Cruise Report
R/V OCEANUS #27
8-14 June 1977

Mid-Atlantic OCS Environmental Studies

A Report to Bureau of Land Management

U.S. GEOLOGICAL SURVEY
OFFICE OF MARINE GEOLOGY

Woods Hole, Massachusetts
02543

#7702rpt

Cruise Report

R/V OCEANUS #27

8-14 June 1977

David Twichell, USGS
Woods Hole, Ma. 02543

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Vessel: R/V OCEANUS, Captain Paul C. Howland

Cruise No: R/V OCEANUS #27

Area: Middle Atlantic Continental Shelf, eastern coast of U.S. from New Jersey to Virginia

Ports: Woods Hole, Ma - Woods Hole, Ma

Date: 8 - 14 June 1977

Personnel:

U.S.G.S. (scientists)	D. Twichell	(Chief Scientist)
	T. Bishop	
	D. Eskenasy	
	D. Hutchinson	
	C. Paull	
	S. Pfierman	
U.S.G.S. (technicians)	A. Goodman	
	N. Lefteriou	
	J. McCarthy	
O.R.E. (technician)	J. Cowles	

Naviagation: Loran C - time zone +04

Scientific Equipment:

1. High resolution subbottom and side scanning sonar model 1000 developed by Ocean Research Equipment
   a. Subbottom operated at 3.5 and 5 KH_z
   b. Side scan operated at 97 KH_z
2. Uniboom model 234 by E.C.G.
   a. Operating from 400-4000 H_z

Narrative: (using Greenwich mean time)

8 June	1440	Depart Woods Hole, Ma.
9 June	0522	Deployed side scan - subbottom fish, begin survey #1
	0533	Deployed Uniboom, all gear is streaming
	2118	End survey #1, gear being recorvered
	2130	All gear aboard
10 June	0113	Deployed all gear
	0125	Begin survey #2
	1551	End survey #2
	1800	Begin Survey #3
11 June	0530	End survey #3
	1050	Begin survey #4
12 June	02500	End survey #4
	0900	Begin survey #5
	2320	End survey #5
13 June	0240	Begin survey #6
	1630	End survey #6, all gear being recovered
	2305	Begin survey #7, deploy side scan - subbottom fish
14 June	0315	End survey # 7, fish being recovered
	0330	Fish recovered, steaming toward Woods Hole, Ma
	1451	Arrive Woods Hole, Ma

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Vessel Oceanus

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LORAN LOG

Cruise 27

Date	Time	Sta.	+/-.	Reading	Latitude	Longitude	Remarks
					N	W	
Jun 8	+4	Just	-				
	1050	DEPARTURE - Woods Hole					Buoy #1
	1127	Robinson Hole Buoy				⇔ cl/by	S/C 228°T
		@ 210 - RPM					
	1152	Devils Bridge Buoy				⇔ .9mi	
	1247	1647	R		41-14.8	71-03.8	
	1300	1700	R		41-12.9	71-06.4	
	1400	1800	Y 2	49-685.9 73-204.9			2 STATION OUT L.O.R ONLY
	1412	1812	R	—	41-03.0	71-23.5	308 9.8 BLOCK 1 IS
	1500	1900	Y 2	49-689.0 49-[illegible]	40-56.5	71-32.5	12.7 MILES BLOCK 1 IS 2 STA OUT TOO FAR
	1600	2000	X	35751.2	40°41.6.R	71°44.	1603 C/S 150 RPM [illegible]
	1700	2100	X 2	35790.3 49973.6	40°38.5	71°56.5	
	1800	2200	Z X	69995.2 39034.4	40°30.8	72°06.5	1830 C/S 200°

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LORAN LOG

Date	Time	Sta.	+/-.	Reading	Latitude N	Longitude W	Remarks
6/8	+4	Gmt					
	1900	2300	Z X	70018.4 39188.8	40°22.	72°18.5	
	1945	2345	Z X	70035.0 39308.5	40°15.4	72°2[illegible].3	
	2100	0100	Z X	700625 39504.2	40-04.5	72-43.8	C/C 221
	2200	0200	X Z	39666.9 70092.7	39-54.7	72-55.5	C/C 224
	2300	0300		39827.7 70120.1	39-45.4	73-08	
	2350	0350		39966.1 70145.6	39-37.3	73 18.2	C/C 224
	2330	0330			39-39.956	73-13-836	
	~~0050~~	~~0450~~	~~X Z~~	~~70-171.7 40-130.1~~	~~39-28~~	~~73-32~~	~~HF 0105 [illegible]~~
	~~0130~~	~~0530~~	~~X Z~~	~~70-169.8 40-137.4~~			0059 C/C TO 2[illegible]3 F S/A
	~~0205~~	~~0605~~	~~X Z~~	~~70-16[illegible] 40-158.7~~	~~39-27.5~~	~~73-35~~	
	~~0138~~	~~0538~~	~~[illegible]~~		~~39-27.805~~	~~73-32.44~~	

Vessel Oceanos

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LORAN LOG

Date	Time	Sta.	+/-.	Reading	Latitude	Longitude	Remarks
6/9	++	GMT			N	W	
	0050	0450	2X	70-171.7 40-130.1	39-28	73-32	HT on STA
							0059 C/C 70243T
	0130	0530	2X	70-169.8 40-137.4			S/A One Survey #1
	0205	0605	2X	70-168.7 40158.7	39-27.5	73-35	
	0138	0538	SAT	—	39-27.84	73-32.441	
	0206	0606	SAT	28-3	39.27.233	73-34.676	
	0300	0700	2X	70-167.0 40-197.0	39-26	73-39	
	0345	0745	2X	70-166.0 40-224.7			C/C 70 135
	0352	0752	SAT	46-3	39°24'890	73°41'137	
	0430	0830	2X	70183.6 40219.9	39°23.5	73°38.7	C/C 175°G
	0447	0847	2X	70190.7 40221.3	39°22.4	73°38.3	C/C 064°G
	0508	0908		70191.5 40209.4	39°22.9	73°36.6	C/C 315°C
	0549	0949		70173.9 40205.2	39°25.	73°39	C/C 295°G
	0617	1017		70165.1 40222.3	39°25.9	73°40.1	C/C 135°G

