#80030

CRUISE REPORT

OCEANUS 88

October 23 - 31, 1980

Bradford Butman
U.S. Geological Survey
Woods Hole, MA 02543

Vessel: OCEANUS

Cruise No.: 88

Dates of Operation: 0925 October 23 - 1300 October 31, 1980

Ports: Woods Hole, Mass. to Woods Hole, Mass.

Area of Operation: Atlantic Continental Shelf (Georges Bank to New Jersey shelf.)

Personnel: Paul Howland, Master

Brad Butman, Chief Scientist, USGS

Mike Bothner, USGS

Scott Chalker, USGS

John Larson, USGS

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Nancy Copley, WHOI

Rose Petrecca, WHOI

William MacLeish, WHOI

Objectives: The objectives of the cruise were:

1) Recover three tripod moorings and three current moorings on the Continental Shelf.

2) Deploy three tripods and four current moorings in and around Lydonia Canyon.

3) Conduct hydrographic measurements (XBT, CTD, and suspended sediments along several shelf transects and in Lydonia Canyon.)

4) Recover seven surface buoys.

5) Obtain surface grab samples at tripod stations at the head of

Lydonia Canyon.

6) Obtain samples at stations A, K, and Q for seasonal benthic study.

Equipment: Northstar Loran-C with cassette recording

Gifft echo sounder (12 kHz)

XBT

Neil Brown Instrument Systems CTD

Smith-MacIntyre grab sampler

Van Veen grab

AMF acoustic command system

Narrative: (All times are Eastern Standard Time)

Oct. 23 0925 Depart Woods Hole. Underway to Lydonia Canyon.

Oct. 24 0100 Arrive Lydonia Canyon.

Start bathymetric survey around canyon head.

0900 Complete survey. Arrive station LCL.

1005 Deploy surface buoy K.

1058 Deploy surface buoy M.

1100 Depart station L. (Tripod to be deployed at L malfunctioned. Decide to delay launch.)

1145 Arrive station LCA.

1312 Deploy eastern marker buoy Q.

1421 Deploy western marker buoy U.

1530 Deploy tripod (mooring 204).

1615 Underway to station LCM.

1645 Arrive station LCM.

1750 Deploy eastern surface buoy V.

Deploy western surface buoy R.

1947 Deploy tripod (mooring 203)

Underway to station LCD.

	2142	Deploy subsurface current mooring at LCC (mooring 209).
		Underway to station LCA.
	2309	Arrive station LCA.
		Grab sample at station LCA.
Oct. 25	0020	Complete grab samples.
		Underway to station GBK.
	0520	Arrive station K.
	0713	Complete grab sample.
	0740	Recover subsurface current mooring (mooring 196).
		Release tripod - no recovery float on surface.
	1000	Start dragging operation.
	1300	Tripod float on surface.
		Recovered float, but tripod line cut.
	1345	Seas building, too rough to work. Secure ship.
		Commence jogging into seas.
Oct. 26		Winds 40-60 mph from SW.
		Jog slowly toward SW. Seas 10-20'.
Oct. 27	0900	Arrive station LCG.
	1154	Start setting mooring LCG.
	1302	Deploy subsurface mooring 213 at station LCG (east wall, depth 500 m).
	1610	Start setting mooring at LCF.
	1734	Deploy subsurface mooring 212 at station LCF (west wall, depth 500 m).
	2049	Deploy subsurface mooring 210 at station LCD (east wall, depth 200 m).
		Setup CTD for canyon transect.
	2300	Unexplained CTD failure.

Oct. 28	0000	Underway to station Q.
	1030	Arrive station Q.
	1100	Recover subsurface mooring (197).
	1233	Start bottom grab samples.
	1325	End bottom grab sampling.
	1436	Recover tripod.
		Seas building. Too rough to work.
	1500	Underway to Woods Hole for medical attention. Warecki (Bosn) and Howland (Master) injured. (Bosn had badly cut ear from fall during rough weather on Oct. 26. Master had crushed finger from deck work on Oct. 27.
	2300	Arrive Woods Hole.
Oct. 29	0110	Depart Woods Hole.
		Underway to station Q.
	0400	Start XBT transect.
	0730	Arrive station Q.
	0900	Deploy Grassle tripod (mooring 206).
	0910	Underway to station MAB.
		Continue XBT transect.
	1146	Complete XBT transect.
Oct. 30	0320	Start XBT transect.
	0600	Arrive station MB.
	0720	Recover subsurface mooring (198).
	0843	Recover tripod (mooring 193).
		Surface buoy F within VACM missing (mooring 1981).
	0936	Recover surface buoy A.
	1029	Recover surface buoy S.

1135 Recover surface buoy T.

1300 Start CTD transect across shelf.

1644 Complete CTD transect.

Underway to Woods Hole.

Oct. 31 1250 Arrive Woods Hole.

Cruise summary: All moorings were deployed as planned with the exception of the tripod at station L. The instrument malfunctioned on deck and will be deployed on the November OCEANUS cruise. Because of the two days of bad weather and the return to Woods Hole for medical attention, there was no time for hydrography on Georges Bank.

All moorings were recovered as planned except for a lost surface mooring at station MAB and the tripod system at GBK. The surface buoys at GBK were left until the tripod is recovered.

Tabulated information:

Moorings deployed: 8 (3 tripods, 4 subsurface [6 VACM], and 1 surface [1 V VACM])

Station	Mooring no.	Latitude N.	Longitude W.	Mooring	Inst.
LCM	203	40°29.6′	67°48.6′	Tripod	
LCA	204	40°34.2′	67°44.8′	Tripod	
GBQ	206	40°29.6′	70°12.2′	Tripod (Grassle)	
LCC	209	40°29.4′	67°43.5′	Subsurface	1V
LCD	210	40°29.3′	67°41.3′	Subsurface	1V
LCF	212	40°21.2′	67°39.1′	Subsurface	2V
LCG	213	40°21.4′	67°41.6′	Subsurface	2V
LCL	2181	40°32.3′	67°36.4′	Surface	1V

Moorings recovered: 5 (2 tripods, 3 subsurface)

Station	Mooring no.	Latitude N.	Longitude W.	Mooring	Inst.
MAB	193	38°42.5′	73°38.8′	Tripod	
GBQ	194	40°29.7′	70°12.2′	Tripod	
GBK	196	41°02.0′	67°34.0′	Subsurface	2V
GBQ	197	40°29.6′	67°12.1′	Subsurface	2V
MAB	198	38°42.6′	73°38.6′	Subsurface (surface lost)	2V

Surface buoys: Deployed 6 (K, M, Q, U, V, R)

Recovered 3 (A, S, T)

Days at sea: 9

CTD stations: 3

XBT stations: 16

Surface salinity: 15

Samples: 1 grab sample

Moorings lost: 1 (surface mooring at MAB [1 VACM])

Moorings temporarily missing: 1 (tripod at GBK, recovery line fouled, tripod tipped.)

Note: Mooring recovered on Dec. 2 (OC 90) by dragging.

