

Time	Latitude	Longitude	Cse	Spd	Log	Depth	Comments
4:25:18	10° 19.754 N	85° 59.932 W	37.3	4.4	123.68		61 guns deployed
4:30:21	10° 20.064 N	85° 59.702 W	33.7	4.4	124.05		3rd 61 deployed
5:00:00	10° 21.774 N	85° 58.324 W	39.1	4.6	126.25		Normal operations
5:30:00	10° 23.573 N	85° 56.742 W	40.6	4.3	128.64		Normal operations
6:00:00	10° 25.269 N	85° 55.145 W	43.5	4.30	130.94		bird bird ¹⁷ is 1m above ^{closest to ship} the ^{bird 16} the ^{is} spawning is 15m
6:30:21	10° 27.244 N	85° 54.716 W	317.8	4.9	133.12		turning on the third gun
7:00:21	10° 28.944 N	85° 56.407 W	318.0	4.60	135.45		Normal operation
7:30:02	10° 30.565 N	85° 57.984 W	321.0	4.70	137.68		
8:00:00	10° 32.207 N	85° 59.569 W	317.7	4.50	139.33		
8:13:00	10° 32.949 N	86° 00.307 W	306.7	4.4	140.97		→ ship turning
8:30:10	10° 33.822 N	86° 01.304 W	233.5	4.50	142.03		
9:00:08	10° 31.722 N	86° 03.111 W	229.6	4.60	144.30		
9:30:04	10° 30.182 N	86° 04.794 W	187.2	4.10	146.59		
10:00:00	10° 28.401 N	86° 03.615 W	136.5	4.6	148.7		→ changed watchstand: Carlos, Jayson
10:30:00	10° 26.773 N	86° 02.041 W	133.0	4.6	150.95		
11:00:00	10° 25.111 N	86° 00.443 W	137.2	4.4	153.21		
11:29:00	10° 23.496 N	85° 58.840 W	130.9	4.7	155.44		→ End Line 13
12:54:00	10° 19.815 N	86° 03.015 W	298.5	5.3	161.91		→ START LINE NS-011. (First shot) ^{N-5}
13:04:18	10° 20.348 N	86° 03.620 W	324.1	5.0	162.82		USER ERROR: START OF LINE DELAYED (1st shot 116)
13:24:00	10° 21.628 N	86° 04.800 W	319.0	4.8	164.54		Normal operation
13:30:15	10° 21.900 N	86° 05.088 W	321.0	4.8	164.89		
13:59:55	10° 23.621 N	86° 06.729 W	291.9	3.10	166.66		CHANGED WATCHSTANDER
14:30:55	10° 25.436 N	86° 08.509 W	297.3	3.20	168.30		STREAMER MALFUNCTION
15:00:15	10 25.462 N	086 10.165 W	195.8	5.70	170.31		→ ship turning, streamer malfunctions, line 11 fms
15:30:07	10 23.700 N	086 10.634 W	164.3	6.00	173.10		→ will start line ⁰⁰⁹ in about 5 min.
16:00:07	10 22.323 N	086 09.374 W	143.9	5.40	175.94		17 shots left on tape, 5 sec between shots
16:30:09	10 20.962 N	086 08.058 W	146.3	5.50	178.71		→ normal
							home/sci/forms.dir/watchlog.doc

Time	Latitude	Longitude	Cse	Spd	Log	Depth	Comments
17:00:00	10° 19.542N	86° 6.708 W	150.5	3.8	191.63	185.9	End on toge 18
17:30:00	10° 18.161N	86° 5.386 W	149.1	3.9	194.49	153.71	End 10 minutes to finish the line
18:00:04	10 16.555N	86 04.650W	199.6	5.70	187.42	220.91	Turning to line 007, change of Watchstanders
18:30:00	10° 15.366 N	86° 06.307W	271.6	4.9	190.1	292.1	approaching start of line 007
19:00:00	10° 17.046 N	86° 08.058W	288.8	3.0	191.76	489.21	
19:30:32	10° 18.735 N	86° 09.713W	296.7	2.90	193.30	490.51	
20:00:00	10 20.341N	86° 11.290 W	295.0	2.90	194.77	546.61	
20:31:39	10 21.996 N	86° 12.944 W	271.1	3.80	196.38	630.21	
21:00:00	10 21.340 N	86° 14.902 W	201.0	5.30	198.75	946.71	
21:34:00	10 19.483 N	86° 14.331 W	144.3	5.80	201.91	1050.30	21:28:02 (START LINE 005)
22:00:00	10 18.239 N	86° 13.178 W	144.3	5.50	204.32	881.01	CHANGED WATCHSTANDER
22:30	10° 16.915N	86° 11.839W	144.0	5.50	207.17	835.31	
23:00	10° 15.511N	86° 10.488W	142.1	5.30	209.99	819.41	
23:30	10° 14.092N	86° 09.141W	145.4	5.70	212.83	922.81	
23:35:22	10° 13.833N	86° 08.444W	139.2	5.6	213.37	832.31	END LINE 005
01:15	10° 09.971N	86° 12.834W	293.6	4.0	221.93	1622.3	START OF LINE 001
01:30	10° 10.930N	86° 13.762 W	304.5	3.6	222.88	2000	
02:00	10° 12.775N	86° 15.450W	296.3	3.6	224.69	1621.2	CHANGED WATCHSTANDER
2:30:00	10° 14.694 N	86° 17.359W	296.9	5.4	226.59	1701.2	
3:00:00	10° 16.234 N	86° 19.314 W	239.4	4.0	227.54	1809.1	turning to next line (NS010)
3:30:00	10° 15.035 N	86° 20.176 W	194.8	3.4	230.91	1933.8	
4:00:55	10 13.547 N	86 20.911 W	192.4	5.0	233.53	2152.4	turning to next lin (NS010)
4:30:00	10° 12.126 N	86 21.061 W	198.0	3.6	236.06	2362.5	

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5:00:03	10° 10.663 N	86° 22.244 W	16.9	2.8	238.59	2574.3	
5:30:00	10° 10.109 N	86° 20.765 W	64.5	6.2	241.06	2482.0	
5:36:00	10° 10.554 N	86° 20.274 W	60.5	5.1	241.50	2396.0	starting line NS010
6:01:05	10° 11.859 N	86° 18.945 W	74.5	3.70	243.10	2082.9	change of watchstanders (MANUEL, CARLOS, JAY)
6:30:22	10° 13.844 N	86° 17.296 W	66.7	3.60	244.96	1774.3	
7:00:32	10° 15.086 N	86° 15.678 W	68.2	4.00	246.89	1386.0	
7:30:02	10° 16.664 N	86° 14.103 W	66.0	3.70	248.83	1069.0	
8:00:00	10° 18.226 N	86° 12.153 W	74.6	4.10	250.80	809.91	
8:30:00	10° 19.849 N	86° 10.872 W	70.9	4.60	252.75	531.71	normal operation
9:00:02	10° 21.446 N	86° 09.270 W	67.8	4.00	254.70	282.81	
9:30:04	10° 23.049 N	86° 07.623 W	73.2	3.60	256.59	124.51	
10:00:00	10° 24.600 N	86° 06.049 W	71.3	3.50	250.11	110.15	
10:30:00	10° 26.623 N	86° 04.109 W	67.7	4.20	261.01	107.91	
11:00:00	10° 27.761 N	86° 02.834 W	70.4	4.10	262.51	104.21	
11:30:00	10° 29.396 N	86° 01.203 W	58.8	4.3	264.55	98.51	
11:55:00	10° 30.513 N	86° 00.086 W	55.8	4.40	266.14	95.91	normal operation
12:00:00	10° 30.906 N	85° 59.602 W	58.3	4.20	266.63	94.21	
12:30:00	10° 32.610 N	85° 57.949 W	53.7	4.20	268.7	91.01	normal operation
13:00:00	10° 34.229 N	85° 56.319 W	52.7	4.1	270.78	92.01	
13:12:00	10° 34.881 N	85° 55.667 W	48.4	4.4	271.61	91.11	INCREASE THE NEW SPEED 5.1 KTS
13:30:00	10° 35.938 N	85° 54.592 W	42.1	4.6	273.02	88.91	NEW NORMAL
14:00:00	10° 37.675 N	85° 52.746 W	44.3	4.90	275.41	84.61	Change Watchstanders (LUIS, MATT)
14:30:00	10° 38.927 N	85° 50.805 W	96.0	4.60	277.76	79.01	turning to line 4
15:00:00	10° 37.237 N	85° 49.119 W	156.1	4.5	280.04	74.41	
15:30:00	10° 35.425 N	85° 50.214 W	226.4	4.4	282.20	76.91	starting line NS004
16:00:15	10° 33.914 N	85° 51.801 W	228.2	3.80	284.34	80.01	normal operation
16:30:30	10° 32.317 N	85° 53.434 W	229.3	4.2	286.43	81.01	

Time	Latitude	Longitude	Cse	Spd	Log	Depth	Comments
17:00	10 33.250 N	085 54.778 W	28.2	4.90	288.53	87.81	-pulling in streamer to fix bird 17, traveling to line 004A
17:30	10° 34.896 N	85° 53.198 W	48.1	4.4	290.98	83.11	
18:00	10 36 431	85 51.586	45.1	4.7	293.38	81.21	-turning to line 004A, change of watch standers
18:30	10° 35.477 N	85° 50.282 W	194.7	4.60	295.67	77.81	
19:00	10° 33.859 N	85° 51.834 W	222.0	4.10	297.65	80.51	
19:30	10° 32.301 N	85° 53.418 W	224.6	3.70	299.65	84.01	
20:00	10° 30.721 N	85° 55.020 W	222.1	4.10	301.71	85.11	
20:30	10° 29.131 N	85° 56.648 W	245.7	4.50	303.92	85.11	
21:00	10° 27.570 N	85° 58.216 W	220.1	4.50	306.03	86.61	
21:30	10° 25.976 N	85° 59.86 W	211.0	4.70	308.82	90.71	
22:00	10° 24.412 N	86 01.441 W	212.3	5.60	311.24	100.41	change turn. watch standers
22:30	10° 22.781 N	86° 03.103 W	212.3	5.50	314.04	103.71	Continue to wait for MMO clearance
23:00	10 21 102 N	86° 04.838 W	213.8	5.2	316.98	109.11	START LINE 4 (3208 → SHOT)
23:30	10 19 548 N	86° 06.357	207.5	5.3	319.40	153.41	Continue to use one gun
23:46	10° 18.739 N	86° 07.233 W	207.3	5.4	320.18	288.95	BEGIN RAMP-UP to 2 GUN
23:52	10° 18.400 N	86° 07.565 W	207.7	5.3	321.45	351.21	BEGIN RAMP-UP to 3 GUN (NORMAL OPERATION)
00:00	10° 18.039 N	86° 07.988 W	208.0	5.4	322.16	429.11	NORMAL OPERATION (DAY 329)
00:30:10	10° 16.444 N	86° 09.562 W	209.9	5.4	324.81	651.21	
01:00	10° 14.876 N	86° 11.160 W	211.4	4.9	327.5	935.81	
01:30	10° 13.307 N	86° 12.748 W	213.9	5.6	330.17	1200.00	NORMAL OPERATION
02:00	10° 11.730 N	86° 14.387 W	212.2	5.5	332.96	1552.12	CHANGE WATCHSTANDER
2:30:00	10° 10.136 N	86° 15.964 W	210.6	4.6	335.66	1989.1	
3:00:00	10° 8.541 N	86° 17.595 W	210.7	4.4	338.54	2377.7	
3:30:00	10° 8.149 N	86° 19.512 W	300.1	5.1	341.06	2500.2	transit to line NS008
4:00:00	10° 10.097 N	86° 19.272 W	72.5	4.4	342.73	2325.2	starting line NS008
4:30:00	10 11.679 N	86 17.591 W	63.6	3.2	344.55	2010.3	normal operation → line NS008
5:00:00	10 13 213	86 15 991	77.7	3.60	346.45	1620.3	normal operations

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5:30:00	10 14 825	86 14 353	67.1	4.40	348.37	1186.0	normal operations
6:00:00	10 16 427	86 12 737	68.8	3.90	350.41	939.71	Change of watchstanders
6:30:00	10° 18.133	86° 11.057	71.0	4.10	352.49	671.41	Normal Operations
7:00:00	10° 19.637	86° 09.414	67.3	3.80	354.48	381.21	
7:30:00	10° 21.256	86° 07.815	66.6	4.10	356.49	189.71	
8:00:00	10° 22.864	86° 06.186	66.1	4.00	358.55	115.91	
8:30:00	10° 24.475	86° 04.539	69.7	4.00	360.56	109.81	
9:00:00	10° 26.096	86° 02.902	69.5	4.10	362.61	105.61	
9:30:00	10° 27.671	86° 01.308	60.2	4.70	364.60	99.81	
10:00:00	10° 29.316	85° 59.618	57.2	4.20	366.85	92.71	Change Watchstanders (Carlos, Manuel, Jason)
10:30:00	10° 30.883	85° 08.22	50.3	4.60	369.08	89.41	
11:00:37	10° 32.505	85° 56.376W	51.9	4.2	371.36	55.5	
11:20:00	10° 33.487	85° 55.369	50.7	4.5	372.82	89.01	THE END LINE NS008
12:00:00	10° 35.272	85° 56.417	240.6	3.8	375.61	95.41	Continuing turn-approaching line NS012
12:00:00	10° 35.060	85° 57.025	224.8	4.4	376.26	92.11	BEGIN RAMP-UP TO 3 GUNS, LINE NS-012
12:30:00	10° 33.855	85° 58.189	215.5	4.8	377.96	95.41	STOP GUNS (MAMMALS)
13:00:00	10 32 374	85 59 716	216.0	5.0	380.26	96.31	Waiting for permission from MMD to
13:30:00	10 30 768	86 01 343	209.8	4.70	382.76	100.71	Continue
14:00:00	10 29.152	86° 03.029	209.1	5.4	385.35	103.61	Still waiting for permission to continue from MMD
14:30:00	10 27 600	86 04 561	213.0	5.4	387.78	105.01	BEGIN RAMP-UP TO 1 GUN
15:00:00	10 25 975	86 06 220	208.8	5.10	390.46	109.31	1 gun working on line 12
15:30:00	10 24.441 N	86 07-782W	210.9	4-4	393.05	119.1	2 guns working on line 12
16:00:00	10 22.835 N	86 09-408	210.7	5.60	395.82	252.11	3 guns working on line 12
16:30:00	10 21 261 N	86 11 007	205.8	5.60	398.60	455.71	1 gun working on line 12
17:00:00	10 19 676 N	86 12 622 W	208.0	5.70	401.40	834.31	1 gun working on line 12
17:30:00	10 18 073 N	86 14 246	204.9	6.10	404.27	1025.4	3 guns working on line 12

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18:00:00	10 16 528	86 15.803	205.9	5.50	407.14	1440.9	3 guns on line 1d → change of watchstander
18:30	10° 14.959	86 17.900	211.1	5.50	410.06	1673.4	
19:00	10° 13.394	86 18.986	212.5	5.50	412.86	1934.8	
19:30	10° 11.800	86° 20.601	219.1	5.60	415.63	2254.5	Time: 19:45 end of line NS012
20:00	10° 11.229	86° 22.602	233.2	3.80	418.25	2531.7	Waiting for next line
20:30	10° 13.297	86° 22.691	78.8	3.90	419.89	2322.2	
21:00	10° 13.000	86° 20.500	94.5	5.10	422.27	2051.6	
21:30	10° 13.828	86° 18.395	149.0	5.40	424.81	1855.3	
22:00	10° 11.923	86° 19.001	202.4	4.90	427.76	2112.1	star line NS-010L - change watchstander
22:30	10° 10.393	86° 20.495	208.4	5.4	430.3	2451.1	NORMAL OPERATION
23:00	10° 08.816	86° 22.103	209.9	5.1	432.92	2854.7	Normal operation
23:30	10 07 273	86 23 670	207.3	5.5	435.56	3336.7	"
23:36	10 06.956	86. 24.000	212	5.2	436.11	33368	End of Type (582 to 521) 111
00:00	10 05.736	86 25.237	204.6	5.2	438.17	3596.	End Type 0000112
00:30	10° 04.121	86° 26.899	211.2	5.5	440.99	4071.5	
01:00	10° 02.482	86° 28.575	210.7	5.3	443.76	4659.6	
01:30	10° 00.929	86° 30.152	208.1	5.7	446.20	4872.2	
02:00	09° 59.275	86° 31.840	211.0	5.4	449.36	4520.7	
02:30	09 57 678	086 33 317	196.4	5.30	452.11	4253	turning to line 4L
03:00	09 55 871	086 32 353	147.3	5.50	454.96	4193.4	turning to line 4L
03:30	09 55.860	086 30.428	48.7	3.60	457.41	4313.9	start of line 4L
4:00:00	9° 57.331 N	86° 28.851 W	62.3	4.6	459.19	4742.4	
4:30:00	9° 58.552 N	86° 27.197 W	62.0	4.9	461.24	4701.1	
5:00:00	10 00 634	086 25.591	62.0	4.20	463.21	42819.8	normal operation → line 4L
5:30:00	10 02 249	086 23 942	58.0	4.30	465.25	3754.6	normal operation → line 4L
6:00:00	10 03 855	086 22.309	59.8	4.40	467.37	3277.5	normal operation → line 4L → change of watchstander