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LORAN LOG

Date	Time	Sta.	+/-.	Reading	N Latitude	W Longitude	Remarks
6/9	+4 GMT						
	0631	1031	Z X	70170.7 46211.0	39° 25.3	73°39.8	c/c to 315°G
	0710	1110	Z X	70154.0 46207.8	39°27.4	73°42.0	c/c 065°C
	0734	1134	Z X	70153.2 46187.1	39°38.2	73°40.4	c/c 135°
	0804	1204	X Z	46184.0 7016.48			
	0821	1221		46182.8 70176.4	39.25.6	73-36.1	c/c 145-G
							0840 c/c 135-G
	0908	1308	Y. Z	51404.6 70188.9	39-24.0	73.33.8	0907 c/c 315-G
	0758	1158	Sat		39.27.103	73.38.088	
	0950	1350		51401.6 70169.4			c/c slowly to rt - 135
	1110	1510		51385.3 70188.1			c/c 064
	1120	1520		51376.7 70187.1	39.25.4	73-31.3	1120 c/c 315
							1135 - c/c 305
	1145	1545		51375.0 7175.3			1145 - c/c 300
	1102	1502	Sat		39.24.745		
	1144	1644	—				c/c TO 063

Vessel Oceanus

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Date	Time	Sta.	+/-.	Reading	Latitude	Longitude	Remarks
	1220	1620	Dat	6^9	39-28.240	73-35.057	1306 c/c TO 125T
							1332 c/c TO 138T
	1318	1718	Dat	12^3	39-29.661	73-34.265	
							1406 c/c 244T
	1409	1809	Y Z	51-357.6 70-173.2	39-28.0	73-32.0	
	1406	1806	Dat	58^3	39-28.011	73-31.460	c/c AT 1406 - 224T
	1436	1836	Dat	15^3	39-27.191	73-33.573	1507 c/c TO 230T
	1502	1902	Dat	85^4	39-26.62	73-33.383	High
	1527	1527	Y Z	51-402.6 70-177.3	39-26.0	73-36.0	
	1605	2005	Y Z	51429.7 70175.0	39°25.	73°38.5	c/c 225°G
	1554	1954	SAT	$27^{\circ\ 3}$	39°35'141	73°37'863	
	1650	2050	SAT	15°	39°33'152	73°41'399	
	1725	2125	Y Z	51486.2 70183.8			1725 GEAR OFF
	1739	2139	Y Z	51496.4 70185.1	39°21.4	73044	1743 c/c 273°C S/A
							END Survey
	1800	2200	Y Z	51548.3 70195.7	39°18.4	73048	

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LORAN LOG

Date	+4 GMT Time	Sta.	+/-.	Reading	N Latitude	W Longitude	Remarks
6/9	1900	2300	Y Z	51712.0 70249.0	39°01.7	72°59.3	
	1945		Y Z	51836.4 70251.3	39° 01.	74° 09.	
	2021			51930.0 70275.7			C/C 218.6
	2056			520350 70303.8			2056 C/C 245
							2102 - C/C 210 - G
	2048	0048	Sat		38-48-991	74-23-662	C/S 2.5 kt stream uni boom and sed. sean.
							SURVEY #2
	2122	0122	Y Z	52059.0 70306.6			C/S 4.0 kt
	2204	0204		52094.3 70320.5	38-44.5	74-26.0	2216 C/C 230-G
	2226			52114.8 70325.7			C/C 210 - G
	2234	0234	Sat		38-42395	74-27661	
	2255	0255	Y Z	52141.1 70334.9	38-41.2	74-28.5	C/C 200
	2328	0328	Y Z	52167.7 70345.7	38-39.0	74-30.6	C/C 313
	2356	0356	Y Z	52169.8 70336.3			C/C 323

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LORAN LOG

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Date	Time (-4)	GMT Sta.	+/-.	Reading	Latitude W	Longitude W	Remarks
June 10	0606	0406	Y2	52-167.8 70-330.0	38-40.5	74-32.5	C/C 029 T
	0034	0434	Y2	52-147.3 70-323.0	38-42.0	74-31.5	C/C 135 T
	0045	0445	Y2	52-147.5 70-327.0			C/C 160 T
	0049	0449	Y2	52-149.5 70-328.9			C/C 135 T
	0107	0507	Y2	52-152.1 70-336.4	38-40.5	74-29.5	C/C 132 T
	0120	0520	Y2	52-153.3 70-341.4			C/C 128 T
	0132	0532	Y2	52-154.1 70-346.6			C/C 124 T
	0202	0602	Y2	52-153.4 70-358.2	38-38.0	74-26.5	C/C 029 T
	0220	0620	Y2	52-141.1 70-353.4			C/C 323 T
	0301	0701	Y2	52-135.8 70-334.1			C/C 318 T
	0238	0638	Sat	-	38-41.047	74-26.298	
	0340	0740	Y2	52-134.9 70-316.9	38-43.5	74-31.0	C/C 029 T
	0408	0508	Y2	52117.3 70310.6	38°44.7	74°29.5	C/C 130° T

0450 0750 Sat 25° 3 38°44.88 74°29.28

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Date	Time +4	Sta. GMT	+/-.	Reading	Latitude N	Longitude W	Remarks
6/10	0450	0850	SAT	15° 3	38°42'315	74°27'431	
	0530	0930	Y Z	52121.9 70349.3	38°40.7	74° 23.2	c/c 029°T
	0604	1004	Y Z	52100.5 70344.4	38°41.5	74° 23.0	c/c 318°T
	0548	0948	SAT	17° 5	38°41'38	74°25'02	
	0645	1045	Y Z	52103.5 70331.9	38°43.0	74° 25.0	0645 c/c 325 c/c 320°T
	0704	1104	Y Z	52102.5 70326.6	38°43.5	74° 26	c/c 325° T
	0735	1135	Y Z	52098.3 70317.1	38°44.6	74° 27.	c/c 330° T
	0754	1154		52096.3 70310.1	38-46.5	74-27.6	c/c 315
							0816 c/c 029-G
	0844			52-081.8 70300.7			c/c 131.0
	0906			52085.8 70312.0			c/c 125°-G
	0915			52087.2 70316.5			c/c 110-G
	0926		Y Z	52087.4 70321.0	38-44.5	74-25.0	c/c 105-G
							0932 c/c 100
	0954			52086.9 70332.1			0954 c/c 252