Station	Depth (m)	Latitude N.	Longitude W.	XBT	SS	CTD	Date	Time
1	43	41°05.25′	70°46.12′	x	x		10/29/80	0410
2	52	40°53.98′	70°36.29′	x	x		10/29/80	0510
3	52	40°45.14′	70°27.87′	x	x		10/29/80	0555
4	57	40°37.33′	70°20.52′	x	x		10/29/80	0645
5	68	40°29.18′	70°12.05′	x	x		10/29/80	0914
6	88	40°19.91′	70°14.51′	x			10/29/80	1004
7	89	40°18.84′	70°14.79′	x			10/29/80	1011
8	101	40°12.98′	70°16.20′	x	x		10/29/80	1040
9	122	40°06.32′	70°17.89′	x	x		10/29/80	1120
10	228	40°01.51′	70°18.84′	x	x		10/29/80	1146
11	750	38°29.25′	73°13.80′	x	x		10/30/80	0320
12	30	38°31.41′	73°18.64′	x	x		10/30/80	0344
13	95	38°33.78′	73°22.91′	x	x		10/30/80	0412
14	75	38°36.94′	73°28.41′	x	x		10/30/80	0447
15a,b	63	38°39.01	73°34.02′	x	x		10/30/80	0520
16	63	38°41.65′	73°38.90′			x	10/30/80	1300
17	47	38°46.18′	73°47.76′		x	x	10/30/80	1438
18	45	38°43.37′	73°43.97′	x	x		10/30/80	1521
19	85	38°34.07′	73°27.93′			x	10/30/80	1644

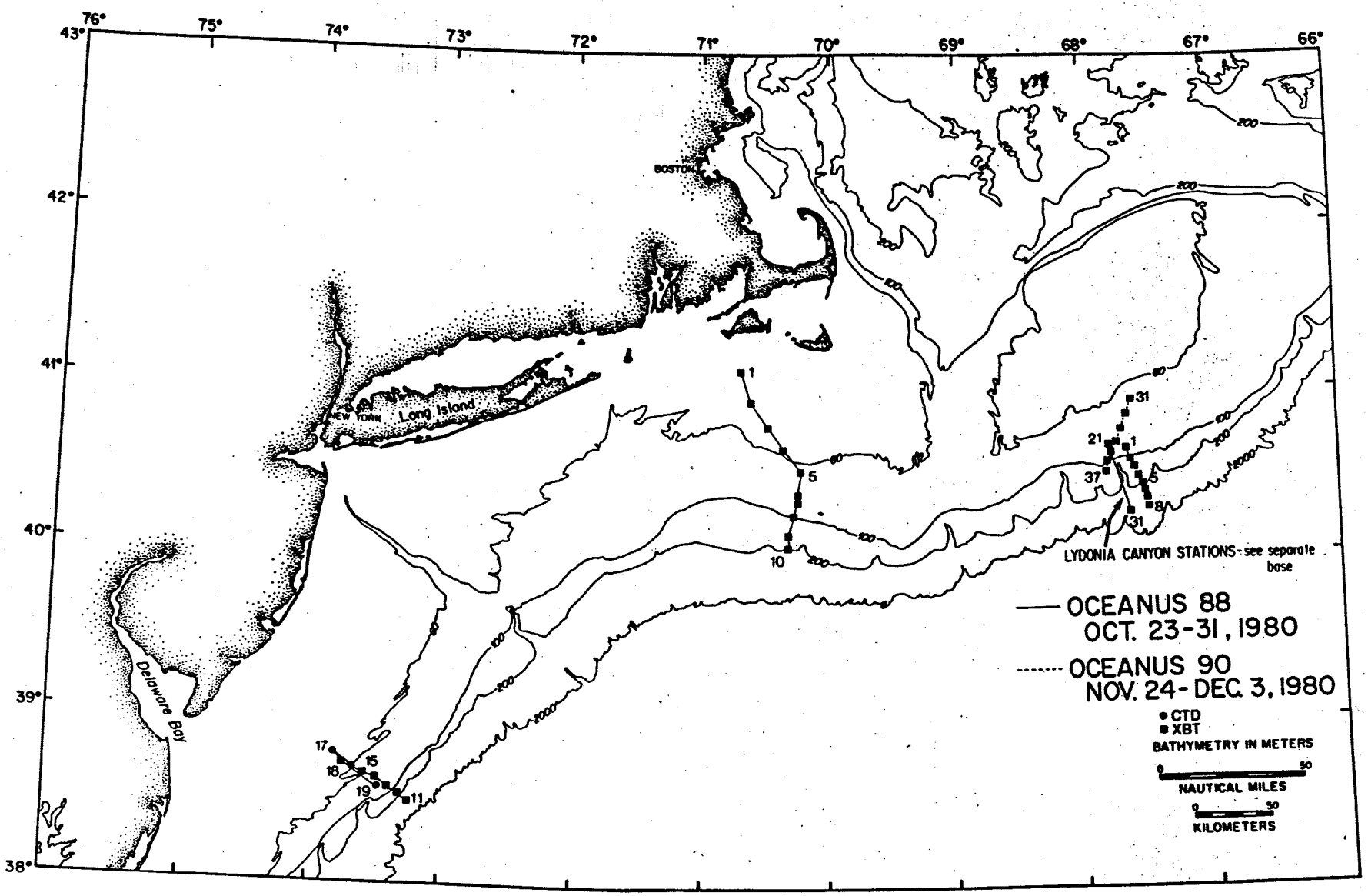


Figure 1. Cruise track OCEANUS 88 October 23 - 31, 1980.

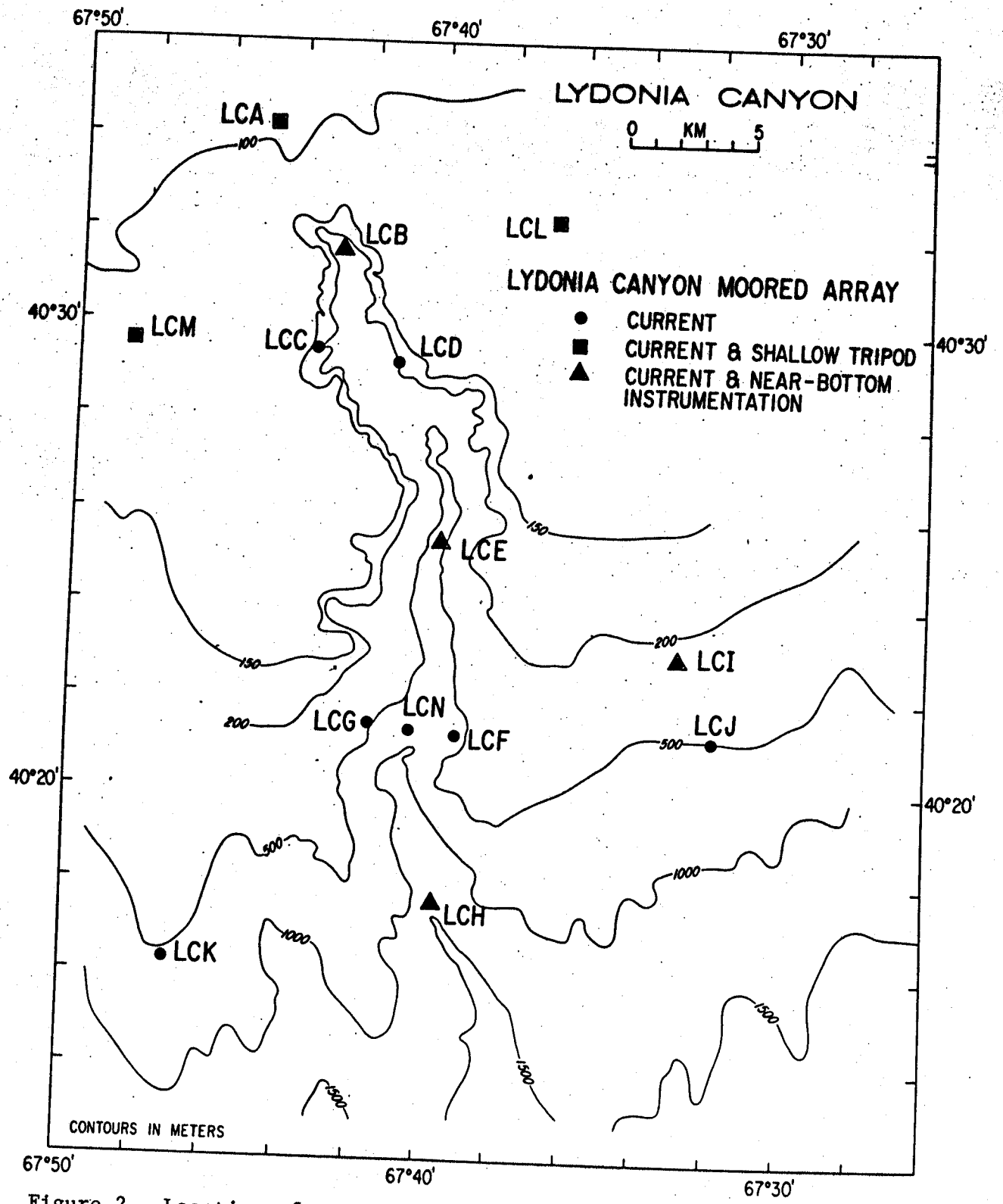


Figure 2. Location of moorings in Lydonia Canyon. (Moorings at stations LCA, LCC, LCD, LCL, LCM, LCF, and LCG deployed on OC 88.)

