79002

Cruise Report

OCEANUS 56

6-15 March 1979

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

Vessel: OCEANUS, Cruise 56

Area of Operations: Georges Bank and Mid-Atlantic Shelf

Dates: Depart Woods Hole 1100 6 March 1979

Arrive Woods Hole 1200 15 March 1979

Personnel:

Paul Howland, Master
Nick Lefteriou, USGS
Marlene Noble, USGS
David Twichell, USGS
Polly Shoukimas, USGS
Cindy Bryden, USGS

Brad Butman, Chief Scientist, USGS
Rick Rendigs, USGS
Stephanie Pfirman, USGS
Allen Hemberger, USGS
Chuck Stelting, USGS (Corpus Christi)
John West, USGS (Corpus Christi)

Andy Eliason, Eliason Data Services

Equipment:

Navigation: Northstar Loran C 6000
Conductivity-Temperature-Depth (CTD): PLESSEY
Grab Sampler: Smith-MacIntyre

Objectives:

The OCEANUS cruise was part of a continuing study of currents and sediment transport on the United States East Coast Continental Shelf. The purpose of the cruise was to:

1. Recover 5 tripod systems
2. Recover 5 current moorings (8 instruments)
3. Deploy 3 tripod systems
4. Deploy 3 current moorings (7 instruments)
5. Repair, replace, and deploy surface marker buoys and lights as necessary
6. Obtain gravity cores from 'mud patch' region south of Martha's Vineyard
7. Conduct hydrographic observations (temperature and salinity)

Narrative:

6 March	1100	Depart Woods Hole
		Underway to Station P
		XBT cross-shelf
	1600	Arrive Station P
		Recover subsurface mooring 167
		Recover tripod 166
		Recover surface buoy and chain
7 March		Coring at Station P
	0100	Start XBT and CTD cross-shelf transect (mud patch)
	0530	Complete transect
		Arrive Station Q
	0830	Set surface buoys
		Deploy tripod system 170
		Deploy current mooring 171
		Recover surface buoy at Station P
	1900	Underway along shelf, XBT and CTD
8 March	0645	Complete along shelf transect
	1030	Start cross-shelf transect (New Jersey)
	1140	Arrive Station D
	1215	Tripod would not enable
		Start search
	1600	Search unsuccessful; return to buoy to start side-scan search
	2200	Grapple tripod
		Recover tripod
		Recover surface buoy
		Grab sample
9 March	0100	Underway, CTD and XBT transect
		Arrive at Station B

	0845	Grab sample
		Set surface buoys
		Recover tripod 158
		Recover subsurface current meter 165
		Deploy tripod 168
		Deploy subsurface current meter 172
9 March		Deploy surface current meter 172
		Set surface buoys
	1630	Underway to Georges Bank
10 March	1620	Arrive at Station K
		Buoy P with current meter missing (mooring 161)
		Subsurface current meter (161) is 5 miles away (tilted)
	1720	Recover tripod 156
		Deploy tripod 169
	1845	Underway to Station A
		Arrive Station A
	2045	Recover subsurface current meter 160
		Recover tripod 155
11 March	0030	Return to Woods Hole
		(Drop off Rick Rendigs—injured)
	1400	Depart Woods Hole—offloaded 5 tripods
	1730	Start XBT transect across Great South Channel and Georges Bank
12 March	0900	Arrive Station L
		12'-16' seas
		Side-scan at Station L
	1830	Side-scan 8 miles west of Station L
13 March	0335	Complete side-scan
	0600	Start CTD and XBT transect across Station L
	0730	Complete transect

	0800	Arrive Station L
		Recover subsurface current meter 163
		Recover surface buoys
	1135	Underway to Station K
		XBT, along shelf section
		Arrive Station K
	1830	Set surface buoys
		Deploy subsurface current meter 173
		Underway to Station A
	2120	Recover surface buoys
		Surface buoy E is missing
		Grab sample
		Side-scan
14 March	0345	Complete side-scan
	0640	Start CTD and XBT transect across shelf
	0735	Arrive at Station K
	0910	Set surface buoy L
		Dragged to new position
		Tripod 169 tilted—no release
		Subsurface current meter 173 does not respond
	1140	Retrieve surface buoy L
		Side-scan malfunction
	1450	Start grapple
	1930	Tripod and subsurface current meter on grappling hook
		Released anchor off subsurface current meter at surface
		Recover tripod 169
		Recover subsurface current meter 173
	2235	Locate subsurface current meter 161, 4 ½ miles SW Station K
		Underway to Woods Hole
		XBT and CTD across Great South Channel