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06:30	10° 05.432	86° 20.715	63.4	4.00	469.40	2875.7	Normal Operation - line 004L
07:00	10° 07.004	86° 19.126	63.7	4.00	471.40	2545.8	
07:30	10° 08.618	86° 17.514	70.3	3.80	473.42	2323.2	Time: 07:47 end line 004L
08:00	10° 09.797 N	86° 15.785 W	128.3	4.40	475.61	2043.6	→ we're turning to go to line NS006
08:30	10° 07.982	86° 16.280	201.7	5.40	478.51	2332.2	
09:00	10° 06.387	86° 17.932	245.9	4.50	481.17	2533.7	
09:30	10° 08.032	86° 19.067	18.1	3.20	482.80	2472.9	
							Time: 08:43 start line 006
10:00	10° 09.814	86° 17.852	70.2	4.0	484.7	2152.5	
10:30	10° 11.776	86° 15.859	69.2	4.4	487.22	1720.6	
11:00	10° 13.042	86° 14.574	70.3	4.0	488.81	1538.0	NORMAL OPERATION
11:30	10° 14.643	86° 12.961	71.3	3.8	490.82	1210.9	
11:52	10° 15.823	86° 11.866	71.9	4.2	492.43	932.81	1 gun WORKING NOW (MMO orders)
12:00	10° 16.211	86° 11.364	64.0	4.20	492.92	844.21	Ramp-up to 2 guns as dolphins move outside dangerous radius
12:10	10° 16.876	86° 10.686	64.7	4.1	493.2	768.71	3 guns, NORMAL OPERATION
12:30	10° 17.777	86° 09.764	69.4	4.00	495.05	515.41	NORMAL OPERATION
13:00	10° 19.388	86° 08.130	66.4	3.9	496.86	294.61	
13:30	10° 21.040	86° 06.451	62.9	3.6	498.86	120.91	
14:00	10° 22.576	86° 04.880	55.0	4.4	500.84	106.01	CHANGE WATCHSTANDERS
14:30	10 24 152	86 03 284	55.4	4.00	502.88	104.78	normal operation - line 6
15:00	10° 25.686	86° 01.717 W	54.0	4.6	504.95	100.71	two GI guns running
15:12	10° 26.467	86 0.930 W	47	4.5	505.98	97.61	3 GI guns running
15:30	10 27 364	86 00 020	52.5	4.00	507.12	91.51	all guns are OFF
16:00:00	10 28.991	85 58.358	47.9	4.2	509.24	89.31	one gun up
16:30	10 30.530 N	85 56.788	50.2	4.7	511.41	87.01	three guns on line

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17:00	10 32.090	85 55.214	48	4.5	513.7	85.21	
17:30	10 32.872	85 53.139	101	4.8	516.24	80.41	on transit to line NS109
18:00	10 32 417	085 50.797	102 96.7	4.90	518.70	66.11	- moving to line NS-109
18:30	10° 33.567	85° 49.443	340.6	5.10	521.03	70.61	starting line - NS 109 - 1 Gun
18:37	10° 34.06	-85° 49 75					Gun #2 online 2 Guns online
19:00	10° 35.304	85° 50.947	315.6	4.80	523.29	79.51	
19:30	10° 36.917	85° 52.499	318.9	4.30	525.29	84.71	
20:00	10° 38.435	85° 53.059	318.0	4.20	527.07	91.89	Waiting for permission from MNO
20:30	10° 40.137	85° 55.619	317.2	4.30	529.63	99.81	
20:56	10° 41.587	85° 57.042					starting new sequence NS-109 1 Gun
21:00	10° 41.769	85° 57.210	313.9	4.20	531.77	107.61	2 Guns
21:05:38	10° 42.072	85° 57.501					3 Guns
21:18:50	10° 42.783	85 58.194					shot down
21:30:00	10° 43.380	85° 58.770	317.8	4.30	533.92	118.81	
21:41:00	10° 43.042	85° 59.403					starting again NS-109 1 Gun
21:51:54	10° 44.566	85° 59.907					3 Guns
22:00	10° 44.991	86° 00.330	315.5	4.00	536.02	129.01	Normal operation (New Watchstanders)
22:30	10° 46.637	86° 01.923	313.8	4.00	538.15	135.71	
23:00	10° 48.280	86° 03.516	315.16	4.3	540.22	141.71	
23:30	10 49 848	86 05 079	317.1	4.4	542.75	147.8	
00:00	10° 51.534	86° 06.777	319.3	4.2	544.36	158.5	JD = 331
00:30	10° 53.214	86° 08.290	316.6	4.1	546.42	165.51	
1:00:36	10° 54.853	86° 9.78	316.8	4.1	548.47	168	Normal Operation
1:30:13	10° 56.475	86° 11.452	317.	4.00	550.45	165	Normal Operation
2:00	10° 58.127	86° 13.072	313.1	4.4	552.4	163.81	
2:30	10 59.740	86 14.612	315	4.6	554.3	161.51	
03:00	11 01 399	086 16 223	316.0	3.80	556.21	159.61	Normal operation

Time	Latitude	Longitude	Cse	Spd	Log	Depth	Comments
03:30	11 03 104	086 17.881	313.4	3.50	558.20	157.51	seisnet fixed, possible problem recording seismic converting seisnet files to another format → fixed
04:00	11 04 667	086 19 393	311.5	3.70	559.77	155.91	normal operations - line 109
04:30	11 06 363	086 21 047	309.8	3.80	561.91	154.01	normal operations - line 109
05:00	11 08 036	086 22.656	311.3	3.70	563.77	153.41	birds 7, 8 below green birds 4, 5, 6 below green birds 3, 4, 5, 6 below green birds 2, 3, 4, 5, 6 below green
05:30	11 09 694	086 24.269	312.1	3.50	565.64	151.71	^{some} birds go in and out of green
06:00	11° 11.355	86° 26.875	303.9	3.80	567.42	150.61	Day 331
06:20							Birds 1, 2, 3, 4, 5 below green
06:30	11° 13.019	86° 27.500	309.7	3.70	569.32	148.61	Normal operation - line NS109
07:00	11° 14.668	86° 29.092	310.3	3.60	571.16	146.31	
07:30	11° 16.296	86° 30.685	308.3	3.80	573.00	143.21	birds 1, 2, 3, 4, 5, 15, 16 below green
08:00	11° 17.974	86° 32.302	315.1	3.50	574.86	141.21	Birds 1, 2, 3, 4, 5, 6 below green
08:30	11° 19.600	86° 33.872	311.1	3.70	576.68	138.91	
09:00	11° 21.252	86° 35.490	317.1	3.80	578.60	134.31	
09:30	11° 22.937	86° 37.122	313.3	4.20	580.55	129.71	Normal operation
10:00	11° 24.574	86° 38.709	313.2	4.00	582.48	124.91	
10:30	11° 26.240	86° 40.322	319.5	4.4	584.41	121.61	
11:00	11° 27.973	86° 42.034	314.2	4.5	586.3	118.71	bird 5, 6, 7 over green, noisy near-off-set
11:30	11° 29.745	86° 43.740	317.6	4.6	588.8	117.41	
12:00	11° 31.507	86° 45.421	317.4	4.5	590.94	113.4	Normal operation
12:30	11° 33.280	86° 47.171	319.8	4.2	593.1	112.51	
13:00	11° 35.252	86° 48.992	313.2	4.4	595.25	112.41	NORMAL OPERATION
13:30	11° 36.774	86° 50.555	325.2	3.8	597.33	111.51	
14:00	11° 38.520	86° 52.239	318.8	4.0	599.27	110.11	

Time	Latitude	Longitude	Cse	Spd	Log	Depth	Comments
14:30	11 40.265	086 53.950	318.4	4.20	601.32	110.11	- normal operations - line 109
15:00	11 41.977	086 55.595	322.2	4.10	603.36	111.41	- normal operations - line 109
15:30	11 43.715	086 57.300	325.2	4.50	605.52	109.61	- normal operations - line 109
16:00	11 45.458	086 58.990	320.4	4.30	607.68	110.61	- normal operations - line 109
16:30	11 47.225	087 00.717	324.1	4.40	609.91	111.21	- normal operations - line 109
17:00	11 48.904	087 02.339	318.4	4.60	612.02	112.21	- normal operations - line 109
17:30	11 50.683	087 04.065	320.9	4.60	614.27	113.51	- normal operations - line 109
18:00	11 52.318	087 05.667	318.1	3.90	616.39	112.51	- change of watchstanders
18:30	11° 53.988	87° 07.283	316.0	3.90	618.54	115.81	No operation; waiting permission from MMO
19:00	11° 55.618	87° 08.871	320.3	4.30	620.68	114.61	waiting permission from MMO
19:16:20	11° 56.516	87° 09.741					start operation line 109 1 Gun.
19:20:39	11° 56.755	87° 09.973					2 Guns
19:25:43	11° 57.036	87° 10.250					3 Guns.
19:30	11° 57.274	87° 10.467	318.4	3.90	622.80	116.61	Normal operation
20:00	11° 58.894	87° 12.055	321.4	4.30	624.92	116.11	Normal Operation
20:30	12° 00.474	87° 13.485	319.3	4.40	627.01	117.11	
20:50:25	12° 01.602	87° 14.686					Shot down
21:00	12° 02.107	87° 15.183	320.7	4.40	629.17	117.01	No operation
21:22:21	12° 03.339	87° 16.385					End line 109
21:30	12° 03.838	87° 16.610	4.5	4.10	631.34	114.31	
22:00	12° 05.363	87° 15.084	5.6	4.5	633.73	110.87	No Operation.
22:30	12 06.569	87 13.229	57.6	4.6	636	103.5	Trans. d.
23:00	12 07.776	87 11.321	51.9	4.7	638.38	95.3	Transit
23:30	12 08.987	87° 09.450	56.0	4.50	640.75	83.11	Transit
00:30	12° 08.635	87° 05.673	129.0	4.2	645.75	77.11	Start LINE NS073 (00:16)
01:00	12° 06.891	87° 04.019	133.0	3.9	647.45	77.31	with 3 GUNS. Normal operation
01:30	12° 05.300	87° 02.476	137.8	4.7	649.5	75.81	

Time	Latitude	Longitude	Cse	Spd	Log	Depth	Comments
2:00	12° 03.613	87° 00.847	138.7	4.5	651.77	77.71	Change of watchstanders
2:30	12 01.855	86 59.151	132.3	4.00	654.06	79.31	normal operation - Line 0783 073
3:00	12 00 116	086 57 461	130.9	4.20	656.30	80.31	normal operations - Line 0783 073
3:30	11 58 447	086 55.847	141.9	4.40	658.41	79.71	normal operations - line 0783 073
4:00	11 56.710	086 54.171	141.1	4.40	660.63	79.41	normal operations - line 0783 073
4:30	11° 54.973	86° 52.986 W	142.9	4.5	662.79	79.31	normal operations line NS-073
5:00	11 53.313	86 50.887	134.7	4.60	665.08	79.81	normal operation line NS - 073
5:30	11 51.653	86 49.274	136.3	4.30	667.20	78.41	normal operation - line NS - 073
6:00	11 49.944 N	086 47.615 W	136.6	4.40	669.40	76.71	change of watchstanders
6:30	11° 48.250	86° 46.373	140.0	4.30	671.63	76.81	Normal Operation
7:00	11° 46.567	86° 44.341	141.0	4.50	673.78	70.01	
7:30	11° 44.830	86° 42.655	135.4	4.60	676.12	68.41	
8:00	11° 43.136	86° 41.023	138.7	4.60	678.42	64.61	Time: 08:12 end line NS-073
8:30	11° 41.177	86° 40.334	217.6	4.80	680.74	65.81	Transit
9:00	11° 40.368	86° 42.178	310.4	4.00	683.00	71.71	Start line NS-071
9:30	11° 42.037	86° 43.820	317.1	4.40	685.27	73.11	normal operation
10:00	11° 43.668	86° 45.419	317.7	4.4	687.5	72.61	
10:30	11° 45.325	86° 47.017	318.3	4.6	689.93	74.11	
11:00	11 47 047	86 48 656	314.8	4.40	692.31	80.31	normal operation
11:30	11° 48.761	86° 50.308	311.8	4.6	694.64	85.31	
12:00	11° 51.040	86° 52.533	305.8	4.7	697.82	87.61	
12:30	11° 52.083	86° 53.540	307.1	4.6	699.26	85.41	
13:00	11° 53.767	86° 55.168	307.1	4.9	701.68	87.71	
13:30	11° 55.488	86 56.803	314.3	4.7	704.15	86.71	normal operation
14:00	11° 57.090	86° 58.389	315.3	5.1	706.57	87.81	normal operation
14:30	11 58 820	87 00 061	314.0	4.80	709.05	88.41	Normal operation - line - 071
15:00	12 00.503	087 01.685	315.8	4.60	711.42	89.81	all 3 gun off - turtles

Time	Latitude	Longitude	Cse	Spd	Log	Depth	Comments
15:30	12 02 176	87 03 306	313.3	4.70	713.78	91.51	all 3 guns off - turtles
16:00	12 03 870	87 04 939	309.9	4.70	716.17	90.31	- normal operations
16:30	12 05 471	87 06 495	309.8	5.10	718.55	88.01	- all 3 guns off - turtles
17:00	12 07.077	87 08.057	308.4	5.10	720.97	86.71	- all 3 guns off - turtles
17:30	12° 7.343	87 9.953W	226.0	4.5	723.5	92.21	- transit to line NS069
18:00	12 05 541	87 10 467	130.2	4.50	725.81	99.61	- change of watchstanders → no guns on - turtles
18:11							Start line - NS 069
18:30	12° 03.870	87° 08.803	135A	4.60	728.06	101.21	
19:00	12° 02.125	87° 07.097	140.7	4.50	730.43	101.61	Shot Down waiting permission from MMO ^{last shot} 609
19:27	12° 00.604	87° 05.654					Continues line NS-069 Shot: 1013
19:30	12° 00.458	87° 05.484	137.6	4.90	732.70	101.41	1 Gun / time: 19:31:20 2 Guns / 19:36:30 3 Guns.
19:46:42	11° 59.483	87° 04.555					Shot Down
20:00	11° 58.754	87° 03.855	140.6	4.60	734.97	103.51	
20:30	11° 57.003	87° 02.150	136.2	4.70	737.27	103.31	
21:00	11° 55.320	87° 00.528	140.3	4.40	739.48	103.71	Time: 21:04 continues line - NS 069 1 Gun / 21:08 2 Guns
21:30	11° 53.609	86° 58.876	140.2	4.20	741.73	101.81	Normal operation 21:13 3 Guns
21:59							Shot Down
22:00	11° 51.324	86° 57.246	137.2	4.50	743.98	101.51	
22:27:8	11° 50.339	86° 55.706	139.8	4.5	746.06	100.61	CONTINUOUS LINE NS-069 (1 GUN)
22:30	11° 50.215	86° 55.592	140.8	4.6	746.23	99.61	1 GUN
22:32	11° 50.086	86° 55.471	140.3	4.6	746.39	100.91	2 GUNS
22:37	11° 49.761	86° 55.162	143.2	4.5	746.82	100.71	3 GUNS "PERFECT"
22:40	11° 49.622	86° 55.025	136.7	4.7	747.02	98.91	1 GUN
23:00	11° 48.495	86° 53.921	140.2	4.5	748.51	98.01	1 GUN
23:14	11° 47.648	86° 53.104	145.3	4.60	749.63	97.51	THE END LINE NS-069 (with 2 GUNS)
23:31	11° 46.528	86° 53.639	218.5	4.50	750.90	100.41	TURN APPROACHING NS-067 (2 central gun off)
00:00	11° 45.537	86° 54.849	249.4	5.00	753.5	105.61	APPROACHING LINE NS067 ^{off}

Time	Latitude	Longitude	Cse	Spd	Log	Depth	Comments
00:07	11°45.862	86°55.267	317.2	4.2	753.77	105.51	BEGIN LINE NS067 (3 GUNS)
00:30	11°47.089	86°56.453	310.3	4.6	755.43	107.41	
01:00	11°48.743	86°58.069	315.8	4.3	757.66	106.81	NORMAL OPERATION
01:30	11°50.451	86°59.705	320.7	4.3	759.88	108.51	
02:00	11°52.162	86 01.364	319.3	4.5	762.13	108.11	
02:30	11 53 898	87 03 .034	318.2	4.60	764.46	108.61	normal operation - line 067
3:00	11 55.598	087 04.679	318.2	4.50	766.79	108.41	- 1 gun online
03:30	11 57 283	087 06 311	312.5	4.70	769.12	109.61	- no guns online
04:00	11 58 933	087 07 .906	319.2	4.70	771.44	110.01	- 2 guns on
04:30	12 00 594	087 09.527	318.8	4.80	773.80	106.31	- normal operation - 3 guns on
05:00	12 02 230	087 11.103	312.3	4.40	776.11	107.11	- normal operation - 3 guns - line 067
05:30	12 03 783	087 12.721	288.1	4.20	778.45	107.41	- turning to line 065
06:00	12 02.791	087 14.474	221.4	4.50	780.58	113.31	- turning to line 065 - change of watchtenders
06:30	12°01.167	087°16.203	222.4	4.70	782.95	116.41	- Transit / Time 06:54 start line NS065 38 guns
07:00	11°59.245	087°15.892	138.2	4.80	785.36	117.41	Normal Operation
07:30	11°57.570	087°14.303	138.7	4.80	787.76	114.21	"
08:00	11°55.889	087°12.677	136.9	4.80	790.23	117.16	"
08:30	11°54.197	87°11.047	136.9	4.60	792.72	117.01	"
09:00	11°52.517	87°09.418	136.8	4.30	795.19	116.11	"
09:30	11°50.843	87°07.798	141.1	4.80	797.64	113.01	"
10:00	11°49.191	87°06.196	133.6	4.50	800.06	115.21	"
10:30	11°47.524	87°04.589	137.1	4.6	802.6	115.91	"
11:00	11°45.886	87°03.012	136.3	4.8	804.8	115.61	"
11:30	11°44.236	87°01.422	135.3	4.8	807.17	115.91	"
12:00	11°42.643	87°59.867	136.7	4.9	809.51	114.91	"
12:15	11°41.753	86°59.023	143.0	5.1	810.77	112.51	THE END LINE NS-065
13:00	11° 38.983	87°00.611	216.5	4.4	814.19	123.01	APPROACHING LINE NS-063
							w/ 2 guns, not recording

