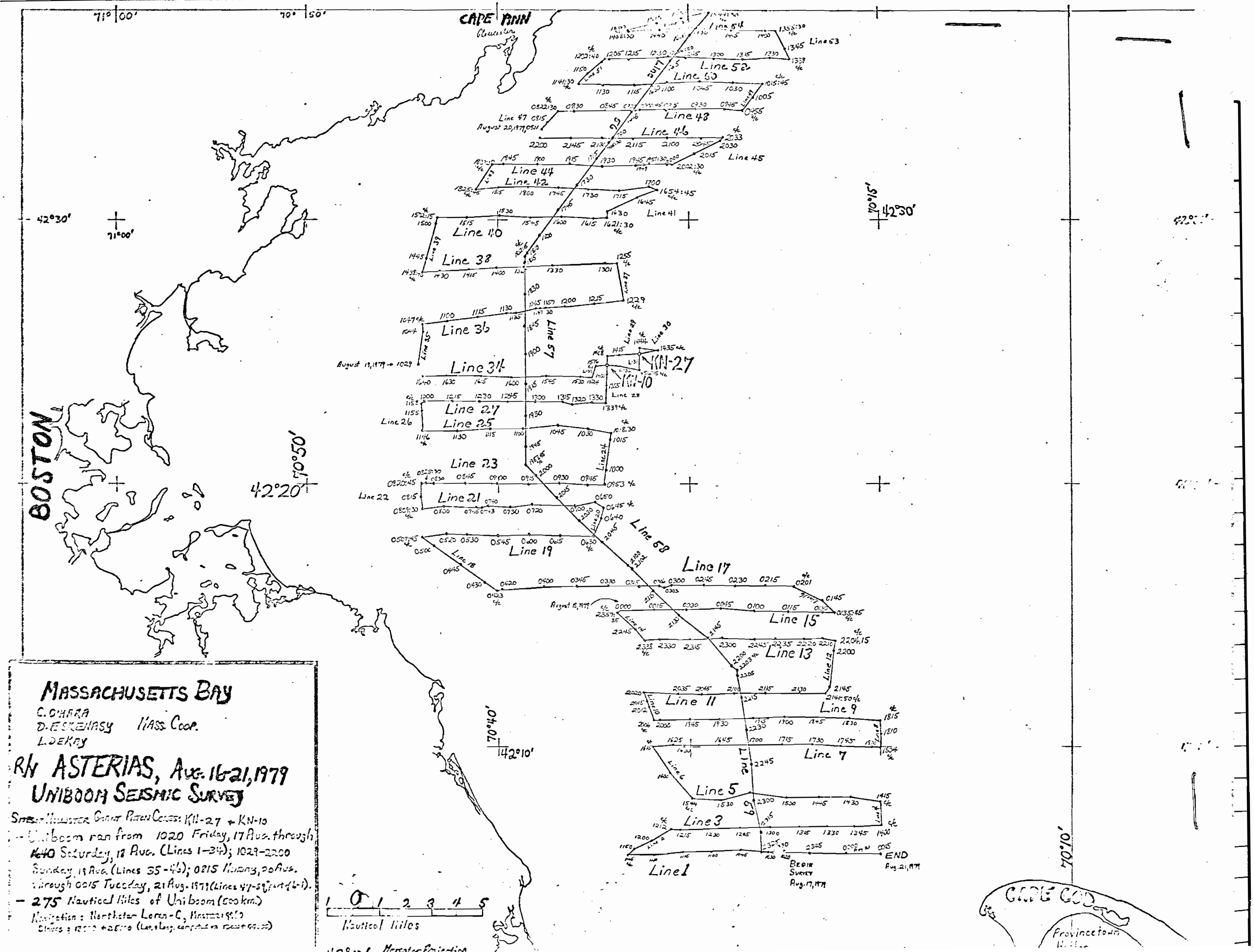
C. OHARA R/V ASTERIAS

AUGUST 15, 1979 - 28, 1979

R.N. OLDALE

UNIBOOM SEISMIC MASSACHUSETTS BAY

C. OHARA
D. ESKENASY
L. DEKAY



MASSACHUSETTS BAY
C. O'HARA
D. ESKENASY
L. DEKAY
MASS. COOP.
R/V ASTERIAS, AUG. 16-21, 1979
UNIBOOM SEISMIC SURVEY
Uniboom ran from 1020 Friday, 17 Aug. through
Saturday, 18 Aug. (Lines 1-34); 1029-2200
Sunday 19 Aug. (Lines 35-46); 0815 Monday, 20 Aug.
through 0015 Tuesday, 21 Aug. 1979
- 275 Nautical Miles of Uniboom (500 km.)
Navigation : Northstar Loran-C
CAPE ANN
Gloucester
BOSTON
CAPE COD
Provincetown
71° 00'
70° 50'
70° 40'
70° 15'
70° 10'
42° 30'
42° 20'
42° 10'
KN-27
KN-10
Line 1
Line 3
Line 5
Line 7
Line 9
Line 11
Line 13
Line 15
Line 17
Line 19
Line 21
Line 23
Line 25
Line 27
Line 34
Line 36
Line 38
Line 40
Line 42
Line 44
Line 46
Line 48
Line 50
Line 52
Line 54
Line 57
Line 58
BEGIN SURVEY Aug. 17, 1979
END Aug. 21, 1979
Nautical Miles
Mercator Projection

THURSDAY 16 AUGUST 1979

OPS							COMMENTS AND OBSERVATIONS
12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO.	STA.	
							MASS COOP
							CRUISE AST-8-79
							R/V ASTERIAS
							MASSACHUSETTS BAY - UNIBOOM
							O'HARA
							ESKENASY
							DEKAY

Carbon Main — S1 S3
Nantucket — S2 S4

GMT DAY	MO	YR	TIME	TIME ZONE ±	SHIPS COURSE	SPD	NAVIGATION S3 Nav / J Yates
16	08	79	1250				
			1840				
			1846				
			1900				25492.9 13854.8
			at Pt A		begin line MB-1		25497.0 13857.5
			1915				25502.7 13862.4
			1920				25505.6 13865.2
			1930				25511.4 13871.0
			1945				25520.2 13879.3
			2000				25528.8 13888.1
					pull gear, log off		
17	08	79	0745		underway from Pt A, MB-1		

(over)

Bight Of Naus Bay Materials

OPS							COMMENTS AND OBSERVATIONS
12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO.	STA.	
							Depart Woods Hole - on route to Provincetown
							1840 (EST) arrive at buoy SE Ptown
							stream hydrophone + boomer
							start recorder test gear
							aim for point A, to begin survey
							1846 (Asterias time) Boomer going
							1900 - Trim + Loran, Still enroute to Loran HB-1
							1915 (OK - cruising) Still having record
							problems Contrast .5 Threshold .7
							gain 5.6 print (-)
							1/2 sec/key 1/4 sec sweep
							Filters { High pass 400 / Low pass open
							2000 stop in middle of Line / pull sleds / head back to Ptown
							Arrive Ptown 2200
							17/8/79 0700 August 17, 1979 Friday - return to Ptown
							for hydrophone + records w/ RNO
							0745 Head out to buoy 13844.0 25471.5 enter point to Loran C
							New phones tried through both amps. Needs amp required
							special patch through Nick's battery box to allow clean interface
							Also tried with 2 pin makeshift connector to both amps (this and
							the unknown patch cord but may have been less effective) Tried
							direct to recorder. All above gave either nothing but the outgoing
							pulse or noise w/o reflectors across the record. Also tried running
							amp to filter but this attenuates signal so can only get
							bottom return. Lo cut @ 600 eliminates interference seen the
							day before. For same area when we replace w/ old phones

GMT DAY	MO	YR	TIME (EST)	TIME ZONE ±	SHIPS COURSE	SPD	NAVIGATION		
17	08	79	1020				25529.0	13887.8	
Lin 1			1030				25534.8	13893.5	
			1045				25548.7	13902.2	
			1100				25552.7	13911.4	
			1115				25561.9	13920.6	
			1130				25571.8	13930.5	
			1145				25580.4	13938.8	
Lin 2				C/C arrive at pt 16					
			1150				25579.6	13935.9	
			1200				25575.9	13928.5	
Lin 3			1212	C/C BOL 3			25572.0	13920.3	
			1215				25568.4	13917.4	
			1230				25559.5	13908.3	
			1245				25549.6	13893.4	
			1300				25539.7	13888.5	
			1315				25530.1	13879.0	
			1330				25521.3	13869.9	
			1345				25512.8	13861.0	
BOL 4			1400	C/C to Lin 4			25604.2	13852.5	
			1405	resume heading					
BOL 5			1415	C/C to Lin 5			25510.7	13847.6	
			1430				25521.2	13856.8	
			1445				25531.2	13867.1	
			1500				25541.7	13872.7	
			1515				25555.2	13888.3	
			1530				25562.6	13899.1	
			1544	end Lin 5			25572.6	13908.9	
				begin Lin 6					