15 March	0600	Complete hydrographic survey
	1200	Arrive Woods Hole

Tabulated Information:

a. Days at Sea: 10

b. Instrumentation Recovered: 11

Area	Type	Mooring	Latitude	Longitude	Station
GB	T	166	40°29.4'N	70°30.4'W	P
GB	CM,TR	167	40°29.1'N	70°30.4'W	P
MA	T	159	38°58.8'N	74°02.2'W	D
MA	T	158	38°43.4'N	73°38.1'W	B
MA	CM(2)	165	38°43.3'N	73°37.8'W	B
GB	T	156	41°02.2'N	67°33.5'W	K
GB	T	155	40°51.2'N	67°24.2'W	A
GB	CM(2)	160	40°48.7'N	67°21.7'W	A
GB	CM	163	41°41.8'N	66°36.2'W	L
GB	T	169	41°02.5'N	67°34.2'W	K
GB	CM(2),TR	173	41°02.5'N	67°33.9'W	K

c. Instrumentation Deployed: 6

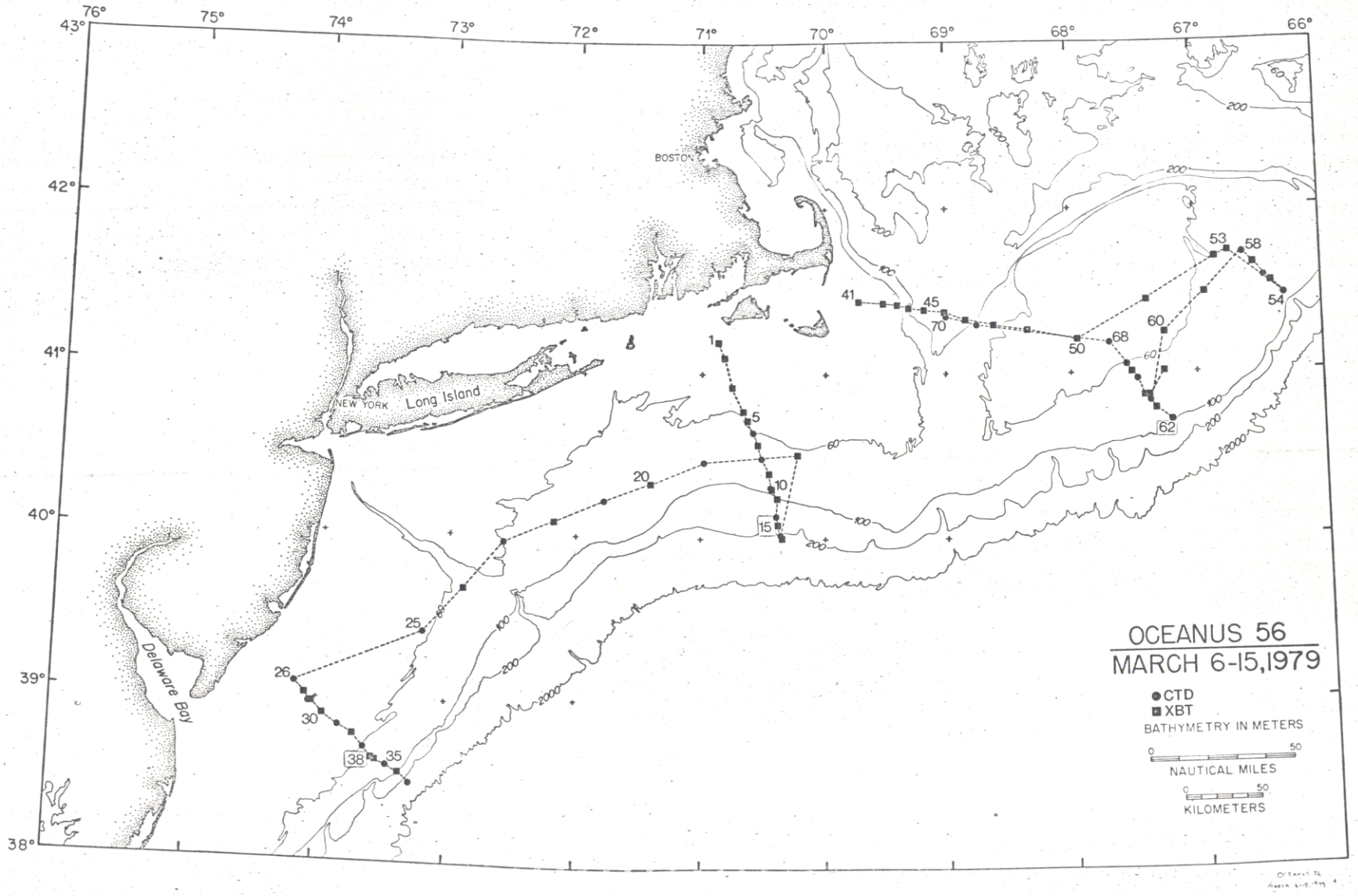
Area	Type	Mooring	Latitude	Longitude	Station
GB	T	170	40°29.9'N	70°13.0'W	Q
GB	CM(3),TR	171	40°29.8'N	70°12.6'W	Q
MA	T	168	38°42.5'N	73°39.3'W	B
MA	CM(2)	172	38°42.6'N	73°39.5'W	B
GB	T	169	41°02.5'N	67°34.2'W	K
GB	CM(2),TR	173	41°02.5'N	67°33.9'W	K