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Date	Time	Sta.	+/-.	Reading	Latitude	Longitude	Remarks
June	+4	GMT			N	W	
	1008	1408		Y Z	50098.0 70333.0		c/c 265
	1030	1430	Sat		38-41-952	74-27-222	
							1100 c/c 260
	1155	1555	Y Z	52194.3 70330.4	38-39.5	74-35	1154 c/c 210
	1230	1630	Y Z	52-230.6 70-342.2	38-37.0	74-37	c/c 180T
	1245	1645	Y Z	52-244.6 70-350.2			c/c 170T
	1353	1753	Y Z	52-300.9 70-388.2	38-29.7	74-37.7	c/c 180T
	1427	1827	Y Z	52-328.4 70-401.9	38-27.5	74-39	c/c 190T
	1437	1837	R				Boux (c/c 220T) φ 283, RANGE 2.4 MI
	1512	1912	Y Z	52-361.7 70-411.2	38-25	74-41	c/c 209
	1550	1950	Y Z	52-393.8 70-422.7	38-23.0	74-42.5	c/c 309
	1616	2016	Y Z	52400.4 70417.5	38°23.2	74°44.2	c/c 325
	1631	2031	Y Z	52399.3 70411.6	38°24.	74°45.	c/c 335°
	1552	1952	Sat	59°3	38°22'717	74°42°305	

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Date	+4 Time	GMT Sta.	+/-.	Reading	N Latitude	W Longitude	Remarks
6/10	1641	2041	Y Z	52397.1 70407.5	38°24.5	74°45.0	c/c 029°T
	1656	2056	Y Z	52389.7 70405.3			c/c 020°T
	1650	2050	SAT	06°	38°24'488	74°44'589	
	1716	2116	Y Z	52379.7 70407.0	38°25.4	74°44.0	c/c 130°T
	1729	2129	Y Z	52381.6 70409.5	38°24.7	74°43.4	c/c 120°T
	1735	2135		52382.1 70412.6			c/c 115°G
	1817	2217		52379.6 70431.2	38°22.6	74°39.5	c/c 020°T
	1855	2255	Y Z	52-362.7 70-427.0	38-23.5	74-38.5	c/c 325T
	1907	2307	Y Z	52361.8 70427.6	38°24	74°39.2	c/c 315°G
	1954	2354	Sat		38-25-226	74-41-849	
10th	2003	0003		52366.4 70405.8	38-25.6	74-42.1	c/c 325
	2050			52363.7 70389.5			c/c 040-G
	2105			52353.7 70388.8			c/c 029-G
	2112			52349.2 70388.3			c/c 120-G
10	2125	Delaware	Separation	Zone "D" Buoy			cl by c/c 130-G
1'							213 G c/c 120

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Date	Time	Sta.	+/-.	Reading	Latitude	Longitude	Remarks
JUNE	+4	GMT			N	W	
10							2153 C/C 115-C
	2213	0213	Y Z	52351.2 70419.2	38-24.6	74-38.5	2212 C/C 110-C
							2221 C/C 029
	2227			52350.6 70422.7			
	2242	0242		52340.0 70420.3	38-25.0	74-37.0	C/C 325
							2311 C/C 320-C
	2326	0326	Sat	18 4	38-26.564	74-39.144	

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Date	Time	Sta.	+/-.	Reading	Latitude	Longitude	Remarks
JON 11	EST	GMT			N	W	
	0026	0426	Y 2	52-340.4 70-380.0	38-29.2	74-43	C/C 191 T
	0046	0440	Y 2	52-355.5 70-387.9			C/C 180 T
	0125	0525	Y 2	52-400.0 70-418.0	38-23	74-44	C/C 190 T
	0135	0530	Y 2	52-405.9 70-421.6	38-22.5	74-44.2	C/C 131 T
	0152	0552	Y 2	52-410.4 70-433.8			C/C 127 T
	0205	0605	Y 2	52-412.2 70-440.0			C/C 123 T
	0220	0620	Y 2	52-413.3 70-446.9	38-19.6	74-41	C/C 115 T
	0300	0700	Y 2	52-413.3 70-462.0	38-18	74-39	
	0400	0800	Y 2	52 413.1 70 487.9	38°15.5	74°35.	
	0400	0800	SAT	36° 3	38°15'362	74°35'017	
	0440	0840	SAT	54° 3	38°13'442	74°31'744	
	0500	0900	Y 2	52412.7 70513.7	38°13	74°30.5	
	0600	1000	Y 2	52413.0 70540.5	38°10.1	74°25.5	

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Date	+4 Time	GMT Sta.	+/-.	Reading	N Latitude	W Longitude	Remarks
6/11	0652	1052	Y Z	52415.0 70564.6	38°07.5	74°22.2	c/c 205° T
	0626	1026	Sat	15	38°07'24.5	74°24'40.3	
	0726	1126	Y Z	52460.3 70584.0	38°03.6	74°24.8	c/c 215° T
	0754	1154	Sat		38-02-142	74-25-452	
	0804	1204		52489.1 70594.3	38-01.5	74-26.4	c/c 235
	0824			52509.2 70599.4	38		c/c 225
	0846			52532.4 70605.8			c/c 308
							0853 - c/c 300
							0855 - c/c 320
	0902	1302		52535.0 70602.0	37-59.4	74-30.2	c/c 330 - G
							0910 c/c 340 - G
	0948	1348		52530.0 70585.7	38-01.3	74-32.3	0922 c/c 325 - G 0948 c/c 020 - G
	1026	1426		52510.1 70577.9			c/c 125
							1030 c/c 120 1035 c/c 115
	1044	1444		52512.2 70586.5			c/c 110
							1052 c/c 105
	1136	1536	Y Z	52509.5 70604.1	38-00.0	74-26.8	c/c 110 - G
	1157	1657	Y Z	52-508.2 70-611.0			c/c 105 T
	1200	1600	Y Z	52-507.6 70-612.0	37-59	74-25.5	c/c 115 T

