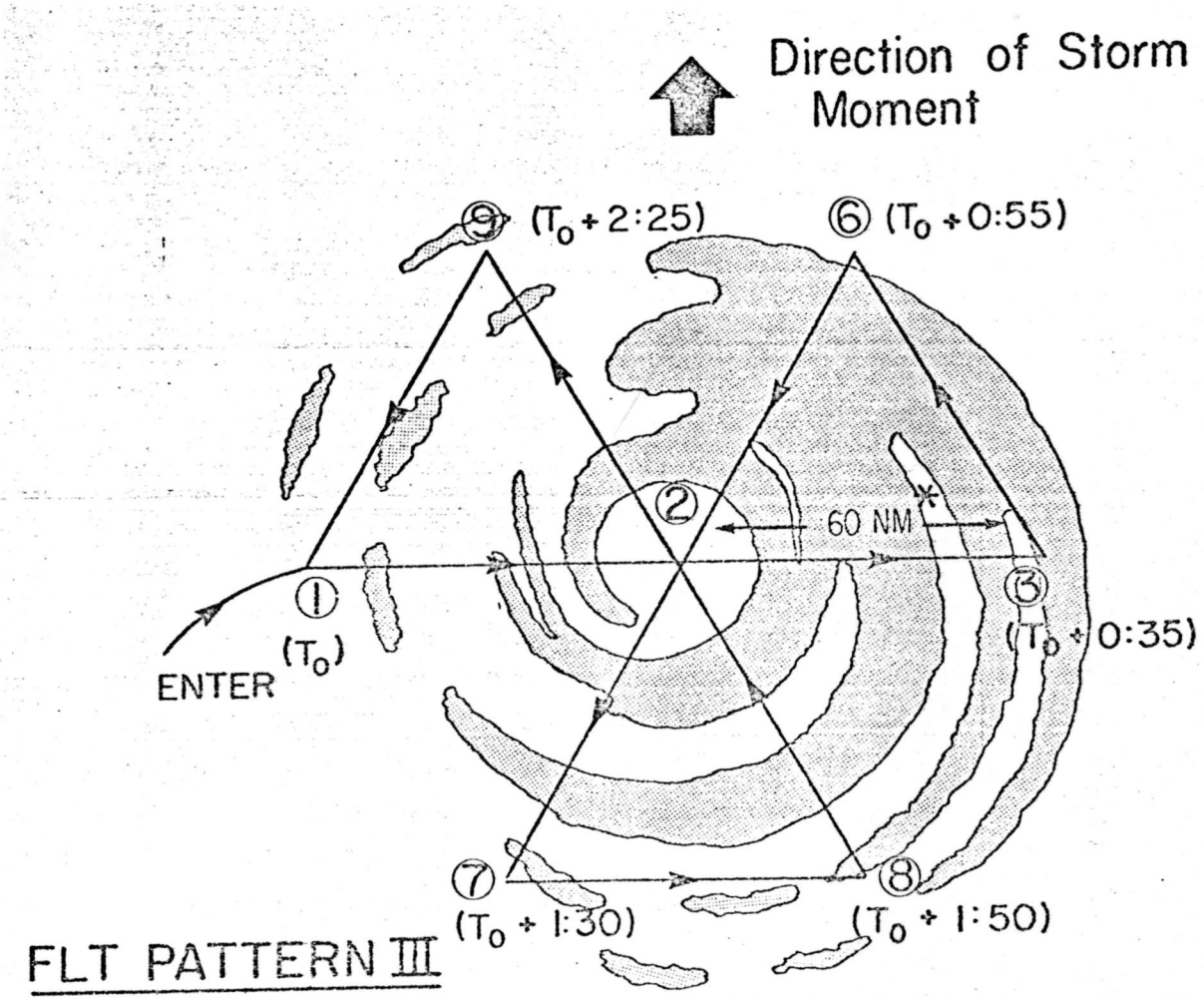
Flight No 790912H2 Julian Day _____ AXBT Contract No. _____
Takeoff time 222150 Landing time _____
On station time _____ Depart station time _____
Operator J. Hawkins
Time _____
Rm _____
Vm _____
Pm _____

AXBT CHECK SHEET

AXBT	Channel#	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
			This	leg will	parallel	storm	track	towards	the SE		
			Calibration		060100 → 060300						
11	14	C3	—	060340	—	—	29,33	87,11	25,2	-	C ✓
12	16	D1	060836	060836	—	—	29,07	86,94	24,7	-	C ✓
13	14	D2	061332	061332	—	—	28,81	86,76	26,0	-	C ✓
14	16	D3	061827	061827	—	—	28,55	86,57	25,2		C ✓