d. Other:

Area	Type	Mooring	Latitude	Longitude	Station
GB	CM	161	missing	missing	K
GB	CM,T	161	~41°03'N	~67°40'W	K

e. Stations:

XBT	46
CTD	25
Surface salinity	68
Surface grab samples	4
Gravity cores	2
Side-scan surveys	4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BOSTON
NEW YORK
Long Island
Delaware Bay
OCEANUS 56
MARCH 6-15,1979
CTD
XBT
BATHYMETRY IN METERS
0 50
NAUTICAL MILES
0 50
KILOMETERS

APPENDIX I

Surface Sample List

Sample No.	Depth (m)	Latitude	Longitude	Date	Time	Type	Station
4734	73	40°29.4'N	76°30.4'W	3/06/79	2035	Off Tripod foot	GB-P
4735	73	~40°29.3'N	~70°30.4'W	3/07/79	0045	Core	GB-P
4736	66	40°29.9'N	70°13.0'W		1100	Core	GB-Q
4737	43	38°58.4'N	74°02.4'W	3/09/79	0050	Grab	MA-D
4738	61	38°43.5'N	73°38.3'W		0845	Grab	MA-B
4739	92	40°49.7'N	67°23.2'W	3/13/79	2330	Grab	GB-A
4740	65	41°02.5'N	67°32.8'W	3/28/79	1055	Grab	GB-K

APPENDIX II

OCEANUS 56 Hydrographic Station List

Station No.	Depth (m)	Latitude	Longitude	XBT	CTD	Surface Salinity	Date	Time
1	23	41°11.6'N	70°52.3'W	X		X	3/06/79	1315
2	38	41°06.0'N	70°49.7'W	X		X		1350
3	52	40°56.6'N	70°45.0'W	X		X		1444
4	61	40°46.1'N	70°39.9'W	X		X		1535
5	61	40°42.4'N	70°38.0'W	X		X		1602
6	61	40°38.6'N	70°35.0'W	X	X	X		1646
7	68	40°34.3'N	70°32.7'W	X		X		1725
8	83	40°29.3'N	70°30.4'W		X	X		1937
9	83	40°23.9'N	70°27.0'W	X		X	3/07/79	0125
10-11	97	40°18.8'N	70°26.7'W		X			0154
12	97	40°18.6'N	70°26.0'W	X		X		0232
13	102	40°15.0'N	70°23.6'W	X		X		0255
14	110	40°08.8'N	70°23.4'W	X	X	X		0334
15	163	40°05.0'N	70°22.7'W	X		X		0421
16	198	40°02.4'N	70°21.6'W		X	X		0443
17	249	40°00.8'N	70°21.5'W	X		X		0535
18	67	40°30.8'N	70°13.4'W	X		X		1431
19	83	40°28.0'N	70°59.0'W		X	X		1904
20	83	40°19.8'N	70°24.4'W	X		X		2050
21	81	40°13.0'N	71°46.4'W		X	X		2219
22	73	40°05.9'N	72°10.8'W	X		X	3/08/79	0056
23	63	39°57.4'N	72°34.8'W		X	X		0245
24	68	39°40.4'N	72°54.4'W	X		X		0505
25	59	39°24.2'N	73°11.3'W		X	X		0642
26	27	39°05.9'N	74°10.6'W		X	X		1035