OPS: 12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO.	STA.	COMMENTS AND OBSERVATIONS
							we get adequate record.
							1020 start survey again
							aim for what we ended last night — yes, aim for pt. B
							because we are already on line.
							1025 try to synch clocks
							1145 arrive pt. B,
							c/c head for pt C, Begin Line 2
							dent tips on belt, have to resynch recorder
							1212 arrive at pt C
							c/c BOL 3 aim for D
							1325 - some more again, record still not great
							go from D to E 25511.0 13847.6 (line 4)
							then E to F 25572.4 13908.9 (line 5)
							then F to G (2 miles) 25598.1 13911.1
							1400 c/c BOL 4 aim for E
							pull boomer in to clear salad
							1405 boom again
							1445 arrive, EOL 4, BOL 5 aim for F
							1500 avoid buoy (obs + por) temp. swerve
							1544 EOL 5 shut recorder for belt adjustments

GMT DAY	MO	YR	TIME	TIME ZONE ±	SHIPS COURSE	SPD	NAVIGATION	
17	08	79	1600				25586.2	13910.3
			1615		C/C EOL 6		25598.0	13911.0
			1618		belt change			
			1625		BOL line 7		25592.0	13904.3
			1630				25588.2	13900.6
			1645				25577.5	13889.8
			1700				25567.0	13879.4
			1715				25556.9	13869.4
			1730				25547.3	13859.6
			1745				25537.6	13850.4
			1800				25527.8	13840.5
			1804		EOL 7		25525.3	13838.0
		C/C			BOL 8			
			1810				25528.1	13835.2
			1815		EOL 8		25531.8	13833.1
					BOL 9			
			1830				25541.8	13842.5
			1845				25552.4	13853.0
			1900				25562.5	13863.2
			1915				25572.8	13873.8
			1930				25583.3	13884.7
			1945				25593.3	13894.3
			2000				25602.8	13903.9
		Pupun Δ	2005		resume line 9		Close	
			2006		EOL 9 BOL 10		25604.7	13905.8
		Line 0	2012				25609.7	13905.0
			2015				25611.5	13904.6
			2020				25614.6	13904.0

OPS							COMMENTS AND OBSERVATIONS
12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO.	STA.	
							G to H 25525.1 13837.9 H is on Stall bank
							H to I 25532.0 13833.0 now I, also Stall Bank
							(1618 Shut down for belt change)
							1625 recorder up
							1815 BOL 9 head West to J 25604.9 13906.0
							(J→K 25614.8 13904.0 K→L 25555.7 13845.5 than home?)
							2000 est paper change (slow speed)
							2005 resume speed, recorder on
							2006 EOL 9 BOL 10 recorder on+off
							Chuck working on belt, belt Δ
							2020 EOL 10 BOL 11

GMT DAY	MO	YR	TIME	TIME ZONE ±	SHIPS COURSE	SPD	NAVIGATION	
17	08	79	2035				25603.0	13893.3
			2045				25595.2	13885.8
			2105				25585.1	13875.4
			2115				25575.0	13865.0
			2130				25564.2	13857.0
			2141.50		C/C BOL 12		25555.7	13845.6
			2145				25556.2	13843.0
			2200				25567.3	13834.8
			2204.15		Begin MB-13		25566.4	13832.5
			2210				25570.6	13836.2
			2220				25576.2	13842.9
			2235				25585.6	13851.7
			2245				25592.1	13858.4
			2300				25602.7	13868.6
			2315				25612.8	13879.1
			2330				25622.7	13889.1
			2338		Begin MB-14		25627.6	13894.2
			2345				25633.2	13895.0
			2357.35		Begin MB-15		25643.1	13897.5
18	08	79	0000				25642.7	13896.4
			0015				25631.7	13885.2
			0030				25621.4	13875.0
			0045				25610.9	13863.8
			0100				25599.6	13853.4
			0115				25588.8	13842.5
			0130				25577.8	13831.4
	EOL-15		0135.45		C/C BOL 16		25573.9	13827.6

at end of line 11, either home or on to pt M
Pt. M, then N, then O, then P

W→E (L→M = 11), N (North) (M→N = 12 short), E-W (N→O = 3 long), O→P (North = 14 short)

OPS						COMMENTS AND OBSERVATIONS
12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO. STA.	
						2020 begin line 11 aim for point L (25555.7, 13845.5
						con't line 11
						C/C 2141:50 aimpt M (25566.6, 13832.5) end line 11, begin Line 12
						C/C aim pt N (25627.7, 13894.4) end MB-12, begin MB-13 2204
						~2208 record blows up - no changes in anything
						END MB-13 - C/C - BEGIN MB14, steer toward O (25643.3, 13897.8)
						End MB-14, C/C, Begin MB-15 steer toward P (25573.8, 13827.5)
						0135:45
						END MB-15, C/C, Begin MB-16, steer to Q (25593.4, 13836.1)

GMT DAY	MO	YR	TIME	TIME ZONE ±	SHIPS COURSE	SPD	NAVIGATION		
18	08	79	0145				25580.7	13829.2	
Arrive									
EOL 16			0201				25593.2	13836.0	
BOL 17									
cont			0215				25602.6	13845.1	
Arrive 17			0230				25612.1	13854.9	
			0245				25622.0	13864.7	
			0300				25632.4	13875.0	
			0303	belt change			25634.4	13877.0	
			0306	resume record			25636.4	13879.1	
			0315				25642.6	13885.6	
			0330				25653.2	13895.6	
Arrive 17			0345				25663.2	13906.0	
			0400				25674.3	13916.9	
			0420				25688.3	13931.2	
EOL 17			0423		C/C BOL 18		25689.9	13933.1	
[redacted]			0430		Arrive 18		25696.3	13935.6	
			0445				25709.1	13940.2	
			0500				25722.6	13945.3	
EOL 18			0505		C/C BOL 19		25729.0	13947.6	
			0520				25721.1	13939.1	
			0530				25713.9	13932.3	
			0545				25702.8	13922.2	
			0600				25692.4	13911.9	
			0615				25681.3	13901.8	
EOL 19			0630		C/C	BOL 20	25670.1	13891.1	
			0640				25672.2	13885.0	
EOL 20			0645		C/C	BOL 21	25673.6	13882.5	

OPS

12 KHz | 3.5 KHz | CSP | MAG | GRAV. | SONO. | STA.

COMMENTS AND OBSERVATIONS

Pt Q → Pt. R 25649.5 13893.0 line 17
but create R' bec. of direction we are headed.
R' will be much nearer to the coast

line 17 ✓ R' = 13933.0 25690.0 OK, on course 0210
(line 18 = R' → S 25729.2 13947.7) ✓
(line 19 = S → T (new) 25670.0 13891.0)

0240 Chuck is playing w/ recorder, seeing if he can clean up the record
Continuing line 17
0303 belt change, recorder off
0306 recording again
0400 all well, recorder has been spreading for a while.
0420 took readings; approaching end of line prepare for line 18, pt. S 25729.2 13947.7
0423 EOL 17 BOL 18

prepare for line 19, pt T (new) 25670.0 13891.0
0507.45 end line [redacted]18 Begin line 19 from S to T
0630 end line 19, Begin line 20 T → U
0645 end line 20 Begin line 21 U → V
head for pt V

