

## Appendix A. F/V Isabel S Event Log

Date (mm/dd/yy)	Event	Start Time (Local)	End Time (Local)	Start Lat (°)	Start Lat (min)	Start Lat (dec. °)	Start Lon (°)	Start Lon (min)	Start Lon (dec. °)	End Lat (°)	End Lat (min)	End Lat (dec. °)	End Lon (°)	End Lon (min)	End Lon (dec. °)	Comments
8/11/99	R/V CT Departs	1015														
8/11/99	F/V Isabel S Departs															
8/11/99	Greene Bomber Deployed	1750		42	11.19	42.1865	69	44.39	69.7398							Green Bomber reads 46 m
8/11/99	Start Transect	1957														
8/12/99	Arrive End Transect		0002							42	35	42.5833	70	39.17	70.6528	
8/12/99	End Return Transect	0002	0627	42	35.00	42.5833	70	39.17	70.6528	41	53.31	41.8885	70	17.20	70.2867	
8/12/99	Cape Cod Bay Box WPT	0707	0926	41	53.22	41.8870	70	12.83	70.2138	42	0.04	42.0007	70	19.35	70.3225	
8/12/99	GB Recovered	0926								42	0.04	42.0007	70	19.35	70.3225	
8/12/99	GB in Stationary survey for R/V CT	1031	1856	42	4.52	42.0753	70	21.66	70.3610							Bad GPS in last file
8/12/99	GB Recovered		1856													
8/12/99	Soliton Transect #1	2016	2306													
8/12/99	Soliton Transect #2	2307	0155													Reverse Course
8/13/99	Soliton Transect #3	0155	0430													
8/13/99	Soliton Transect #4	0430	0747							40	10.43	40.1738	70	37.80	70.6300	
8/13/99	GB Recovered for transit to Wilkinson	0750		40	10.43	40.1738	70	37.80	70.6300							
8/13/99	Finback Whales Sighted	0850		42	14.16	42.2360	70	25.87	70.4312							
8/13/99	Humpback Whales Sighted	0925		42	16.17	42.2695	70	18.09	70.3015							
8/13/99	Start Wilkinson Basin Grid (Leg #1)	1152		42	24.37	42.4062	69	52.13	69.8688							
8/13/99	Turn #1 (Leg #2)															
8/13/99	Turn #2 (Leg #3)	1324														
8/13/99	Turn #3 (Leg #4)	1435		42	22.60	42.3767	69	50.84	69.8473							
8/13/99	Turn #4 (Leg #5)	1501		42	20.83	42.3472	69	49.34	69.8223							
8/13/99	Turn #5 (Leg #6)	1606		42	22.74	42.3790	69	42.80	69.7133							

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8/13/99	Turn #6 (Leg #7)	1638		42	21.06	42.3510	69	40.41	69.6735							
8/13/99	Turn #7 (Leg #8)	1802		42	19.06	42.3177	69	47.78	69.7963							
8/13/99	Turn #8 (Leg #9)	1831		42	17.69	42.2948	69	45.91	69.7652							
8/13/99	Turn #9 (Leg #10)	1934		42	19.53	42.3255	69	39.62	69.6603							Whale sighted (humpback) at occurrence of internal wave
8/13/99	Turn #10 (Leg #11)	2015		42	17.49	42.2915	69	37.76	69.6293							
8/13/99	Turn #11 (Leg #12)	2128		42	15.92	42.2653	69	44.96	69.7493							
8/13/99	Turn #12 (Leg #13)	2202		42	14.15	42.2358	69	43.18	69.7197							
8/13/99	Turn #13 (Leg #14)	2309		42	16.17	42.2695	69	36.86	69.6143							
8/13/99	Turn #14 (Leg #15)	2333		42	15.01	42.2502	69	35.48	69.5913							
8/14/99	End of Transect	0038		42	12.80	42.2133	69	41.65	69.6942							
8/14/99	N-S transect	1317		42	4.50	42.0750	70	19.47	70.3245							
8/14/99	Soliton Transect #5	1704	1954	42	19.95	42.3325	70	22.99	70.3832	42	10.93	42.1822	70	36.14	70.6023	
8/14/99	Soliton Transect #6	1955	2316	42	10.93	42.1822	70	36.14	70.6023	42	21.39	42.3565	70	20.72	70.3453	
8/14/99	Solitons (Trans. #6)	2237		42	19.53	42.3255	70	23.00	70.3833							12 distinct waves (13-20 dampened)
8/14/99	Soliton Transect #7	2316	0234	42	21.39	42.3565	70	20.72	70.3453							
8/15/99	Soliton Transect #8	0234	0550	42	10.82	42.1803	70	36.10	70.6017							
8/15/99	Soliton Transect #9	0550	0843													
8/15/99	Soliton Transect #10	0843	1025	42	10.74	42.1790	70	36.25	70.6042	42	16.2	42.2700	70	28.71	70.4785	
8/15/99	Bongo/GB Tow #1	1042	1048	42	16.36	42.2727	70	28.80	70.4800	42	16.5	42.2750	70	28.56	70.4760	
8/15/99	GB Recovered for transit		1330							42	19.27	42.3212	70	25.62	70.4270	
8/15/99	Deploy GB	1622		41	54.59	41.9098	70	5.97	70.0995							
8/16/99	GB Recovered for transit to Wilkinson		0118							42	2.62	42.0437	70	16.07	70.2678	
8/16/99	Arrive Wilkinson	0555		42	18.84	42.3140	69	48.19	69.8032							
8/16/99	Deploy GB	0557		42	18.85	42.3142	69	48.14	69.8023							