Appendix II (continued)

Station No.	Depth (m)	Latitude	Longitude	XBT	CTD	Surface Salinity	Date	Time
27	39	39°01.2'N	74°05.5'W	X		X		1115
28	43	38°58.6'N	74°02.4'W		X	X		1145
29	43	38°58.6'N	74°02.5'W	X		X		1250
30	40	38°54.5'N	73°56.9'W	X		X	3/09/79	0130
31	44	38°51.0'N	73°49.1'W		X	X		0208
32	50	38°47.9'N	73°42.2'W	X		X		0302
33	63	38°42.9'N	73°37.9'W		X	X		0330
34	69	38°39.0'N	73°32.0'W	X		X		0422
35	82	38°36.3'N	73°26.4'W		X	X		0454
36	115	38°33.4'N	73°21.0'W	X		X		0532
37	278	38°29.7'N	73°15.7'W		X	X		0603
38	71	38°38.6'N	73°30.4'W	X		X		0731
39	85	40°51.1'N	67°23.0'W	X		X	3/10/79	2330
40	72	41°59.8'N	67°15.2'W	X		X	3/11/79	0027
41	23	41°26.3'N	69°43.3'W	X		X		1731
42	35	41°25.1'N	69°31.6'W	X		X		1813
43	43	41°24.5'N	69°25.0'W	X		X		1837
44	107	41°23.5'N	69°18.2'W	X		X		1901
45	154	41°22.7'N	69°10.8'W	X		X		1930
46	153	41°21.9'N	69°00.7'W	X		X		2105
47	122	41°19.6'N	68°50.3'W	X		X		2145
48	70	41°17.2'N	68°36.8'W	X		X		2235
49	55	41°15.9'N	68°20.1'W	X		X		2330
50	51	41°12.5'N	67°56.9'W	X		X	3/12/79	0046
51	45	41°25.7'N	67°23.3'W	X		X		0326
52	68	41°41.6'N	66°50.6'W	X		X		0629

Appendix II (continued)

Station No.	Depth (m)	Latitude	Longitude	XBT	CTD	Surface Salinity	Date	Time
53	65	41°43.1'N	66°43.5'W	X		X		0703
54	96	41°27.2'N	66°17.8'W		X	X	3/13/79	0447
55	92	41°31.2'N	66°23.1'W	X		X		0536
56	89	41°33.8'N	66°26.5'W		X	X		0609
57	75	41°38.5'N	66°31.9'W	X		X		0700
58	70	41°42.0'N	66°36.4'W		X	X		0733
59	68	41°28.2'N	66°55.4'W	X		X		1307
60	51	41°14.8'N	67°15.4'W	X		X		1438
61	89	40°50.0'N	67°22.9'W		X	X		2335
62	101	40°42.9'N	67°12.2'W		X	X	3/14/79	0432
63	96	40°46.8'N	67°20.0'W	X		X		0507
64	87	40°51.0'N	67°24.1'W	X		X		0601
65	74	40°57.6'N	67°28.9'W		X	X		0641
66	70	40°59.6'N	67°31.0'W	X		X		0703
67	65	40°02.8'N	67°33.7'W		X	X		0728
68	51	41°10.6'N	67°41.5'W		X	X		2337
69	87	41°17.6'N	68°45.5'W		X	X	3/15/79	0437
70	155	41°20.1'N	69°00.5'W		X	X		0600

APPENDIX III

Side-Scan Surveys

Four areas on the Middle Atlantic and North Atlantic continental shelves were studied using side-scan sonar and echo sounding techniques. These 4 areas were surveyed to map the types of bed forms present as well as their orientation and amplitude. At Side D on the Mid-Atlantic Shelf the side-scan sonar was also successfully used to locate a lost tripod.