KN-10 TDs
KN-27 TDs

Draw down the hatch at the belt change

GMT DAY	MO	YR	TIME	TIME ZONE ±	SHIPS COURSE	SPD	NAVIGATION		
18	08	79	0650		line 21		25677.0	13884.2	
			0700				25684.0	13891.4	
			0720				25697.6	13905.1	
			0730				25705.3	13912.8	
			0740		Δ Belt		25712.9	13920.0	
			0743		Back On		25715.2	13922.3	
			0745				25716.7	13923.8	
			0800				25728.6	13934.9	
	EOL21		0809.30	C/C	line 22		25735.7	13942.3	
			0815				25738.8	13940.7	
	EOL22		0820.45	C/C	Δ paper B/line 23		MISSED	FIX ON C/C	
			0825 30		back on		25740.2	13936.4	
			0830		synch recorder		25737.2	13933.6	
			0845				25726.5	13923.1	
			0853		Adjust Belts				
			0855		Synch recorder				
			0900				25715.5	13912.6	
			0915				25704.8	13902.3	
			0930				25694.6	13891.8	
			0945				25684.3	13882.9	
	EOL23		0953		C/C BOL 24		25679.4	13877.6	
			1000				25682.2	13874.3	
			1015				25688.4	13866.9	
	EOL24		1018 30		C/C BOL 25		25689.7	13865.1	
			1030				25698.1	13872.0	
			1045				25709.0	13882.9	
			1100				25720.0	13893.8	
			1115				25731.3	13904.6	
			1130				25742.0	13916.0	

OPS							COMMENTS AND OBSERVATIONS
12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO.	STA.	
							20 ~~F~~ to U V = 25673.5, 13882.2 ✓
							21 U to V V = 25735.9, 13942.4 ✓
							22 V to W W = 25741.7, 13937.9 ✓
							23 W to X X = 25679.3, 13877.6 ✓
							24 X to Y Y = 25690.0, 13865.0 Y ✓ ~~Must be reset~~ OK ~~Change structure done~~
							turn page for further information as we approach Hollister OPCoes
							0700 steering along line 21
							EOL 21 C/C BOL 22 steer to W
							EOL 22, C/C, BOL 23 steer to X Down pgm change Recorder function steer Line 23
							EOL 23, C/C, BOL 24 steer toward Y 0953
							1018 Begin line 25, head for Z

GMT DAY	GMT MO	GMT YR	GMT TIME	TIME ZONE ±	SHIPS COURSE	SHIPS SPD	NAVIGATION		
18	08	79	1146		C/C	BOL 26	25753.8	13927.4	
			1155				25758.9	13923.9	
EOL 26			1158		C/C	BOL 27	25760.5	13922.6	
			1200				25760.1	13921.3	
			1215				25750.7	13911.9	
			1230				25741.3	13903.0	
			1245		↑ gain to 35 dB.		25732.0	13893.7	
			1300				25722.3	13884.7	
			1315		Adj belt		25713.1	13875.5	
			1320		synch recorder.		25709.7	13872.8	
			1330			slow	25703.2	13866.2	
EOL 27			1339		~~C/C BOL 28~~ hdg		25698.1	13861.4	
			1355		BOL 28		25702.7	13857.9	
			1400				25705.9	13855.6	
			1404.30		KN-10		25707.8	13853.6	
EOL 28			1408		BOL 29		25709.8	13852.1	
			1415				25705.6	13847.6	
			1424.30		KN-27		25699.5	13841.5	
			1430				25697.1	13837.3	
EOL 29			1435	C/C	BOL 30		25694.6	13834.3	
BOL 30			1444	C/C	BOL 31		25701.1	13839.9	
			1447.30		KN-27		25699.4	13841.0	
BOL 31			1456.15	C/C	BOL 32		25696.2	13844.1	
			1505				25703.0	13849.7	
			~~1510~~		KN-10		~~25707.9~~		
			1511				25707.9	13853.4	
EOL 32			1516	C/C	BOL 33		42°24.49'	70°34.91'	
			~~1~~				over		

Mark GPC on paper

OPS: 12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO.	STA.	COMMENTS AND OBSERVATIONS
							Y → Z Z = 25753.8 13927.5 ✓
							Z → ZA ZA = 25760.7 13922.5 ✓
							ZA → ZB ZB = 25698.2 13861.2 ✓
							ZB to KN-10 (ZD) = 25708.0 13853.5 ✓ no c/c * mark GPC KN-10
							KN-10 → ZBA, ZBA = 25710.0 13852.0 ✓
							ZBA to KN-27, KN-27 = 25699.3 13841.3 ✓ no c/c * mark GPC KN-27
							KN-27 to ZBC, ZBC = 13839.0 25~~7030~~ 647.5 ✓
							ZBC → ZBD, ZBD = 13840.0 25701.0 ✓
							ZBD → KN-27 = 25699.3 13841.3 ✓ no c/c * GPC KN-27
							KN-27 → ZBE = 25698.0 13843.0 ✓ X
							ZBE → KN-10 = 25708.0 13853.5 ✓ no c/c * GPC KN-10
							KN-10 → ZBF = 25710.0 13856.0 ~~OK~~ BAD
							ZBF → ZBG, ZBG = 25707.0 13859.0
							Now go from ZBG to ZF, on our regular course
							ZF = 25766.4, 13917.0
							1146 Begin Line 26
							1158 End L.26, B.O.L. 27, head for pt. ZB
							? Is paper moving slower today? The
							? five minute spacings are shorter than last night.
							(Yes, about 0830 this morn.)
							1339 Recorder off, belt changed, ~~salad~~ salad removed
							Recorder on again at about 1349
							↑ slow 1354 Resume speed 1355 synch record
							1404.30 KN-10; 1424.20 KN-27
							Run 30 dogleg to set us up for next line Screwed up the TD's at ZBC and ZBD
							1516 c/c 42°24.43' 70°34.91'
							head for pt. ZBG then pick up ZF
							25766.4 13917.0

GMT				TIME ZONE	SHIPS		NAVIGATION	
DAY	MO	YR	TIME	±	COURSE	SPD		
18	08	79			heading for pt ZF from 42°24.49' and 70°34.91'			
	BOL 33 ~~[illegible]~~							
Line 34			1524	C/C	BOL 34		25709.0	13860.8
			1530				25713.2	13864.9
			1545				25724.8	13876.0
			1600				25736.2	13887.7
			1615				25746.9	13897.5
			1630				25758.5	13909.3
			1640		End Line 34		25766.2	13916.9

OPS: 12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO.	STA.	COMMENTS AND OBSERVATIONS
							After much radio about Hollester Core we have crossed OPCs KN-10 and KN-27 turned each, + then lost ourselves We followed Lat + long down to 42°24' and now have resumed our E-W lines So now, at 1524, BEGAN LINE 34 EOL 34 @ 1640 Head for Boston Harbor 1645 (maybe 2 hr steam)

Sunday 19 Aug 79

New Day

0800 depart Boston Harbor

On route to start of line MD-35

~ 2 hour steam

GMT DAY	MO	YR	TIME	TIME ZONE ±	SHIPS COURSE	SPD	NAVIGATION	
19	08	79	1029		BOC	35	25770.6	13916.1
			1047				25776.8	13908.4
EOC 35			1047		BOC	36	25778.8	13907.4
			1100				25777.2	13898.3
			1115				25762.1	13887.5
			1130				25753.0	13887.3
			1138		Synch		25749.9	13873.8
			1145		Δ Belt		25744.2	13866.5
			1147:30		back on		25742.6	13864.7
			1156		synch		25741.0	13862.9
			1200		resynch		25734.6	13856.0
			1215				25725.6	13845.7
EOC 36			1229 30		BOC	37	25717.2	13835.5
							.	.
			1244		slow to correct Nav		.	.
EOC 37			1258		BOC	38	25728.5	13830.4
			1301				25732.3	13837.2
							.	.
			1312		VELOCITY AMP THROWN OFF BENCH			
			13 16:15				.	.
			1330				25749.0	13852.3
			1345				25757.9	13862.0
			1400				25766.8	13871.2
			1415				25775.7	13881.1
			1430				25785.4	13891.1
EOC 38			1438:40		BOC	39	25790.7	13896.9
			1445				25792.6	13892.9
			1500				25797.5	13883.0
EOC 39			1502:15		BOC	40	25798.2	13881.7
							.	.