APPENDIX I

Bridge Log OCEANUS 88 October 23 - 31, 1980

Cruise 88

Date	Time	Sta.	+/-.	Reading	Latitude	Longitude	Remarks
	1025	CAST OFF V/C IN TRANSIT					
		VINYARD & NANTUCKET SOUNDS.					
	1200	1600	LC		41.27.42	70.20.88	
	1508	1908	V/B	CL/AY	S&W "GRS" BUOY		DEPARTURE S/C 086°
	1600	2000	LC		41.26.12	69.31.55	
	1619	2019	LC		41-26.2	69-27.3	S/C 152G
	1700	2100	LC		41-19.8	69-23.1	
	1800	2200	LC		41-10.2	69-16.9	
	18~~20~~18	2218	SAT	21°/3	41-07.633	69-15.168	
	1905	2305	LC		41-00.8	69-10.3	
	2000	0000	LC		40-53.5	69-04.5	
	2039	0039	LC		40-48.7	69-00.5	C/C 103
	2100	0100	LC		40-48.5	69-55.9	C/C 108

Cruise #88

Date	Time	Sta.	+/-.	Reading	Latitude	Longitude	Remarks
10/23	+4	GMT			N	W	Thursday 23-OCT-80
	2200	0200			40 47.2	68-43.1	c/c 110·G
	2304	0304			40-44.4	68·29.3	C/C 10 G
	0000	0400	LC		40·41.89	68.17.05	
	0100	0500	DR		40 39.0	68·03.8	
	0203	0603	LC		40·36.15	67.49.65	0203 ARRIVE LYDONIA C. 0203 CME SURVEY
							c/c 180°g
	0258	0658	LC		40 25.7	67.48.8	0258 c/c 087°g
	0306	0706	LC		40.25.6	67·47.32	0306 c/c 000°g
	0400	0800	LC		40-32.5	67-47.1	
	0427	0827	LC		40-36	69-47.0	c/c 090G
	0437	0837	LC		40-36.0	69-45.0	c/c 180
	0457	0857	LC		40-36.6	67-45.0	c/c 083G
	0505	0905	LC		40-32.7	67-43.4	c/c 000G
	0527	0927	LC		40-36	67-43.4	c/c 090G.

Cruise # 88

Date	Time	Sta.	+/-.	Reading	Latitude	Longitude	Remarks
10/24	+4	GMT			N	W	FRI 24 OCT '86
	0534	0934	LC		40-36	67-42.0	C/C 180G, C/S 150RPM
	0536	0936	SAT	31°/3	40-35.641	67-42.013	
	0552	0952	LC		40-33.5	67-42	C/C 142G
	0600	1000	LC		40-32.5	67-41.1	
	0611	1011	LC		40-31.3	67-40.0	C/C 000G
	0630	1030	LC		40-34	67-40.06	
	0643	1043	LC		40-36	67-39.9	C/C 090G
	0652	1052	LC		40-36.1	67-38	C/C 180G.
	0700	1100	LC		40-34.9	67-38	
	0726	1126	LC		40-30.7	67-38	C/C 144G
	0742	1142	LC		40-28.5	67-36.1	C/C 000G.
	0758	1158			40-30.95	67-36.01	C/C 003

Cruise _____

Date	Time	Sta.	+/-.	Reading	Latitude	Longitude	Remarks
	+4	GMT			N	W	Friday - 24-OCT-8
	0805	1205			40-32.10	67-36.04	c/c 270
	0808	1208			40-32.13	67-36.67	c/c 267 - G - 6 kt
	0812	1212			40-32 13	67-37.26	
	0827	1227			40-32.16	67-39.54	c/c 000
	0836	1236			40-33.06	67-39.81	c/c 090
	0901	1301			40-33.27	67-36.51	
	0906	1306			40-33.30	67-35.9	c/c 180
	0924	1324			40-31.32	67-35.93	c/c 270
	~~10~~ 0933	1333			40-31.27	67 37.37	c/c 000
	0942	1342			40-32 15	67 37.56	c/c 045
	0952	1352			40-32.77	67-36.8	H.T
	1105	1505			40-32.38	67-36.94	- Let go anchor to Surface Mooring - Site "L"

Cruise #88

Date	Time	Sta.	+/-.	Reading	Latitude	Longitude	Remarks
	+4	GMT			N	W	
	1158	1558	LC		40-32.31	67-36.42	Let go anchor to Surface Marker Site "L"
	1206	1606	LC		40 32.3	67 36.5	
	1244	1644	LC		40 34.3	67.43.8	H.T.
	1412	2012	LC		40.34.31	67.44.41	1412 ANCHOR OVER LYDONIA CANYON SITE "A" EASTERN BUOY
	1521	1921	WESTERN BUOY ∅ 085° T @0.4 mi TO EASTERN BUOY				1521 ANCHOR OVER WESTERN BUOY SITE "A"
	1630	2030					SET TRIPOD 0.14 M FROM WESTERN BUOY
	1644	2044					V4s TO TRAWL LINE
	1653	2053					PICK UP BUOY, HAUL BACK
	1717	2117	LC		40-33.6	67-44.8	V4s TO SITE 'M'
	1746	2146	LC		40-28.5	67-48.1	HOVE TO, SITE 'M'
	1850	2250	LC		40-29.5	67-48.5	ANCHOR OVER BUOY 'B'? Site "M"
	2014	0014	LC		40-29.5	67 48.05	Anchor over Buoy "R"
	2050		Launched Trajectory .14 mi from				Buoy "B" ∅ 269°

Cruise #88

Date	Time	~~Sta.~~	+/-.	Reading	Latitude	Longitude	Remarks
10/24	+4	GMT			N	W	
	1856	2256	SA	46°/4	40-29.779	67-48.805'	
	2151	0151	LC		40 29.86	67-49.16	
	2210		LC		40-29.55	67-43.93	Var C. Stream Sub surface mooring
	2242	0242	LC		40 29.42	67-43.46	Let go anchor to. " Sub surface mooring LC
	2314	0314	LC		40-29.33	67-43.66	

Cruise 88

Date	Time	Sta.	+/-.	Reading	Latitude	Longitude	Remarks
	+4	GMT			NORTH	WEST	SATURDAY OCT 26, 1980
	0016	0416	LC		40.34.10	67.44.73	#1 0016 MUD GRAB ON BOTTOM
	0026	0426	LC		40.34.07	67.44.76	#2 0026 " " " "
	0034	0434	LC		40.34.05	67.44.86	#3 0034 " " " "
	0042	0442	LC		40.34.00	67.44.88	#4 0042 " " " "
	0048	0448	LC		40.33.99	67.44.91	#5 0048 " " " "
	0054	0454	LC		40.33.94	67.44.97	#6 0054 " " " "
	0102	0502	LC		40.33.86	67.45.03	#7 0102 " " " "
	0109	0509	LC		40.33.80	67.45.07	#8 0109 " " " "
	0120	0520	LC		40 33.7	67.45.1	END STA S/C 017° g
	0200	0600	LC		40.39.90	67.42.38	C/C 013° g
	0300	0700	LC		40.47.98	67.39.36	0300 C/C 015° g
							0350 C/C 021° g
	0400	0800	LC		40-55.7	67-37.3	
	0400	0800	SAT	20°/3	40-55.993	67-37.135	