Time	Latitude	Longitude	Cse	Spd	Log	Depth	Comments
13:30	11° 38.025	87° 03.187	313.4	4.1	816.99	130.81	START LINE NS-063 (3600S)
14:00	11° 39.266	87° 04.339	322.8	4.2	818.42	130.01	NORMAL OPERATION
14:30	11 41 094	087 06.110	316.4	4.0	820.53	127.71	normal operation - line 063
15:00	11 42.863	087 07.825	315.2	4.10	822.65	124.01	normal operation - line 063
15:30	11 44 546	087 09.445	316.2	4.40	824.72	122.81	normal operation - line 063
16:00	11 46.332	087 11.183	314.9	4.60	826.98	125.01	normal operation - line 063
16:30	11 48 067	087 12.860	317.5	4.30	829.17	123.11	normal operation - line 063
17:00	11 49 827	087 14.562	312.4	4.20	831.35	123.11	normal operation - line 063
17:30	11 51.552	087 16.216	311.4	4.30	833.44	122.91	normal operation - line 063
18:00	11 53.301	087 17.927	317.4	4.30	835.74	122.41	normal op. → change of operations
18:30	11° 55.077	087° 19.664	321.0	4.20	837.94	124.51	" / 18:42 End line NS063
19:00	11° 55.769	087° 21.667	221.3	4.50	840.08	127.41	Transit
19:30	11° 54.038	087° 23.222	214.0	4.40	842.42	133.61	"
20:00	11° 52.128	087° 24.346	160.0	5.00	844.78	151.81	20:09 Start line NS061
20:30	11° 50.504	087° 22.932	129.6	4.70	847.20	154.01	Normal Operation
21:00	11° 48.941	087° 21.429	135.1	4.80	849.64	153.51	"
21:30	11° 47.386	087° 19.921	132.0	5.00	852.05	153.01	"
22:00	11° 45.817	087° 18.415	131.2	4.80	854.50	154.01	" Change withstanders
22:30	11° 44.209	87° 16.856	133.0	4.90	857.05	153.51	SEISNET computer displays error message declaring: The disk is FULL.
							Anthony comes and fixes it, no problem.
23:00	11° 42.692	87° 15.382	127.4	4.8	859.4	151.21	NORMAL OPERATION
23:30	11° 41.103	87° 13.854	129.3	5.0	861.94	147.81	
00:00:00	11° 39.596	87° 12.391	130.6	5.10	864.39	141.01	SPEED IS OVER 5.0 KTS
00:30	11° 38.018	87° 10.856	132.5	5.0	867.07	133.51	NORMAL OPERATION
01:00	11° 36.454	87° 09.293	137.4	5.3	869.98	133.91	
01:30	11° 34.981	87° 07.926	134.0	5.1	872.24	109.61	

Time	Latitude	Longitude	Cse	Spd	Log	Depth	Comments
00:30	11 31.423	087 08.149	205.1	4.70	877.32	124.31	turning to line 59
01:00	11 29.692	087 09.850	236.5	4.90	879.75	181.61	turning to line 59
03:30	11 31.035	087 11.819	315.6	3.70	881.65	203.61	line 059 - birds out of green
04:00	11 32.841	087 13.578	322.6	3.60	883.51	218.91	normal operation - line 059
04:30	11 34.618	087 15.297	318.6	3.90	885.40	238.21	normal operations - line 059
05:00	11 36.368	087 16.993	315.7	4.10	887.31	257.11	normal operations - line 059
05:30	11 38.182	87 18.765	322.6	5.2	889.31	271.61	" " "
06:00	11 39.986	087 20.502	319.7	3.8	891.22	283.71	change of watchstanders
06:30	11° 41.851	087° 22.316	325.1	3.80	893.26	288.41	Normal Operation
07:00	11° 43.624	087° 24.028	323.1	4.00	895.22	277.41	Bad Operation no record data
07:30	11° 45.424	087° 25.768	317.8	4.00	897.23	257.51	Normal Operation
08:00	11° 47.211	087 27.432	316.8	4.20	899.20	243.61	" "
08:30	11° 48.128	087° 29.615	228.2	4.50	901.23	268.81	" "
09:00	11° 46.230	087° 30.148	166.5	5.00	903.59	375.41	Transit to line 057
09:30	11° 44.759	087° 28.999	133.5	4.70	906.01	390.71	Normal Operation line NS 057
10:00	11° 43.399	087° 27.678	128.0	4.90	908.46	423.21	" " change watchstanders
10:30	11° 42.008	87° 26.346	138.0	4.80	911.01	452.71	
11:00	11° 00.21	87. 28.018	134.1	5.2	913.53	477.81	Normal operation
11:30	11° 39.279	87. 23.710	131.1	4.6	916.02	477.71	"
12:00	11° 37.910	87° 22.387	127.2	5.3	918.52	477.51	"
12:30	11° 36.522	87° 21.042	128.3	4.9	921.13	483.11	"
13:00	11° 35.159	87° 19.792	128.6	5.6	923.67	452.31	"
13:30	11° 33.837	87° 18.453	126.1	5.2	926.19	441.91	"
14:00	11° 32.499	87° 17.156	129.1	5.2	928.84	428.91	"
14:30	11 31.205	087 15.903	125.9	5.20	931.42	419.71	- noisy birds, large waves
15:00	11 29.965	087 14.714	127.0	5.10	934.03	413.71	"
15:30	11 28.811	087 13.585	125.8	5.20	936.58	412.71	"

Time	Latitude	Longitude	Cse	Spd	Log	Depth	Comments
23:20	11 41 042	87 33 705	133.1	5.10	966.04	1088.5	Begin Line NS-053, Streamer depth = 2.5m, (was 3.0)
23:30	11 41 224	87 33 257	133.6	5.30	967.01	1091.2	Normal operation
00:00	11 39.912	87 31 996	129.6	5.10	969.76	1083.2	"
00:30	11° 38.664	87° 30.765	132.3	5.6	972.38	1078.2	"
01:00	11° 37.396	87° 29.556	132.2	5.5	975.14	1160.0	"
01:30	11° 36.241	87° 28.444	134.8	5.4	977.76	1094.2	"
02:00	11° 35.153	87° 27.383	129.0	5.2	980.3	1102.2	"
02:30	11 34 117	087 26.388	124.9	4.80	982.74	1078.2	"
03:00	11 33.005	087 25.306	130.4	5.00	985.40	1014.4	"
03:30	11 31 918	087 24.255	128.2	5.10	988.01	956.71	"
04:00	11 30.872	087 23.252	125.9	5.00	990.59	896.91	"
04:30	11 29.848	087 22.246	122.4	4.90	993.17	852.21	"
05:00	11 28.922	087 21.358	126.3	5.20	995.54	816.41	"
05:30	11 27.831	087 20.296	127.6	5.50	998.16	792.51	"
06:00	11 26.823	087 19.315	130.3	4.70	1000.73	810.41	Change of watchstanders
06:30	11° 25.852	087° 18.375	133.8	4.80	1003.19	815.41	Normal Operation
07:00	11° 24.880	087° 17.430	130.2	5.00	1005.66	821.41	" "
07:30	11° 23.905	087° 16.491	127.9	4.80	1008.12	841.21	" " / 07:50 End line NS053
08:00	11° 22.740	087° 15.734	147.2	4.70	1010.58	904.91	Transit
08:30	11° 21.072	087° 16.235	232.0	4.80	1013.18	1061.30	" / 08:49 stat line NS051
09:00	11° 21.925	087° 18.535	320.9	3.00	1014.72	1048.30	Normal operation
09:30	11° 23.867	087° 20.265	321.0	2.90	1016.20	981.61	" "
10:00	11° 25.782	087° 22.141	324.5	3.10	1017.78	975.91	change of watchstanders
10:30	11 27.62	87 24 041	312.1	3.30	1019.43	1008.5	Fixing bird/gun snag (10:38 - 23 GUNS) 10:38 - 23 GUNS
11:00	11° 29.688	87 25.922	317.9	3.10	1021.04	1130.0	
11:30	11° 31.625	87 27.780	318.3	2.9	1022.56	1262.9	

Cruise EW 0412 JD 335

R/V Maurice Ewing Science Watch Log

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Time	Latitude	Longitude	Cse	Spd	Log	Depth	Comments
12:00	11° 35.645	087° 29.754	316.9	3.1	1024.23	1404.9	No RECORDING (PROBLEMS) (12:02 start)
12:30	11 35 512	87 31 565	323.5	3.2	1075.76	1445.9	"
13:00	11° 37 415	87° 33.400	323.4	3.2	1027.35	1376.8	
13:30	11° 39.328	87° 35.244	315.8	3.1	1028.9	1378.8	
13:44	11° 40.249	87° 36.169	305.5	2.9	1029.67	1374.8	THE END LINE NS-05A
14:00	11 39.337	087 38.681	171.6	5.00	1032.88	1567.1	- turning to line 090
15:00	11 37.678	087 39.163	176.0	5.20	1035.37	1682.5	- turning to line 090
15:30	11 38.058	087 39.491	181.5	5.00	1037.88	1787.9	- "
16:00	11 35.399	087 38.444	99.73	4.50	1040.40	1750.8	"
16:30	11 36 484	087 37 075	77.6	5.00	1042.67	1629.3	Line 090 - noisy data, some birds out of green
17:00	11 37.977	087 35.582	71.0	5.30	1045.18	1478.9	"
17:30	11 39.543	087 34.030	67.4	5.00	1047.24	1284.9	line 090 - less noise, streamer straighter, → in green
18:00	11 40.970	087 32.628	66.0	4.80	1050.07	1048.3	change of watchstanders
18:30	11° 42.572	087° 31.040	65.6	4.50	1052.53	793.51	Normal operation
19:00	11° 44.214	087° 29.433	53.7	4.60	1055.01	444.11	" "
19:30	11° 45.909	087° 27.772	58.6	4.90	1057.93	292.01	" "
20:00	11° 47.610	087° 26.106	54.2	4.70	1059.00	211.81	" "
20:30	11° 49.319	087° 24.431	55.5	5.00	1062.24	575.21	" "
21:00	11° 50.947	087° 22.748	63.6	4.30	1064.69	148.91	" "
21:30	11° 52.554	087° 21.279	46.8	4.70	1066.99	130.81	" "
22:00	11° 54.213	087° 19.620	44.2	5.00	1069.42	125.51	" " change of watchstanders
22:30	11° 55.794	087° 18.049	45.5	5.00	1071.76	124.61	Fishing net has been snagged by bird 13
23:00	11° 57.615	87° 16.278	42.4	4.90	1074.28	121.71	Data corruption is minimal at this time.
23:30	11° 59.358	87° 14.566	41.5	5.20	1076.85	117.81	Bird was freed of fishing material
00:00	12° 01.205	87° 12.751	36.9	4.8	1079.83	114.61	
00:30	12° 02.630	87° 11.308	32.8	4.4	1081.69	109.61	Normal operation
01:00	12° 04.242	87° 09.769	31.8	5.0	1083.92	104.11	Normal operation

Time	Latitude	Longitude	Cse	Spd	Log	Depth	Comments
11:00	11° 47.030	87° 27.586	218.4	4.40	1128.52	190.51	Normal depth changes when in area
01:30	12° 05.882	87° 08.165	25.9	4.9	1086.32	946.1	NORMAL OPERATION
02:00	12° 07.560	87° 06.493	25.9	4.9	1088.9	80.41	
02:30	12 09.156	87 04.957	28.3	4.90	1091.14	66.81	normal operation
03:00	12 10.772	87 03.360	31.7	5.10	1093.60	56.11	normal operation
3:30	12 10.319	87 1.416	166.6	5.0	1095.78	49.71	transit to line NS-086
3:37	12 9.720	87 1.330	196.0	4.4	1096.2	53.31	magnetometer log went off
03:47	12 9.041	87 1.638	226.1	4.5	1096.9	55.41	starting line NS-086
04:00	12 8 255	87 2.189	232.1	4.60	1097.83	63.01	- normal operations, magnetometer on
04:30	12 06 746	87 03.978	254.7	4.60	1100.19	75.51	- normal operation, ~200 m to line
05:00	12 05 189	87 05 749	236.7	4.30	1102.54	87.21	- normal operations ~4 m to line
05:30	12 03.489	87 07.423	240.1	4.70	1104.89	98.81	- normal operations ~10 m to line
06:00	12 01 812	087 09.072	239.0	4.70	1107.13	105.41	- change of watchstanders
06:30	12° 00.089	87° 10.784	232.5	4.70	1109.53	111.91	No operation. Data no recorded
07:00	11° 58.442	87° 12.371	229.0	5.00	1111.88	115.31	Normal Operation
07:30	11° 56.856	87° 13.941	227.2	4.80	1114.25	117.11	Data no recorded
08:00	11° 55.264	87° 15.432	222.5	4.90	1116.67	121.21	Normal operation
08:30	11° 53.689	87° 17.047	222.5	4.70	1119.02	121.41	" "
09:00	11° 52.033	87° 18.659	221.2	4.60	1121.40	125.11	problem in the system No recorded data
09:30	11° 50.428	87° 20.242	212.7	4.80	1123.72	135.61	Normal Operation
10:00	11° 48.763	87° 21.863	220.8	4.80	1126.11	161.11	" "
10:30	11° 47.030	87° 27.586	218.4	4.40	1128.52	190.51	
11:00	11° 45.456	87° 25.131	211.3	4.80	1130.85	246.59	
11:06							PROBLEM ELECTRICITY - Whole Ship!
11:30	unavailable	unavailable					We are still trying to recover from a power outage, the ship is offline and the engineers and science techs are trying to regroup.
12:00	11° 43.724	87° 27.428	151.7	1.6	1148.96	UNAVAILABLE	Anthony
12:30	11° 41	87° 27	240.3	5.4	1151.68	"	Circling back around to point on line NS-086

Time	Latitude	Longitude	Cse	Spd	Log	Depth	Comments
13:00	11° 42.488	87 29.053	20.5	4.0	1153.25	unavailable	Continue to turn to reapproach NS-086
13:30	11° 44.487	87° 28.026	104.7	4.3	1155.49	362.81	Hydrosweep is is down and being worked on
							▲ No DATA
14:00	11° 46.216	11° 46.239	10.5	4.3	1157.84	252.41	NO DATA
14:30	11 47.412	087 25.506	89.6	4.4	1159.81	206.91	2 guns on - not recording yet
15:00	11 46.081	087 24.464					- beginning of line 0864
15:30	11 44.444	087 26.113	215.9	4.3	1164.31	309.41	some - some birds below green
16:00	11 42.681	087 27.848	214.9	4.8	1166.66	472.21	- some some birds above green
16:30	11 40.936	087 29.558	211.4	4.3	1169.03	805.21	normal
17:00	11 37.276	087 31.176	212.4	4.6	1171.33	1056.3	normal
17:30	11 37.553	087 32.881	217.4	5.2	1173.74	1337.8	normal
18:00	11 35.751	087 34.641	212.5	4.7	1176.07	1545.1	normal
18:30	11° 34.109	087° 36.242	200.1	4.2	1178.29	1711.6	Normal End line NS 0086
19:00	11° 32.482	087° 36.025	123.5	5.0	1180.80	1754.8	Transit
19:30	11° 32.641	087° 34.633	70.8	5.3	1183.29	1681.5	Start line NS 082
20:00	11° 34.101	087° 33.120	57.5	5.0	1185.63	1553.1	Normal Operation
20:30	11° 35.823	087° 31.616	63.3	4.7	1188.19	1435.3	" "
21:00	11° 37.138	87° 30.137	60.4	4.8	1190.61	1182.0	streamer/birds are perfectly aligned
21:30	11° 38.634	087° 28.618	53.0	4.7	1193.04	959.71	Normal Operation
22:00	11° 40.247	087° 27.101	58.2	4.8	1195.43	711.11	" "
22:30	11° 41.830	87. 28.540	53.3	4.7	1197.9	424.7	Normal Operation
23:00	11° 43.461	87. 23.939	45.9	4.8	1200.34	278.9	" ——— "
23:30	11 45.033	87 22.393	45.4	4.9	1202.76	203.	- " ——— "
24:00	11 46.658	87 20.808	44.3	4.1	1205.29	168.41	slow to 4kt to avoid fishing gear may have to deviate
00:19	11 47.483	87 19.989	39.8	4.0	1206.77	154.81	CHG course - deviate to port 5° to avoid fishing gear
00:25	11 47.771	87 19.795	30.8	4.0	1207.12	149.21	CHG course another 5° port
00:30	11 48.047	87 19.707	25.5	4.1	1207.42	147.31	CHG course - turning back to parallel to line
							Max offline distance ~300 m

Time	Latitude	Longitude	Cse	Spd	Log	Depth	Comments
01:00	11° 49.456	87° 18.090	47.7	5.2	1209.87	130.71	
1:30	11° 51.021	87 16.523	35.4	5.1	1212	128	Normal operation
2:00	11° 52.610	87° 14.948	38.3	4.8	1214.8	120.8	Normal operation
2:30	11 54.221	87 13.386	38.4	4.9	1217.27	120.01	normal
3:00	11 55.809	087 11.829	39.4	5.2	1219.77	115.91	normal
03:30	11 57.411	087 10.252	39.5	5.0	1222.35	115.41	normal
04:00	11 59.049	087 08.636	28.7	5.0	1224.95	111.11	normal
04:30	12 00.616	087 07.100	26.4	5.2	1227.52	103.81	normal
05:00	12 02.127	087 05.616	22.6	5.2	1230.05	98.01	normal
05:30	12 03.697	087 04.073	29.9	5.2	1232.69	88.11	normal
06:00	12 05.216	087 02.585	26.4	5.3	1235.15	77.01	change of watchstanders
06:30	12° 06.949	087° 00.893	24.7	5.1	1237.89	64.61	Normal Operation End line NS 082
07:00	12° 08.115	086° 59.025	102.0	3.8	1240.24	51.11	Transit
07:30	12° 06.187	086° 58.399	245.6	4.1	1242.12	56.71	Start line NS 078
08:00	12° 04.603	087° 00.004	234.1	4.2	1244.45	72.31	Normal Operation
08:30	12° 02.967	087° 01.706	242.3	4.2	1246.64	84.41	" "
09:00	12° 01.349	087° 03.301	238.7	4.2	1248.76	93.51	" "
09:30	11° 59.708	087° 04.910	239.7	4.3	1250.82	103.41	" "
10:00	11° 58.038	087° 06.545	242.6	4.0	1252.91	109.51	" "
10:30	11° 56.401	87 08.157	239.6	4.0	1254.95	114.01	" "
11:00	11° 54.761	87 09.762	234.6	4.0	1256.98	115.01	" "
11:30	11° 53.053	87° 11.440	231.2	3.9	1258.0	118.71	" "
12:00	11° 51.344	87 13.125	221.8	3.8	1261.02	121	" "
12:30	11° 49.574	87 14.861	224.8	4.1	1263.09	125.21	" "
13:00	11° 47.887	87 16.591	227.8	3.8	1265.06	130.11	" "
13:30	11° 46.095	87 18.279	220.1	3.7	1266.98	151.21	" "
14:00	11° 44.364	87° 19.973	219.5	4.0	1268.94	182.41	