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Date	Time	Sta.	+/-.	Reading	Latitude	Longitude	Remarks
	+4	gmt			N	W	
	1220	1620	Y 2	52-506.7 70-618.4			C/C 029 T
	1300	1700	Y 2	52-489.5 70-611.7	37-59.5	74-24	C/C 320 T
	1316	1716	Y 2	52-487.7 70-605.8			C/C 315 T
	1350	1750	Y 2	52-487.5 70-590.8			C/C 311 T
	1409	1809	X 2	52-488.2 70-583.2	38-02.5 T	74-24	C/C 313 T
	1447	1847	Y 2	52-488.1 70-565.7			C/C 029 T
	1504	1904	Y 2	52-477.6 70-560.7			C/C 130 T
	1530	1930	Y 2	52-477.7 70-569.6			
	1541	1941					C/C 127
	1558	1958	Cpt	18° 4	38°03'170	74°26'198	
	1630	2030	Cpt	58° 3	38°01.956	74°27.547	
	1715	2115	Y 2	52475.9 70602.5	38°01.1	74°23.5	C/C 079° T
	1740	2140	Y 2	52457.2 70596.4	38°02.4	74°22.6	C/C 315° T

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Date	+4 GMT Time	Sta.	+/-	Reading	N Latitude	W Longitude	Remarks
6/11	1755	3158					c/c 310° T
	1825	2225	Y Z	52-454.7 70-579.4			c/c 305° T
	1937	2337	Y Z	52458.1 70555.2	38°07.1	74°29.1	c/c 030° T
	2004	0004	Y Z	52443.9 70549.9	38-07.8	74-27.5	c/c 125-C
							2025 c/c 130-C
	2040	0040		52438.5 70565.9	38-06.4	74-25.5	c/c 212
	2044	0044	Sd		38-05-941	74-25-312	
	2100	0100	Y Z	52454.0 70572.7	38-05.0	74-26.0	c/c 235
							2124 c/c 224
	2200	0200	Y Z	52503.2 70586.9	38-02.0	74-29.0	c/c 218
—	2252	0252	Y Z	52649.5 70604.0	37-58.6	74-31.5	c/c 082 —
							2302 c/s 5 kt
	2341	0341	Y Z	52521.2 70614.9	37-58.5	74-26.6	c/c 077
	0000	0400	Y Z	52-508.4 70-617.7	37-58.5	74-25.0	
	0006	0406	Y Z	52-504.1 70-618.1			c/c 060 T

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Date	Time	Sta.	+/-.	Reading	Latitude	Longitude	Remarks
JUN 12	+4	gmt	-		N	W	
	0037	0437	X Z	52-478.7 70-618.7	—	—	c/c 070T
	0115	0515	X Z	52-450.5 70-622.4	37-59.5	74-17.5	
	0200	0600	Y Z	52-418.6 70-625.6	38-00.5	74-13.5	
	0300	0700	Y Z	52-375.7 70-628.9	38-01.5	74-08.0	
	0354	0754	SAT	19° 3	38°02'012	74°03'202	
	0400	0800	Y Z	52329.3 70631.8	38°02.2	74°02.5	
	0430	0830	Y Z	52306.8 70633.7	38°02.5	74°00.	c/c 090° T
	0500	0900	SAT	10° 3	38°01'971	73°57'144	
	0504	0904	Y Z	52290.4 70641.8	38°02.2	73°56.2	c/c 210°T START SURVEY
	0525	0925	Y Z	52312.1 70650.7	38°00.7	73°56.6	c/c 215°T
	0518	0918	SAT	24° 3	38°00'870	73°56'746	
	0545	0945	Y Z	52335.0 70658.5	37°59.2	73°58.4	c/c 230°T
	0627	1027	Y Z	52379.5 70668.0	37°56.5	74°02	c/c 225°T

Vessel OCC. NUS

Cruise 27

LORAN LOG

Page 16

Date	Time +4 GMT	Sta.	+/-	Reading	Latitude N	Longitude W	Remarks
6/12	0646	1046	Y Z	57387.5 70673.4	37°55.3	74°03.5	c/c 015° T
	0712	1112	Y Z	52437.0 70682.6	37°53.4	74°05.	c/c 005° T
	0734	1134	Y Z	52414.0 70674.0	37°54.5	74°06.5	c/c 015° T
	0805	1205	Y Z	52388.7 70661.5	37-57.0	74-04.0	c/c 010
	0826			52372.2 70652.6			c/c 050
							0828 c/c 005
	0835	1235	Y Z	52366.4 70649.5			c/c 084 - c/s 4 kt
	0840	1240	Set		37-58-910	74-03-121	0845 c/c 092 0855 c/c 004
	0914			52349.5 70655.6			c/c 074.6
							0926 c/c 069
	1000			52321.1 70657.3	37-59.4	73-57	
	1009	1409		52318.8 70657.4			c/c 345
							1024 c/c 355
	1045			52303.5 70643.9			c/c 020
	1109			52287.1 70636.5			c/c 010-6
	1148			52261.6 70622.9	38-05	73-56	c/c 000
	1200	1600	Y Z	52-254.2 70-617.8	38-06	73-56.5	

Vessel Oceanus

Cruise 77

LORAN LOG

Page 17

Date	Time	Sta.	+/-.	Reading	Latitude	Longitude	Remarks
	+4	GMT	-		N	W	
	1324	1624	Y2	52-241.7 70-608.6			350 C/C
	1304	1704	Y2	52 224.4 70-592.1			C/C 350
	1328	1728	Y2	52-211.4 70-581.4	38-11.5	73-57	C/C 090 T
	1424	1824	Sat	513	38-11.319	73-53.227	
	1504	1904	Y2	52-168.4 70-594.4	38-11	73-53	C/C 065 T
	1515	1915	Y2	52-159.9 70-593.7			C/C 087 T
	1535	1935	Y2	52-145.2 70-596.4	38-11.8	73-47.5	C/C 000 T
	1559	1959	Y2	52128.5 70586.7	38°13.3	73°047.4	C/C 270° T
	1610	2010	Sat	21° 3	38°13'634	73°48'567	
	1654	2054	Sat	No Fix	38°14'012	73°53'134	
	1708	2108	Sat	211° 3	38°13'999	73°53'944	
	1726	2126	Y2	52176.3 70569.6	38°14.	73°55.7	C/C 000° T
	1743	2143	Y2	52163.0 70560.2	38°15.5	73°55.7	C/C 040° T

