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Aircraft Measurements in the Norwegian and Iceland Seas during "Chair Helix", October 1987

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Abstract

Operational components of the United States Navy are becoming increasingly interested in the potential of coupled ocean-acoustic forecast systems for improving weapons effectiveness predictions. Such systems would combine in situ and remotely sensed data, historical databases, ocean hydrodynamic and thermodynamic numerical models and acoustic performance prediction models to give an improved picture of the ocean environment both in a "nowcast" and in a forecast mode. The Tactical Oceanography Program is a major focal point in NORDA's development, testing and delivery of such systems.

This Note discusses the experimental design, data collection and processing, and some preliminary results from Chair Helix, the Second Tactical Oceanography Project Prediction Experiment in the Norwegian and Iceland Seas during October 1987. Detailed charts of the survey positions are presented, as well as plots of all of the profiles. A more complete presentation of the descriptive findings from the experiment is given in the companion NORDA Technical Note: Environmental Conditions in the Norwegian and Iceland Seas During 'Chair Helix,' October 1987" by J. Boyd.

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Acknowledgments

Richard Myrick (NORDA Physical Oceanography Branch) and Roy Burke (Undersea Systems Branch) provided on-site technical support during the experiment, Bob Brown (Advanced Technology Branch) helped with the equipment installation, and he and Ron Miles (also of the Advanced Technology Branch) were generous with their long distance advice. The "can-do" spirit of CDR H. Wnuk and the other members of the Naval Research Laboratory P-3 flight crew was an important factor in the success of the experiment. The Antisubmarine Warfare Center at the Naval Air Station in Keflavik, Iceland, generously provided much appreciated cold weather gear, electronics assistance, and space in which to set up the ground-based processing equipment. The Naval Oceanography Command Facility kindly allowed us to use their facilities for a demonstration of a NORDA-sponsored improved acoustic prediction system (PESOGEN). Peter Flynn of Planning Systems, Inc., did much of the data processing.

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and 23 October. For three of these flights the time-position-data association was confused and the resulting data plots were very different from each other and from our findings on nearby days. We deemed the data from these flights too unreliable for use. The 19 October results, however, appeared satisfactory and these are included in this report.

The dates and regions of operations were:

Flight	Date	Region
1	7 October 1987	Jan Mayen Front
2	11 October 1987	Iceland Sea
3	12 October 1987	Iceland-Faeroe Front
4	14 October 1987	Southern Norwegian Sea
5	17 October 1987	Iceland-Faeroe Front
6	19 October 1987	Iceland and Norwegian Sea (selected areas)
(Operational aircraft)	19 October 1987	Iceland-Faeroe Front
7	21 October 1987	Iceland-Faeroe Front
8	23 October 1987	Northern Norwegian Sea

The regions are indicated on Figure 1, and the successful drop positions for each flight day are given in Figures 2 - 10 on the same scale as in the first figure. In all, 349 AXBTs (181 shallow: nominally 305 m, and 168 deep: nominally 750 m) and 7 AXSVs (sound velocity probes) were successfully deployed and analyzed by NORDA personnel. An additional 36 shallow buoys were deployed and digitized by operational Navy personnel and processed by NORDA.

Personnel

The following NORDA personnel participated in part or all of the operations:

Janice D. Boyd, Oceanographer, Chief Scientist
Richard K. Myrick, Physical Science Technician
Roy Burke, Electronics Technician
Joseph W. McCaffrey, Supervisory Oceanographer

Navigation

The on-board Litton 72 inertial navigation system was used for navigation, with periodic comparisons with the VLF/Omega system. Drop positions were recorded automatically by the data acquisition system as a probe was launched. The navigational accuracy was estimated by calculating the aircraft position error upon landing, approximately 9 hours after initialization of the systems. This averaged about 3 nautical miles (5.6 km) for the Litton 72 and about the same for the VLF/Omega. Because of the potential but unknown effects of wind and other factors upon the falling probes, the drop positions are considered accurate to about 1.5 times the navigational accuracy, or about 4.5 nautical miles (6 km). No information was recorded regarding the navigational accuracy of the 19 October dataset collected by operational aircraft, but it is reasonable to assume a similar value.