OPS							COMMENTS AND OBSERVATIONS
12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO.	STA.	
							Start line MB-35 (ZG: 25778.8 13907.3)
							EOL MB-35 BOL MB-36 (ZH 25717.1, 13835.5)
							EOL MB-36 BOL MB-37 (Z1: 25723.6, 13840.2)
							Head to ZK
							ALL OK
							Cont line MB-38
							Steer to Z IN BOL 39 EOL 38
							EOL 39

UNIBOOM BOMBAST-8-79

GMT DAY	MO	YR	TIME	TIME ZONE ±	SHIPS COURSE	SPD	NAVIGATION
19	08	79	1502	:15	BOL 40		25798.2 13881.7
			1515				25788.5 13871.7
			1530				25778.0 13860.5
			1545				25767.6 13850.3
			1600				25757.1 13839.6
			1615				25746.6 13829.2
	EOL 40		1621	:30	BOL 41		25742.2 13824.7
			1630				25727.2 13823.5
			1645				25737.6 13810.9
			1654		Adj Belt		~~25733.2~~
	EOL 41		1654	:45	BOL 42		25733.2 13802.7
							25736.2 13807.8
			1715				25745.6 13815.0
			1730				25755.0 13825.2
			1745				25765.4 13834.8
			1800				25775.2 13845.0
			1815				25784.7 13855.3
	EOL 42		1825	45	BOL 43		25791.8 13863.1
			1830				25792.1 13860.0
	EOL 43		1839	:20	BOL 44		25792.5 13852.9
			1845				25788.2 13848.8
			1900				25777.6 13837.4
			1915				25767.0 13826.4
			1930				25756.6 13815.7
			1945				25746.3 13804.8
			1949		O Belt, rec. off		25743.6 13801.7
			1951	:30	Back on		25741.9 13800.3
			2000				25736.4 13794.5
	EOL 44		2002	:30	BOL 45		25735.0 13792.7

ZQ

UNIBOOM BOMBAST-8-79

OPS							COMMENTS AND OBSERVATIONS
12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO.	STA.	
							Steer to ZM, BOL MB-40. Heading EAST. (25742.3, 13824.5)
							EPC Recorder down - paper + belt change
							EPC " on - Start line MB-41
							Recorder down for belt adj ~ 20 sec
							BOL 42 (25792.0 13863.5 : ZO)
							EOL 42 BOL 43 (ZR: 25792.6 13852.8)
							EOL 43 BOL 44 (ZQ: 25734.9, 13792.7)
							Δ to spreading
							Recorder Belt change
							EOL 44

GMT				TIME ZONE	SHIPS		NAVIGATION	
DAY	MO	YR	TIME	±	COURSE	SPD		
19	08	79	2002	:30	BOL	45	25735.0	13792.7
			2015				25730.7	13783.3
			2030				25725.8	13772.3
	EOL	45	2033		BOL	46	25725.8	13770.6
			2045				25732.2	13778.0
			2100				25742.6	13788.8
			2115				25753.2	13800.2
			2130				25763.1	13810.3
			2145				25773.0	13820.7
	EOL	46	2200				25783.1	13831.3

OPS							COMMENTS AND OBSERVATIONS
12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO.	STA.	
							BOL 45 (ZT: 25725.1, 13770.6)
							℄ BOL 46 (ZS: 25783.2, 13831.2)
							Call it a day - On route to Gloucester for the night

GMT DAY	MO	YR	TIME	TIME ZONE ±	SHIPS COURSE	SPD	NAVIGATION	
20	03	79	0811		BOL 47		25784.5	13828.8
			0815				25784.1	13825.7
EOL 47			0822:30		BOL 48		25783.2	13819.8
			0830				25778.2	13814.7
			0845				25768.5	13804.0
			0900	△ Belt			25759.5	13793.7
			0901:45	Back on			25758.4	13792.5
			0915				25749.7	13783.9
			0930				25741.0	13774.3
			0945				25732.3	13765.0
EOL 48			0955		BOL 49		25726.6	13759.0
			1005				25726.3	13752.9
EOL 49			1015:45		BOL 50		25726.7	13747.0
			1030				25736.0	13756.6
			1045				25746.1	13767.3
			1100				25756.0	13778.0
			1115				25765.4	13789.1
			1130				25775.5	13799.5
EOL 50			1141:30	BOL 51		C/C	25783.1	13807.4
			1150				25782.5	13802.4
			1200				25780.9	13795.2
EOL 51			1202:40	BOL 52			25780.8	13793.6
			1205				25779.5	13792.6
			1215				25773.4	13785.8
			1230	△ Belt			25764.6	13776.1
			1235:30	Back on			25761.3	13772.6
			1245				25756.0	13766.8
			1306				25747.8	13757.8
			1315				25739.1	13748.9
			1330				25730.8	13739.1

OPS: 12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO.	STA.	COMMENTS AND OBSERVATIONS
							Out of Gloucester, Begin line 47 (ZV 25783.4, 13819.7)
							Change Belt Back on
							0955 end line 48, begin line 48, head for ZX (25726.8 13746.8)
							1015:45 end line 49, Begin line 50 (ZW: 25783.1, 13807.6)
							BOL 51 (ZZ: 25780.9, 13793.4)
							BOL 52 (ZY: 25725.1, 13733.1)
							EPC down belt change

25760
758

LINE MB52

GMT DAY	MO	YR	TIME	TIME ZONE ±	SHIPS COURSE	SPD	NAVIGATION		
20	08	79	1339		BOL 53		25725.2	13733.3	
			1345				25728.7	13732.3	
EOL 53			1355:30		BOL 54		25735.8	13731.8	
			1400				25738.8	13735.0	
			1415				25749.3	13746.5	
			1430				25760.0	13757.6	
			1445				25770.4	13769.6	
EOL 54			1459:30	C/C	BOL 55		25780.3	13780.1	
			1500				25780.7	13779.9	
			1515				25778.3	13769.2	
[redacted]			1530	C/C	[redacted]6		25767.0	13760.1	
EOL 55			1544:30	C/C	BOL 56		25760.1	13750.0	
			1600				25760.3	13761.1	
			1615				25759.9	13772.6	
			1630				25759.7	13784.1	
			1645				25759.8	13795.6	
			1700				25759.8	13807.0	
			1705:30				25759.8	13809.1	
			1715				25759.8	13816.5	
			1730				25759.9	13828.1	
			1745				25760.1	13839.4	
			1800				25760.1	13850.8	
			1810				25759.8	13858.2	
EOL 56			1812:15	C/C	BOL 57		25760.0	13859.7	
			1815				25758.8	13861.3	
			1830				25751.1	13867.0	
			1845				25743.8	13873.8	
			1900				25736.8	13878.5	
			1915				25729.7	13884.4	
			1930				25722.3	13890.3	

OPS

12 KHz | 3.5 KHz | CSP | MAG | GRAV. | SONO. | STA.

COMMENTS AND OBSERVATIONS

C/C BOL 53 (AZA: 25736.0, 13732.0) EOL 52

C/C BOL 54 (AZA: 25780.0, 13780.2)

1458 BOL 55 25760.0 13750.0 endpoint

	line #	endpoint
	56 ✓	25760.0, 13860.0
	57 ✓	13900.0 25710.0
	58 ✓	25590.0 13870.0
	59	25534.8 13895.5
rerun to start →	60 →	25497.0 13857.5

C/C Start line MB-56

1700 Slow for paper + delta

1705.30 resume recorder, line 56, speed up

1715 light, clock synch seems to work (false alarm)

Start line MB-57

GMT DAY	MO	YR	TIME	TIME ZONE ±	SHIPS COURSE	SPD	NAVIGATION		
2	0	8	7 9 1945		L	INE 57 cont	25714.6	13896.1	
EOL 57	~~2053.45~~			c/c			~~25710.2~~	~~13899.8~~	
	19	53	~~2053.45~~	c/c	BOL 58		25710.2	13899.8	
			~~2~~000				25764.7	13898.5	
			2015				25692.1	13895.8	
			2030				25678.9	13892.6	
			2045				25665.6	13889.3	
			2100	Δ Belt			25651.3	13885.3	
			2102	Back ON			25649.6	13884.8	
			2115				25637.1	13881.8	
			2130				25622.7	13878.5	
			2145				25607.9	13874.4	
			2200				25593.0	13870.7	
			2203				25590.1	13870.0	
EOL 58			2205		BOL 59		25588.7	13870.8	
			2215				25581.7	13873.6	
			2230				25571.8	13878.5	
			2245				25561.9	13883.1	
			2300				25551.6	13887.8	
			2315				25541.2	13892.2	
EOL 59			2325	Re[illegible]	MB-1		25535.3	13895.6	
			2330				25531.8	13892.0	
			2345				25520.6	13880.4	
			2400	↓					
21	0	8	7 9 0000	MB-1 cont			25508.3	13868.5	
			0015	END Survey			25497.2	13857.7	