Vessel OCEANUS

Cruise 27

LORAN LOG

Page 18

Date	+4 GMT Time	Sta.	+/-.	Reading	N Latitude	W Longitude	Remarks
June 12							1752 c/c 100'
	1832	2232	Y Z	52-134.0 70-571.4	38°15.4	73°50.6	c/c 090
	1917	2317	Y Z	52105.5 70579.[illegible]	38°15.1	73°46.2	c/c 077° T
	1944	2344	Y Z	52079.6 70570.6	38°16.7	73°[illegible].6	c/c 022° T
	1950		Sat		38-17168	73-44-504	
	2026	0026	Y Z	520416 70556.3	38-19.7	73-42.8	c/c 015-G
	2057		Y Z	52014.4 70545.1	38-21.8	73-41.5	c/c 010
	2138		Y Z	51980.5 70530.0	38-24.7	73-40.2	c/c 005
	2226	0226	Sat	7° 7	38-27-713	73-38-916	
	2238		Y Z	51937.9 70509.1	38-28.5	73-39	c/c 065
	2256		Y Z	51927.1 70510.4	38-28.5	73-37.7	c/c 055

Vessel Oceanus

Cruise 7127

LORAN LOG

Date	Time	Sta.	+/-.	Reading	Latitude	Longitude	Remarks
	+4	gmt			N	W	
	0003	0403	Y2	51-887.0 70-509.7	38-30	73-34	
	0038	0438	Y2	51-865.1 70-507.7			C/C 060
	0118	0518	Y2	51-841.7 70-506.8	38-31.5	73-29	C/C 030T
	0200	0600	Y2	51-813.4 70-497.3			C/C 210 T
	0222	0622	Sat	513	38-32.586	73-27.199	
	0322	0722	Y2	51-860.0 70-516.0			C/C 030 T
	0302	0702	Sat	443	38-30-575	73-28,980	
	0405	0805	Y2	51845.1 70513.7	38°31.5	73°29.5	C/C 045° T
	0517	0917	Y2	51802.0 70500.0	38°33.7	73°25.7	C/S 3 KTS C/C to 210° T
	0558	0958	SAT	10° 03	38°30'.51	73°26'.097	060 C/C 5 KTS
	0616	1016	Y2	51844.5 70530.4	38°29.7	73°26.8	C/C 210° T
	0718	1118	Y2	51851.0 70459.5	38°33.3	73°33.7	C/C 225° T
	0758			51879.9 70492.7	38·32.2	73-35.5	C/C 130

Vessel OCEANUS

Cruise 27

LORAN LOG

June +4 Date	Time	GMT ~~Sta.~~	+/-	Reading	N Latitude	W Longitude	Remarks
13	0811			51881.5 70496.8	38-30.4	73-35.0	c/c 104
	0826			51876.4 70503.1			c/c 110
	0841			51874.0 70508.1	70-30.5	73-32.5	c/c 230
							0901 c/c 315
	0907			51896.5 70509.3	38-29.6	73-34.5	
	0911			51896.3 70507.8	38-30	73-35.0	c/c 331
	0926			51892.3 70500.4	38-31	73-36.5	c/c 325
	0936			51890.0 70495.0			c/c 300
	0950			51890.4 70489.5	38-32.2	73-37.5	c/c 253
	1027			51860.8 70489.5			c/c 053
	1057			51839.4 70486.8	38-34.2	73-32.0	c/c 100
	1114			51830.2 70493.5			c/c 110
	1128			51828.3 70496.6			c/c 120
	1200			51827.2 70508.4	38-31.8	73-27.0	

Vessel Oceanus

Cruise 27

LORAN LOG

Page 21

Date	Time	Sta.	+/-.	Reading	Latitude	Longitude	Remarks
6/13	+4	gmT	-	-	N	W	
	1235	1635	Y Z	51-826.4 70-520.1	38-31	73-25	END STA C/L 043 f/a
	1330	1730	Y Z	51-704.8 70-494.0	38-37.2	73-16	
	1308	1708	Sat	50³	38-36.216	73-24.694	wrong time
	1400	1800	Y Z	51-619.3 70-476.4	38-42.4	73-09.5	
	1334	1734	Sat	24³	38-39-174	73-10-940	??
	1500	1900	Y Z	51-448.1 70-439.7	38-52	72-58	
—	1600	2000	Y Z	51270.1 70397.4	39°03.3	72°45.2	
	1700	2100	Y Z	51093.0 70356.1	39°13.9	72°33.0	
	1710	2110	Sat	No Fim	39°18'020	72°34'984	
	1750	2150	Sat	08 04	39°24'111	72°18'255	1755 c/s to 5 kts
	1800	2200	Y Z				
	1900	2300	Y Z	50863.7 70309.1	39°27.5	72°16.6	1903 c/c 020 T 1900 c/s f/A
6/13	1919	2315	Y Z	50823.1 70295.1	39°30.5	72°14.4	c/s 2 kts 1925 launched Beall

Vessel OCEANUS

Cruise 21

LORAN LOG

Page 22

Date	Time +4 GMT	Sta.	+/-	Reading	Latitude N	Longitude W	Remarks
6/13	1935	2		50818.2 70793.3	39°20.5	72°13.7	1939 c/s 375T°
	2055			50757.7 70271.3	39-36	72-12.0	Slow c/c 257
	2204			50814.1 70267.6	39-34.4	72-18.8	Slower c/c 095
	2328			50781.1 70287.2	39-33.0	72-11.5	all seismic gear aboard c/c 028.6 @ 200 RPM

Vessel Oceanus

Cruise AZ7

LORAN LOG

Page

Date	Time	Sta.	+/-.	Reading	Latitude	Longitude	Remarks
	tu	gmt			N	W	
	0100	0500	Y Z	50-536.0 70-215.0	39-50.5	71-58.5	
	0200	0600	Y Z	50-386.0 70-171.4	40-02.0	71-50.5	
	0303	0703	Y Z	50-255.4 70-126.1	40-12.5	71-44.5	
	0400	0800	Y Z	50080.1 70085.8	40°24.5	71°33.7	
			SAT				WRONG TIME
	0500	0900	Y Z	49929.5 70043.7	40°35.6	71°25.3	0505 c/c 024°T
	0600	1000	Y Z	49790.0 69997.2	40°47.3	71°18.5	
	0700	1100	Y Z	49656.0 69950.1	40°55.5	71°12	c/c 026°T
	0745	1145	Y Z	49562.0 69916.6	41°01.5	71°06.7	
	0800			495185 69901.5			
	0850	1250			41-20.0	70-58.3	c/c 049.
	0900	V/c	2 Sed - down Vineyard Sound				
	0920	Vineyard Sound "NA" Buoy ← .5 mi					
	1020	ARRIVAL	Woods Hole Buoy #1				