Data Collection and Processing

The data was acquired and processed using the NORDA Physical Oceanography Branch Isis system (Figure 11), which consists of integrated aircraft-installed and ground-based components that allow full processing and considerable analysis of the data to be performed while still in the field. (All figures in this report have been produced by this system.)

Data was transmitted from the air deployed probes (AXBT — temperature — and AXSV — sound velocity) as a frequency modulated signal on one of three standard carrier frequencies (channel 12 or 170.5 MHz, channel 14 or 172.0 MHz, and channel 16 or 173.5 MHz). Up to three probes on each of the three channels were active at any one time. The signals were picked up by standard Navy ARR-52 aircraft sonobuoy receivers and sent to the data interface unit where they were amplified, filtered, digitized and sent along a 16 bit parallel GPIO interface bus to the acquisition computer, a Hewlett-Packard 9000 model 320. The incoming signal was also sent to a VCR-based backup analog recording system for later replay, if necessary. For an assortment of reasons, a few drops were replayed back at NORDA, but details have not been noted because the procedure has no impact upon data quality.

The HP 9000/320 computer subsampled each input data stream at 10 Hz (about every 15 cm in depth for AXBTs) and displayed the data in real time on the CRT display. Navigation data from the Litton 72 inertial navigation system was also sampled by the acquisition computer as each probe was launched. Upon termination of a probe the data was stored on 3.5" microdiskettes and a hardcopy plot was made on an HP 7550A plotter.

For the near-real-time modeling efforts in conjunction with this work, the data was needed as quickly as possible after landing. To meet this requirement, the hardcopy plots were digitized while in flight using a digitizing tablet and a PC computer (in this case, a Toshiba T-1100). Navigation information was merged with the digitized files and the data was saved in the standard Isis archive format. Attempts to send this data to the Harvard "Gapcast" and NORDA mixed layer modeling efforts were only partly successful because of very poor telephone communications with the United States.

Final data processing and display took place partly in Iceland and was completed back at NORDA. The raw data on the 3.5" microdiskettes were read into a PC/AT compatible computer, in this case a Zenith Z-248. A 21 point (2.1 second) median filter was applied to remove most of the one to several point data spikes and other "glitches" that occur in the data for various reasons and to filter out much

of the high frequency noise. The raw data was then converted to engineering units using the following conversion equations (Boyd, 1987). For temperature,

$$T = -38.6045 + 2.71075 \times 10^{-2} F$$

where F is frequency in hertz and T is temperature in degrees centigrade. Temperature accuracy is about 0.2°C; precision is up to an order of magnitude better (Boyd, 1987).

The conversion equation for depth is different for shallow or deep probes. For shallow probes the equation was

$$z = 1.5573t - 3.01 \times 10^{-4}t^2$$

and for deep,

$$z = 1.6325t - 2.15 \times 10^{-4}t^2$$

where z is depth in meters and t is elapsed time (in seconds) after probe release. Depth accuracy is around 5 m; precision is up to an order of magnitude better (Boyd, 1987).

Seven AXSVs or sound velocity probes were also deployed during Flight 4 in the Southern Norwegian Sea. Maximum depth for AXSVs is 850 m. Conversion equations and claimed accuracies are given in Sippican (1982); claimed accuracies should probably be considered optimistic. The frequency to sound speed conversion equation used was

$$V = \frac{0.052}{\frac{1}{128\,F} - 2.35 \times 10^{-7}}$$

where V is sound speed in m s^{-1} and F is frequency in Hz. Manufacturer's claimed accuracy is 0.25 m s^{-1}.

The elapsed drop time to depth conversion equation was

$$z = 0.4572 + 1.862t - 7.925 \times 10^{-5}t^2$$

where z is depth in meters and t is elapsed time (in seconds). Manufacturer's claimed accuracy is 2% or 5 m, whichever is greater.

After conversion to engineering units, the data was decimated to a 1 meter resolution, and a final 9 point median filter was applied to complete the smoothing process. In many instances the final 9 point filter did not appear subjectively to be needed. However, in other cases it was needed, especially to eliminate the enhanced noise that sometimes is observed at depth near the end of a profile when atmospheric conditions cause ducting of the transmitted signal (Boyd, 1986). In order to maintain processing consistency over the whole dataset, the second filtering operation was applied to all profiles. For mesoscale purposes this has no detrimental effect whatsoever.