OPS							COMMENTS AND OBSERVATIONS
12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO.	STA.	
							(~~Back~~ to 13900.0, 25710.0)
							(Next to 25590., 13870.0)
							1953.45 c/d begin 5-8
							EOL 58 BOL 59 (255348, 13895.5)
							EOL 59 ~~Resume~~ RERUN PART OF Line 1 (25497.0, 13857.5)
							0830 Depart P-Town - on route to Woods Hole

Prepared turning points

OPS: 12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO.	STA.	COMMENTS AND OBSERVATIONS						
							A	25497.0	13857.5	1	ZE	25699.3	13841.3 KN-27 GPC
							B 2	25580.5	13939.0	✓	ZF	25766.4	13917.0
							C	25572.0	13920.0	✓	ZG	25778.8	13907.3
							D 4	25504.2	13852.6	3 ✓	ZH	25717.1	13835.5
							E	25511.0	13847.6	5	ZI	25723.6	13840.2
							F	25572.4	13908.9		ZJ	25784.6	13901.5
							G 6	25598.1	13911.1	✓ 7	ZK	25790.8	13897.1
							H	25525.1	13837.9		ZL	25729.3	13834.8
							I 8	25532.0 (25549.2)	13833.0 (13851.7)	new old 9	ZM	25742.3	13824.5
							J 10	25604.9	13906.0		ZN	25798.3	13881.6
							K	25614.8	13904.0	11	ZO	25792.0	13863.1
							L 12	25555.1	13845.5		ZP	25733.2	13802.6
							M	25566.6	13832.5	13	ZQ	25734.9	13792.7
							N	25627.7	13894.4		ZR	25792.6	13852.8
							O 14	25643.3	13897.8	15	ZS	25783.2	13831.2
							P 16	25573.8	13827.5		ZT	25725.1	13770.6
							Q	25593.4	13836.1	17	ZU	25726.4	13758.9
							R 18	25690.0 ~~25649.5~~	13933.0 ~~13892.0~~		ZV	25783.4	13819.7
							S	25729.2	13947.7	19	ZW	25783.1	13807.6
							T 20	25670.0 ~~25606.4~~	13891.0 ~~13826.4~~		ZX	25726.8	13746.8
							U	25673.5	13882.2	21	ZY	25725.1	13733.1
							V	25735.9	13942.4		ZZ	25780.9	13793.4
							W	25741.7	13937.9		AZA	25780.0	13780.2
							α	25679.3	13877.6	✓	BZA	25736.0	13732.0
							y	25690.0 ~~25686.9~~	13865.0 ~~13861.2~~				
							Z	25753.8	13927.5				
							ZA	25760.7	13922.5				
							ZB	25698.2	13861.2				
							ZC	25705.0	13856.0				
							ZD	25708.0	13853.5	KN-10 GPC Hallister			

note corrections

GMT				TIME ZONE	SHIPS		NAVIGATION
DAY	MO	YR	TIME	±	COURSE	SPD	
							RERUN MB-1 FROM 25534.8, 13893.5 to P-Town.

Carbon Main — S1 S3
Nantucket — S2 S4

GMT DAY	MO	YR	TIME	TIME ZONE ±	SHIPS COURSE	SPD	NAVIGATION S3 Nav / J Yates
16	08	79	1250				
			1840				
			1846				
			1900				25492.9 13854.8
			at Pt A		begin line MB-1		25497.0 13857.5
			1915				25502.7 13862.4
			1920				25505.6 13865.2
			1930				25511.4 13871.0
			1945				25520.2 13879.3
			2000				25528.8 13888.1
					pull gear, log off		
17	08	79	0745		underway from Pt A, MB-1		

(over)

Bight Of Naus Bay Materials

OPS							COMMENTS AND OBSERVATIONS
12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO.	STA.	
							Depart Woods Hole - on route to Provincetown
							1840 (EST) arrive at buoy SE Ptown
							stream hydrophone + boomer
							start recorder test gear
							aim for point A, to begin survey
							1846 (Asterias time) Boomer going
							1900 - Trim + Loran, Still enroute to Loran HB-1
							1915 (OK - cruising) Still having record
							problems Contrast .5 Threshold .7
							gain 5.6 print (-)
							1/2 sec/key 1/4 sec sweep
							Filters { High pass 400 / Low pass open
							2000 stop in middle of Line / pull sleds / head back to Ptown
							Arrive Ptown 2200
							17/8/79 0700 August 17, 1979 Friday - return to Ptown
							for hydrophone + records w/ RNO
							0745 Head out to buoy 13844.0 25471.5 enter point to Loran C
							New phones tried through both amps. Needs amp required
							special patch through Nick's battery box to allow clean interface
							Also tried with 2 pin makeshift connector to both amps (this and
							the unknown patch cord but may have been less effective) Tried
							direct to recorder. All above gave either nothing but the outgoing
							pulse or noise w/o reflectors across the record. Also tried running
							amp to filter but this attenuates signal so can only get
							bottom return. Lo cut @ 600 eliminates interference seen the
							day before. For same area when we replace w/ old phones

GMT DAY	MO	YR	TIME (EST)	TIME ZONE ±	SHIPS COURSE	SPD	NAVIGATION		
17	08	79	1020				25529.0	13887.8	
Lin 1			1030				25534.8	13893.5	
			1045				25548.7	13902.2	
			1100				25552.7	13911.4	
			1115				25561.9	13920.6	
			1130				25571.8	13930.5	
			1145				25580.4	13938.8	
Lin 2				C/C arrive at pt 16					
			1150				25579.6	13935.9	
			1200				25575.9	13928.5	
Lin 3			1212	C/C BOL 3			25572.0	13920.3	
			1215				25568.4	13917.4	
			1230				25559.5	13908.3	
			1245				25549.6	13893.4	
			1300				25539.7	13888.5	
			1315				25530.1	13879.0	
			1330				25521.3	13869.9	
			1345				25512.8	13861.0	
BOL 4			1400	C/C to Lin 4			25604.2	13852.5	
			1405	resume heading					
BOL 5			1415	C/C to Lin 5			25510.7	13847.6	
			1430				25521.2	13856.8	
			1445				25531.2	13867.1	
			1500				25541.7	13872.7	
			1515				25555.2	13888.3	
			1530				25562.6	13899.1	
			1544	end Lin 5			25572.6	13908.9	
				begin Lin 6					

OPS: 12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO.	STA.	COMMENTS AND OBSERVATIONS
							we get adequate record.
							1020 start survey again
							aim for what we ended last night — yes, aim for pt. B
							because we are already on line.
							1025 try to synch clocks
							1145 arrive pt. B,
							c/c head for pt C, Begin Line 2
							dent tips on belt, have to resynch recorder
							1212 arrive at pt C
							c/c BOL 3 aim for D
							1325 - some more again, record still not great
							go from D to E 25511.0 13847.6 (line 4)
							then E to F 25572.4 13908.9 (line 5)
							then F to G (2 miles) 25598.1 13911.1
							1400 c/c BOL 4 aim for E
							pull boomer in to clear salad
							1405 boom again
							1445 arrive, EOL 4, BOL 5 aim for F
							1500 avoid buoy (obs + por) temp. swerve
							1544 EOL 5 shut recorder for belt adjustments

GMT DAY	MO	YR	TIME	TIME ZONE ±	SHIPS COURSE	SPD	NAVIGATION	
17	08	79	1600				25586.2	13910.3
			1615		C/C EOL 6		25598.0	13911.0
			1618		belt change			
			1625		BOL line 7		25592.0	13904.3
			1630				25588.2	13900.6
			1645				25577.5	13889.8
			1700				25567.0	13879.4
			1715				25556.9	13869.4
			1730				25547.3	13859.6
			1745				25537.6	13850.4
			1800				25527.8	13840.5
			1804		EOL 7		25525.3	13838.0
		C/C			BOL 8			
			1810				25528.1	13835.2
			1815		EOL 8		25531.8	13833.1
					BOL 9			
			1830				25541.8	13842.5
			1845				25552.4	13853.0
			1900				25562.5	13863.2
			1915				25572.8	13873.8
			1930				25583.3	13884.7
			1945				25593.3	13894.3
			2000				25602.8	13903.9
		Pupun Δ	2005		resume line 9		Close	
			2006		EOL 9 BOL 10		25604.7	13905.8
		Line 0	2012				25609.7	13905.0
			2015				25611.5	13904.6
			2020				25614.6	13904.0