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8/16/99	Turn #1	0720		42	22.70	42.3783	69	42.40	69.7067							
8/16/99	Turn #2	0750		42	21.01	42.3502	69	40.16	69.6693							
8/16/99	Stop Ship	1137														Transfer MB and MS to R/V Connecticut
8/16/99	Begin Grid (2 miles) Head to NW Point	1259	1317	42	24.47	42.4078	69	54.08	69.9013	42	25.01	42.4168	69	55.60	69.9267	
8/16/99	Turn #1 NW Point (Leg #1)	1317	1349	42	25.01	42.4168	69	55.60	69.9267	42	25.7	42.4283	69	53.06	69.8843	
8/16/99	Turn #2 NE Point (Leg #2)	1349	1425	42	25.70	42.4283	69	53.06	69.8843	42	23.7	42.3950	69	52.06	69.8677	
8/16/99	Turn #3 SE Point (Leg #3)	1425	1458	42	23.70	42.3950	69	52.06	69.8677	42	23.25	42.3875	69	54.71	69.9118	
8/16/99	Turn #4 SW Point Leg #4)	1458		42	23.25	42.3875	69	54.71	69.9118							
8/16/99	Diamond Turn #5 (Leg #1)	1525	1542	42	25.06	42.4177	69	55.51	69.9252	42	25.45	42.4242	69	54.20	69.9033	
8/16/99	Diamond Turn #6 (Leg #2)	1542	1605	42	25.45	42.4242	69	54.20	69.9033	42	24.64	42.4107	69	52.53	69.8755	
8/16/99	Diamond Turn #7 (Leg #3)	1605	1626	42	24.64	42.4107	69	52.53	69.8755	42	23.44	42.3907	69	53.40	69.8900	
8/16/99	Diamond Turn #8 (Leg #4)	1626	1648	42	23.44	42.3907	69	53.40	69.8900	42	24.12	42.4020	69	55.17	69.9195	
8/16/99	Back to R/V Connecticut	1727		42	24.37	42.4062	69	53.73	69.8955							MB and MS return to F/V Isabel S and Light Trap transferred to R/V Connecticut
8/16/99	GB Deployed-head to grid (SE Point)	2036	2049	42	24.20	42.4033	69	51.64	69.8607	42	23.51	42.3918	69	32.59	69.5432	
8/16/99	Turn #1 (SE Point-- #2) Leg #1	2049	2112	42	23.51	42.3918	69	32.59	69.5432	42	23.17	42.3862	69	54.66	69.9110	
8/16/99	Turn #2 (SW Point-- #3) Leg #2	2112	2141	42	23.17	42.3862	69	54.66	69.9110	42	25.17	42.4195	69	55.58	69.9263	
8/16/99	Turn #3 (NW Point-- #4) Leg #3	2141	2208	42	25.17	42.4195	69	55.58	69.9263	42	25.08	42.4180	69	52.96	69.8827	
8/16/99	Turn #4 (NW Point-- #1) Leg #4	2208	2250	42	25.08	42.4180	69	52.96	69.8827	42	23.46	42.3910	69	53.44	69.8907	
8/16/99	Turn #5 (Diamond Point 7) Leg #1	2250	2311	42	23.46	42.3910	69	53.44	69.8907	42	24.71	42.4118	69	55.18	69.9197	