H 06



D - Dropsondes

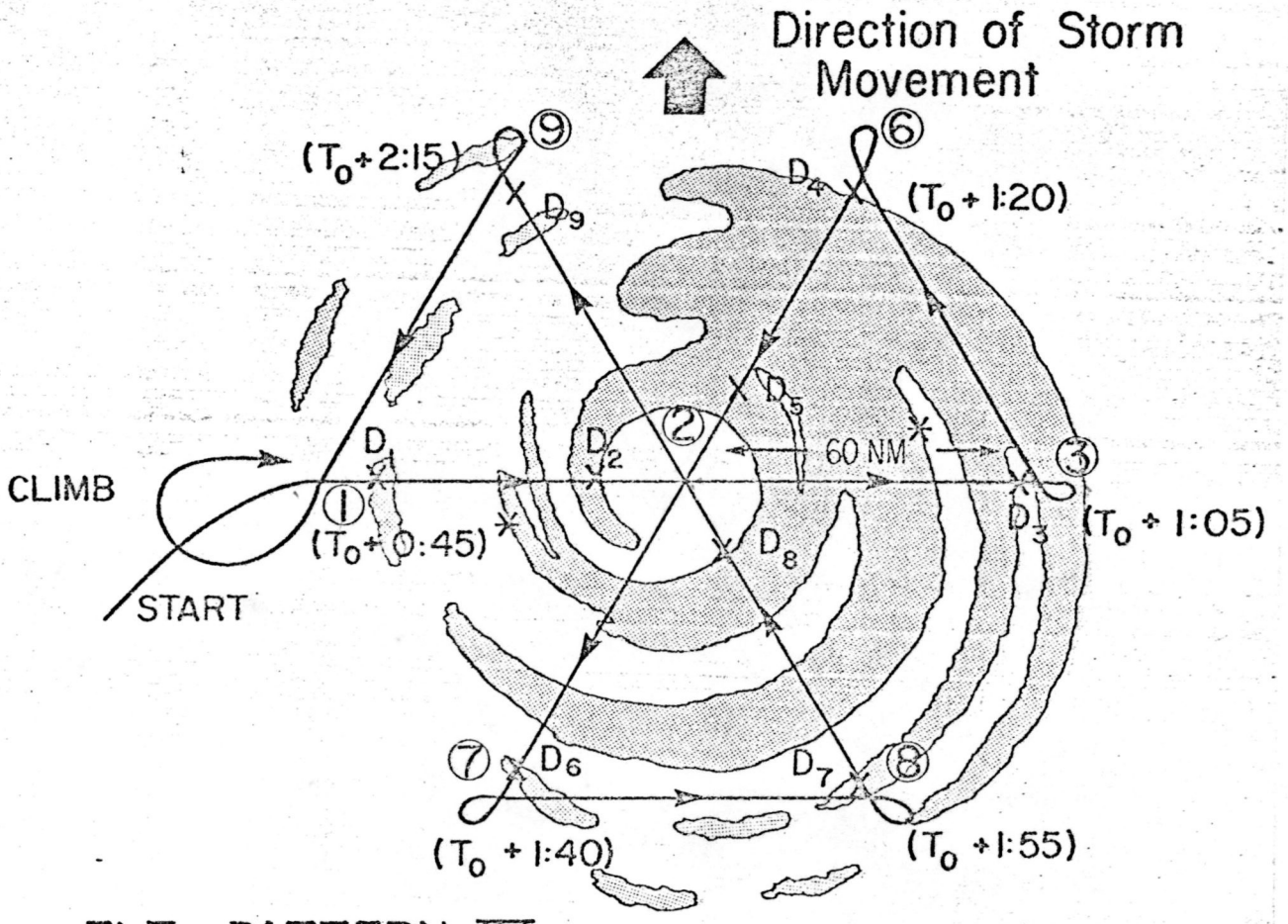
NOAA FLTS A, B, A2, B2, A3, B3, A4, B4 (Long-term monitoring)
(See figure B.2 and table B.1)
FLY 1-2-3-6-2-7-8-2-9 at 1500 ft. Repeat for duration of flight.

NOAA FLT C (Short term monitoring) (See figure B.3 and table B.2)
FLY 1-2-3-6-2-7-8-2-9-1 at 10,000 ft and repeat.

NOAA FLTS C, C2, C3 (Long-term monitoring) and B (short-term monitoring)
(See figures B.2 and B.3 and tables B.1 and B.2)
FLY 1-2-3-6-2-7-8-2-9-1 at . 20,000 ft. Climb to 24,000 ft near 1.
Repeat pattern at 24,000 ft. Dropsondes released on this pattern.

*Distance varies from 60 to 80 nm depending upon storm characteristics.

Figure B.8. Flight pattern III. Short- and long--term monitoring pattern and flight sequences. (See figures, B.2 and B.3 and tables B.1 and B.2).



FLT PATTERN IV

D - Dropsondes

NASA FLTS D, D2, and D3 (Short- and long-term monitoring)
30,000 ft pattern

FLY 1-2-3-6-2-7-8-2-9-1 at 30,000 ft; climb to 39,000 ft near 1 to start pattern V; drops made at points D1 to D9 (D2, D5 and D8 just outside eyewall)

*Approximate times of arrival at points indicated during initial flight D for comparisons with flights A and C. Similar elapsed times results for comparisons with flights C2, B2 and D2 and C3, A4 and D3 for use in dropsonde release decisions.