The equipment used included a Klein side-scan sonar set to scan 100 m to each side and a 12 kHz echo sounder. Table 1 lists the time spent and the amount of data collected. Figures 1 through 4 show the ship tracks. Data collected at Sites A and D are of good quality while the data from the other two survey areas is of poorer quality due to the much rougher seas.

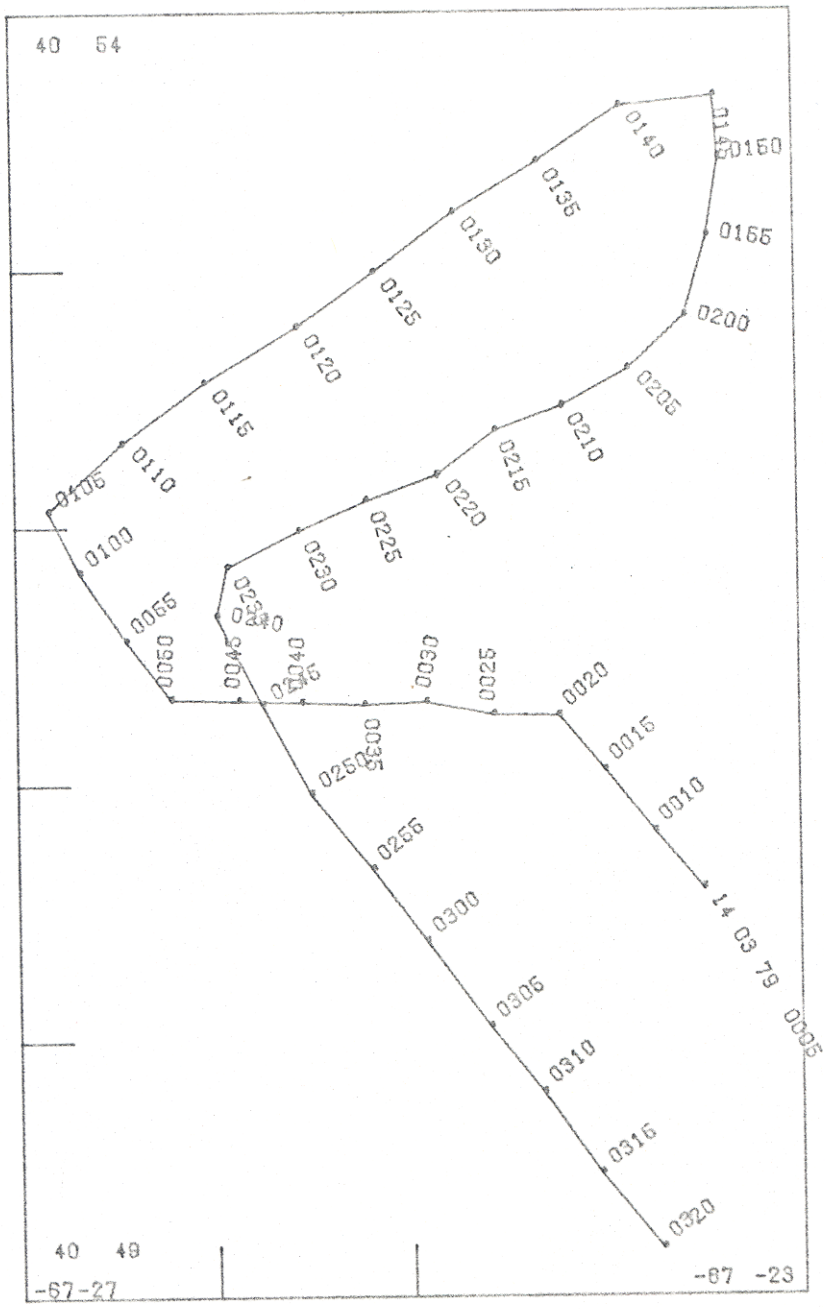
A preliminary study of the data shows that sand waves, megaripples, trawl marks, and featureless sea floor were recorded by the side-scan sonar. Site D on the Middle Atlantic Shelf had a smooth featurelsss bottom. On Georges Bank, Site A was an area having a smooth featureless sea floor which was frequently cut by trawl marks. Site L and the area surveyed west of Site L both showed megaripples to be nearly ubiquitous on the records while sand waves were less frequent and mostly found in the shallower parts of these areas. Trawl marks were not seen in these two areas.