Cruise 8°

Date	Time	Sta.	+/-.	Reading	Latitude	Longitude	Remarks
	±4	GMT			N	W	10/25/80
	0454	0854			41- 02.4	67- 34.2	HOVE TO
	0621	1021	LC		41-02.3	67- 34.4	HOVE TO, CMC BOTTOM SAMPLE
	0636	1036	LC		" 02.3	" 34.6	GRAB SAMPLE
	0641	1041	LC		" 02.3	" 34.8	" "
	0645	1045	LC		" 02.3	" 34.8	" "
	0657	1057	LC		" 02.3	" 34.8	" "
	0655	1055	LC		" 02.4	" 34.8	" "
	0659	1059	LC		" 02.4	" 34.8	" "
	0704	1104	LC		" 02.4	" 34.9	" "
	0707	1107	LC		" 02.4	" 34.9	" "
	0713	1113	LC		" 02.4	" 34.9	" "
	0748	1148	LC		41-02.7	67- 34.2	SET FISH TRAWL

Cruise 88

Date	Time	~~Sta.~~	+/-.	Reading	Latitude	Longitude	Remarks
	74	GMT			N	W	10/25/80
	0903	1303			41-02.8	67-35.25	Sub Surface Mooring
							hauled abd.
							1100 Cme trawling
							(dragging) for tripod
	1225	1625	LC		41-02.35	67-33.93	
	1410	1810	VB	TRIPOD RELEASE FLOAT SURFACES WITH			
				20 METERS OF LINE.			TRIPOD NOT RECOVERED
	1445	1845	/	CME JOGGING INTO HEAVY SEAS.			
	1500	1900	LC		41.02.62	67.32.26	
	1648	2048	SAT	59°/3	40-56.915	67-26.592	
	1700	2100	LC		40-56.5	67-26.1	
	1800	2200	LC		40-54.	67-24.5	
	1853	2253	LC		40-52.17	67-23.12	
	2000	2400	LC		40-50.16	67-21.4	C/C 110 G.
	2118	0118	LC		40-50.66	67-19.2	C/C 140
	2200	0200	LC		40-50.75	67-18.8	

Cruise _____

Date	Time	Sta.	+/-.	Reading	Latitude	Longitude	Remarks
	2254	0254	LC		40°50.28	67°17.5	c/c 180-6.
							Wind shift to SSW @ 15-20 kts
	2316	0316	LC		40-48.67	67-17.37	
	0019	0419	LC		40-49.0	67-15.76	
	0000	0400	LC		40.45.0	67.15.6	

Cruise 60

Date	Time	Sta.	+/-.	Reading	Latitude	Longitude	Remarks
	~~0000~~	~~0500~~	CLOCKS / CHRONOMETERS SET TO +5 GMT				
			(RETARDED ONE HOUR)				
	0000	0500			40 45.0	67 15.6	
	0000	0600			40.44.39	67.23.95	
	0135	0635	LC		40.43.8	67.28.3	0135 CME JOGGING
							S/C 180° g/
	0200	0700	LC		40.42.05	67.27.94	0200 C/C 200° g/
							JOGGING CONTINUES
	0300	0800	LC		40.38.92	67.28.39	0300 C/C 225° g/
	0405	0905	LC		40-35.2	67-29.7	C/C 200G.
	0500	1000	LC		40-31.6	67-30.3	0530 C/C 220G
	0538	1038	SAT	07/4	40-28.905	67-30.883	
	0600	1100	LC		40-28.6	67-31.9	
	0624	1124	SAT	80°/3	40-27.622	67-32.595	
	0700	1200	LC		40-26.2	67-35.6	C/C 240G.
	0800	1300	LC		40-23.76	67-39.86	
	0850	1350	LC		40 21.72	67-43.59	Long line ⇒

Cruise #88

Date	Time	Sta.	+/-.	Reading	Latitude	Longitude	Remarks
	+6	GMT			N	W	Sunday - 26 - OCT - 8
	1000	1500			40·19 22	67- 48 30	c/c 250
	1200	1700	LC		40·16.9	67·53.4	
	1400	1900	LC		40 12.5	68·02.4	
	SIMUL FIX						
	1458	1958	Sat	57^3	40 10.241	68·04.807	
	1458	1958	LC		40·10.33	68·04.88	
	1600	2100	LC		40-07.6	68-07.4	4C260G
	1646	2146	SAT	19/3	40-06.613	68-09.467	
	1700	2200	LC		40-05.9	68-10.3	
	1800	2300	LC		40-04.3	68-12.8	
	1900	2400	LC		40-02.7	68-15.0	
	2002	0102	LC		41-00.97	68-16.85	
	2104	0204	LC		40-59.3	68-19.6	
	2202	0302	LC		40-57.5	68-21.6	

Cruise #88

Date	Time	Sta.	+/-.	Reading	Latitude	Longitude	Remarks
	+5	GMT			NORTH	WEST	
	2238	0338			39-56.44	68-23.22	Sunday Oct 26, 1980
							2238 - c/o 040-6 - 4-5

Cruise 88

Date	Time	Sta.	+/-.	Reading	Latitude	Longitude	Remarks
	+5	GMT			NORTH	WEST	MONDAY OCT 27, 1980
	0000	0500	LC		40·00.61	68·13.74	
	0100	0600	LC		40·04.24	68·06.53	
	0200	0700	LC		40·07.95	68·00.83	0218 R/S 0249 C/C
							TRAFFIC
	0300	0800	LC		40·11.25	67.55.67	0316 NEW COURSE
							065°
	0400	0900	LC		40-12.9	67- 49.2	
							0440-0455 U/S
	0500	1000	LC		40- 14.1	67 -46.3	0455-S/C 0406
	0518	1018	SAT		40-14.615'	67-45.283	
	0600	1100	LC		40- 16.5'	67- 42.7	
	0700	1200	LC		40- 18.8	67- 39.4	
	0730	1230	LC		40- 20	67- 37.9	C/C 270G, TOSSING INTO WIND
	1000	1500	LC		40-19.6	67-44.0	
	1154	1654	LC		40-21.64	67-40.53	Core Setting
							Sub Surface Mooring "G"

Cruise 88

Date	Time	Sta.	+/-.	Reading	Latitude	Longitude	Remarks
	+5	GMT			NORTH	WEST	MONDAY OCTOBER 27, 198
	1302	1802	LC		40·21.45	67·41.65	1302 ANCHOR AWAY
							SUB SURFACE MOORING "6
	1610	2110					1610 LAUNCH FLOAT +
							DEPLOY MOORING V'S
	1733	2233	LC		40- 21.2	67- 39.1	ANCHOR AWAY! V'S
							RANGING ON MOORING
	1855	2355			46-22-	67-40	S/C 0005, @ 160RPM
	1944	0044					
					40- 29.2	67- 39.5	V'S TO DEPLOY MOORING
	2049	0149	LC		40-29.25	67-41.25	Let go anchor Intermediate Mooring
	2343	0443			40-29.86	67-39.77	S/C 274.6 @ 150RPM

Cruise 8Y

Date	Time	Sta.	+/-.	Reading	Latitude	Longitude	Remarks
	+5	GMT			NORTH	WEST	TUESDAY OCT 28, 1980
	0000	0500	LC		40·29.95	67·45.88	LC LATITUDE ERROR?
							(LC ON 51 & 52)
	0100	0600	LC		40·31·57	68·01.21	CHANGED 51-53 MAINE &
							CAROLINA
	0200	0700	LC		40·32.06	68·15.78	
	0300	0800	LC		40·32.09	68·29.82	0300 R/S 180 RPM
							0330 C/C 274° g
	0400	0900	LC		40—32.2	68—41.9	
	0414	0914	SAT	5/3	40—32.360	68—44.884	
	0454	0954	SAT	20/3	40—32.483	68—53.361	
	0500	1000	LC		40—32.6	68—54.4	
	0600	1100	LC		40—33	69—07.3	C/C 270G.
	0700	1200	LC		40—32.4	69—20	C/C 272G.
	0800	1300	LC		40-32.7	69-35.4	C/C 267·G
	0905				40-32.45	69-51.3	C/C 262·G