OPS							COMMENTS AND OBSERVATIONS
12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO.	STA.	
							G to H 25525.1 13837.9 H is on Stall bank
							H to I 25532.0 13833.0 now I, also Stall Bank
							(1618 Shut down for belt change)
							1625 recorder up
							1815 BOL 9 head West to J 25604.9 13906.0
							(J→K 25614.8 13904.0 K→L 25555.7 13845.5 than home?)
							2000 est paper change (slow speed)
							2005 resume speed, recorder on
							2006 EOL 9 BOL 10 recorder on+off
							Chuck working on belt, belt Δ
							2020 EOL 10 BOL 11

GMT DAY	MO	YR	TIME	TIME ZONE ±	SHIPS COURSE	SPD	NAVIGATION	
17	08	79	2035				25603.0	13893.3
			2045				25595.2	13885.8
			2105				25585.1	13875.4
			2115				25575.0	13865.0
			2130				25564.2	13857.0
			2141.50		C/C BOL 12		25555.7	13845.6
			2145				25556.2	13843.0
			2200				25567.3	13834.8
			2204.15		Begin MB-13		25566.4	13832.5
			2210				25570.6	13836.2
			2220				25576.2	13842.9
			2235				25585.6	13851.7
			2245				25592.1	13858.4
			2300				25602.7	13868.6
			2315				25612.8	13879.1
			2330				25622.7	13889.1
			2338		Begin MB-14		25627.6	13894.2
			2345				25633.2	13895.0
			2357.35		Begin MB-15		25643.1	13897.5
18	08	79	0000				25642.7	13896.4
			0015				25631.7	13885.2
			0030				25621.4	13875.0
			0045				25610.9	13863.8
			0100				25599.6	13853.4
			0115				25588.8	13842.5
			0130				25577.8	13831.4
	EOL-15		0135.45		C/C BOL 16		25573.9	13827.6

at end of line 11, either home or on to pt M
Pt. M, then N, then O, then P

W→E (L→M = 11), N (North) (M→N = 12 short), E-W (N→O = 3 long), O→P (North = 14 short)

OPS						COMMENTS AND OBSERVATIONS
12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO. STA.	
						2020 begin line 11 aim for point L (25555.7, 13845.5
						con't line 11
						C/C 2141:50 aimpt M (25566.6, 13832.5) end line 11, begin Line 12
						C/C aim pt N (25627.7, 13894.4) end MB-12, begin MB-13 2204
						~2208 record blows up - no changes in anything
						END MB-13 - C/C - BEGIN MB14, steer toward O (25643.3, 13897.8)
						End MB-14, C/C, Begin MB-15 steer toward P (25573.8, 13827.5)
						0135:45
						END MB-15, C/C, Begin MB-16, steer to Q (25593.4, 13836.1)

GMT DAY	MO	YR	TIME	TIME ZONE ±	SHIPS COURSE	SPD	NAVIGATION		
18	08	79	0145				25580.7	13829.2	
Arrive									
EOL 16			0201				25593.2	13836.0	
BOL 17									
cont			0215				25602.6	13845.1	
Arrive 17			0230				25612.1	13854.9	
			0245				25622.0	13864.7	
			0300				25632.4	13875.0	
			0303	belt change			25634.4	13877.0	
			0306	resume record			25636.4	13879.1	
			0315				25642.6	13885.6	
			0330				25653.2	13895.6	
Arrive 17			0345				25663.2	13906.0	
			0400				25674.3	13916.9	
			0420				25688.3	13931.2	
EOL 17			0423		C/C BOL 18		25689.9	13933.1	
[redacted]			0430		Arrive 18		25696.3	13935.6	
			0445				25709.1	13940.2	
			0500				25722.6	13945.3	
EOL 18			0505		C/C BOL 19		25729.0	13947.6	
			0520				25721.1	13939.1	
			0530				25713.9	13932.3	
			0545				25702.8	13922.2	
			0600				25692.4	13911.9	
			0615				25681.3	13901.8	
EOL 19			0630		C/C	BOL 20	25670.1	13891.1	
			0640				25672.2	13885.0	
EOL 20			0645		C/C	BOL 21	25673.6	13882.5	

OPS

12 KHz | 3.5 KHz | CSP | MAG | GRAV. | SONO. | STA.

COMMENTS AND OBSERVATIONS

Pt Q → Pt. R 25649.5 13893.0 line 17
but create R' bec. of direction we are headed.
R' will be much nearer to the coast

line 17 ✓ R' = 13933.0 25690.0 OK, on course 0210
(line 18 = R' → S 25729.2 13947.7) ✓
(line 19 = S → T (new) 25670.0 13891.0)

0240 Chuck is playing w/ recorder, seeing if he can clean up the record
Continuing line 17
0303 belt change, recorder off
0306 recording again
0400 all well, recorder has been spreading for a while.
0420 took readings; approaching end of line prepare for line 18, pt. S 25729.2 13947.7
0423 EOL 17 BOL 18

prepare for line 19, pt T (new) 25670.0 13891.0
0507.45 end line [redacted]18 Begin line 19 from S to T
0630 end line 19, Begin line 20 T → U
0645 end line 20 Begin line 21 U → V
head for pt V

KN-10 TDs
KN-27 TDs

Draw down the hatch at the belt change

GMT DAY	MO	YR	TIME	TIME ZONE ±	SHIPS COURSE	SPD	NAVIGATION		
18	08	79	0650		line 21		25677.0	13884.2	
			0700				25684.0	13891.4	
			0720				25697.6	13905.1	
			0730				25705.3	13912.8	
			0740		Δ Belt		25712.9	13920.0	
			0743		Back On		25715.2	13922.3	
			0745				25716.7	13923.8	
			0800				25728.6	13934.9	
	EOL21		0809.30	C/C	line 22		25735.7	13942.3	
			0815				25738.8	13940.7	
	EOL22		0820.45	C/C	Δ paper B/line 23		MISSED	FIX ON C/C	
			0825 30		back on		25740.2	13936.4	
			0830		synch recorder		25737.2	13933.6	
			0845				25726.5	13923.1	
			0853		Adjust Belts				
			0855		Synch recorder				
			0900				25715.5	13912.6	
			0915				25704.8	13902.3	
			0930				25694.6	13891.8	
			0945				25684.3	13882.9	
	EOL23		0953		C/C BOL 24		25679.4	13877.6	
			1000				25682.2	13874.3	
			1015				25688.4	13866.9	
	EOL24		1018 30		C/C BOL 25		25689.7	13865.1	
			1030				25698.1	13872.0	
			1045				25709.0	13882.9	
			1100				25720.0	13893.8	
			1115				25731.3	13904.6	
			1130				25742.0	13916.0	

OPS							COMMENTS AND OBSERVATIONS
12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO.	STA.	
							20 ~~F~~ to U V = 25673.5, 13882.2 ✓
							21 U to V V = 25735.9, 13942.4 ✓
							22 V to W W = 25741.7, 13937.9 ✓
							23 W to X X = 25679.3, 13877.6 ✓
							24 X to Y Y = 25690.0, 13865.0 Y ✓ ~~Must be reset~~ OK ~~Change structure done~~
							turn page for further information as we approach Hollister OPCoes
							0700 steering along line 21
							EOL 21 C/C BOL 22 steer to W
							EOL 22, C/C, BOL 23 steer to X Down pgm change Recorder function steer Line 23
							EOL 23, C/C, BOL 24 steer toward Y 0953
							1018 Begin line 25, head for Z

GMT DAY	GMT MO	GMT YR	GMT TIME	TIME ZONE ±	SHIPS COURSE	SHIPS SPD	NAVIGATION		
18	08	79	1146		C/C	BOL 26	25753.8	13927.4	
			1155				25758.9	13923.9	
EOL 26			1158		C/C	BOL 27	25760.5	13922.6	
			1200				25760.1	13921.3	
			1215				25750.7	13911.9	
			1230				25741.3	13903.0	
			1245		↑ gain to 35 dB.		25732.0	13893.7	
			1300				25722.3	13884.7	
			1315		Adj belt		25713.1	13875.5	
			1320		synch recorder.		25709.7	13872.8	
			1330			slow	25703.2	13866.2	
EOL 27			1339		~~C/C BOL 28~~ hdg		25698.1	13861.4	
			1355		BOL 28		25702.7	13857.9	
			1400				25705.9	13855.6	
			1404.30		KN-10		25707.8	13853.6	
EOL 28			1408		BOL 29		25709.8	13852.1	
			1415				25705.6	13847.6	
			1424.30		KN-27		25699.5	13841.5	
			1430				25697.1	13837.3	
EOL 29			1435	C/C	BOL 30		25694.6	13834.3	
BOL 30			1444	C/C	BOL 31		25701.1	13839.9	
			1447.30		KN-27		25699.4	13841.0	
BOL 31			1456.15	C/C	BOL 32		25696.2	13844.1	
			1505				25703.0	13849.7	
			~~1510~~		KN-10		~~25707.9~~		
			1511				25707.9	13853.4	
EOL 32			1516	C/C	BOL 33		42°24.49'	70°34.91'	
			~~1~~				over		