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8/16/99	Turn #6 (Diamond Point 8) Leg #2	2311	2330	42	24.71	42.4118	69	55.18	69.9197	42	25.47	42.4245	69	54.20	69.9033	
8/16/99	Turn #7 (Diamond Point 9) Leg #3	2330		42	25.47	42.4245	69	54.20	69.9033	42	23.44	42.2344				
8/16/99	Turn #8 (Diamond Point 6) Leg #4	2350	0011	42	24.69	42.4115	69	52.44	69.8740	42	25.5	42.2550				
8/17/99	Turn #9 (Diamond Point 7) Leg #5	0011	0039	42	23.44	42.3907	69	53.59	69.8932	42	25.44	42.2544				
8/17/99	Turn # 10 (Diamond Point 5) Leg #6	0039	0047	42	25.50	42.4250	69	54.51	69.9085							
8/17/99	End of Box go to Stellwagen	0047		42	25.44	42.4240	69	55.26	69.9210	42	22.93	42.2293		53.59	69.5359	
8/17/99	Begin Transect 2	0908	1233	42	12.16	42.2027	70	33.98	70.5663	42	20.85	42.2085		54.51	69.5451	
8/17/99	Begin Transect 3	1233	1314	42	22.93	42.3822	70	18.42	70.3070	42	22.8	42.2280		55.26	69.5526	
8/17/99	Begin Short Transect 1	1314	1352	42	20.65	42.3442	70	21.31	70.3552							
8/17/99	Begin Short Transect 2	1352		42	22.60	42.3767	70	18.53	70.3088					18.42	70.1842	
8/17/99	Stationary survey--waiting for waves	1445	1616											21.31	70.2131	
8/17/99	Soliton Transect 1	1616	2127	42	21.01	42.3502	70	21.88	70.3647					18.53	70.1853	
8/17/99	Zig Zag (leg #1)	2127	2142							42	8.11	42.0811	70	25.23	70.2523	
8/17/99	Zig Zag (leg #2)	2142	2337	42	8.11	42.1352	70	25.23	70.4205	41	59.97	41.5997	70	29.08	70.2908	
8/17/99	Recover Greene Bomber	2337	2340	41	59.97	41.5997	70	29.08	70.2908							Cease science ops, steam to WHOI
6/18/99	Arrive Woods Hole	05:50		40	30.00	40.5000	70	40.00	70.6667							

**Appendix B. R/V Connecticut Event Log**

Date (mm/dd/yy)	Event	Start Time (Local)	End Time (Local)	Start Lat (°)	Start Lat (min)	Start Lat (dec. °)	Start Lon (°)	Start Lon (min)	Start Lon (dec. °)	Cast Depth (m)	Water Depth (m)	Comments
8/11/99	Bongo	15:40	15:42	42	0.15	42.0025	70	23.11	70.3852	5	50	Double Oblique
8/11/99	ROV	16:30	20:00	42	59.92	42.9987	70	24.68	70.4113	16	50	No animals captured
8/12/99	Bongo	8:00	9:00	42	2.98	42.0497	70	23.8	70.3967	50		Large excluder mesh on 505 net
8/12/99	ROV	9:39	10:06	42	4.65	42.0775	70	21.77	70.3628	50		No front on APOP net
8/12/99	ROV	10:50	12:00	42	4.45	42.0742	70	21.67	70.3612	20	50	Front cover changed to concave
8/12/99	ROV	17:00	18:30	42	7.00	42.1180	70	23	70.3800	25		Animals from bongo placed in chamber
8/13/99	ROV	13:00	17:15	42	10.24	42.1707	70	13	70.2167	16		Slurp gun pump downstream of chamber
8/14/99	CTD	13:10	13:20	41	49.42	41.8237	70	19.89	70.3315	30	30	
8/14/99	APOP Wire Cast	13:30		41	49.42	41.8237	70	19.89	70.3315	5	30	Quick test of APOP on hydrowire
8/14/99	Bongo	14:10	14:50	41	49.30	41.8217	70	19.14	70.3190	23	30	Collecting for APOP @ 1.5 kts
8/14/99	APOP Wire Cast	15:00	16:20	41	49.30	41.8217	70	19.14	70.3190	26	26	Collecting data with animals in chamber
8/14/99	APOP Wire Cast	16:35	17:15	41	49.30	41.8217	70	19.14	70.3190	26	26	Collecting data with empty chamber
8/14/99	APOP Wire Cast	17:30	17:45	41	49.30	41.8217	70	19.14	70.3190	26	26	Empty chamber with hose to flush
8/14/99	Bongo	18:45	18:50	41	51.94	41.8657	70	18.97	70.3162	16	30	Collecting for APOP @ 1.5 kts
8/14/99	Bongo	19:00	19:15	41	51.94	41.8657	70	18.97	70.3162	16	30	Collecting for APOP @ 1.5 kts
8/14/99	APOP Wire Cast	19:40	20:15	41	51.94	41.8657	70	18.97	70.3162	26	30	Animals from bongo placed in chamber
8/14/99	APOP Wire Cast			41	51.94	41.8657	70	18.97	70.3162	26	30	Empty chamber
8/14/99	CTD	20:30	20:35	41	51.94	41.8657	70	18.97	70.3162	26	30	
8/14/99	Bongo	20:55	21:05	41	52.97	41.8828	70	18.67	70.3112	10	30	Collecting for APOP
8/14/99	Bongo	21:15	21:25	41	52.97	41.8828	70	18.67	70.3112	10	30	Collecting for APOP
8/14/99	APOP Wire Cast	21:35	23:05	41	52.97	41.8828	70	18.67	70.3112	26	30	Animals from bongo placed in chamber
8/14/99	APOP Wire Cast	23:25	23:40	41	52.97	41.8828	70	18.67	70.3112	26	30	Empty chamber
8/14/99	CTD	23:45	23:50	41	52.97	41.8828	70	18.67	70.3112	26	30	
8/15/99	Bongo	10:47	10:54	42	16.42	42.2737	70	28.91	70.4818	50	77	No catch, cod end not secured on 333
8/15/99	Bongo	15:58	16:10	41	56.42	41.9403	70	8.78	70.1463	15	40	505 µm on both nets, coarse mesh excluder
8/15/99	APOP Wire Cast	16:39	17:20	41	56.42	41.9403	70	13.99	70.2332	26	39	Animals from bongo placed in chamber