OCEANUS 56

Amount of Side-Scan Sonar and 12 kHz Echo Sounding Profiles Collected

Survey Area	Time Spent	Km of Data Collected
Site D	1 hr. 8 min.	4.3 km
Site L	7 hrs. 27 min.	46.3 km
West of Site L	8 hrs. 24 min.	71.7 km
Site A	3 hrs. 15 min.	22.8 km
Totals	20 hrs. 14 min.	145.1 km

Site A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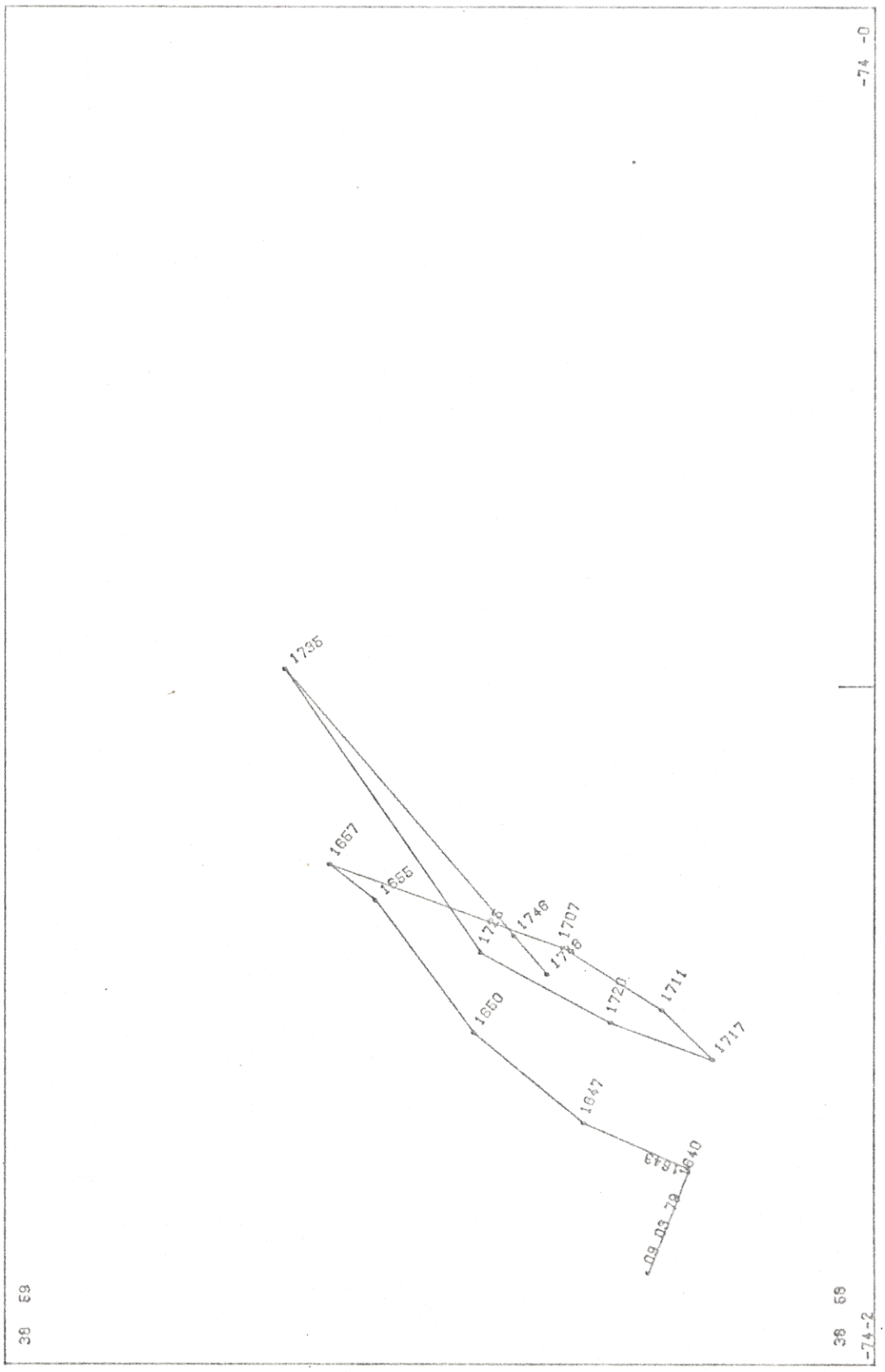
Site D