Time	Latitude	Longitude	Cse	Spd	Log	Depth	Comments
04:30	11 42.602 11 42.602	087 21.696	214.4	3.9	1270.88	244.11	normal
15:00	11 40.884	087 20.388	208.1	3.7	1272.75	392.81	normal
15:30	11 39.180	087 25.056	211.0	3.6	1274.67	654.71	normal
16:00	15 59.41	11 32.466	212.4	4.1	1276.55	945.71	- many birds below green
16:30	11 35.689	087 28.442	207.2	4.0	1278.56	1137.1	- some birds below green
17:00	11 33.995	087 30.158	202.4	4.0	1280.58	1349.8	- normal
17:30	11 32.302	087 31.817	196.8	4.0	1282.62	1534.0	- some birds above green
18:00	11 30.551	087 33.474	199.6	4.3	1284.76	1676.4	- turning to line 0802 - change of watch
18:30	11° 28.854	087° 35.230	201.7	4.2	1286.95	1930.7	- 8.0 record length
19:00	11° 27.642	087° 37.549	271.4	3.9	1289.13	2816.9	- 25 m ^{shot} spacing
19:30	11° 29.526	087° 39.076	58.0	4.5	1291.12	2360.9	→ Transit
20:00	11° 30.912	087° 37.584	71.3	4.8	1293.70	1951.9	Transit
20:30	11° 32.228	087° 36.151	63.3	4.8	1296.21	1772.9	"
21:00	11° 33.564	087° 34.703	63.7	4.8	1298.68	1639.3	
21:30	11° 34.821	087° 33.182					
22:00	11° 33.572	87° 32.215	185.3	5.1	1303.75	1512.0	APPROACHING LINE NS-0802
22:04	11° 33.278	87 32.421	207	4.4	1304	1538	^{Began} Start of Line 802
22:30	11° 31.877	87° 33.797	206.1	4.2	1305.86	1652.4	NORMAL OPERATION
23:00	11° 30.264	87° 35.377	201.2	4.3	1308.4	1800.0	"
23:30	11 28.661	87 36.935	196.1	4.5	1310.30	2409.0	— " — " —
00:00	11 27.100	87 38.453	197.5	4.5	1312.6	2933	— " — " —
00:30	11° 25.498	87° 40.029	192.3	4.6	1314.91	3706.8	" "
01:00	11° 23.883	87° 41.006	192.5	5.1	1317.29	4048.6	" "
01:30	11° 22.352	87° 43.108	188.4	4.9	1319.67	4296.7	" "
02:00	11° 20.891	87° 44.527	186.4	4.9	1322.10	4930	" "
02:30	11 19.513	087 45.886	181.8	5.0	1324.52	5214.0	normal
03:00	11 18.183	087 47.186	191.0	4.3	1326.86	5542.9	normal

Time	Latitude	Longitude	Cse	Spd	Log	Depth	Comments
03:30	11 16.708	087 48.600	190.4	5.1	1329.28	5390.6	normal
04:00	11 15.178	087 50.107	190.2	5.0	1331.78	4974.2	normal
04:30	11 13.672	087 51.576	189.7	4.7	1334.28	4705.0	some some birds above green
05:00	11 12.162	087 52.956	173.6	4.6	1336.70	4454.1	- turning to line 074L
05:30	11 11.103	087 52.525	139.3	4.9	1339.10	4347.0	- "
06:00	11 10.164 11 10.164	087 51.759 087 51.759	145.9 145.9	4.4	1341.52	4137.4	- turning to line 074L - change of watchstander
06:30	11° 10.002	087° 50.458	72.3	4.50	1344.03	4080.4	Start line NS-074L
07:00	11° 11.467	087° 49.024	71.4	5.20	1346.29	4627.0	Normal Operation
07:30	11° 13.027	087° 47.499	69.3	5.50	1348.73	5067.8	" "
08:00	11° 14.689	087° 45.901	72.8	5.10	1351.32	5424.1	" "
08:30	11° 16.218	087° 44.374	65.2	5.10	1353.80	5552.0	" "
09:00	11° 17.742	087° 42.883	64.9	4.80	1356.39	5177.0	" "
09:30	11° 19.129	087° 41.529	68.5	5.10	1358.88	4415.1	" "
10:00	11° 20.577	087° 40.105	67.9	5.50	1361.40	4123.9	" "
10:30	11° 22.016	87° 38.693	71.2	5.0	1364.04	3904.2	Very noisy, streamer is not in range though
11:00	11° 23.420	87° 37.304	70.4	5.0	1366.52	3212.0	
11:30	11° 24.818	87° 35.914	65.4	4.8	1368.91	2809.7	
12:00	11° 26.253	87° 34.543	63.6	4.8	1371.30	2333.3	
12:30	11° 27.785	87° 33.037	66.1	5.0	1373.80	1895.5	Very noisy; streamer is shallow (birds 1-6 ³ / ₁₇)
13:00	11° 29.336	87° 31.516	56.7	5.0	1376.36	1631.3	
13:30	11° 30.849	87° 30.024	58.2	4.7	1378.87	1465.9	
14:00	11 32.519	087 28.392	57.6	5.2	1381.62	1338.8	some streamers out of green - change of watch
14:30	11 33.879	087 27.095	58.8	4.7	1383.40	1162.0	some streamers out of green
15:00	11 35.378	087 25.569	50.0	5.4	1386.43	941.71	some "
15:30	11 36.892	087 24.095	52.9	5.1	1389.03	732.01	" pan streamer is in water
16:00	11 38.324	087 22.711	51.0	4.5	1391.53	470.21	"
16:30	11 39.711	087 21.314	47.8	5.0	1394.10	335.11	"

Time	Latitude	Longitude	Cse	Spd	Log	Depth	Comments
17:00	11 41.227	087 14.835	44.4	4.6	1396.60	223.31	some streamers out of green - line 742
17:30	11 42.736	087 18.356	39.4	5.1	1399.11	177.71	- normal
18:00	11 44.262	087 16.866	39.9	5.1	1401.62	150.21	- normal - change of watch
18:30	11° 45.318	087° 15.251	38.5	5.1	1404.24	130.21	- Normal Operation
19:00	11° 47.985	087° 13.720	31.5	5.0	1406.78	125.11	" "
19:30	11° 49.046	087° 12.193	33.3	5.2	1409.24	123.01	" "
20:00	11° 50.560	087° 10.700	28.4	4.7	1411.69	115.31	" "
20:30	11° 52.018	087° 09.263	31.3	4.8	1414.10	116.21	" "
21:00	11° 53.491	087° 07.819	31.7	4.9	1416.51	114.71	" "
21:30	11° 55.011	087° 06.313	27.0	5.0	1418.00	113.11	" "
22:00	11° 56.487	087° 04.830	29.0	5.0	1421.36	108.71	" " change of watchstanders
22:30	11° 57.904	87° 03.473	21.3	4.8	1423.6	102.61	" "
23:00	11° 59.361	87° 02.031	22.8	5.1	1426.32	95.11	" "
23:30	12° 00.861	87° 00.596	26.0	5.0	1428.84	87.81	" "
00:00	12° 02.462	86° 59.	28.0	5.0	1431.50	78.21	" "
00:30	12° 04.148	86° 57.364	43.2	4.9	1433.85	65.31	" "
01:00	12° 05.795	86° 55.747	52.2	4.7	1436.29	51.81	NORMAL OPERATIONS
01:30	12° 07.359	86° 54.193	53.7	4.8	1438.58	42.41	
02:00	12° 09.043	86° 52.559	54.4	4.7	1440.97	33.11	NORMAL OPERATION
02:30	12 10.753	086 50.853	33.9	4.0	1443.42	23.31	normal - turning to line 080
03:00	12 12.522	086 51.725	293.0	4.8	1445.67	20.51	"
03:30	12 12.300	086 51.074	225.7	4.2	1448.02	25.11	normal - line 080
4:00	12 10.664	86 55.657	215.3	4.7	1450.79	32.31	"
4:30	12 08.900	086 57.410	219.3	4.2	1452.57	46.51	"
5:00	12 07.314	086 58.957	222.0	4.3	1454.65	54.21	"
05:30	12 05.608	087 00.627	227.7	4.1	1456.81	69.61	"
06:00	12 03.860	087 02.356	232.7	4.2	1458.98	82.91	"

Time	Latitude	Longitude	Cse	Spd	Log	Depth	Comments
06:30	12° 02.032	087° 04.033	238.4	4.3	1461.12	94.21	Normal Operation
07:00	12° 03.386	087° 05.760	245.3	4.0	1463.15	103.21	" "
07:30	11° 58.710	087° 07.423	243.7	3.6	1465.01	110.31	" "
08:00	11° 57.020	087° 09.083	244.2	4.0	1466.91	113.21	" "
08:30	11° 55.228	087° 10.788	238.7	3.7	1468.85	114.51	" "
09:00	11° 53.564	087° 12.478	239.0	4.1	1470.79	117.41	" "
09:30	11° 51.831	087° 14.110	229.6	4.1	1472.72	119.01	" "
10:00	11° 50.221	087° 15.745	233.1	3.9	1474.65	124.71	" "
10:30	11° 48.008	087° 18.750	230.5	4.0	1476.7	135.82	" "
11:00	11° 46.661	087° 19.255	230.01	4.1	1478.6	154.81	" "
11:30	11° 44.897	087° 20.992	221.0	3.8	1480.54	188.91	" "
12:00	11° 43.103	087° 22.756	225.2	3.8	1482.48	259.01	
12:30	11° 41.336	087° 24.486	217.0	3.9	1484.40	417.31	
13:30	11° 37.809	087° 27.946	219.5	3.9	1488.22	951.71	
13:36	11° 37.468	087° 28.294	217.2	3.8	1488.58	1012.4	OFFLINE FOR FISHING BOATS (20 m)
14:00	11 36.056	087 29.678	215.7	3.6	1490.05	1215.9	change of watch
14:30	11 34.398	087 31.352	211.1	3.6	1491.87	1436.9	normal
15:00	11 32.586	087 33.087	207.4	3.4	1493.78	1597.2	normal
15:30	11 30.825	087 34.126	132.1	4.3	1495.71	1694.5	- turning to line 070
16:00	11 29.702	087 32.984	114.9	4.7	1498.12	1680.5	" "
16:30	11 28.525	087 31.699	118.6	5.0	1500.58	1715.6	" "
17:00	11 27.718	087 30.359	85.4	4.8	1502.98	1649.4	" "
17:30	11 28.638	087 29.127	51.4	5.1	1505.37	1471.9	normal - line 070
18:00	11 29.870	087 27.934	57.9	4.7	1507.87	1301.8	change of watch
18:30	11° 31.140	087° 26.633	50.3	5.2	1510.41	1167.0	Normal Operation
19:00	11° 32.425	087° 25.438	54.6	5.1	1512.97	1036.9	" "
19:30	11° 33.638	087° 24.189	50.3	4.9	1515.47	904.91	" "

Time	Latitude	Longitude	Cse	Spd	Log	Depth	Comments
20:00	11° 34.955	87° 22.355	50.0	4.8	1517.93	728.91	Normal Operation / 20:11:21 shot down / 20:10 16m
20:30	11° 36.223	87° 21.715	48.3	5.1	1520.32	545.81	3 Guns operation
21:00	11° 37.583	87° 20.377	46.3	4.7	1522.78	388.61	Shot down / 21:02 3 Guns operating
21:30	11° 38.948	87° 19.042	45.0	4.8	1525.28	255.61	Normal operation / 21:43 16m / 21:46 3 Guns /
22:00	11° 40.271	87° 17.738	35.6	4.5	1527.85	197.81	Normal Operation
22:30	11° 41.665	87° 16.371	40.8	5.1	1530.42	167.51	
22:41	11° 42.163	87° 15.868	34.8	5.0	1531.43	156.61	Shot Down
22:44	11° 42.351	87° 15.693	33.2	5.1	1531.70	155.81	3 GUNS OPERATING
23:00	11° 43.054	87° 15.018	37.3	5.4	1532.97	145.71	Hi seas disrupting streamer
23:30	11° 44.507	87° 13.562	36.3	5.4	1535.56	128.51	STREAMER lowered to 3m, improves data
00:00	11° 45.97	87° 12.130	31.7	5.8	1538.16	128.3	Normal Operation
00:30	11° 47.498	87° 10.610	33.2	5.4	1541.00	123.61	
01:07	11° 49.258	87° 08.854	34.4	5.4	1544.21	117.51	
01:30	11° 50.478	87° 07.674	27.1	5.4	1546.24	114.41	
02:00	11° 51.956	87° 06.267	31.1	5.0	1548.88	114.81	
02:30	11° 53.301	087° 04.937	29.5	5.1	1551.31	113.61	Normal line 070
03:00	11° 54.739	087° 03.537	32.0	4.4	1553.83	112.01	"
03:30	11° 56.281	087° 02.017	41.0	5.0	1556.27	105.11	"
04:00	11° 57.895	087° 00.440	42.3	4.6	1558.68	94.71	"
04:30	11° 59.507	086° 58.861	43.6	4.7	1561.05	85.41	"
5:00	12° 01.053	086° 57.340	44.2	4.9	1563.31	80.11	"
5:38	12° 03.263	086° 55.63					"
6:00	12° 03.151	086° 53.861	132.7	5.2	1568.07	56.11	change of watch
7:00	1						

Time	Latitude	Longitude	Cse	Spd	Log	Depth	Comments
7:00	11° 59.523 N	86° 55.756 W	223.8	4.3	1572.86	77.51	start of line 66
07:30	11° 57.831	086° 57.393	219.2	4.5	1574.99	85.21	Normal Operation
08:00	11° 56.088	86° 59.105	226.1	4.1	1577.15	96.81	" "
08:30	11° 54.410	87° 00.755	222.6	4.0	1579.18	103.91	" "
09:00	11° 52.684	87° 02.459	224.5	4.1	1581.16	109.99	" "
09:30	11° 50.918	87° 04.192	231.9	4.1	1583.19	111.61	" "
10:00	11° 49.176	87° 05.874	238.5	3.8	1585.13	115.51	" "
10:30	11° 47.449	87° 07.600	235.8	3.9	1587.03	117.51	" "
11:00	11° 45.701	87° 09.308	237.7	3.6	1588.94	122.81	" "
11:30	11° 43.910	87° 11.077	231.3	4.1	1590.92	128.71	" "
12:00	11° 40.048	87° 14.864	231.2	3.8	1595.01	162.51	" "
12:30	11° 40.090	87° 14.970	231.3	4.0	1596.03	180.25	" "
13:00	11° 38.131	87° 16.744	225.7	3.8	1597.01	200.61	" "
13:30	11° 36.287	87° 18.560	219.7	4.0	1598.89	348.9	" "
14:00	11° 34.430	87° 20.374	231.9	4.0	1600.73	533.41	" "
14:30	11 32.561	87 22.201	220.5	3.8	1602.58	801.61	- on going noise in channels 8-14
15:00	11 30.733	087 23.999	217.0	4.1	1604.45	960.61	- some some birds out of green, noisy
15:30	11 28.930	087 25.763	214.8	3.8	1606.29	1123.1	- normal
16:00	11 27.224	087 27.421	214.2	3.6	1608.10	1361.8	- normal
16:20	11° 25.913	87 28.720	214.2	5.0	1609.53	1596.2	end of line NS-066
16:30	11° 25.479	87 29.164	210.9	4.9	1610.04	1750.7	transit to next line. checking streamer, changing
17:00	11 23.770	87 30.836	201.8	4.0	1611.92	2390.3	turning to line 062
17:30	11 22.136	087 30.457	116.3	4.6	1614.12	2617.7	"
18:00	11 22.535	087 28.911	55.4	4.7	1616.57	2216.1	" → change in watch
18:30	11° 23.890	087° 27.575	47.2	4.8	1619.09	1642.3	transit.
19:00							

Cruise EW 0412 JD 340

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Time	Latitude	Longitude	Cse	Spd	Log	Depth	Comments
19:00	11° 25.246 N	87° 26.235 N	48.5	5.3	1621.51	1303.8	first rounded log for line 62
19:30	11° 26.551 N	87° 24.951 N	47.5	5.3	1623.98	1108	
20:00	11° 27.857	87° 23.687	42.9	4.9	1624.54	976.81	
20:30	11° 29.118	087° 22.452	45.6	4.9	1629.02	871.11	
21:00	11° 30.372	087° 21.219	37.5	5.1	1631.59	775.71	
21:30	11° 31.683	087° 19.938	42.3	5.2	1634.20	659.41	
22:00	11° 32.906	87° 18.732	36.0	4.8	1636.67	503.11	
22:22	11° 33.842	87° 17.796	41.9	5.4	1638.59	406.91	4 minutes ^{H60} with 16UN, NOW 36UNS (NORMAL OPERATION)
22:27	11° 34.044	87° 17.603	35.5	4.9	1638.99	389.31	Shot DOWN (TURTLES)
22:30	11° 34.195	87° 17.460	34.7	4.8	1639.28	372.81	36UNS NORMAL OPERATION
23:00	11° 35.389	87° 16.293	37.4	5.4	1641.66	256.01	NORMAL OPERATION
23:30	11° 36.711	87° 14.983	32.8	5.2	1644.27	185.7	— " — " —
00:00	11° 37.931	87° 13.806	33.8	4.9	1646.97	159.7	" "
00:30	11° 39.202	87° 12.553	35.6	5.1	1649.52	144.31	" "
01:00	11° 40.459	87° 11.315	33.2	5.2	1652.16	132.71	" "
1:30	11° 41.699	87° 10.098	30.2	5.4	1654.77	127.11	— " — " —
2:00	11° 42.970	87° 08.849	29.6	5.6	1657.29	125.91	change of watch
2:30							normal
3:00	11° 45.591	087° 06.286	34.4	4.8	1662.30	122.81	normal
3:30	11° 46.931	087° 04.962	35.7	4.8	1664.87	118.71	normal
4:00	11° 48.398	087° 03.536	39.9	4.8	1667.28	115.11	normal
4:30	11° 49.910	087° 02.057	46.7	4.9	1669.79	113.21	normal
5:00	11° 51.482	087° 00.504	39.9	4.8	1672.27	110.11	normal
5:30	11° 53.083	086° 58.940	44.9	5.1	1674.70	105.41	normal
6:00	11° 54.662	086° 57.385	48.1	4.8	1677.05	99.11	— change of watch
6:30	11° 56.395	086° 55.698	46.2	4.8	1679.53	84.61	Normal operation
7:00	11° 58.114	86° 54.001	54.5	4.9	1682.03	77.01	" "