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8/15/99	APOP Wire Cast	17:30	17:40	41	56.42	41.9403	70	13.99	70.2332	26	39	Empty chamber
8/15/99	CTD	17:48	17:58	41	56.42	41.9403	70	13.99	70.2332	38	39	
8/15/99	Bongo	19:05	19:22	41	59.52	41.9920	70	13.03	70.2172	13	39	Longer tow time
8/15/99	APOP Wire Cast	19:32	20:15	41	59.52	41.9920	70	13.03	70.2172	26	39	Animals from bongo placed in chamber
8/15/99	APOP Wire Cast	20:30	20:40	41	59.52	41.9920	70	13.03	70.2172	26	39	Empty chamber
8/15/99	CTD	20:45	20:55	41	59.52	41.9920	70	13.03	70.2172	38	39	
8/16/99	CTD	11:45	12:05								213	
8/16/99	Bongo	12:20	12:30							36	213	
8/16/99	Bongo	12:30	12:48							36	213	
8/16/99	ROV	13:17	16:56	42	55.91	42.9318	69	2.73	69.0455	164	164	Video ground truthing of acoustics
8/16/99	Bongo	19:00	19:25	42	24.58	42.4097	69	52.69	69.8782	200	200	Ground truthing of acoustics and ROV
8/16/99	APOP Wire Cast	19:40	20:30	42	24.58	42.4097	69	52.69	69.8782	200	200	<i>Calanus</i> in chamber
8/16/99	APOP Wire Cast	20:40	20:50	42	24.58	42.4097	69	52.69	69.8782	200	200	Empty chamber
8/16/99	CTD	21:30	21:50	42	24.58	42.4097	69	52.69	69.8782	180	200	
8/16/99	Light trap	21:45	22:05	42	24.58	42.4097	69	52.69	69.8782	1	200	Empty catch, halogen light
8/16/99	Light trap	22:35	22:50	42	24.58	42.4097	69	52.69	69.8782	20	200	Cyalume light sticks
8/17/99	CTD	9:30	9:40	42	14.00	42.2333	70	31.50	70.5250	61	64	
8/17/99	Bongo	9:45	9:55	42	14.00	42.2333	70	31.50	70.5250	50	50	Oblique tow
8/17/99	Bongo	10:10	10:20	42	14.27	42.2378	70	31.18	70.5197	50	50	Oblique tow
8/17/99	CTD	10:45	10:55	42	16.00	42.2667	70	28.96	70.4827	75	81	
8/17/99	Bongo	10:58	11:05	42	16.09	42.2682	70	28.96	70.4827	50	81	Oblique tow
8/17/99	Bongo	11:17	11:27	42	16.57	42.2762	70	29.02	70.4837	50	84	
8/17/99	CTD	12:00	12:10	42	18.50	42.3083	70	25.00	70.4167	100	98	
8/17/99	Bongo	12:08	12:30	42	18.50	42.3083	70	25.00	70.4167	50	98	Oblique tow
8/17/99	Bongo	12:45	13:05	42	18.50	42.3083	70	25.00	70.4167	50	98	Oblique tow
8/17/99	CTD	13:15	13:25	42	20.02	42.3337	70	22.93	70.3822	98	102	In internal wave
8/17/99	Bongo	13:33	13:42	42	19.53	42.3255	70	23.57	70.3928	50	111	In internal wave
8/17/99	Bongo	13:57	14:06	42	19.15	42.3192	70	24.52	70.4087	50	105	Missed internal wave
8/17/99	CTD	14:10	14:20	42	18.96	42.3160	70	24.93	70.4155	100	105	Missed internal wave