**Varies from 60 to 80 nm depending upon storm characteristics.

Figure B.9. Flight pattern IV for NASA CV 990 (See figures B.1, B.2 and B.3 and tables B.1 and B.2).

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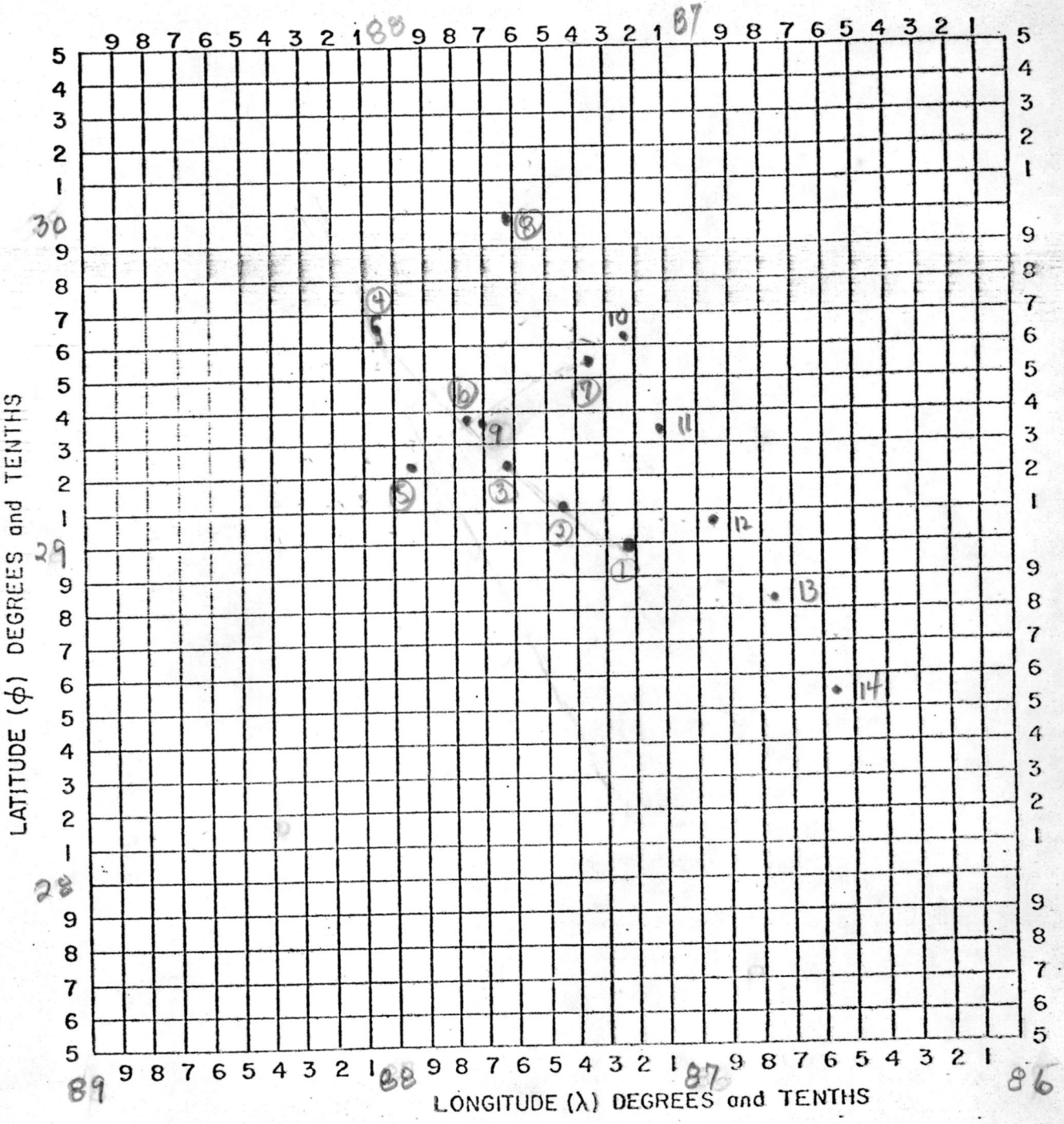
HURRICANE RECCO PLOTTING CHART



DATE 790912H2

OBSERVER Hawkins

NOTE: Label full degrees according to location of flight area

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AXBT CHECK SHEET SUMMARY

Flight 790912 H2 Contract No. _____

		Number
(1)	Sondes on hand by channel no....CH12.....	—
	....CH14.....	7
	....CH16.....	7
	Total.....	14
(2)	Sondes used by channel no ....CH12.....	—
	....CH14.....	7
	....CH16.....	7
	Total.....	14
(3)	Failures with no signal.....	1
(4)	Failures with carrier signal, but no modulation	—
(5)	Failures with sea surface temperature but terminated above thermocline.....	1
(6)	Probes which terminated above 250m but below thermocline.....	—
(7)	Total Failures.....	2
(8)	Failure rate.....	15%

Hermes A1, A2, A3
B1, B2
C1, C2
D2

All others magnavox