The processed data were then visually scanned, primarily to detect instances where the probe had hit bottom before wire break and to find occasional data spikes at the very beginning or end of the profile which were not removed by the filtering process. These and a few other identified problems were removed using the Isis system interactive screen editor, and the data were archived in the standard Isis archive format at 1 m and 2 m depth resolutions.

The major inflection points from the AXBT profiles taken by the operational P-3's were manually digitized by Naval Oceanography Command Facility personnel from the small "grams" produced by the on-board AQA-7 system. This technique assumes the Navy standard frequency to temperature conversion equation of

$$T = -40.0 + 0.02778\ F$$

which has a specified accuracy of 0.55°C. The assumed Navy standard elapsed drop time to depth conversion equation is

$$z = 1.52t$$

which has a specified accuracy of 5% down to 300m. Boyd (1987) found these specified accuracies to be valid in a study using AXBTs produced under a different contract number. No information on navigational accuracy was recorded. After being merged with navigation and date/time information, the data were archived in the standard Isis archive format, still in major inflection point form.

Discussion

The individual data profiles obtained during October 1987 were generally of excellent quality, although the quality of the datasets as a whole were degraded by the high AXBT failure rate. Figure 1 shows the ensemble of drop positions and the 5 major regions into which the study area was divided. The drop positions for the individual flights are given in Figures 2 - 10. A listing of all successful probes, along with depth, position, and date/time is given in Table 2. Drop positions annotated with station numbers and the temperature versus depth profiles themselves for each flight day are presented in Appendices A - I.

These data have been used by Harvard University modelers in their "Gapcast" modeling effort (Denbo and Robinson, 1988a and b) and will be used both to provide a validation field for the NORDA regional hydrodynamic model being developed for the area and to test the TOPS thermodynamic prediction model. In addition, the data will be analyzed to provide a better understanding of the regional hydrography, circulation, and frontal structure of the area. As a first step in this analysis, horizontal temperature contours at selected depths of 0, 50, 100, 200, 300, and 375 meters were produced by combining the data from all eight NORDA flights into one near-synoptic dataset for the Norwegian and Iceland Seas (Figures 12-17). Some comments on the major features of these Figures follow.

A notable feature of the Norwegian and Iceland Seas is the occurrence of 5 major fronts separating important water masses in the area. The Norwegian Current Front paralleling the Norwegian coast separates the western boundary of the inflowing Atlantic water of the Norwegian Current from the waters of the Norwegian Sea itself. The Jan Mayen Front separates the cold, relatively fresh waters of the Iceland Sea from the warmer and saltier waters of the Norwegian Sea, while the Iceland-Faeroe Front (often called

the Polar Front) marks the boundary between the warm and saline North Atlantic water of the Irminger Current from the colder, fresher waters flowing southward from the Iceland Sea.

The Irminger Current loops around the western edge of Iceland and flows along the island's northern coast as a current known by various names, including the Kolbeinsey Current, the East Icelandic Current, or the Iceland Current. Another frontal zone, the Kolbeinsey Current Front exists, along the northern edge of this current, separating it from the Polar Water of the Iceland Sea.

The fifth front, the East Greenland Current Front, parallels the Greenland coast and separates the eastern boundary of the cold, fresh, southward flowing East Greenland Current from the slightly more saline waters of the Iceland Sea.

All five of the major frontal features of the region may be seen in the temperature contours at 0, 50, 100, 200, 300, and 375 m (Figures 12 - 17). Because of surface warming and the development of the surface mixed layer, in most instances the fronts are better defined below about 50 m. The Norwegian Current Front is diffuse and ill defined, but at 100 m lies between about 5°W and 0° and shifts to the east with increasing depth. The Jan Mayen Front between 5° and 10°W and north of 65°N is quite well delineated below 50 m by the 2°C isotherm. Clusterings of isotherms indicate the Iceland-Faeroe Front between Iceland and the Faeroe Islands and the Kolbeinsey Current Front north of Iceland. The Kolbeinsey Current Front does not appear to extend down as deeply as 300m. The 0°C isotherm can be taken as the East Greenland Current Front (Aagaard and Coachman, 1968), with the waters lying on the Greenland side being part of the southward flowing East Greenland Current. Eddies with diameters estimated to be on the order of 50 km were visually observed in this area from the aircraft.