Cruise _____

Date	Time	Sta.	+/-.	Reading	Latitude	Longitude	Remarks
	+5	GMT			N	W	28-OCT-80 -
	1004	1504			40-31.59	70-05.56	c/c 245
	1035	1535			40-29.71	70-12.03	
	1141				40 29.72	70 11.67	Sub Surface Mooring made

Cruise 88

LORAN LOG

Date	Time	Sta.	+/-.	Reading	Latitude	Longitude	Remarks
	+5	GMT			NORTH	WEST	TUESDAY OCT 28, 1980
	1233	1733	LC		40.29.05	70.11.72	1233 CME MULTIPLE MUD GRABS
	1325	1825	LC		40.28.59	70.10.90	1325 END MULTIPLE MUD GRABS
	1432	1932	LC		40.28.5	70.10.0	1432 TRIPOD ABD
	1607	2107	LC		40-28.1	70-14.5	S/C 324 G. 200 RPM
	1656	2156	SAT	170/3	40-35.653	70-22.038	
	1700	2200	LC		40-36.3	70-22.5	
	1800	2300	LC		40-45.8	70-32.1	
	1900	2401	LC		40-55.3	70-41.9	
	2029				41-11.0	70-53.5	1927 C/C 334 G. SW Shoal of 064° 3.0 mi C/C 000. G
	2117				41-21.8	70-54.1	Devils Br. Buoy 2090 1.7 mi dist C/C 052° G
	2149	Robinson	Hole Buoy			[illegible]	Vac C/opals IN VINYARD SOUND
	2240	ARRIVAL		WN #1 & #2			

2255 DOCKSIDE WN01

Cruise 88

LORAN LOG

Date	Time	Sta.	+/-.	Reading	Latitude	Longitude	Remarks
	GMT	+5			NORTH	WEST	WED OCT 29, 1980
	0110	0610	CAST OFF				
	0120	0620	VB	DEPARTURE WN #1 & #2			
	0205	0705	CL/3Y	ROBINSONS HOLE BUOY			(0.3 MI ⊖→) C/C 228°
	0235	0735	DEVILS BRIDGE	BUOY 0.7 MI ←⊖			C/C 180°
	0300	0800	LC		41-16.87	70-52.25	C/C 184°
	0321	0821	LC		41-12.29	70-52.56	C/C 145°
							0341 C/C 142°
	0400	0900	LC		41-05.7	70-46.5	
	0450	0950	SAT	14°/2	40-56.882	70-39.035	
	0500	1000	LC		40-55.3	70-37.5	
	0552	1052	SAT	6/2	40-46.322	70-29.248	
	0600	1100	LC		40-45.0	70-27.7	
	0700	1200	LC		40-34.8	70-18	
	0730	1230	LC		40-29.5	70-12.3	V4S AT SIA 'Q'

Cruise _____

Date	Time	Sta.	+/-.	Reading	Latitude	Longitude	Remarks
					N	W	10-29-80
	0856		1356	LC	40-29.57	70-12-05	Launch Grassley Tripod
							.2 mi ϕ070 from E.B.
	0912		1412	LC	40-29.4	70-11.8	S/C 192.6 @
	1002		1602	LC	40 20.5	70-14.26	
	1100		1600	LC	40-09.76	70-16.89	
	1148		1648	LC	40-01.2	70-18.8	C/C 232.6
	/						

Cruise 88

Date	Time	Sta.	+/-.	Reading	Latitude	Longitude	Remarks
	+5	GMT			NORTH	WEST	WED OCT 29, 1980
	1200	1700	DR		39.59	70.21	1221 c/c 239°
	1300	1800	LC		39.53.86	70.31.66	
	1400	1900	LC		39.48.53	70.43.38	
	1500	2000	LC		39.43.12	70.55.15	
	~~1518~~	~~2018~~	~~SAT~~	~~14°/3~~	~~39.42.354~~	~~71.01.695~~	
	1600	2100	LC		39-37.5'	71- 07.0	
	1604	2104	SAT	42°/3	39-37.06	71-07.913	
	1700	2200	LC		39-31.5'	71 19.2	
	1800	2300	LC		39-25.4	71-31.5'	
	1854	2354	SAT	10°/2	39-25.918	71-30.237	
	1902	2402	LC		39-19.1	71 44.0	
	2007	0107	LC		39-12.76	71.56.78	c/c 236
	2100	0200	LC		39-07.17	72 07.13	
	2202	0302			39-00.5	72-19.0	
	2310	0410	L		38-54.0	72-33.0	130 RPM

2325-170 RPM

Cruise 88

Date	Time	Sta.	+/-.	Reading	Latitude	Longitude	Remarks
	+5	GMT			NORTH	WEST	THURS OCT 30, 1980
	0000	0500	LC		38.49.16	72.41.83	
	0100	0600	LC		38.43.29	72.52.38	0100 c/c & R/c
	0200	0700	LC		38.36.53	73.01.45	0200 c/c 234° g
	0300	0800	LC		38.30.84	73.11.36	
	0316	0816	LC		38.29.21	73.13.95	0316 c/c 306° g
							0345 c/c 308° g
	0400	0900	LC		38-32.8	73-21.2	
	0500	1100	LC		38-38.3	73-30.7	
	0552	1052	LC		38-42.1	73-38.1	HOVE TO, CLOSE BUOYS
	0554	1054	SAT	8°/2	38-41.956	73-38.280	
							0710 PICKUP SUBSURFACE MOORING
	0843	1333	LC		38-42.49	73 38.78	RECOVER TRIPOD
	0936				38-42.46	73-38 93	" Surface Mooring
							1029. Recovers S. Mooring and anchor
	1135	1635	LC		38-42.27	73-38-54	Surface Mooring and anchor

Cruise 88

LORAN LOG

Date	Time	Sta.	+/-.	Reading	Latitude	Longitude	Remarks
	+5	GMT			NORTH	WEST	THURS OCT 30, 1980
							1245 -1336 CTO's
	1336	1836	LC		38·41 42	73·38 95	END STA S/C 305° g
	1400	1900	LC		38·43.28	73·42.24	
							1436 - 1500 CTO's
	1500	2000	LC		38.45.73	73·48.07	1500 END STA S/C 130° g
							170 RPM
	1600	2100	LC		38·39.63	73·36.03	
	1642	2142	LC		38-34.1	73-28	HACTO, CTO STA
	1705	2205	DR		"	"	S/C 035°G, 170 RPM
	1800	2300	LC		38-42.15	73-20	
	1850	2350	SAT	30°/2	38-50.129	73-12.707	
	1900	2400	LC		38-51.7	73-11.6	
	2000	0100	LC		39-01.2	73-02.8	
	2105	0205	LC		39-10.9	72:53.9	
	2204	0304	LC		39-19.9	72.46.0	
	2251	0351	LC		39·27.28	72·39.24	RIGS @ 125°-8.75 mi. 120°.5 - 9.4 mi