Time	Latitude	Longitude	Cse	Spd	Log	Depth	Comments
07:30	11° 53.849	086° 52.304	43.3	5.0	1684.19	63.51	Normal Operation line NS-062
08:00	12° 00.010	86° 50.361	128.1	5.1	1686.96	55.61	turning to line NS-058
08:30	11° 58.165	86° 50.907	213.3	4.4	1689.38	67.61	start line NS-058
09:00	11° 56.521	86° 52.453	218.8	4.5	1693.59	77.11	Normal Operation
09:30	11° 54.866	86° 54.082	209.3	4.3	1693.83	83.31	" "
10:00	11° 53.283	86° 55.637	218.9	4.5	1696.03	93.61	" " change of watchstander
10:30	11° 51.676	86° 57.227	226.7	4.4	1698.6	102.21	" "
11:00	11° 50.065	86° 58.808	217.7	4.5	1700.54	107.31	" "
11:30	11° 48.432	87° 00.411	223	4.5	1702.7	111.01	" "
12:00	11° 46.785	87° 02.058	225.2	3.8	1704.77	111.81	" "
12:30	11° 45.064	87° 03.720	220.8	4.1	1706.74	118.41	" "
13:00	11° 43.324	87° 05.400	222.5	4.2	1708.65	125.01	
13:11	11° 42.695	87° 06.068	230.5	4.0	1709.67	127.61	SHUT DOWN (3 GUNS) FOR 4 min
13:30	11° 41.636	87° 06.000	228.9	4.5	1710.77	127.61	NORMAL OPERATION
14:00	11° 39.910	87° 8.738	240.3	5.1	1712.78	117.21	Normal operation
14:09	11 39.371	87° 9.283	239.9	4.8	1713.35	118.71	Shutdown. Turtles line NS-058
14:13	11 39.137	87° 9.528	241.0	5.1	1713.58	120.41	back with 3 GUNS
14:30	11 38.121	87 10.523	240.3	3.2	1714.55	131.91	normal
15:00	11 36.238	87 12.363	242.5	3.1	1716.21	153.21	normal
15:30	11 34.471	87 14.099	236.6	3.1	1717.76	202.91	normal
16:00	11 32.600	87 15.943	241.6	3.1	1719.33	364.11	normal
16:30	11 30.767	87 17.740	230.7	2.9	1720.84	547.61	normal
17:00	11 28.994	87 19.487	230.5	2.8	1722.32	729.61	normal
17:30	11 27.209	87 21.240	228.7	2.9	1723.77	868.11	normal
18:00	11 25.466	87 22.942	226.6	3.0	1725.23	1041.3	normal change watchstander
18:30	11° 23.674	87° 24.675	231.1	2.8	1726.75	1316.8	normal operation
19:00	11° 21.973	87° 26.433	230.8	2.8	1728.28	1794.0	end line NS-058

Time	Latitude	Longitude	Cse	Spd	Log	Depth	Comments
19:30	11° 20.333	087° 28.263	230.2	3.0	1723.76	2551.9	Transit
20:00	11° 18.311	087° 28.544	112.4	4.5	1731.66	2994.9	"
20:30	11° 18.086	087° 27.077	44.9	5.0	1734.20	2636.2	"
21:00	11° 19.164	087° 25.978	40.8	4.8	1736.72	2177.7	"
21:30	11° 20.178	087° 24.891	45.4	5.1	1739.31	1708.6	"
22:00	11° 21.293	087° 23.895	38.5	8.1	1741.78	1492.0	" change watchstander.
22:17	11° 21.895	87° 23.286	41.0	5.0	1742.3	1343.8	START LINE NS-054 (36VNS)
22:30	11° 22.339	87° 22.855	41.2	5.3	1744.28	1261.9	NORMAL OPERATION
23:00	11° 23.424	87° 21.790	41.9	5.5	1746.90	1084.2	" "
23:30	11° 24.524	87° 20.713	42.2	5.2	1749.48	963.61	" "
00:00	11° 25.65	87 19.613	35.6	4.9	1752.11	869.11	Normal operation
00:30	11° 26.	87° 18.373	37.2	5.2	1754.78	759.81	" "
01:00	11° 28.110	87° 17.195	36.9	5.6	1757.27	648.51	Normal Operation
01:30	11° 29.325	87° 16.000	33.3	5.4	1759.91	500.51	
02:00	11° 30.538	87° 14.815	38.5	5.3	1762.53	391.51	
02:30	11 33.206	87 12.201	38.5	5.5	1767.73	171.31	normal
03:00							normal
03:30	11 34.611	087 10.823	35.9	5.0	1770.23	123.31	normal
4:00	11 36.195	087 09.278	37.3	4.5	1772.90	113.51	normal
4:30	11 37.626	087 07.878	41.2	4.5	1775.12	115.91	normal
5:00	11 39.227	087 06.306	43.2	4.8	1777.62	124.81	normal
5:30	11 40.819	087 04.749	43.7	4.9	1780.01	129.91	Normal
6:00	11 42.386	087 03.207	42.6	4.6	1782.31	122.21	change of watch
06:30	11° 44.091	087° 01.541	51.8	4.6	1784.73	118.21	Normal Operation
07:00	11° 45.714	086° 59.345	46.1	4.3	1786.96	113.71	" "
07:30	11° 47.353	086° 58.336	46.9	4.2	1789.09	111.11	" "
08:00	11° 48.938	086° 56.721	57.4	4.3	1791.18	105.01	" "

Time	Latitude	Longitude	Cse	Spd	Log	Depth	Comments
08:30	11° 50.631	086° 55.168	58.4	4.2	1793.16	96.91	Normal Operation
09:00	11° 52.210	086° 53.568	57.9	4.1	1795.12	85.21	" "
09:30	11° 53.818	086° 51.990	53.9	3.6	1797.09	81.31	" "
10:00	11° 55.444	086° 50.398	51.0	3.9	1799.05	71.61	" " change Watchstanders.
10:30 10:30	11° 56.982	86° 47.162	52.3	4.0	1801.06	61.3	Near end of line NS-054
11:00	11° 56.536	86° 46.933	162.3	4.9	1803.83	54.81	
11:14	11° 55.512	86° 47.231	238.5	4.5	1804.61	59.41	Start Line NS-050
11:30	11 54.724	86 48.019	212.2	4.9	1805.79	65.7	- Normal Operation -
12:00	11° 53.169	86° 49.597	211.1	4.8	1806.36	76.41	Smooth Operator: NS-050
12:30	11° 51.572	86° 51.106	213.4	5.1	1810.82	82.21	" — " — "
13:00	11° 50.010	86° 52.625	218.8	5.3	1813.38	91.61	Normal Operation NORMAL OPERATION
13:30	11° 48.300	86° 54.313	213.5	5.1	1816.14	100.51	BIRD 17 SHALLOW
	11° 46.791	86° 55.814	217.2	5.1	1818.20	106.30	
14:30	11 45.292	086 57.261	216.8	5.2	1821.13	110.81	normal
14:36	11 44.983	86 57.558	216.1	4.3	1821.63	111.51	shutdown. Turtle synth
14:40	11 44.781	86 57.764	216.3	4.2	1821.97	112.11	re-starting line with 3 61 guns
14:59	11 43.821	86 58.710	220.0	4.4	1823.58	113.21	shutdown. Turtle
15:00	11 43.758	86 58.779	216.9	5.0	1823.69	113.71	- shutdown - turtle
15:03	11 43.599	86 58.927	218.3	4.2	1823.94	112.91	restarting line
15:04	11 43.543	86 59.983	216.3	4.3	1824.03	112.61	shutdown. Turtle
15:08	11 43.320	86 59.199	216.3	4.2	1824.4	112.31	back with 3 guns
15:16	11 42.953	86 59.565	219.4	3.9	1824.98	113.81	Shutdown, Turtle
15:20	11 42.745	86 59.774	218.4	2.2	1825.34	115.81	back 3 guns
15:21	11 42.688	86 59.817	217.1	4.2	1825.4	115.41	Shutdown. Turtle
15:25	11 42.496	87° 0.007	216.3	4.1	1825.71	116.31	back. 3 guns
15:30	11 42.246	87 00.246	215.8	4.9	1826.10	116.81	- normal
16:00	11 40.744	87 01.725	219.1	4.9	1828.52	122.01	- normal

Cruise EW 042		JD 342		R/V Maurice Ewing Science Watch Log			NS-050	Page 32
Time	Latitude	Longitude	Cse	Spd	Log	Depth	Comments	
16:09	11 40.243	87 2.224	223.2	4.2	1829.71	123.61	shutdown . Turtle	[Line NS-050]
16:14	11 40.026	87 2.437	222.2	4.3	1829.66	125.11	back . 3 Guns.	"
16:30	11 39.089	87 3.359	216.9	4.6	1831.11	131.21	normal	"
17:00	11 37.515	87 4.897	215.7	4.9	1833.44	124.71	normal	"
17:30	11 35.939	087 06.432	220.5	4.6	1835.80	109.61	normal	"
18:00	11 34.302	087 08.038	219.7	4.7	1838.17	129.71	- change of watch	"
18:30	11 32.677	87 09.626	219.9	4.6	1840.48	130.11	normal Operation	"
19:00	11 31.026	87 11.243	219.7	4.5	1842.82	189.51	" "	"
19:30	11 29.419	87 12.819	222.9	4.2	1845.03	347.41	" "	"
20:00	11 27.800	87 14.409	225.8	4.4	1847.22	500.11	" "	"
20:30	11 26.099	87 16.073	221.4	4.1	1849.44	723.31	" "	"
21:00	11 24.382	87 17.752	225.8	4.0	1851.56	854.21	" "	"
21:30	11 22.697	87 19.417	225.7	3.9	1853.53	1038.40	" "	"
22:00	11 21.010	87 21.062	227.0	3.8	1855.93	1277.90	" "	"
22:11	11 20.181	87 21.860	235.3	3.8	1856.37	1470.9	END Line NS-050	"
22:30	11 19.778	87 23.159	290.4	4.3	1857.52	1617.2	TURNING - Approaching line NS-056	
23:00	11 20.922	87 24.908	348.5	4.5	1859.85	1636.3	" "	"
23:35	11 22.639	87 24.111	39.9	4.9	1862.61	1342.9		
00:00	11 23.744	87 23.040	39.6	5.1	1864.57	1146.1	Normal Operation line NS-056	
00:30	11 25.183	87 21.635	41.6	5.0	1867.15	990.31	" "	
01:00	11 26.666	87 20.178	40.3	4.9	1869.64	842.21	" "	
01:30	11 28.275	87 18.601	42.2	4.8	1872.14	708.11	" "	
02:00	11 29.911	87 17.002	47.9	4.5	1874.55	528.41	" "	
02:30	11 31.540	87 15.401	45.3	4.6	1876.88	376.01	normal - 056	
03:00	11 33.145	087 13.833	52.3	4.4	1879.11	219.91	normal - 056	
03:30	11 34.843	087 12.187	52.3	4.4	1881.41	157.51	Normal - 056	

Cruise EW 04/2		JD 343		R/V Maurice Ewing Science Watch Log				Page 32 33
Time	Latitude	Longitude	Cse	Spd	Log	Depth	Comments	
4:00	11° 36.279	87° 10.491	87.5	4.1	1883.64	119.71	On transit to line NS-103	
4:00	11 34 916	87 09 .304	172.5	5.0	1885.87	125.81	"	
5:00	11 34.527	87° 11.150	320	4.3	1888.31	127.71	"	
5:08	11 34.871	87 11.429	320.9	4.7	1888.67	130.61	starting line NS-103	
5:30	11 36.029	87 12.579	311.2	4.2	1890.06	156.41	- normal line 103	
6:00	11 37.642	87 14.137	310.4	4.0	1892.01	166.71	- normal - change of watch	
06:30	11° 39.264	87° 15.717	317.9	4.0	1894.06	177.01	Normal Operation	
07:00	11° 40.813	87° 17.204	322.6	3.6	1896.04	184.51	" "	
07:30	11° 42.400	87° 18.781	328.0	4.5	1898.16	189.71	" "	
08:00	11° 44.031	87° 20.399	329.9	4.3	1900.38	191.21	" "	
08:30	11° 45.638	87° 21.943	332.3	4.3	1902.64	189.41	" "	
09:00	11° 47.247	87° 23.506	331.7	4.7	1905.03	187.71	" "	
09:30	11° 48.871	87° 25.105	337.0	4.7	1907.49	185.51	" "	
10:00	11° 50.455	87 26.621	327.8	4.8	1909.32	181.91	" "	
10:30	11° 51.964	87 28.113	330.7	4.9	1912.51	179.3	- - -	
11:00	11° 53.410	87 29.529	334.6	5.0	1915.08	178.01	" "	
11:30	11° 54.843	87 30.845	336.1	5.0	1917.62	174.91	" "	
12:00	11° 56.112	87 32.190	337.1	5.1	1919.99	170.91	PROBLEM WITH GPS 04/POS N V	
12:19	11° 56.989	87° 33.056	336.8	5.1	1921.94	169.31	SHUT DOWN 4 min (until 12:24)	
12:30	11° 57.421	87° 33.469	335.0	4.9	1922.76	168.31	NORMAL OPERATION	
13:00	11° 58.700	87° 34.749	340.3	5.1	1925.3	167.41	" "	
13:30	11° 59.980	87° 35.955	335.6	5.1	1927.78	165.61	" "	
14:00	12° 01.290	87° 37.250	337.1	5.2	1930.35	165.31	" "	
14:30	12 02.611	087 38.522	334.6	4.9	1932.79	163.41	Normal	
15:00	12 03.895	087 39.759	334.3	4.9	1935.28	160.71	"	
15:27	12 5.139	87 40.977	329.2	3.8	1937.54	156.21	Shutdown. Turtle	
15:30	12 5.241	87 41.077	331.4	3.6	1937.74	154.91	"	
							http://sci/forms/dir/watchlog.doc	

Cruise EW <u>0412</u>		JD <u>343</u>	R/V Maurice Ewing Science Watch Log				Page 34 <u>39</u>
Time	Latitude	Longitude	Cse	Spd	Log	Depth	Comments
15:31	12 5.300	87 41.138	332.9	3.5	1937.86	154.31	back with 3 GS guns
16:00	12 06.512	87 42.330	326.3	5.1	1940.17	149.91	normal
16:30	12 07.858	87 43.632	327.7	4.6	1942.71	144.21	"
16:41	12 8.374	87 44.173	327.2	3.7	1943.66	142.11	shutdown. Turtle
16:47	12 8.635	87 44.401	329.9	3.8	1944.15	141.91	back. 3 guns
17:00	12 9.182	87 44.931	324.4	3.7	1945.17	139.01	normal operation
17:09	12 9.622	87 45.332	330.5	3.6	1945.97	138.61	shutdown. Turtle
17:20	12 10.041	87 45.818	327.4	3.9	1946.82	136.41	ram-up with 1 gun
17:26	12 10.407	87 46.121	327.2	3.7	1947.41	136.01	back. 2 guns
17:30	12 10.546	87 46.260	329.3	4.8	1947.64	135.01	- 2 guns on
17:48	12 11.371	87 47.077	328.3	3.5	1949.19	131.9	- 3 guns on
18:00	12 11.858	87 47.541	326.5	4.9	1950.04	130.41	- change of watch
18:22	12° 12.321	87° 48.575					Shot down / 18:26 Shot ^{while} 3 Guns
18:30	12° 13.269	87° 48.921	323.6	4.8	1952.64	125.81	Normal Operation / 1 shot down / 1 Gun shot
19:00	12° 14.643	87° 50.271	329.5	4.9	1955.14	123.51	Normal Operation / 18:26 shot down
19:30	12° 16.026	87° 51.627	326.4	4.8	1957.64	120.01	3 Guns Normal Operation
20:00	12° 17.430	87° 52.986	322.4	5.1	1960.18	120.31	Normal Operation
20:30	12° 18.802	87° 54.326	323.7	5.0	1962.70	116.51	" "
21:00	12° 20.219	87° 55.709	315.5	4.9	1965.23	112.31	" "
21:30	12° 21.669	87° 57.129	316.1	5.0	1967.78	109.11	" "
22:00	12. 23.107	87° 58.537	314.0	5.0	1970.31	104.41	" "
22:30	12° 24.536	87° 59.955	317.3	5.0	1972.76	102.31	" "
23:00	12° 26.006	88° 01.386	319.1	5.0	1975.52	101.11	" "
23:30	12 27.367	88 2.71	315.2	4.8	1977.87	97.0	" "
00:00	12° 28.853	88° 04.183	313.0	5.0	1980.51	94.71	" "
00:30	12° 30.194	88° 05.471	312.6	5.0	1982.88	92.31	" "
01:00	12° 31.624	88° 06.870	311.2	4.9	1985.42	92.41	

Time	Latitude	Longitude	Cse	Spd	Log	Depth	Comments
01:30	12° 33.018	88° 08.261	310.1	5.0	1987.94	92.21	
02:00	12° 34.385	88° 09.577	311.1	4.8	1990.38	94.21	
02:30	12 35.843	88 10.997	307.4	5.0	1992.89	94.81	- normal
03:00	12 37.322	88 12.447	307.2	4.8	1995.45	94.01	- normal
03:30	12 38.821	88 13.914	306.3	5.1	1998.01	92.01	- normal
4:00	12 40.318	88 15.382	305.6	5.0	2000.59	92.11	- normal
4:30	12 41.796	88 16.827	301.5	4.7	2003.11	89.61	- normal
5:00	12 43.282	88 18.280	308.1	5.0	2005.65	88.31	- normal
5:30	12 43.272	88 19.816	214.1	4.1	2008.11	92.01	transit to line NS-102
6:00	12 41.063	88 19.660	192.2	4.6	2010.42	104.61	- change of watch - turning to line 102
06:30	12° 40.078	88° 18.175	35.6	4.0	2012.48	104.01	transit 106:35 start line NS-102
07:00	12° 41.652	88° 16.388	45.1	3.9	2014.47	88.91	Normal Operation
07:30	12° 43.058	88° 14.554	41.0	4.3	2016.46	88.11	" "
08:00	12° 44.499	88° 12.662	32.8	4.1	2018.55	76.81	" "
08:30	12° 45.917	88° 10.813	35.1	3.8	2020.62	70.11	" "
09:00	12° 47.312	88° 08.999	30.7	4.3	2022.63	68.41	" "
09:30	12° 48.691	88° 07.223	35.5	4.4	2024.84	64.81	" "
10:00	12° 50.086	88° 05.400	34.7	4.2	2027.06	60.31	" "
10:30	12° 51.463	88 03.575	27.9	4.4	2029.22	54.01	NORMAL Operation
11:00	12° 52.901	88 01.700	35.0	4.1	2031.38	54.21	" "
11:30	12° 54.280	88 59.886	34.1	4.2	2033.44	57.21	" "
12:00	12° 55.660	87 58.174	40.5	3.8	2035.44	49.41	" "
12:10	12° 56.7	87 57.39				45	Magnetometer brought in - shallow water
12:30	12° 57.035	87 56.352	43.2	4.2	2037.51	47.91	NORMAL OPERATION
13:00	12° 58.461	87° 54.494	46.3	4.2	2039.71	44.41	Normal Operation
13:30	12° 59.846	87° 52.693	46.1	4.1	2041.82	50.81	Normal Operation
14:00	13° 01.150	87 50.849	55.4	4.0	2043.93	53.51	" "