Operational Summary
R/V OCEANUS #27
8-14 June 1977

Loran C fixes with latitude and longitude for start and finish of each Survey

Survey #	Latitude	Longitude	Loran C Nova Scotia	Loran C Dana
1	39°28.5'N	73°33.0'W	40138.1	70169.7
	39°22.7'N	73°43.0'W	51475.9	70182.3
			Nantucket	Dana
2	38°47.5'N	74°24.5'W	52061.2	70328.5
	38°40.0'N	74°33.0'W	52190.7	70330.0
3	38°29.5'N	74°38.0'W	52308.8	70392.1
	38°22.5'N	74°44.2'W	52406.1	70421.5
4	38°17.2'N	74°23'W	52414.7	70559.5
	37°58.5'N	74°31.7'W	52548.2	70603.4
5	38°25.0'N	73°57.0'W	52291.4	70641.3
	38°15.0'N	73°46.5'W	52100.8	70578.0
6	38°28.5'N	73°39.0'W	51939.0	70509.6
	38°31.0'N	73°25.0'W	51826.5	70519.2
7	39°28.5'N	72°16.5'W	51024.1	70341.5
	39°33.2'N	72°13.2'W	50787.2	70284.6

Survey #	Date and time of Survey (Grenwich Mean) Beginning	End	Time Spent Hrs: Mins.	Survey Length (km)	Location Description
1	6/9 0522	6/9 2118	15:56	99.9	∿65 km off the coast of N.J
2	6/10 0113	6/10 1551	14:38	103.6	off mouth of Delaware Bay
link			2:09	21.3	∿32 km off the coast by
3	6/10 1800	6/11 0530	11.30	82.3	the Delaware-Maryland
link			5:20	42.6	Border
4	6/11 1050	6/12 0250	16:00	107.3	∿74 km off the coast by the
link			6:10	52.7	Maryland-Virginia Border
5	6/12 0900	6/12 2320	14:20	115.6	Baltimore Canyon & Area
link			3:20	27.8	south
6	6/13 0240	6/13 1630	13:50	98.1	Wilmington Canyon
7	6/13 2305	6/14 0315	4:10	34.2	Hudson Canyon

Totals:

I. Total time spent on surveys - 90 hrs. 24 mins.
II. Total time spent on links - 16 hrs. 59 mins.
III. Total time gear was in tow - 107 hrs. 23 mins.
IV. Total distance gear was in tow - 788.35 km
V. Total distance traveled without gear in tow - 752.20 km
VI. Total distance of cruise - 1540.55 km
VII. Total time of cruise - 6 days, 0 hrs. 11 mins.

Table 1. Recorder Schedule

Date (Greenwich mean time) and Comments		Subbottom	Sidescan	Uniboom
June 8, 1977				
start voyage.....	1645			
June 9, 1977				
gear is in.....	0522	X	X	X (0515)
pull out to go to next survey area....	2118	0	0	0
June 10, 1977				
	0113	X	X	X (0120)
	1508	X	X	0
	1650	X	X	X
June 11, 1977				
	1052	D	X	X
	1140	0	X	X
	1200	0	0	0
	1255	X	X	0
	1333	X	0	0
	1413	X	X	0
	1651	X	X	X
	1737	X	X	D
	1804	X	X	X
June 12, 1977	0310	0	X	X
	1200	0	X	X
	1210	X	X	X
	1330	X	X	0
	1800	X	X	X
	1820	X	0 (too deep)	X
	1913	X	X	X
June 13, 1977	0138	X	X	0
	0158	X	X	X
	1556	X	X	0 (out of paper
pull out for	1625	0 (out of paper)	X	0
cruise to site #7 Hudson Canyon	1630	0	0	0

Legend

X = recorder working properly
0 = recorder out
D = difficulties with record

Table 2.

Date	Total Run distance of gear streamed (km)	Subbottom	Sidescan	Uniboom
6/8	0	0	0	0
6/9	98.05	98.05	98.05	98.05
6/10	166.50	166.50	166.50	151.70
6/11	172.05	153.50	159.10	99.90
6/12	188.70	86.95	183.15	185.00
6/13	116.55	116.55	116.55	109.15
6/13 & 14 03212-03152 (Hudson Canyon-Survey #7)	37.00	37.00	37.00	0

Discussion

The purpose of the cruise was to survey seven areas on the Middle Atlantic shelf to map sand waves or any other bedforms indicative of significant sediment movement. Four of the surveys were on the middle shelf, and the remaining three were conducted around the heads of Baltimore, Wilmington, and Hudson Canyons.

A combined high resolution subbottom (3.5-7 KHz frequency) and side scanning sonar system, developed by Ocean Research Equipment, was used for these surveys. The side scan records outlined the presence and distribution of bottom features, and the high resolution subbottom results helped define their internal structures. A deeper penetration seismic system, the Uniboom, was also used to define the deeper substrate of the continental shelf.

Generally, the equipment worked well, and excepting the first two days the weather was calm. We completed six of the seven surveys, but only spent about three hours on the seventh at Hudson Canyon because of a lack of time. The side scan subbottom system was used for all of the surveys, and was not limited by the weather conditions we encountered. Mainly because of weather, record quality was not as good during the first two days because of the rough seas. The equipment was reliable except for one recorder, supplied by ORE, which we had to replace with the spare USGS recorder.

The results we obtained were good. After only a brief and incomplete analysis of the records it seems unlikely, with the exception of the Wilmington Canyon area, that any of the survey areas have well developed sand waves in them. Off Delaware Bay a number of patches of different textured sea floor were crossed, and in other areas ripples were apparent on the side scan records. Ripples were by no means continuous over the entire shelf. A man-made feature seen extensively on the shelf surface were trawl markings.

In summary,the only area with well developed, large assymetry sand waves was located near the head of Wilmington Canyon. The distribution and internal character of these waves were well documented.