Cruise 88

LORAN LOG

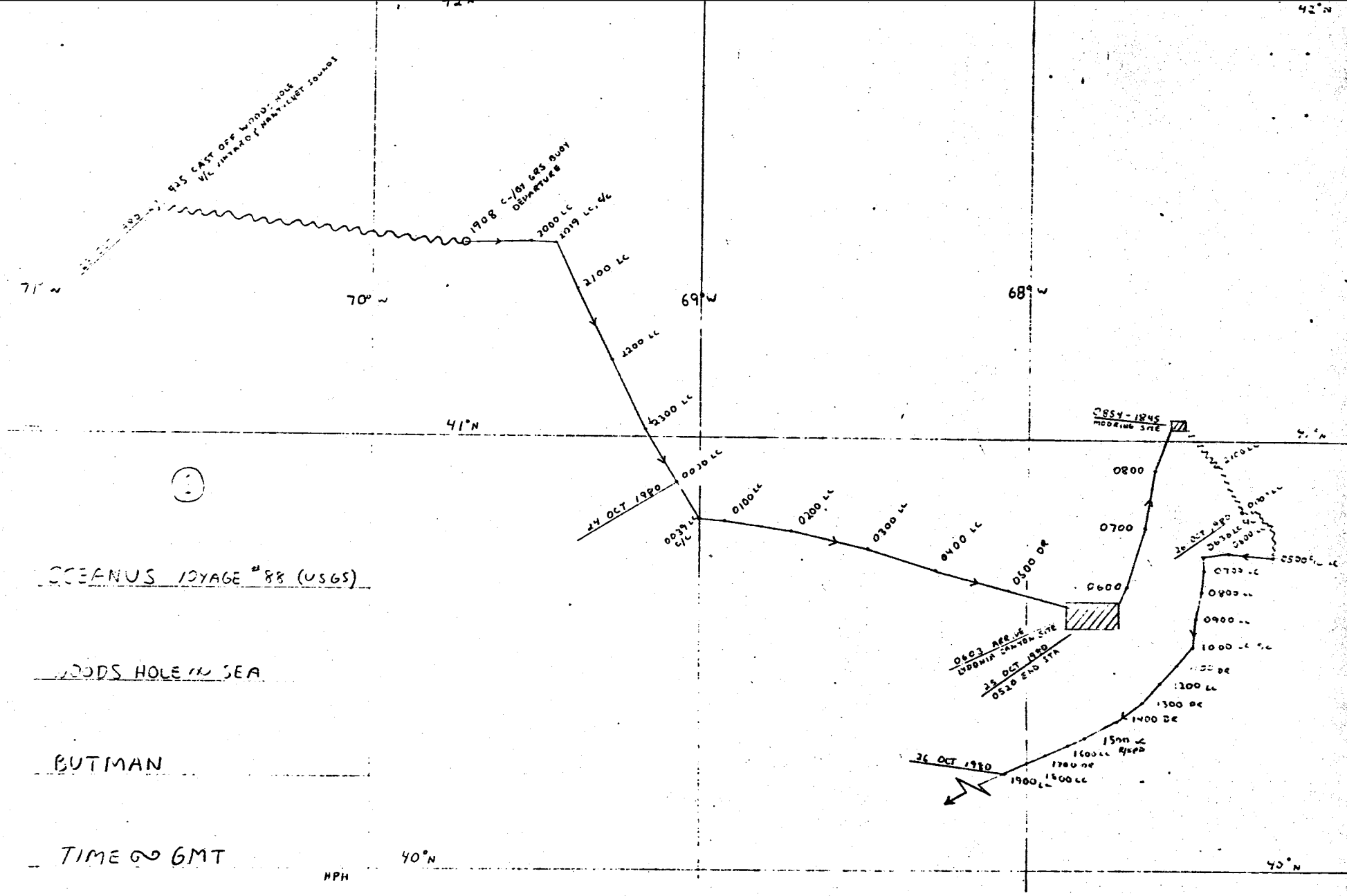
Date	Time	Sta.	+/-.	Reading	Latitude	Longitude	Remarks
	GMT	+5			NORTH	WEST	FRIDAY, ALL HALLOWS EVE 1980
	0000	0500	LC		39.38.07	72.29.34	
	0103	0603	LC		39.47.90	72.19.9	C/C 033°
	0200	0700	LC		39.56.66	72.11.91	
	0300	0800	LC		40.05.93	72.03.64	
	0824	0824	SAT	10²/2	40-09.495	72-00.419	
	0400	0800	LC		40-15.3	71-55.4	
	0500	1000	LC		40-24.8	71-47.2	
	0600	1100	LC		40-34.5	71-38.8	C/C 035
	0602	1102	SAT	57/4	40-34.574	71-38.672	
	0700	1200	LC		40-43.6	71-30.0	
	0800	1300	LC		40-52.7	71-20.8	
	0900	1400			41-01.6	71-12.0	

Cruise #88

Date	Time	Sta.	+/-.	Reading	Latitude	Longitude	Remarks
	+5	GMT			N	W	FRIDAY - 10-31-80
	1009	1509	LC		41-12.1	71.01.5	
	1115	1615	LC		41-21.9	70-52.1	DEVILS BR. BUOY #29 ~~0~~ .25 mi Var 0/spd
	1240	1740	UB	ARRIVAL	WN #1 & #2		
	1250	1750	--	DOCKSIDE	WHOI		

APPENDIX II

Smooth Sheets



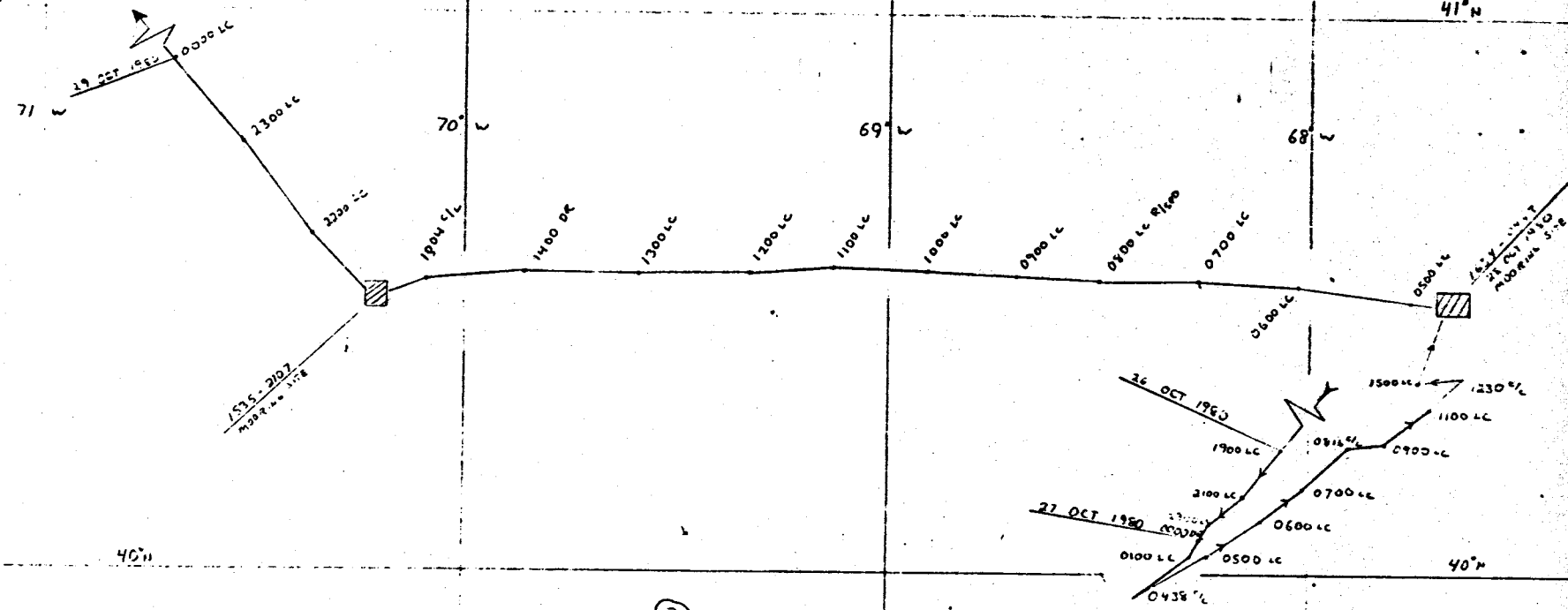
OCEANUS VOYAGE #88 (USGS)