Mark GPC on paper

OPS: 12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO.	STA.	COMMENTS AND OBSERVATIONS
							Y → Z Z = 25753.8 13927.5 ✓
							Z → ZA ZA = 25760.7 13922.5 ✓
							ZA → ZB ZB = 25698.2 13861.2 ✓
							ZB to KN-10 (ZD) = 25708.0 13853.5 ✓ no c/c * mark GPC KN-10
							KN-10 → ZBA, ZBA = 25710.0 13852.0 ✓
							ZBA to KN-27, KN-27 = 25699.3 13841.3 ✓ no c/c * mark GPC KN-27
							KN-27 to ZBC, ZBC = 13839.0 25~~7030~~ 647.5 ✓
							ZBC → ZBD, ZBD = 13840.0 25701.0 ✓
							ZBD → KN-27 = 25699.3 13841.3 ✓ no c/c * GPC KN-27
							KN-27 → ZBE = 25698.0 13843.0 ✓ X
							ZBE → KN-10 = 25708.0 13853.5 ✓ no c/c * GPC KN-10
							KN-10 → ZBF = 25710.0 13856.0 ~~OK~~ BAD
							ZBF → ZBG, ZBG = 25707.0 13859.0
							Now go from ZBG to ZF, on our regular course
							ZF = 25766.4, 13917.0
							1146 Begin Line 26
							1158 End L.26, B.O.L. 27, head for pt. ZB
							? Is paper moving slower today? The
							? five minute spacings are shorter than last night.
							(Yes, about 0830 this morn.)
							1339 Recorder off, belt changed, ~~salad~~ salad removed
							Recorder on again at about 1349
							↑ slow 1354 Resume speed 1355 synch record
							1404.30 KN-10; 1424.20 KN-27
							Run 30 dogleg to set us up for next line Screwed up the TD's at ZBC and ZBD
							1516 c/c 42°24.43' 70°34.91'
							head for pt. ZBG then pick up ZF
							25766.4 13917.0

GMT				TIME ZONE	SHIPS		NAVIGATION	
DAY	MO	YR	TIME	±	COURSE	SPD		
18	08	79			heading for pt ZF from 42°24.49' and 70°34.91'			
	BOL 33 ~~[illegible]~~							
Line 34			1524	C/C	BOL 34		25709.0	13860.8
			1530				25713.2	13864.9
			1545				25724.8	13876.0
			1600				25736.2	13887.7
			1615				25746.9	13897.5
			1630				25758.5	13909.3
			1640		End Line 34		25766.2	13916.9

OPS: 12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO.	STA.	COMMENTS AND OBSERVATIONS
							After much radio about Hollester Core we have crossed OPCs KN-10 and KN-27 turned each, + then lost ourselves We followed Lat + long down to 42°24' and now have resumed our E-W lines So now, at 1524, BEGAN LINE 34 EOL 34 @ 1640 Head for Boston Harbor 1645 (maybe 2 hr steam)

Sunday 19 Aug 79

New Day

0800 depart Boston Harbor

On route to start of line MD-35

~ 2 hour steam

GMT DAY	MO	YR	TIME	TIME ZONE ±	SHIPS COURSE	SPD	NAVIGATION	
19	08	79	1029		BOC	35	25770.6	13916.1
			1047				25776.8	13908.4
EOC 35			1047		BOC	36	25778.8	13907.4
			1100				25777.2	13898.3
			1115				25762.1	13887.5
			1130				25753.0	13887.3
			1138		Synch		25749.9	13873.8
			1145		Δ Belt		25744.2	13866.5
			1147:30		back on		25742.6	13864.7
			1156		synch		25741.0	13862.9
			1200		resynch		25734.6	13856.0
			1215				25725.6	13845.7
EOC 36			1229 30		BOC	37	25717.2	13835.5
							.	.
			1244		slow to correct Nav		.	.
EOC 37			1258		BOC	38	25728.5	13830.4
			1301				25732.3	13837.2
							.	.
			1312		VELOCITY AMP THROWN OFF BENCH			
			13 16:15				.	.
			1330				25749.0	13852.3
			1345				25757.9	13862.0
			1400				25766.8	13871.2
			1415				25775.7	13881.1
			1430				25785.4	13891.1
EOC 38			1438:40		BOC	39	25790.7	13896.9
			1445				25792.6	13892.9
			1500				25797.5	13883.0
EOC 39			1502:15		BOC	40	25798.2	13881.7
							.	.

OPS							COMMENTS AND OBSERVATIONS
12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO.	STA.	
							Start line MB-35 (ZG: 25778.8 13907.3)
							EOL MB-35 BOL MB-36 (ZH 25717.1, 13835.5)
							EOL MB-36 BOL MB-37 (Z1: 25723.6, 13840.2)
							Head to ZK
							ALL OK
							Cont line MB-38
							Steer to Z IN BOL 39 EOL 38
							EOL 39

UNIBOOM BOMBAST-8-79

GMT DAY	MO	YR	TIME	TIME ZONE ±	SHIPS COURSE	SPD	NAVIGATION
19	08	79	1502	:15	BOL 40		25798.2 13881.7
			1515				25788.5 13871.7
			1530				25778.0 13860.5
			1545				25767.6 13850.3
			1600				25757.1 13839.6
			1615				25746.6 13829.2
	EOL 40		1621	:30	BOL 41		25742.2 13824.7
			1630				25727.2 13823.5
			1645				25737.6 13810.9
			1654		Adj Belt		~~25733.2~~
	EOL 41		1654	:45	BOL 42		25733.2 13802.7
							25736.2 13807.8
			1715				25745.6 13815.0
			1730				25755.0 13825.2
			1745				25765.4 13834.8
			1800				25775.2 13845.0
			1815				25784.7 13855.3
	EOL 42		1825	45	BOL 43		25791.8 13863.1
			1830				25792.1 13860.0
	EOL 43		1839	:20	BOL 44		25792.5 13852.9
			1845				25788.2 13848.8
			1900				25777.6 13837.4
			1915				25767.0 13826.4
			1930				25756.6 13815.7
			1945				25746.3 13804.8
			1949		O Belt, rec. off		25743.6 13801.7
			1951	:30	Back on		25741.9 13800.3
			2000				25736.4 13794.5
	EOL 44		2002	:30	BOL 45		25735.0 13792.7

ZQ

UNIBOOM BOMBAST-8-79

OPS							COMMENTS AND OBSERVATIONS
12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO.	STA.	
							Steer to ZM, BOL MB-40. Heading EAST. (25742.3, 13824.5)
							EPC Recorder down - paper + belt change
							EPC " on - Start line MB-41
							Recorder down for belt adj ~ 20 sec
							BOL 42 (25792.0 13863.5 : ZO)
							EOL 42 BOL 43 (ZR: 25792.6 13852.8)
							EOL 43 BOL 44 (ZQ: 25734.9, 13792.7)
							Δ to spreading
							Recorder Belt change
							EOL 44

GMT				TIME ZONE	SHIPS		NAVIGATION	
DAY	MO	YR	TIME	±	COURSE	SPD		
19	08	79	2002	:30	BOL	45	25735.0	13792.7
			2015				25730.7	13783.3
			2030				25725.8	13772.3
	EOL	45	2033		BOL	46	25725.8	13770.6
			2045				25732.2	13778.0
			2100				25742.6	13788.8
			2115				25753.2	13800.2
			2130				25763.1	13810.3
			2145				25773.0	13820.7
	EOL	46	2200				25783.1	13831.3

OPS							COMMENTS AND OBSERVATIONS
12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO.	STA.	
							BOL 45 (ZT: 25725.1, 13770.6)
							℄ BOL 46 (ZS: 25783.2, 13831.2)
							Call it a day - On route to Gloucester for the night