Time	Latitude	Longitude	Cse	Spd	Log	Depth	Comments
14:30	13 02.575	087 49.096	51.7	4.2	2045.98	50.01	normal - line 102
15:00	13 03.979	087 47.304	57.0	4.1	2048.06	41.61	normal
15:30	13 05.383	087 45.477	63.5	3.6	2050.08	31.01	"
16:00	13 06.783	087 43.651	55.5	4.0	2051.98	26.71	"
16:30	13 08.107	087 41.856	59.7	3.6	2053.86	30.81	- shut down to 1 gun
17:00	13 09 206	087 39.911	62.3	3.7	2055.71	28.91	- extending line 102
17:30	13 09 240	087 37.919	155.6	4.3	2057.76	27.21	- turning to line 100
18:00	13 07.759	087 39.150	251.2	4.4	2059.99	23.21	- line 100 change watchstander
18:30	13° 6.185	87° 40.873	217.2	4.5	2062.30	26.21	- line 100 Normal Operation
19:00	13° 04.531	87° 42.525	226.4	4.0	2064.48	29.01	- Normal Operation
19:30	13° 02.922	87° 44.149	220.3	4.0	2066.57	34.41	" "
20:00	13° 01.294	87° 45.799	223.9	4.4	2068.78	37.81	" "
20:30	12° 59.690	87° 47.417	226.6	3.8	2070.84	36.61	" "
21:00	12° 58.043	87° 49.089	228.6	4.2	2072.94	37.51	" "
21:30	12° 56.445	87° 50.705	230.5	4.2	2075.03	44.51	" "
22:00	12° 54.786	87° 52.381	234.2	4.5	2077.20	48.51	" " change watchstander
22:30	12° 53.238	87° 53.966	236.5	4.7	2079.4	48.11	" "
23:00	12° 51.712	87° 55.528	244.1	4.7	2081.71	50.71	" "
23:30	12° 50.169	87 57.055	247.5	4.8	2084.09	50.6	" "
00:00	12° 48.686	87° 58.588	246.3	4.9	2086.67	52.61	• Normal Operation
00:30	12° 47.063	88° 00.211	243.8	5.3	2089.21	55.21	Smooth Operator at the Controls
01:00	12° 45.495	88° 01.797	245.7	4.8	2091.67	58.1	"
01:30	12° 44.037	88° 03.268	248.1	5.1	2094.08	64.41	
02:00	12° 42.576	88° 04.747	246.5	4.9	2096.64	69.81	
02:30	12 41.123	88 06.204	242.0	5.1	2099.18	74.41	- normal
03:00	12 39.730	88 07.623	240.4	5.1	2101.62	78.61	- normal
03:30	12 38.946	88 09.212	315.7	5.3	2104.31	82.71	- normal

Cruise <u>EW 0412</u>		JD <u>345</u>		R/V Maurice Ewing Science Watch Log				Page <u>37</u>
Time	Latitude	Longitude	Cse	Spd	Log	Depth	Comments	
4:00	12 40.769	88 10.056	348.2	4.7	2106.96	80.01	transit to line NS-105	
4:30	12 41.057	88 08.227	169.2	3.1	2108.87	77.61	- start line 105	
5:00	12 37.676	88 05.068	142.0	3.1	2111.94	80.91	- normal	
5:30							- normal	
6:00	12 36.024	88 03.458	137.8	3.1	2113.48	80.91	- change of watch	
06:30	12° 34.261	88° 01.728	143.8	3.2	2115.10	82.01	Normal Operation	
07:00	12° 32.845	88° 00.054	127.4	3.2	2116.72	82.41	" "	
07:30	12° 30.835	87° 58.388	125.3	3.2	2118.25	84.11	" "	
08:00	12° 29.150	87° 56.751	130.9	3.2	2119.79	85.21	" "	
08:30	12° 27.494	87° 55.121	123.3	3.2	2121.38	85.41	" "	
09:00	12° 25.879	87° 53.554	111.5	2.9	2122.90	85.61	" "	
09:30	12° 24.237	87° 51.957	116.7	3.1	2124.43	88.91	" "	
10:00	12° 22.625	87° 50.364	109.3	3.3	2125.97	92.01	Change Watchstanders → Smooth Operators	
10:30	12° 20.934	87° 48.738	106.6	3.3	2127.70	103.11	Birds active - esp. near-offset, seismic rel. noisy	
11:00	12 19 292	87 47 139	114.1	3.4	2129.37	110.31	Speed overground increased from 3.9 to 4.9 b/c birds	
11:30	12° 17.578	87° 45.486	113.1	3.9	2131.6	113.41		
12:00	12 0.09	87 43.776	111.9	5.0	2133.07	113.1	- Normal Operation	
12:30	12° 14.059	87° 42.038	123.0	4.0	2135.09	116.01	- Near offset birds shallow	
13:00	12° 12.282	87° 40.316	113.5	4.1	2137.17	118.41	- Streamer moving up & down a lot (esp. birds (1,2,3, 17) seismic v. noisy @ far offset	
13:30	12° 10.538	87° 38.578	120.6	4.3	2139.24	120.91	NORMAL OPERATION	
14:00	12° 08.794	87° 36.883	119.6	3.8	2141.3	124.31	" "	
14:30	12 07.113	87 35.276	116.3	4.2	2143.41	126.11	" "	
14:51	12 5.898	87 34.091	119.6	4.2	2145.07	130.11	shutdown. Turtle	
15:00	12 05.479	87 33.664	126.3	4.4	2145.69	130.81	- normal - 3 guns	
15:18	12 4.451	87 32.666	128.1	4.7	2147.15	132.51	shutdown. Turtle	
15:22	12 4.216	87 32.428	128.2	4.5	2147.48	130.61	back. 3 guns	

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Time	Latitude	Longitude	Cse	Spd	Log	Depth	Comments
15:30	12 03.841	087 32.075	129.3	4.7	2147.49	132.81	- normal
16:00	12 02.201	087 30.482	133.2	4.8	2150.36	133.21	- normal
16:30	12 00.570	087 28.903	134.5	4.8	2152.80	134.91	- normal
17:00	11 58.956	087 27.319	138.2	5.2	2155.24	135.51	- normal
17:30	11 57.323	087 25.733	140.3	5.2	2157.84	133.11	- normal
18:00	11 55.746	087 24.202	139.9	5.2	2160.37	132.71	- change of watch
18:30	11° 54.069	087° 22.565	137.8	5.1	2163.08	131.91	Normal Operation
19:00	11° 52.504	087° 21.036	138.9	5.0	2165.60	130.71	" "
19:30	11° 50.952	087° 19.531	137.8	4.7	2168.17	131.51	" "
20:00	11° 49.421	087° 18.031	141.9	5.0	2170.69	130.59	" "
20:30	11° 47.971	087° 16.636	136.9	5.0	2173.20	130.31	" "
21:00	11° 46.506	087° 15.207	133.9	4.9	2175.71	130.01	" "
21:30	11° 45.072	087° 13.812	131.1	5.0	2178.22	128.91	" "
22:00	11° 43.647	087° 12.435	137.9	4.7	2180.70	128.11	" "
22:30	11° 42.320	87° 11.146	139.6	4.6	2183.05	126.3	——"——
23:00	11° 40.939	87 9.800	135.5	4.1	2185.5	126.0	——"——
23:30	11° 39.556	87° 08.433	139.0	5.0	2188.02	116.81	
24:00	11° 38.189	87° 07.117	138.3	5.2	2190.45	114.91	Seismic noisy although streamer looks good
00:30	11° 36.792	87° 05.754	137.1	5.1	2193.10	113.61	NORMAL OPERATION
01:00	11° 35.446	87° 04.455	131.7	4.9	2195.56	116.01	
01:30	11° 34.086	87° 03.141	133.4	4.8	2198.03	128.04	Seismic continues to be noisy - streamer is good
02:00	11° 32.709	87° 01.796	136.3	4.9	2200.51	132.61	
02:30	11.31.340	87 00.474	135.1	4.9	2202.96	136.41	- normal
03:00	11 30.023	086 59.186	134.8	5.3	2205.38	143.01	- normal
3:30	11 28.736	86 57.140	135.1	3.4	2207.73	145.31	- normal
4:00	11 27.498	86 56.736	133.2	4.8	2210.34	136.51	- normal
4:30	11 26.190	86 55.477	133.3	5.0	2212.82	131.51	- normal

Cruise EW 0412		JD 346		R/V Maurice Ewing Science Watch Log				Page
Time	Latitude	Longitude	Cse	Spd	Log	Depth	Comments	
5:00	11 24.890	086 54.213	135.3	4.8	2215.29	136.11	- normal	
5:30	11 23.557	086 52.916	131.7	4.8	2217.68	140.91	- normal	
6:00	11 22.208	086 51.594	134.1	4.7	2220.05	144.81	- change of watch	
06:30	11° 20.712	086° 50.139	131.7	5.3	2222.66	165.31	Normal Operation	
07:00	11° 019.250	086° 48.722	136.2	4.9	2225.48	175.01	" "	
07:30	11° 17.824	086° 47.329	137.8	5.1	2227.64	181.81	" "	
08:00	11° 16.355	086° 45.909	140.4	5.0	2230.23	194.41	" "	
08:30	11° 14.915	086° 44.515	136.3	5.0	2232.74	194.21	" "	
09:00	11° 13.501	086° 43.129	130.0	5.0	2235.28	182.61	" "	
09:30	11° 12.090	086° 41.756	136.1	5.0	2237.80	167.61	" "	
10:00	11° 10.739	086° 40.452	129.7	4.9	2240.28	156.91	" "	
10:12	11° 10.186	86° 39.890	136.4	5.2	2241.35	151.51	" "	
10:30	11° 09.420	86° 39.175	131.1	4.9	2242.78	155.61	" "	
11:00	11° 08.080	86° 37.859	134.0	5.4	2245.33	141.11	" "	
11:30	11° 06.725	86° 36.560	137.7	4.6	2247.9	145.11	" "	
12:00	11° 05.440	86° 35.298	140.4	4.8	2250.34	147.01	" "	
12:30	11° 04.152	86° 34.044	145.6	4.7	2252.87	148.21	" "	
13:00	11° 02.903	86° 32.836	141.1	5.0	2255.33	150.91	" "	
13:30	11° 01.655	86° 31.650	134.8	4.7	2257.8	155.1	" "	
14:00	11° 0.442	86° 30.466	132.0	4.9	2260.3	159.1	" "	
14:30	10 59.235	086 29.289	136.2	4.9	2262.76	164.11	normal	
14:45	10 58.618	086 28.708	138.8	4.6	2264.01	165.81	"	
15:00	10 58.050	086 28.140	139.0	5.5	2265.16	166.91	"	
15:30	10 56.783	086 26.924	140.6	5.4	2267.76	175.51	" - 20 min. to turn	
16:00	10 55.585	086 25.695	128.1	4.5	2270.28	192.01	- turning to line 022	
16:30	10 56.748	86 24.527	35.2	5.0	2272.47	191.51	transit to line NJ-022	
17:00	10 57.971	086 23.964	186.5	3.7	2274.14	187.51	" "	

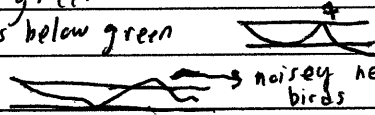
Time	Latitude	Longitude	Cse	Spd	Log	Depth	Comments
17:30	10 56.403	086 27.331	209.5	5.3	2276.48	177.21	- normal
18:00	10 54.425	086 28.814	208.7	5.1	2278.83	184.61	- change of watch
18:30	10° 53.131	086° 30.408	206.1	5.1	2281.42	191.21	Normal Operation
19:00	10° 51.477	086° 31.969	203.3	5.2	2283.94	207.61	" "
19:30	10° 49.807	086° 33.554	210.0	5.0	2286.40	250.41	" "
20:00	10° 48.175	086° 35.093	210.2	5.0	2288.78	337.51	" "
20:30	10° 46.522	86° 36.870	208.8	4.8	2291.31	643.31	" "
21:00	10° 44.903	86° 38.193	204.9	4.9	2293.78	878.01	" "
21:30							
22:00	10° 41.676	86° 41.246	207.3	4.9	2298.67	1535.0	" "
22:30	10° 40.059	86° 42.789	207.0	4.9	2301.17	2016.4	" "
23:00	10° 38.411	86° 44.405	222.9	5.1	2303.71	2436.5	END LINE NS022
23:30	10 39.367	86 46.812	346.3	5.8	2306.1	2650.0	Transit to NS026
23:56	10° 40.496	86° 45.822	091.1	5.4	2307.97	2335.3	START LINE NS-026
00:00	10° 40.678	86° 45.678	101.8	5.2	2308.91	2299.9	Fighting current at beginning of line,
00:30	10° 41.969	86° 44.019	58.8	4.9	2310.63	1767.8	offset by ~750m to the NW from line
00:30							Normal Operation
01:00	10° 43.704	86° 42.393	58.4	4.7	2313.09	1283.9	Noisy Data - streamer is okay, wind 20.8 kts
01:30	10° 45.273	86° 40.912	63.9	4.6	2315.29	998.81	NORMAL OPERATION
02:00	10° 46.926	86° 39.343	61.1	4.6	2317.60	750.31	
02:30	10 48.590	86 37.776	62.8	4.2	2319.83	533.81	- normal
03:00	10 50.225	86 36.227	63.8	4.5	2322.05	326.51	- normal
03:30	10 51.871	86 34.672	62.4	4.3	2324.27	208.71	- normal - noisy birds - birds in green
4:00	10 53.516	86 33.119	62.3	4.5	2326.48	196.91	- normal
4:30	10 55.131	086 31.595	60.1	4.5	2328.70	188.31	- normal
5:00	10 56.788	086 30.028	63.4	4.5	2330.92	182.31	- normal
5:30	10 58.426	086 28.476	57.5	4.6	2333.19	164.91	- normal

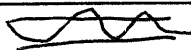


Time	Latitude	Longitude	Cse	Spd	Log	Depth	Comments
06:00	11° 00.030	086° 26.964	60.9	4.7	2335.41	179.81	- change of watch
06:30	11° 01.764	086° 25.330	60.8	4.6	2337.77	181.61	Normal Operation
07:00	11° 03.481	086° 23.712	56.2	4.2	2340.10	173.71	" "
07:30	11° 05.097	086° 22.181	60.3	4.7	2342.26	163.01	" "
08:00	11° 06.766	086° 20.601	60.2	4.5	2344.52	150.01	" "
08:30	11° 08.395	086° 19.067	55.9	4.6	2346.76	136.41	" "
09:00	11° 10.052	086° 17.493	57.6	4.6	2349.07	125.51	" "
09:30	11° 11.709	086° 15.926	61.0	4.9	2351.38	117.11	" "
10:00	11° 13.364	086° 14.356	50.7	4.5	2353.76	104.11	" " change watchstanders
10:30	11° 15.014	86° 12.767	56.3	4.7	2356.11	102.71	" "
11:00	11° 16.695	86° 11.191	56.0	4.5	2358.32	90.61	NORMAL OPERATION
11:30	11° 18.342	86° 09.636	50.4	4.7	2360.55	79.81	
12:00	11° 19.939	86° 08.111	41.5	4.7	2362.81	70.48	
12:30	11° 21.588	86° 06.559	37.4	4.6	2365.15	62.41	End line NS-026
13:00	11° 23.482	86° 07.101	316.8	4.8	2367.73	51.71	TRANSIT Approaching NS-034
13:30	11° 24.828	86° 08.863	273.3	5.0	2370.16	50.71	APPROACHING NS-034
13:40	11° 24.513	86° 09.642	227.3	4.6	2371.15	52.81	START LINE NS-034
14:00	11° 23.451	86° 10.662	226.7	4.4	2372.45	62.61	NORMAL OP.
14:30	11 21.787	86 12.255	224.4	4.4	2374.79	68.51	normal
15:00	11 20.153	86 13.813	219.8	4.9	2377.01	72.41	normal
15:30	11 18.496	086 15.389	214.9	4.5	2379.31	69.01	normal
16:00	11 16.861	086 16.941	211.3	4.6	2381.59	108.01	-normal
16:30	11 15.181	86 18.550	207.3	4.4	2383.97	107.11	normal
17:00	11 13.637	86 20.002	210.4	4.4	2386.09	116.01	normal
17:30	11 11.979	86 21.599	206.4	4.3	2388.47	130.41	NORMAL
18:00	11 10.379	86 23.124	211.6	4.9	2390.83	143.11	-change of watch
18:30	11° 08.674	86° 24.731	205.1	5.0	2393.42	156.31	Normal O.