WOODS HOLE TO SEA

BUTMAN

TIME ~ GMT

NPH



②

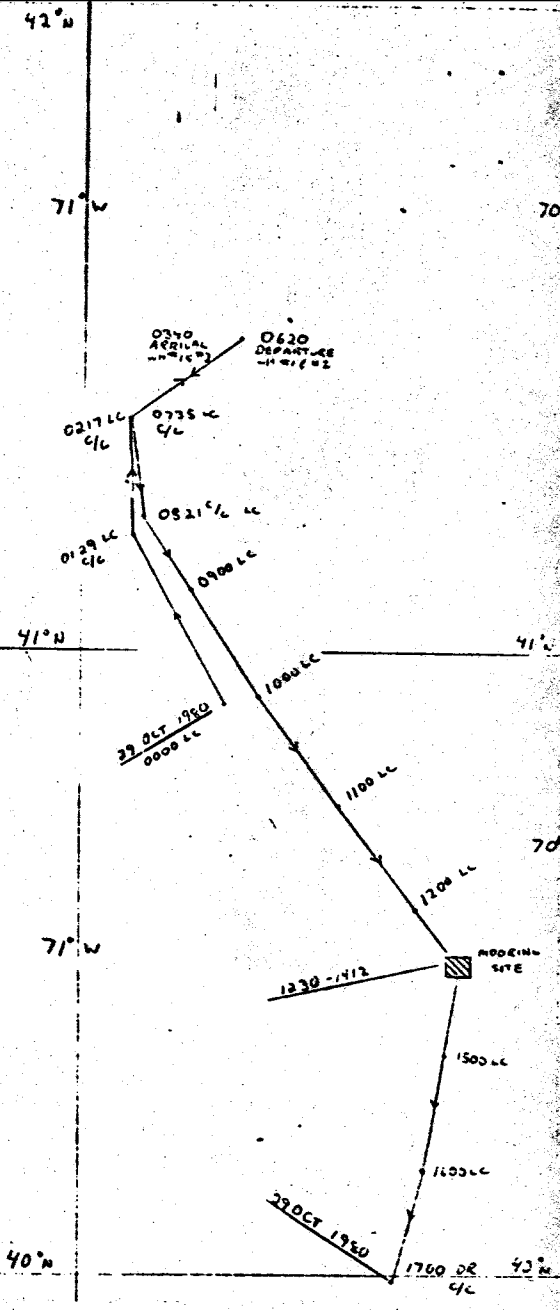
OCEANUS VOYAGE #88 (USGS)

WOODS HOLE ~ SEA

BUTMAN

TIME ~ GMT

HPM



③

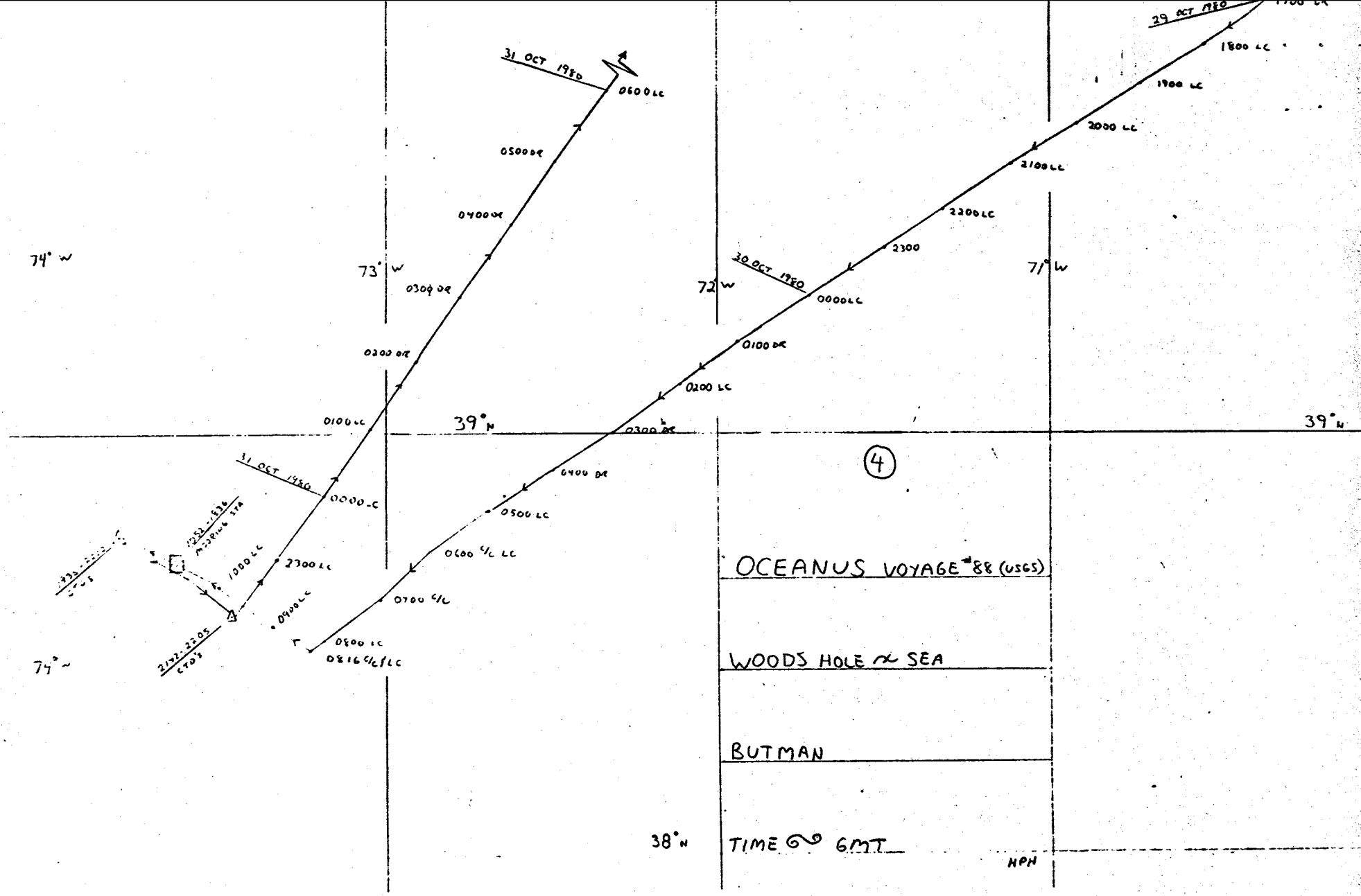
OCEANUS VOYAGE #88 (USGS)