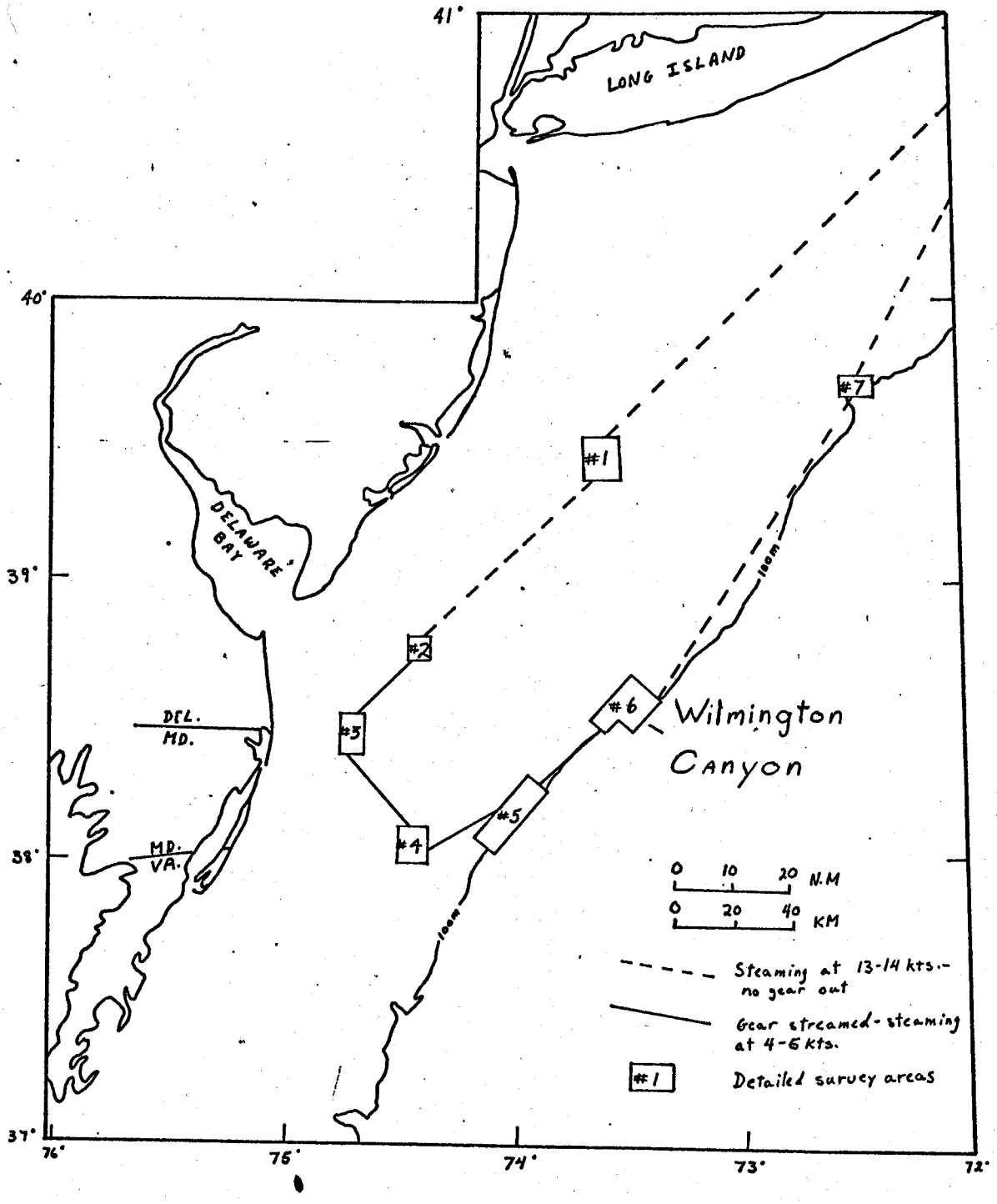

41°
LONG ISLAND
40°
DELAWARE BAY
39°
DEL.
MD.
MD.
VA.
38°
37°
76°
75°
74°
73°
72°
#1
#2
#3
#4
#5
#6
#7
Wilmington
Canyon
100m
100m
0 10 20 N.M
0 20 40 KM
Steaming at 13-14 kts.- no gear out
Gear streamed - steaming at 4-6 kts.
#1 Detailed survey areas

Fig. 1

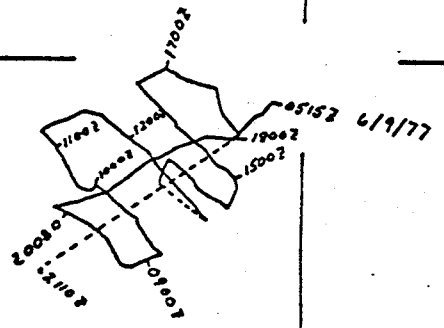
73°30'

73°

72°30'

39°30'