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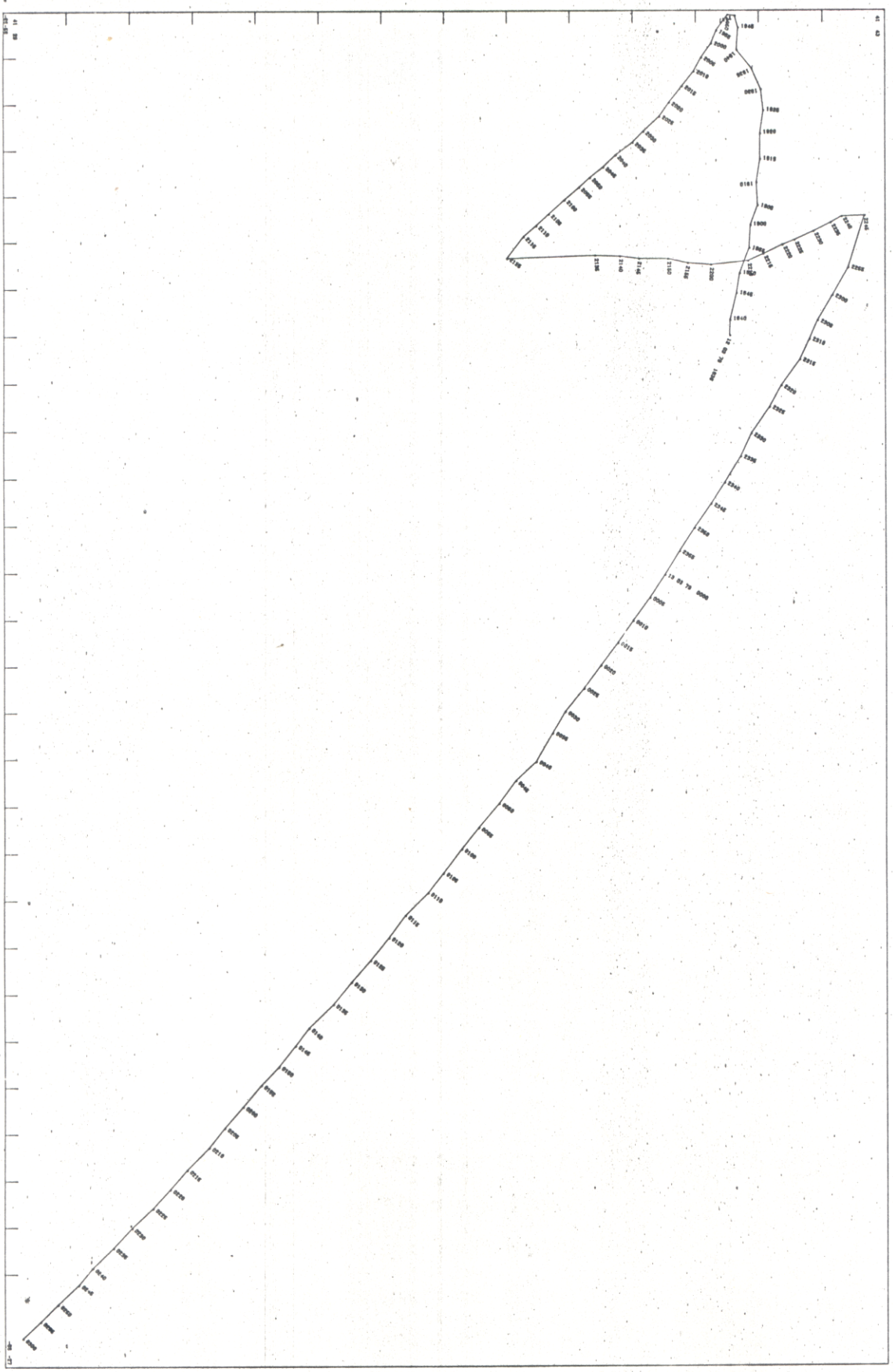
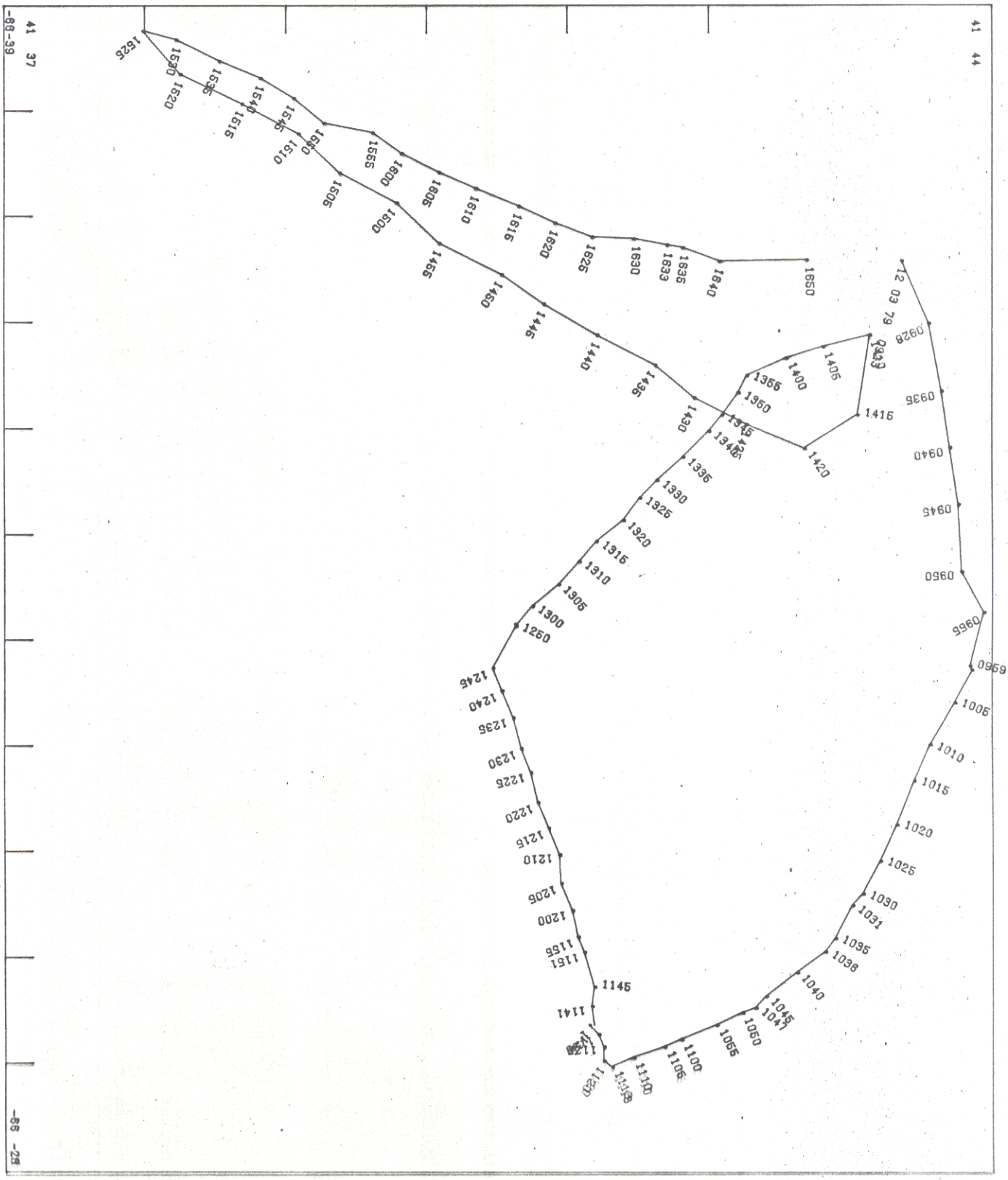
OCEANUS 056: GEORGES BANK - WEST OF SITE L 60°/DEG LONG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