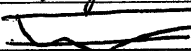
Cruise EW <u>0412</u> JD <u>347</u>		R/V Maurice Ewing Science Watch Log					Page <u>42</u>
Time	Latitude	Longitude	Cse	Spd	Log	Depth	Comments
19:00	11° 07.073	086° 26.243	206.3	5.2	2335.91	169.71	Normal Operation
19:30	11° 05.496	086° 27.761	208.3	4.9	2338.71	179.61	" "
20:00	11° 03.855	086° 29.322	205.5	5.3	2400.92	169.61	" "
20:30	11° 02.167	086° 30.930	207.5	5.0	2403.49	151.41	" "
21:00	11° 00.527	086° 32.512	206.8	4.9	2405.96	161.61	" "
21:30	10° 58.835	086° 34.071	205.8	5.0	2408.43	167.61	" "
22:00	10° 57.263	086° 35.629	202.3	5.0	2410.88	160.51	" " Change watch standers
22:05	10° 56.959	86° 35.950	200.6	4.6	2411.40	158.41	Bird 4 at surface (possibly lost) → fixed
22:30	10° 55.620	86° 37.204	202.2	4.8	2413.48	162.81	NORMAL OPERATION
23:00	10° 53.992	86° 38.760	201.8	4.9	2416.02	329.51	
23:30	10° 52.446	86° 40.206	201.8	5.0	2418.49	499.50 17	
24:00	10° 50.961	86° 41.603	193.3	4.6	2420.00	691.61	
00:30	10° 49.434	86° 43.077	201.0	4.8	2423.31	1040.8	Everything is going smoothly
01:00	10° 47.891	86° 44.528	206.3	4.6	2425.70	1313.6	Smooth Operation
01:30	10° 46.344	86° 46.000	206.8	4.7	2428.15	1508.7	" - " - "
02:00	10° 44.737	86° 47.535	206.9	4.5	2430.67	1949.7	
02:30	10 43.170	086 49.020	209.5	5.2	2433.16	2384.9	- normal
3:00	10 41.597	086 48.771	137.5	4.4	2435.68	2488.1	- Normal transit to line NJ-030
3:30	10 41.078	086 46.901	49.3	5.4	2438.04	2234.0	- start line 030
4:00	10 43.743	086 45.909	60.7	4.3	2440.09	1665.3	- no noisy birds
4:30	10 43.598	086 43.841	53.8	4.4	2442.24	1342.3	- normal
5:00	10 47.058	086 42.271	60.7	4.2	2444.38	1007.7	noisy birds
5:30	10 48.663	086 40.251	61.2	4.2	2446.47	731.51	- normal
5:30 6:00	10 50.269	086 39.229	62.2	4.1	2448.59	567.91	- change of watch
06:30	10° 52.047	086° 37.555	66.7	4.0	2450.85	328.21	Normal Operation
07:00	10° 53.742	086° 35.957	60.2	4.4	2452.98	182.51	" "
07:30	10° 55.388	086° 34.377	63.3	4.3	2455.18	177.51	" "

Time	Latitude	Longitude	Cse	Spd	Log	Depth	Comments
08:00	10° 57.021	086° 32.832	61.6	4.0	2457.32	180.71	Normal Operation
08:30	10° 58.703	086° 31.250	57.5	4.3	2453.55	170.31	" "
09:00	11° 00.351	086° 29.389	57.6	4.5	2461.78	154.71	" "
09:30	11° 01.990	086° 28.136	62.7	4.4	2464.01	175.01	" "
10:00	11° 03.679	086° 26.537	59.8	4.4	2466.25	180.61	" "
10:30	11° 05.308	86° 24.967	64.6	4.8	2468.55	170.11	" "
11:00	11° 06.690	86° 23.389	63.0	4.6	2470.86	159.01	Wind = 29.7 kts, streamer moving around
11:30	11° 08.655	86° 21.805	59.3	4.7	2473.26	145.41	~ channels 125-166 noisy
11:45 11:45	11° 09.429	86° 20.920	58.7	4.9	2474.57	137.11	NORMAL OPERATIONS
12:00	11° 10.290	86° 20.263	55.2	4.6	2475.57	132.01	
12:30	11° 11.941	86° 18.678	55.7	4.6	2477.88	121.09	
13:00	11° 13.532	86° 17.012	59.1	4.3	2479.91	116.8	
13:30	11° 15.275	86° 15.520	52.8	4.7	2482.49	103.31	
14:00	11° 16.875	86° 14.002	43.7	4.4	2484.77	93.91	
14:30	11 18.744	86 13.349	322.5	4.5	2487.09	81.31	- normal - turning to line NS038
15:00	11 20.268	86 14.948	316.7	4.4	2489.26	70.31	- normal - turning to line NS038
15:30	11 20.260	86 16.952	224.7	4.3	2491.49	78.51	- normal - line NS038
16:00	11 18.624	86 18.495	221.0	4.8	2493.73	95.51	- normal - line NS038
16:30	11 16.958	086 20.062	215.6	4.4	2496.07	103.31	- normal
17:00	11 15.334	086 21.629	219.3	5.0	2498.29	118.91	- normal
17:30	11 13.659	086 23.210	127.51	4.4	2500.60	128.21	- normal
18:00	11 12.056	086 24.724	217.1	4.4	2502.80	139.91	- change of watch
18:30	11° 10.394	86° 26.297	208.9	4.7	2505.13	153.01	Normal operation
19:00	11° 08.752	086° 27.845	207.0	4.7	2507.41	166.21	" "
19:30	11° 07.114	086° 29.338	204.2	4.9	2509.84	178.41	" "
20:00	11° 05.459	086° 30.964	211.8	5.0	2512.31	165.11	" "
20:30	11° 03.811	086° 32.519	207.5	4.6	2514.64	147.41	" "

Time	Latitude	Longitude	Cse	Spd	Log	Depth	Comments
21:00	11° 02.135	086° 34.117	205.6	4.4	2517.00	154.31	Normal Operation
21:30	11° 00.495	086° 35.676	206.7	4.7	2519.24	155.11	" "
22:00	10° 58.854	86° 37.250	205.6	4.2	2521.57	149.51	" "
22:30	10° 57.264	86° 38.704	200.6	4.4	2523.85	158.51	" "
22:47	10° 56.282	86° 39.687	205.6	4.3	2525.17	310.11	Slow Down to 2.9 kts (Magnetometer was pulled to 400)
23:00	10° 55.791	86° 40.216	201.8	3.2	2525.94	397.51	too slow → BIRDS CRAZIES (NOISY)
23:25	10° 55.624	86° 40.376	196.7	3.8	2526.15	415.30	INCREASE SPEED 4.5 KTS
23:30	10° 54.253	86° 41.592	203.0	4.7	2528.04	620.71	NORMAL OPERATION (PROBLEM BIRD 006) (FISHING GEAR)
00:00	10° 52.620	86° 43.042	204.6	4.8	2530.26	858.31	NORMAL OPERATION
00:30	10° 51.010	86° 44.688	201.3	4.7	2532.77	1093.8	too noisy (BIRDS)
01:00	10° 49.382	86° 46.209	205.5	4.7	2535.25	1339.3	Bird 6 shallow
01:30	10° 47.747	86° 47.756	205.4	4.9	2537.19	1666.3	NORMAL OPERATION
2:00	10° 46.065	86° 49.351	207.3	4.7	2540.21	2064.3	data a little bit noisy.
2:30	10 44.449	86 50.879	206.0	4.9	2542.70	2392.8	- turning to line 042, pulling in streamer
3:00	10° 43.474	86° 51.961	215.8	2.7	2544.47	2797.8	- "
3:30	10° 42.787	86 53.166	213.8	2.7	2545.97	3212.7	A fish was trap in the streamer
4:00	10 42.102	86 54.338	217.4	2.8	2547.44	3455.9	pulling out streamer
5:00	10 40.533	86 56.930	214.2	3.2	2550.62	3967	turning to new line. Still working in
5:30	10 40.802	86 59.078	339.5	3.7	2552.69	4382.9	the streamer.
							→ turning toward line 042, streamer pulled in
6:00	10 41.968	86 58.251	76.0	3.4	2554.37	4020.6	- change of watch - putting streamer back
6:30							→ missed reading
7:00	10° 43.872	86° 55.304	72.0	3.5	2558.17	3449.9	- adjusting bird depths
7:30	10° 41.895	86° 53.930	77.0	3.3	2560.09	2895.1	- waiting for birds to stay at the
8:00	10° 46.007	86° 52.665	63.6	4.3	2561.31	2595.3	level of the green zone 100.06 ster line 042
8:30	10° 47.581	86° 50.956	61.6	4.8	2564.28	2317.4	Normal operation
9:00	10° 49.197	86° 49.425	52.5	4.4	2566.57	1799.3	" "

Time	Latitude	Longitude	Cse	Spd	Log	Depth	Comments
09:30	10° 50.849	086° 47.862	59.9	4.4	2568.88	1425.5	Normal Operation
10:00	10° 52.500	086° 46.293	61.5	4.5	2571.17	1197.7	" " change watchstander
10:30	10° 54.156	86° 44.731	63.7	4.6	2573.66	1041.3	" "
11:00	10° 55.740	86° 43.213	58.4	5.2	2576.14	795.91	Noisy (birds) off
11:30	10° 57.407	86° 41.653	61.7	5.4	2578.74	443.82	Birds 1-7 erratic
12:00	10° 58.970	86° 40.171	62.5	4.2	2581.32	164.8	Birds 1,2,6,7,17 shallow
12:30	11° 00.549	86° 38.655	59.5	5.4	2583.71	149.81	Birds 3-7, 10-17 shallow
13:00	11° 02.192	86° 37.109	59.7	4.7	2586.83	154.81	Birds 1-7; SHALLOW
13:30	11° 03.709	86° 35.666	59.8	5.1	2588.72	147.51	Birds 2,3,6,7 SHALLOW
14:00	11° 05.223	86° 34.224	56.9	5.2	2591.28	141.01	Birds 1-7, SHALLOW
14:30	11 06.778	86 32.769	57.6	5.1	2593.75	161.71	- some birds out of green
15:00	11 08.302	86 31.298	55.9	5.0	2596.26	177.11	- "
15:30	11 09.841	86 29.837	53.9	5.3	2598.81	167.01	- bird 7 out of green
16:00	11 11.451	86 28.357	52.3	4.7	2601.33	153.91	- birds out of green
16:30	11 13.028	86 26.851	54.1	4.3	2603.79	144.41	- birds in green
17:00	11 14.607	86 25.340	55.2	4.8	2606.25	128.81	- some birds below green
17:30	11 16.199	86 23.784	49.8	5.0	2608.59	114.81	- noisy data  noisy near far birds
18:00	11 17.797	86 22.318	48.2	4.8	2611.00	109.41	- change of watch
18:30	11° 19.418	086° 20.799	43.8	4.9	2613.33	99.11	4-8 Birds out of green
19:00	11° 21.206	86° 19.092	34.2	4.4	2615.96	77.21	- 3-7 out of green
19:30	11° 22.723	86° 17.640	37.3	3.1	2618.11	65.61	→ crew at the back deck taking out
20:00	11° 23.810	86° 16.593	39.2	3.0	2619.67	67.41	→ the birds and streamer
20:30	11° 24.897	86 15.405	35.0	3.8	2621.30	64.41	
21:00	11° 26.410	86 14.021	31.1	4.4	2623.44	54.91	turning to start line 44
21:30	11° 25.689	86° 16.303	228.0	4.7	2625.75	61.51	Transit
22:00	11° 24.107	86° 17.895	223.9	4.1	2628.00	68.41	" change watchstander
22:25	11° 22.748	86° 19.185	225.5	4.1	2629.82	65.91	START LINE NS-044
22:30	11° 22.458	86° 19.463	225.6	4.2	2630.16	69.51	NORMAL OPERATION

Cruise EW <u>0412</u>		JD <u>349</u>		R/V Maurice Ewing Science Watch Log			Page <u>46</u>
Time	Latitude	Longitude	Cse	Spd	Log	Depth	Comments
23:00	11° 20.754	86° 21.074	215.9	4.0	2632.20	95.41	Line NS-044: Everything is running very smoothly.
23:30	11° 19.073	86° 22.675	219.5	4.6	2637.3	109.3	Normal Operation line 044
00:00	11° 17.386	86° 24.265	210.1	4.2	2636.32	113.71	" "
00:30	11° 15.607	86° 25.967	212.3	4.1	2638.50	120.21	" "
01:00	11° 13.824	86° 27.668	202.7	4.5	2640.71	143.41	" "
01:30	11° 12.048	86° 29.333	204.5	4.6	2642.96	156.91	" "
02:00	11° 10.0764	86° 31.025	207.5	4.7	2645.16	172.11	Line NS-044 -
2:30	11 08.501	086 32.700	207.4	4.2	2647.36	173.01	- normal
3:00	11 06.767	086 34.335	206.2	4.2	2649.46	151.41	- normal birds out of green 
3:30	11 05.096	086 35.922	204.6	3.8	2651.57	145.11	- normal
4:00	11 03.347	086 37.576	202.4	5.1	2653.86	150.11	- normal noisy birds 
4:30	11 01.592	086 39.233	207.2	4.9	2656.17	147.61	- noisy 
5:00	10 59.780	86 40.957	202.0	4.8	2658.83	163.31	port side gun (37) was turned off.
5:30	10 58.018	86 42.623	203	4.4	2661.05	1404.71	normal
6:00	10 56.315	86 44.237	202.3	4.8	2663.38	743.01	change of watch
6:30	10° 54.455	086° 45.983	205.0	4.8	2665.97	1035.4	Normal Operation. some birds out of green
7:00	10° 52.723	086° 47.625	209.1	4.8	2668.28	1303.7	" " Some birds below of green
7:30	10° 50.918	086° 49.334	204.4	4.8	2670.75	1637.5	" " Birds on line.
8:00	10° 49.132	086° 51.021	202.2	4.9	2673.12	2045.4	" " some birds out of green
8:30	10° 47.337	086° 52.718	203.6	4.9	2675.62	2534.8	" "
9:00	10° 46.492	086° 55.048	286.9	4.0	2677.95	2905.0	Transit to line NS023
9:30	10° 40.198	086° 55.817	66.9	5.2	2679.90	2797.8	"
10:00	10° 43.629	086° 54.217	64.8	4.8	2682.31	2379.9	"
10:30	10° 51.230	86° 52.587	59.0	4.6	2684.76	1872	in turn (transit to line NS023)
11:00	10° 52.857	86° 50.952	59.9	4.9	2687.25	1577.1	transit
11:30	10° 54.429	86° 49.337	67.8	4.6	2689.71	1305.7	TRANSIT
12:00	10° 54.089	86° 47.905	133.7	5.1	2692.20	1220.5	START LINE NS-023
							hor10/sci/forms/dir/watchlog.doc

Time	Latitude	Longitude	Cse	Spd	Log	Depth	Comments
12:30	10° 52.96	86° 46.785	133.1	4.9	2694.65	1235.4	Normal Operation line NS-023
13:00	10° 51.741	86° 45.616	133.1	5.3	2697.29	1151.2	" " "
13:30	10° 50.559	86° 44.483	132.8	4.9	2699.90	1086.9	" "
14:00	10° 49.450	86° 43.389	130.2	5.5	2702.45	1032.4	" "
14:30	10 48.300	86 42.299	128.3	4.5	2705.02	917.71	-normal - rough water
15:00	10 47.256	86 41.269	128.1	5.4	2707.46	893.91	-normal - noisy birds 
15:30	10 46.152	86 40.219	132.2	4.7	2709.96	878.11	-normal 
16:00	10 45.088	86 39.188	138.2	4.9	2712.39	910.71	-normal
16:30	10 43.959	86 38.092	130.8	3.1	2714.92	950.31	normal
17:00	10 42.845	86 37.004	130.8	4.6	2717.29	1067.1	normal
17:30	10 43.302	86 35.480	76.7	4.9	2719.77	914.71	normal turning to line 027
18:00	10 44.316	086 33.892	76.9	4.4	2722.14	710.71	-change of watch
18:30	10° 46.051	086° 32.826	356.3	4.4	2724.57	489.01	- Transit 118: star line 027
19:00	10° 48.029	086° 34.377	319.4	3.7	2726.41	361.51	- Operation with 2 Guns
19:30	10° 49.848	086° 36.101	314.7	3.4	2728.21	340.91	- Normal Operation (3Guns)
20:00	10° 51.629	086 37.891	322.6	3.7	2729.98	353.41	- " Same birds out of green
20:30	10° 53.394	86° 39.547	317.8	3.1	2731.74	412.11	- normal operation
21:00	10° 55.179	86° 41.277	318.5	3.8	2733.46	512.01	- normal operation
21:30	10° 57.007	086° 43.032	309.9	3.7	2735.25	487.01	Normal Operation / 2351 End line NS-027
22:00	10 58.875	086° 44.669	356.0	3.4	2737.03	691.41	" "
22:30	11° 0.624	86° 43.700	60.0	4.6	2739.15	385.9	Transit to line NS-031
23:00	11° 02.251	86° 41.986	61.7	5.7	2741.83	154.7	"
23:30	11° 03.755	86° 40.447	61.4	5.3	2744.28	157.01	Transit to NS-031
00:00	11° 04.709	86° 38.830	130.4	5.4	2746.90	154.87	
00:10	11° 4.110	86 38.383	128.1	5.2	2747.7	153.6	Start Line NO-031
00:30	11° 03.280	86° 37.496	131.3	5.0	2749.46	153.11	NORMAL OPERATION
01:00	11° 01.962	86° 36.204	128.9	5.5	2751.93	152.31	" "

Time	Latitude	Longitude	Cse	Spd	Log	Depth	Comments
01:30	11° 00.535	86° 34.830	130.6	5.1	2754.67	156.21	Normal Operation
02:00	10° 59.148	86° 33.499	130.3	5.2	2757.31	166.11	" "
2:30	10 57.758	86 32.152	128.7	5.0	2759.97	179.31	normal
3:00	10 56.395	86 30.827	131.5	5.1	276.50	187.51	normal
3:30	10 54.918	86 29.405	133.3	5.2	2765.07	181.91	normal
4:00	10 53.481	86 28.022	131.9	4.4	2767.34	171.51	normal
4:30	10 52.817	86 26.405	61.6	4.5	2770.03	181.01	transit to line NS-107
5:00	10 54.341	86 24.860	48.1	5.4	2772.59	192.61	- "
5:30	10 55.816	86 23.455	57.7	4.9	2775.06	188.71	"
6:00	10 57.175	86 22.063	66.5	4.6	2777.45	186.61	change of watch - transit to line NS-107
06:30	10° 58.895	086° 21.545	327.0	4.7	2779.96	182.51	transit / 06:34 start line NS-107
07:00	11° 00.686	086° 23.142	329.2	4.5	2782.03	179.11	Normal Operation.
07:30	11° 02.411	086° 24.815	333.0	4.1	2784.12	179.01	" "
08:00	11° 04.119	086° 26.476	332.2	4.3	2786.25	178.01	" "
08:30	11° 05.747	086° 28.085	334.8	4.1	2788.31	177.91	" "
09:00	11° 07.485	086° 29.767	325.8	4.2	2790.50	179.71	" "
09:30	11° 09.196	86° 31.441	336.4	4.4	2792.68	177.41	" "
10:00	11° 10.859	86° 33.033	326.2	4.4	2794.81	177.01	Change Watchstanders
10:30	11° 12.589	86° 34.718	327.1	4.7	2797.12	175.41	NORMAL OPERATION
11:00	11° 14.356	86° 36.427	323.6	4.9	2799.49	174.61	" "
11:30	11° 16.135	86° 38.145	322.7	4.8	2801.89	171.61	" "
12:00	11° 17.872	86° 39.846	320.4	5.0	2804.33	168.61	" "
12:30	11° 19.646	86° 41.559	320.1	4.9	2806.82	164.81	" "
13:00	11° 21.400	86° 43.276	319.3	5.0	2809.33	157.91	" "
13:30	11° 23.151	86° 44.967	320.5	5.0	2811.86	150.41	Shut down (0 guns) = turtle
13:34	11° 23.382	86° 45.150	323.1	5.1	2812.36	148.51	3 guns on
14:00	11° 24.846	86° 46.614	318.7	5.1	2814.40	142.01	NORMAL OPERATIONS