SURVEY #1



SURVEY #7

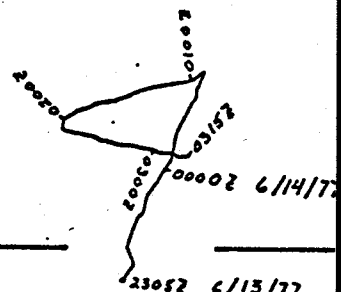


Fig. 2

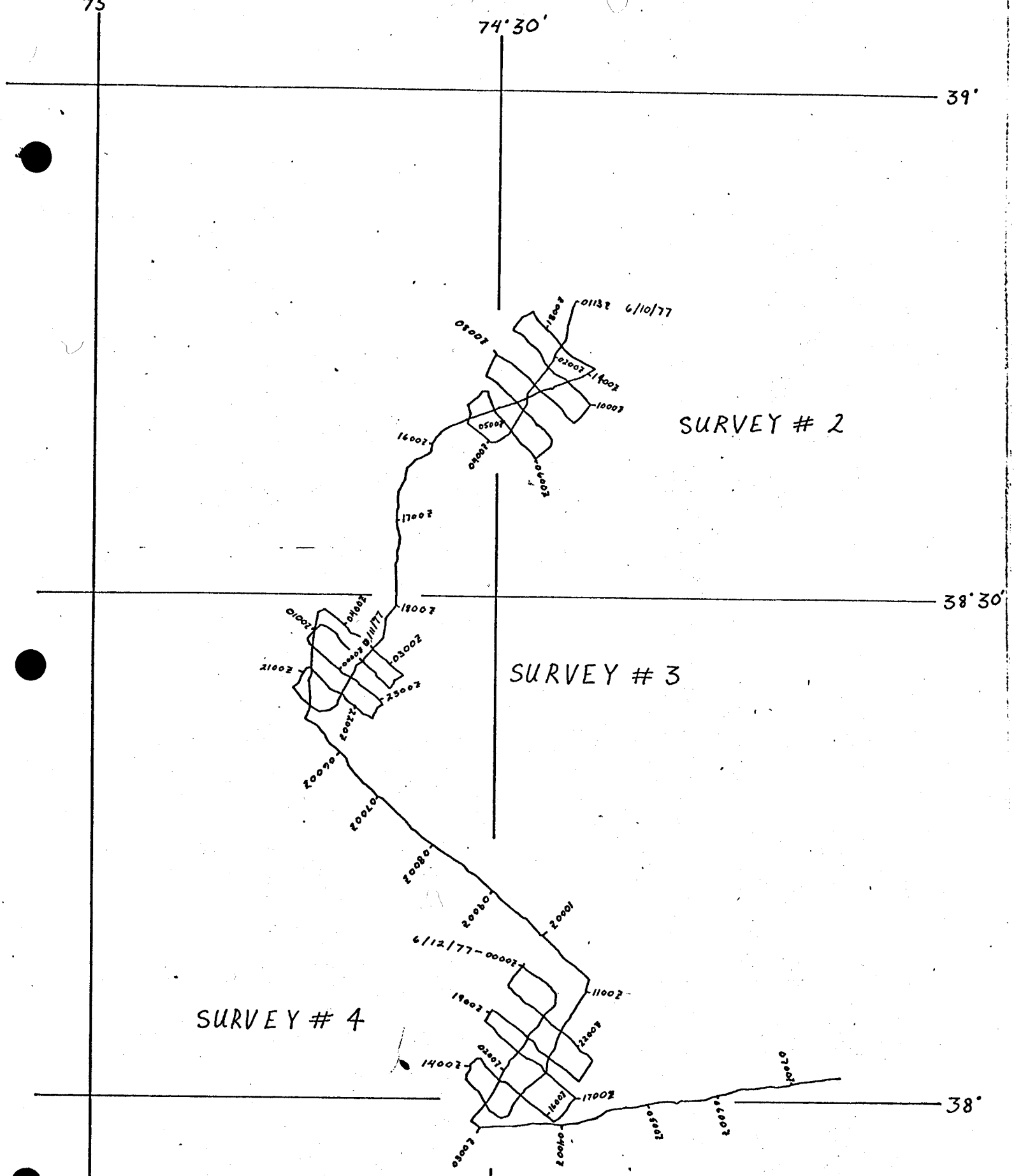

73
74°30'
39°
38°30'
38°
SURVEY # 2
SURVEY # 3
SURVEY # 4
6/10/77
8/11/77
6/12/77

Fig. 3

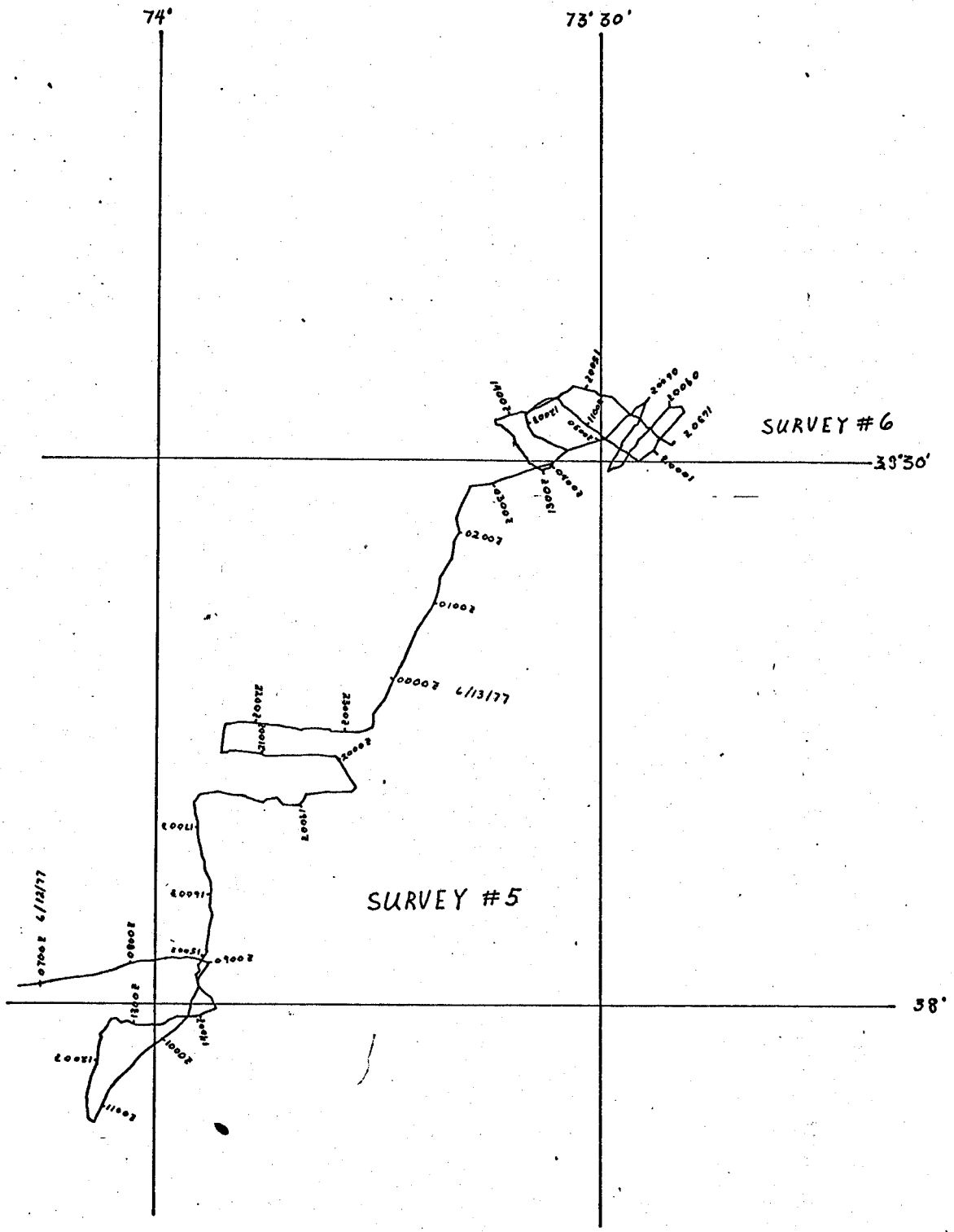


Fig. 4