GMT DAY	MO	YR	TIME	TIME ZONE ±	SHIPS COURSE	SPD	NAVIGATION	
20	03	79	0811		BOL 47		25784.5	13828.8
			0815				25784.1	13825.7
EOL 47			0822:30		BOL 48		25783.2	13819.8
			0830				25778.2	13814.7
			0845				25768.5	13804.0
			0900	△ Belt			25759.5	13793.7
			0901:45	Back on			25758.4	13792.5
			0915				25749.7	13783.9
			0930				25741.0	13774.3
			0945				25732.3	13765.0
EOL 48			0955		BOL 49		25726.6	13759.0
			1005				25726.3	13752.9
EOL 49			1015:45		BOL 50		25726.7	13747.0
			1030				25736.0	13756.6
			1045				25746.1	13767.3
			1100				25756.0	13778.0
			1115				25765.4	13789.1
			1130				25775.5	13799.5
EOL 50			1141:30	BOL 51		C/C	25783.1	13807.4
			1150				25782.5	13802.4
			1200				25780.9	13795.2
EOL 51			1202:40	BOL 52			25780.8	13793.6
			1205				25779.5	13792.6
			1215				25773.4	13785.8
			1230	△ Belt			25764.6	13776.1
			1235:30	Back on			25761.3	13772.6
			1245				25756.0	13766.8
			1306				25747.8	13757.8
			1315				25739.1	13748.9
			1330				25730.8	13739.1

OPS: 12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO.	STA.	COMMENTS AND OBSERVATIONS
							Out of Gloucester, Begin line 47 (ZV 25783.4, 13819.7)
							Change Belt Back on
							0955 end line 48, begin line 48, head for ZX (25726.8 13746.8)
							1015:45 end line 49, Begin line 50 (ZW: 25783.1, 13807.6)
							BOL 51 (ZZ: 25780.9, 13793.4)
							BOL 52 (ZY: 25725.1, 13733.1)
							EPC down belt change

25760
758

LINE MB52

GMT DAY	MO	YR	TIME	TIME ZONE ±	SHIPS COURSE	SPD	NAVIGATION		
20	08	79	1339		BOL 53		25725.2	13733.3	
			1345				25728.7	13732.3	
EOL 53			1355:30		BOL 54		25735.8	13731.8	
			1400				25738.8	13735.0	
			1415				25749.3	13746.5	
			1430				25760.0	13757.6	
			1445				25770.4	13769.6	
EOL 54			1459:30	C/C	BOL 55		25780.3	13780.1	
			1500				25780.7	13779.9	
			1515				25778.3	13769.2	
[redacted]			1530	C/C	[redacted]6		25767.0	13760.1	
EOL 55			1544:30	C/C	BOL 56		25760.1	13750.0	
			1600				25760.3	13761.1	
			1615				25759.9	13772.6	
			1630				25759.7	13784.1	
			1645				25759.8	13795.6	
			1700				25759.8	13807.0	
			1705:30				25759.8	13809.1	
			1715				25759.8	13816.5	
			1730				25759.9	13828.1	
			1745				25760.1	13839.4	
			1800				25760.1	13850.8	
			1810				25759.8	13858.2	
EOL 56			1812:15	C/C	BOL 57		25760.0	13859.7	
			1815				25758.8	13861.3	
			1830				25751.1	13867.0	
			1845				25743.8	13873.8	
			1900				25736.8	13878.5	
			1915				25729.7	13884.4	
			1930				25722.3	13890.3	

OPS

12 KHz | 3.5 KHz | CSP | MAG | GRAV. | SONO. | STA.

COMMENTS AND OBSERVATIONS

C/C BOL 53 (AZA: 25736.0, 13732.0) EOL 52

C/C BOL 54 (AZA: 25780.0, 13780.2)

1458 BOL 55 25760.0 13750.0 endpoint

	line #	endpoint
	56 ✓	25760.0, 13860.0
	57 ✓	13900.0 25710.0
	58 ✓	25590.0 13870.0
	59	25534.8 13895.5
rerun to start →	60 →	25497.0 13857.5

C/C Start line MB-56

1700 Slow for paper + delta

1705.30 resume recorder, line 56, speed up

1715 light, clock synch seems to work (false alarm)

Start line MB-57

GMT DAY	MO	YR	TIME	TIME ZONE ±	SHIPS COURSE	SPD	NAVIGATION		
2	0	8	7 9 1945		L	INE 57 cont	25714.6	13896.1	
EOL 57	~~2053.45~~			c/c			~~25710.2~~	~~13899.8~~	
	19	53	~~2053.45~~	c/c	BOL 58		25710.2	13899.8	
			~~2~~000				25764.7	13898.5	
			2015				25692.1	13895.8	
			2030				25678.9	13892.6	
			2045				25665.6	13889.3	
			2100	Δ Belt			25651.3	13885.3	
			2102	Back ON			25649.6	13884.8	
			2115				25637.1	13881.8	
			2130				25622.7	13878.5	
			2145				25607.9	13874.4	
			2200				25593.0	13870.7	
			2203				25590.1	13870.0	
EOL 58			2205		BOL 59		25588.7	13870.8	
			2215				25581.7	13873.6	
			2230				25571.8	13878.5	
			2245				25561.9	13883.1	
			2300				25551.6	13887.8	
			2315				25541.2	13892.2	
EOL 59			2325	Re[illegible]	MB-1		25535.3	13895.6	
			2330				25531.8	13892.0	
			2345				25520.6	13880.4	
			2400	↓					
21	0	8	7 9 0000	MB-1 cont			25508.3	13868.5	
			0015	END Survey			25497.2	13857.7	

OPS							COMMENTS AND OBSERVATIONS
12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO.	STA.	
							(~~Back~~ to 13900.0, 25710.0)
							(Next to 25590., 13870.0)
							1953.45 c/d begin 5-8
							EOL 58 BOL 59 (255348, 13895.5)
							EOL 59 ~~Resume~~ RERUN PART OF Line 1 (25497.0, 13857.5)
							0830 Depart P-Town - on route to Woods Hole

Prepared turning points

OPS: 12 KHz	3.5 KHz	CSP	MAG	GRAV.	SONO.	STA.	COMMENTS AND OBSERVATIONS						
							A	25497.0	13857.5	1	ZE	25699.3	13841.3 KN-27 GPC
							B 2	25580.5	13939.0	✓	ZF	25766.4	13917.0
							C	25572.0	13920.0	✓	ZG	25778.8	13907.3
							D 4	25504.2	13852.6	3 ✓	ZH	25717.1	13835.5
							E	25511.0	13847.6	5	ZI	25723.6	13840.2
							F	25572.4	13908.9		ZJ	25784.6	13901.5
							G 6	25598.1	13911.1	✓ 7	ZK	25790.8	13897.1
							H	25525.1	13837.9		ZL	25729.3	13834.8
							I 8	25532.0 (25549.2)	13833.0 (13851.7)	new old 9	ZM	25742.3	13824.5
							J 10	25604.9	13906.0		ZN	25798.3	13881.6
							K	25614.8	13904.0	11	ZO	25792.0	13863.1
							L 12	25555.1	13845.5		ZP	25733.2	13802.6
							M	25566.6	13832.5	13	ZQ	25734.9	13792.7
							N	25627.7	13894.4		ZR	25792.6	13852.8
							O 14	25643.3	13897.8	15	ZS	25783.2	13831.2
							P 16	25573.8	13827.5		ZT	25725.1	13770.6
							Q	25593.4	13836.1	17	ZU	25726.4	13758.9
							R 18	25690.0 ~~25649.5~~	13933.0 ~~13892.0~~		ZV	25783.4	13819.7
							S	25729.2	13947.7	19	ZW	25783.1	13807.6
							T 20	25670.0 ~~25606.4~~	13891.0 ~~13826.4~~		ZX	25726.8	13746.8
							U	25673.5	13882.2	21	ZY	25725.1	13733.1
							V	25735.9	13942.4		ZZ	25780.9	13793.4
							W	25741.7	13937.9		AZA	25780.0	13780.2
							α	25679.3	13877.6	✓	BZA	25736.0	13732.0
							y	25690.0 ~~25686.9~~	13865.0 ~~13861.2~~				
							Z	25753.8	13927.5				
							ZA	25760.7	13922.5				
							ZB	25698.2	13861.2				
							ZC	25705.0	13856.0				
							ZD	25708.0	13853.5	KN-10 GPC Hallister			

note corrections

GMT				TIME ZONE	SHIPS		NAVIGATION
DAY	MO	YR	TIME	±	COURSE	SPD	
							RERUN MB-1 FROM 25534.8, 13893.5 to P-Town.