Time	Latitude	Longitude	Cse	Spd	Log	Depth	Comments
14:30	11 26.588	086 48.309	316.6	5.2	2817.01	137.71	normal
15:00	11 28.324	086 49.996	320.8	5.3	2819.62	134.21	-normal
15:30	11 29.975	086 51.596	316.0	5.3	2822.10	134.41	-normal
16:00	11 31.709	086 53.282	317.9	4.9	2824.70	126.01	-normal
16:30	11 33.411	086 54.937	328.4	5.1	2827.22	122.51	-normal
17:00	11 35.091	086 56.568	319.3	4.9	2829.70	120.21	-normal
17:30	11 36.834	086 58.266	317.4	5.2	2832.20	119.21	-normal
18:00	11 38.569	086 59.930	316.8	5.2	2834.63	119.91	-change of watch 18:28 shut down turtle 18:52 star guns (3)
18:30	11° 40.373	087° 01.700	318.6	4.9	2837.20	119.91	18:53 shut down 18:57 (start 3 guns)
19:00	11° 42.087	087° 03.337	318.3	4.9	2839.58	118.51	Normal Operation
19:30	11° 43.800	087° 05.036	315.6	5.0	2842.04	120.51	" "
20:00	11 45.561	087° 06.797	310.9	5.0	2844.53	119.21	" "
20:30	11° 47.301	087° 08.428	312.4	5.1	2847.00	118.31	" "
21:00	11° 49.055	087° 10.146	310.5	5.2	2849.59	119.01	" "
21:30	11° 50.784	087° 11.828	310.9	5.0	2852.14	117.51	" " 121:43 1 Gun 121:52: 3 Guns
22:00	11° 52.490	087° 13.487	308.8	5.1	2854.68	119.81	Normal Operation Change watchstanders
22:30	11° 54.229	87° 15.178	310.5	4.8	2857.26	120.61	NORMAL OPERATIONS
23:00	11° 55.815	87° 16.719	308.2	4.9	2859.60	122.61	" "
23:12	11° 56.560	87° 17.450	321.8	4.9	2860.74	119.31	End line NS-107
23:30	11° 57.782	87 17.375	39.8	4.8	2861.98	122.1	In Transit to Line NS088
24:00	11° 57.106	87° 15.596	190.5	4.9	2864.13	120.31	" " "
0:30	11° 55.284	87° 17.065	225.3	4.8	2866.71	122.51	" " "
00:37	11° 54.888	87° 17.446	225.1	4.8	2867.24	121.81	START LINE NS-088
01:00	11° 53.569	87° 18.746	223.7	4.8	2869.18	124.81	Normal operation
01:30	11° 51.855	87° 20.414	222.7	4.6	2871.57	119.31	" "
02:00	11° 50.187	87° 22.055	223.8	5.1	2873.92	140.01	" "
02:30	11 48.429	087 23.773	222	5.1	2876.37	176.41	-2 port guns off, 1 gun on

Cruise <u>EW 091A</u>		JD <u>352</u>		R/V Maurice Ewing Science Watch Log			Page <u>50</u>
Time	Latitude	Longitude	Cse	Spd	Log	Depth	Comments
3:00	11 46.715	087 25.458	216.3	4.7	2878.75	217.91	- normal
3:30	11 44.945	087 27.189	214.7	5.2	2881.24	314.61	- normal
4:00	11 43.198	087 28.898	215.8	4.9	2883.76	496.51	normal - 1 gun on - dolphins
4:30	11 41.534	087 30.534	214.7	5.2	2886.09	627.61	- 1 gun on - dolphins
5:00	11 39.667	087 32.358	212.5	5.0	2888.69	1135.4	- normal
5:30	11 37.982	087 34.013	211.7	4.5	2891.04	1377.9	- normal
6:00	11 36.243	087 35.704	216.4	4.5	2893.42	1567.1	- change of watch
06:30	11° 34.445	087° 37.362	191.1	4.4	2895.85	1730.8	6:24 end line NS-088 / Transit line NS-084
07:00	11° 32.840	087° 36.446	101.5	4.8	2898.35	1740.7	Transit / 07:15 star line NS-084
07:30	11° 34.188	087° 34.585	57.2	4.8	2900.80	1539.8	Normal Operation
08:00	11° 35.964	087° 32.853	53.1	5.1	2903.31	1425.5	" "
08:30	11° 37.661	087° 31.099	55.3	5.1	2905.87	1159.1	" "
09:00	11° 39.481	87° 29.420	64.5	4.3	2908.36	889.01	Birds a bit funky since ship
9:30	11° 41.011	87° 28.910	56.1	4.1	2910.57	667.11	slowed down
10:00	11° 42.524	087° 26.422	52.5	4.5	2912.64	415.21	Normal Operation
10:30	11° 44.157	87° 24.812	50.3	4.6	2914.87	274.11	" "
11:00	11° 45.907	87° 23.024	47.9	4.8	2917.21	196.51	" "
11:30	11° 47.661	87° 21.361	49.1	4.8	2919.57	161.9	" "
12:00	11° 49.435	87° 19.639	43.9	4.2	2921.92	135.91	" "
12:30	11° 51.156	87° 17.963	44.4	4.6	2924.25	125.91	" "
12:44	11° 52.080	87° 17.035	44.7	4.7	2925.59	127.91	SHOT DOWN (4 min)
13:00	11° 52.920	87° 16.212	42.8	4.6	2926.63	121.21	NORMAL OPERATION
13:30	11° 54.664	87° 14.508	38.1	4.9	2929.0	119.71	" "
14:00	11° 56.477	87° 12.638	39.0	4.6	2931.50	115.11	" "
14:30	11 58.275	87 10.961	36.3	4.8	2933.84	116.21	- normal
15:00	12 00.015	87 09.250	32.7	4.5	2936.14	110.91	- normal
15:30	12 01.771	87 07.526	31.9	4.9	2938.51	101.71	- normal

Time	Latitude	Longitude	Cse	Spd	Log	Depth	Comments
16:00	12° 03.485	087° 05.842	29.8	4.8	2940.86	93.41	- turtle shutdown
16:30	12° 05.294	087° 04.065	28.9	5.1	2943.34	83.61	- normal
17:00	12° 07.001	087° 02.390	25.3	5.3	2945.69	66.71	- normal
17:30	12° 08.768	087° 00.620	42.6	4.7	2948.13	52.31	- normal
18:00	12° 07.894	086° 58.411	128.3	3.6	2950.15	48.51	normal turning to line 076
18:30	12° 05.781	086° 57.391	225.5	4.8	2952.09	54.11	18:35 start line NS076 / 18:51 shutdown
19:00	12° 04.140	086° 53.005	239.1	5.0	2954.59	72.41	shutdown. / 19:07 start recorded 1 gun / 19:12 2 guns
19:30	12° 02.465	087° 00.640	239.1	5.0	2957.09	81.31	No recording / 19:42 1 gun / 19:47 2 guns / 19:52 3 guns
20:00	12° 00.772	087° 02.305	239.5	4.9	2959.60	90.41	Normal Operation 9 min no recorded
20:30	11° 59.084	087° 03.957	231.9	4.9	2962.11	102.11	(8 guns)
21:00	11° 57.403	087° 05.614	231.8	5.3	2964.64	106.51	Normal Operation
21:30	11° 55.781	087° 07.202	234.3	5.2	2967.16	111.61	" "
22:00	11° 54.137	087° 08.812	228.9	5.1	2969.71	112.91	" "
22:30	11° 52.463	87° 10.463	231.1	4.9	2972.31	114.81	" "
23:00	11° 50.870	87° 12.028	227.1	5.0	2974.84	116.61	" "
23:30	11° 49.233	87° 13.666	228.2	5.1	2977.40	121.61	" "
00:00	11° 47.445	87° 15.382	220.6	4.9	2979.9	128.01	Normal Operation
0:30	11° 45.652	87° 17.15	226.9	4.9	2982.5	143.5	- " -
1:00	11° 43.79	87° 18.975	221	4.9	2985.3	175.7	- " -
1:30	11° 42.153	87° 20.582	216.5	4.9	2987.69	224.6	- " -
2:00	11° 40.420	87° 22.294	221.7	5.0	2990.27	356.91	
2:30	11° 38.637	87° 24.031	213.6	5.2	2992.82	556.91	- normal
3:00	11° 36.902	87° 25.736	210.5	5.2	2995.41	862.21	- 1 gun on - dolphins
3:30	11° 35.247	87° 27.351	221.9	4.6	2997.92	1111.9	- 2 guns on - ramping up
4:00	11° 33.602	87° 28.961	213.9	5.3	3000.44	1317.7	- normal
4:30	11° 31.913	87° 30.622	217.5	5.1	3003.01	1450.9	- normal
5:00	11° 30.268	87° 32.235	216.7	5.1	3005.47	1616.0	- turning to line NS 072

Time	Latitude	Longitude	Cse	Spd	Log	Depth	Comments
5:30	11 28.484	087 31.629	123.0	5.3	3008.04	1707.5	- turning to line NS072
6:00	11 29.572	087 29.780	54.6	4.7	3010.26	1456.1	- change of watch - line NS072
6:30	11° 31.396	087° 27.995	55.6	4.7	3012.65	1263.2	Normal Operation
7:00	11° 33.165	087° 26.266	50.0	4.2	3014.96	1076.3	" "
7:30	11° 34.950	087° 24.512	44.1	4.6	3017.24	870.81	" "
8:00	11° 36.739	087° 22.783	43.4	4.3	3019.46	601.11	" "
8:30	11° 38.516	087° 21.030	46.5	4.4	3021.71	371.61	" " 1850 ± 6m
9:00	11° 40.249	087° 19.327	46.7	4.3	3023.86	228.11	Operating With 1 Gun
9:30	11° 41.986	087° 17.633	45.5	4.6	3026.07	174.91	Normal Operation 3 Guns / 937 end line NS072
10:00	11° 44.021	087° 17.227	301.0	5.1	3028.39	154.71	Transit/change watch
10:30	11° 43.138	87 19.038	187.9	4.8	3031.02	181.7	Transit to line 103A
10:40	11° 42.389	87° 18.743	143.7	4.9	3031.93	186.41	START LINE NS-103A
11:00	11° 41.309	87° 17.693	143.8	4.9	3033.37	185.2	- Normal operation
11:30	11° 39.448	87° 15.823	142.1	5.1	3035.99	174.71	" "
12:00	11° 37.682	87° 14.189	142.6	5.1	3038.43	165.51	" "
12:30	11° 34.194	87° 10.811	139.8	4.8	3043.21	124.71	" "
13:00	11° 33.355	87° 09.956	138.8	5.0	3044.32	125.62	" "
13:30	11° 32.405	87° 09.068	137.8	4.9	3045.63	121.31	" "
14:00	11° 30.628	87° 07.371	137.7	4.7	3047.97	129.41	" "
14:30	11 28.682	87 5.487	137.8	4.4	3050.33	151.81	Normal operation
15:00	11 27 150	87 03.997	135.0	4.5	3052.61	157.61	- normal
15:30	11 25 437	87 02 348	133.8	4.7	3054.85	160.01	- normal
16:00	11 23.676	87 00.648	133.6	4.5	3057.17	162.11	- normal
16:30	11 21.883	86 58.909	132.1	4.5	3059.47	163.21	- normal
17:00	11 20.023	86 57.113	129.7	4.7	3061.82	159.91	normal
17:30	11 18.327	86 55.472	129.9	4.2	3063.97	158.31	normal
18:00	11 16.649	86 53.851	125.6	4.3	3066.08	171.31	- change of watch

Time	Latitude	Longitude	Cse	Spd	Log	Depth	Comments
18:30	11° 14.819	086° 52.068	126.6	4.5	3068.42	130.21	Normal Operation
19:00	11° 13.035	086° 50.343	128.2	4.4	3070.66	202.51	" "
19:30	11° 11.247	086 48.616	128.8	4.3	3072.34	200.61	" "
20:00	11° 09.500	086 46.945	129.1	3.2	3075.15	174.51	No operation problem in No. 50 streamers
20:30	11° 08.394	86° 46.113	125.3	2.4	3046.39	149.91	No operation; speed down to 2.4
21:00	11° 06.885	86° 46.494	304.5	4.3	3078.35	165.61	ship turning back to start of NS103B
21:43	11 05.318	086 45.275	325.1	5.3	3082.36	204.91	" " " " "
22:00	11 10.233	086 50.301	333.2	5.0	3083.97	217.01	" " " " "
22:30	11 11.685	86 49.303	95.7	4.8	3086.3	205.5	Transit to line NS103B
23:00	11° 10.026	86° 47.441	122.6	5.0	3088.6	186.61	Normal operation NS 103B
23:30	11° 8.256	86° 45.734	127.8	5.0	3090.79	145.3	— " — " —
00:00	11° 06.446	86° 44.008	127.0	4.1	3092.95	145.21	" "
0:30	11° 4.727	86° 42.326	125.5	4.9	3095.09	150.8	— " — " —
1:00	11° 2.989	86° 40.653	122.4	4.8	3097.24	153.1	— " —
1:30	11° 1.149	86° 38.871	120.6	4.9	3099.5	152.5	— " —
2:00	10° 59.463	86° 37.241	123.0	4.9	3101.69	155.1	— " —
2:30	10 57.610	86 35.458	116.4	4.6	3104.10	156.61	normal
3:00	10 55.862	86 33.756	120.6	4.6	3106.40	174.31	"
3:30	10 54.108	086 32.092					normal
4:00	10 52.410	086 30.432	117.2	5.1	3111.22	189.61	normal
4:30	10 50.632	086 28.718	118.7	5.0	3113.72	168.91	normal
5:00	10 48.896	086 27.040	116.3	5.2	3116.19	171.21	normal
5:30	10 47.135	086 25.328	116.2	5.1	3118.64	190.21	normal
6:00	10 45.301	086 23.584	113.2	5.0	3121.15	202.61	- change of watch
06:30	10° 42.532	086° 21.954	115.6	4.6	3123.50	199.01	Normal Operation
07:00	10° 41.906	086 20.273	119.7	5.3	3125.38	188.61	" "
07:30	10° 40.273	086° 19.707	132.5	5.3	3128.52	188.81	a bit noisy data
8:00	38.570	17.078	135.6	4.6	3130.96	212.01	a bit noisy data

Time	Latitude	Longitude	Cse	Spd	Log	Depth	Comments
08:30	10° 36.839	086° 15.408	137.2	5.0	3133.48	232.11	Normal Operation
09:00	10° 35.088	086° 13.719	136.9	5.1	3136.03	237.21	" "
09:30	10° 33.434	86° 12.129	135.2	5.2	3138.49	216.51	" "
10:00	10° 31.694	86° 10.450	139.2	5.1	3141.01	164.3	— " — LINE NS-103B
10:30	10° 30.054	86° 8.861	139.8	4.9	3143.3	122.8	— " —
11:00	10° 28.372	86° 7.242	139.8	5.1	3145.9	111.5	— " —
11:30	10° 26.273	86° 5.649	141.2	5.0	3148.6	108.5	— " —
12:00	10° 25.170	86° 4.144	144.8	5.0	3151.28	106.1	— " —
12:30	10° 23.641	86° 02.671	144.5	5.1	3153.90	106.31	Most Agreeable Watch (NORMAL OPERATION)
13:00	10° 22.180	86° 1.268	146.5	5.0	3156.45	103.1	Normal operation END NS-103B
13:30	10° 22.749	86° 59.325	22.4	4.1	3158.92	87.81	TRANSIT TO NS-002
14:00	10° 24.045	86° 00.727	230.8	4.9	3161.04	97.91	" " "
14:30	10 22.601	86 02.233	214.7	4.7	3163.58	105.81	- normal
15:00	10 21.170	86 03.649	212.2	5.2	3166.10	107.31	- normal
15:30	10 19.694	86 05.102	211.0	4.9	3168.61	111.01	- normal
16:00	10 18.204	86 06.560	214.4	5.1	3171.07	254.61	- normal.
16:30	10 16.685	86 08.048	212.8	4.9	3173.57	538.81	- normal
17:00	10 15.094	86 09.630	211.7	4.3 (SME) 5.3 (SPD)	3176.20	921.21	- normal
17:30	10 13.513	86 11.158	218.1	5.1	3178.68	1131.7	normal
18:00	10 12.577	86 13.022	225.0	4.6	3181.17	1298.8	normal
18:30	10° 14.329	86° 14.677	17.0	4.8	3183.75	1269.1	Transit
19:00	10° 14.839	86° 12.585	111.0	5.5	3186.22	1203.8	Transit
19:30	10° 13.446	86° 11.047	145.9	5.1	3188.64	1156.4	- normal operation
20:00	10° 11.953	86° 09.961	150.3	5.0	3191.07	1033.8	- we're veering from normal course
20:30	10° 10.637	86° 08.633	142.5	4.9	3193.56	1069.4	- we're about 30 m off course (course is to our starboard)
21:00	10° 09.181	86° 07.418	144.4	5.1	3196.10	1186.1	- skip back on its course
21:30	10° 07.692	86° 06.140	146.5	5.0	3198.55	1107	- normal operation