WOODS HOLE ~ SEA

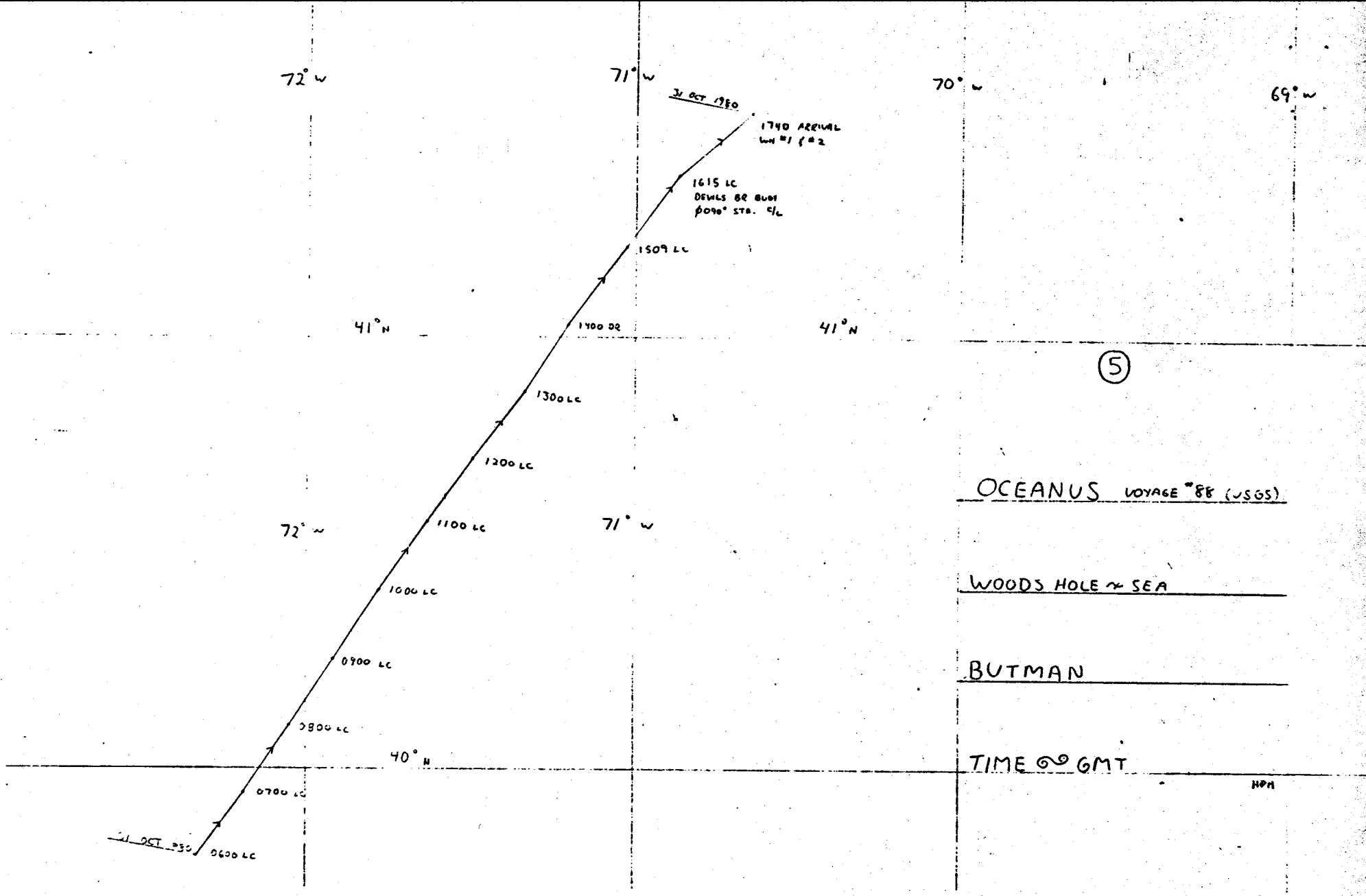
BUTMAN

TIME ~ GMT

HPH



29 OCT 1980
1800 LC
1900 LC
2000 LC
2100 LC
2200 LC
2300
30 OCT 1980
0000 LC
0100 DR
0200 LC
0300 DR
0400 DR
0500 LC
0600 C/C LC
0700 C/C
0800 LC
0816 C/C/LC
31 OCT 1980
0600 LC
0500 DR
0400 DR
0300 DR
0200 DR
0100 LC
0000 LC
2300 LC
0900 LC
1000 LC
74° W
73° W
72° W
71° W
39° N
38° N
74° N
OCEANUS VOYAGE #88 (USGS)
WOODS HOLE ~ SEA
BUTMAN
TIME ~ GMT
HPH


72° W
71° W
70° W
69° W
41° N
40° N
31 OCT 1980
1740 ARRIVAL
WH #1 & #2
1615 LC
DEVILS BR BUOY
090° STB. C/L
1509 LC
1400 DR
1300 LC
1200 LC
1100 LC
1000 LC
0900 LC
0800 LC
0700 LC
0600 LC
31 OCT 1980
5
OCEANUS VOYAGE #88 (USGS)
WOODS HOLE → SEA
BUTMAN
TIME ∞ GMT
HPM

Appendix III

Meteorological Observations

Key to Meteorological Observations

Swell

0 No swell
1 Low, short or average
2 Low, long
3 Moderate, short
4 Moderate, average
5 Moderate, long
6 Heavy, short
7 Heavy, average
8 Heavy, long
9 Confused

Sea height

0 Calm
1 Smooth, less than 1'
2 Slight 1-3'
3 Moderate 3-5
4 Rough 5-8
5 Very Rough 8-12'
6 High 12-20
7 Very high 20-40
8 Mountainous 40 and higher
9 Confused

Weather

b blue skies
bc scattered clouds
d drizzle
f fog
h hail
l lightening
o overcast
c mostly cloudy
p passing rain showers
q squalls
r rain
s snow
t thunder
z haze

Wind

	knots	mph
0	under 1	under 1
1	1-3	1-3
2	4-6	4-7
3	7-10	8-12
4	11-16	13-18
5	17-21	19-24
6	22-27	25-31
7	28-33	32-38
8	34-40	39-46
9	41-47	47-54
10	48-55	55-63
11	36-63	64-72
12	64-71	73-82

OCEANUS-88 WEATHER FROM DECK LOG

YYMMDDHHMM	WIND DIRECTION	WIND BEAUFORT	WIND KNOTS	SEA BEAUFORT	SEA HEIGHT	SWELL DIRECTION	SWELL BEAUFORT	SWELL HEIGHT	BAROMETER	AIR TEMP	WEATHER
8010231200	WNW	4		3		---	---		1033	44	BC
8010231600	WNW	5		4		Nly	3		1033	46	B
8010232000	N	4-5		3		N	1		1033	46	BC
8010240000	Nly	4		3		N	3		1034	50	C
8010240400	Nly	4-5		4		N	3		1033	50	C
8010240800	N	4		4		N	4		1034	48	D
8010241200	NNE	4		3		NNE	1		1034	52	D
8010241600	NE	4		3		NE	1		1034	53	C
8010242000	NExE	3		3		NNE	1		1033	50	BC
8010250000	ENE	4		3		NE	1		1032	---	C
8010250400	ENE	4-5		3		ENE	1		1030	50	C
8010250800	ESE	4-5		3		Ely	1		1028	54	D
8010251200	ESE	4		3		Ely	1		1022	58	D
8010251600	SE	6		6		SE	6		1013	61	DR
8010252000	SE	9-10		6		SE	7		1003	62	DP
8010260000	SSW	5		---		confused			997	---	D
8010260400	SW	6-7		6		confused	9		998	58	D
8010260800	WSW	7-9		6		WSW	6		1002	56	CPQ
8010261200	W/S	6-8		6		WSW	6		1005	51	CP
8010261600	Wly	6-7		6		WxS	6		1008	52	C
8010262000	W	8-9		6		WSW	6		1010	52	D
8010270000	Wly	7-8		6		WSW	6		1012	58	C
8010270400	WxN	7		5-6		WNW	3		1015	54	C
8010270800	WxN	6-7		5-6		WNW	4		1018	54	D
8010271200	W/N	6-7		5		Wly	3		1020	57	C
8010271600	WxN	5		3		Wly	2		1021	54	C
8010272000	Wly	3		3		W	3		1021	54	BC
8010280000	Wly	3		3		W	1		1019	53	BC
8010280400	W	6		4		W	3		1018	54	C
8010280800	WSW	4-5		4		WSW	3		1017	58	D
8010281200	SW	6		4		SW	1		1010	62	D
8010281600	WxS	6-7		5		WxS	6		1009	61	D
8010282000	NW	5-6		4		Wly	3		1009	50	D
8010290000	NW	5		---		---	---		1010	46	D
8010290400	NW	6		3		NW	1		1014	47	BC
8010290800	NW	5		3-4		NW	1		1018	46	C
8010291200	NW	5		4		NW	1		1019	48	D
8010291600	NW	5		3		WNW	1		1021	46	C
8010292000	NW	5		3		NW	1		1023	51	D
8010300000	NW	4		3		NW	1		1024	52	C
8010300400	NW	3		3		NWly	2		1026	56	C
8010300800	NWxN	3		3		NW	1		1027	49	D
8010301200	N	3-4		3		NNW	1		1026	50	D
8010301600	NW	3		2		NW	1		1024	51	D
8010302000	NW	3		2		NW	1		1023	47	BC
8010310000	Wly	2-3		2		NW	1		1022	49	BC
8010310400	lt airs	---		2		---	---		1020	49	BC
8010310800	WSW	4-5		2		WSW	1		1019	52	BC