As was found during the May experiment, the Norwegian Current, Iceland-Faeroe, and Jan Mayen Fronts lay close to their 1980 - 81 locations as described by Smart (1984). Their positions appear to be related to bathymetry, but their precise locations vary, and meanders and eddies are prevalent. Absent in October was the northward meander of the upper several hundred meters of the Iceland-Faeroe Front near 10°W. This meander was seen throughout all four May surveys of the Front and could be seen on satellite IR imagery, and such features had occasionally been reported in the past (Smart, 1984), but by October it had disappeared.

More details on the descriptive results from this experiment is given in the companion NORDA Technical Note, "Environmental Conditions in the Norwegian and Iceland Seas During 'Chair Helix,' October 1987" by J. Boyd.

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Table 1. AXBT failure rates in percent during "Chair Helix," October 1987. The failure rates are broken down by probe depth (shallow or deep), lot number, and channel.

AXBT FAILURE RATES (%)

LOT #	SHALLOW MODELS CHANNEL 12	14	16	DEEP MODELS CHANNEL 12	14	16
8	44	0	49	--	--	--
9	53	68	--	--	--	--
9F	39	61	14	--	--	--
11	62	67	--	--	--	--
11F	78	100	--	--	--	--
12	--	3	--	--	--	--
13	100	92	--	--	--	--
18	--	8	--	--	--	--
22	--	--	--	28	28	34
23	--	--	69*	--	--	--
24	--	--	--	--	--	13

All probes manufactured under 1983 contract NOO 163-83-C-0003 except for * which was under 1981 contract NOO 163-81-C-0287.

Overall failure rates:	Shallow	- 53%
	Deep	- 27%
Expected:	5	- 10%

Table 2. Probe type, depth (S=shallow, D=deep), position and time for all flights during "Chair Helix," October 1987.

DATE: 10/07/87 FLIGHT: 1
REGION: JAN MAYEN FRONT

#	TYPE	D/S	LATITUDE (DEG MIN)		LONGITUDE (DEG MIN)		TIME (Z)
23	AXBT	D	67	.10	-11	-42.60	11:43:42
26	AXBT	S	67	34.40	-9	-4.60	12:14:14
29	AXBT	S	67	34.60	-5	-36.70	12:29:47
35	AXBT	S	68	7.00	-6	-18.20	12:59:23
43	AXBT	D	68	36.50	-9	-20.30	14:25:46
45	AXBT	D	68	38.00	-6	-36.40	14:37:28
46	AXBT	D	68	38.20	-5	-35.40	14:41:26
47	AXBT	D	68	37.90	-4	-50.40	14:44:25
49	AXBT	D	68	34.60	-2	-59.60	14:51:59
50	AXBT	D	68	32.40	-2	-6.00	14:55:53
51	AXBT	S	69	4.30	-1	-52.90	15:03:22
55	AXBT	S	69	5.90	-5	-37.90	15:21:12
57	AXBT	S	69	4.10	-7	-31.70	15:29:47
58	AXBT	S	69	3.40	-8	-52.50	15:36:01
62	AXBT	S	69	33.30	-10	-10.50	16:02:49
64	AXBT	D	69	33.70	-8	-44.10	16:08:45
70	AXBT	D	69	33.90	-1	-40.40	16:37:50

DATE: 10/11/87 FLIGHT: 2
REGION: ICELAND SEA

#	TYPE	D/S	LATITUDE (DEG MIN)		LONGITUDE (DEG MIN)		TIME (Z)
76	AXBT	S	69	1.00	-13	-4.00	10:01:00
77	AXBT	S	68	30.70	-13	-2.50	10:07:03
82	AXBT	S	66	30.70	-12	-59.40	10:31:40
85	AXBT	S	66	18.90	-13	-33.30	10:44:39
91	AXBT	S	68	29.90	-13	-59.30	11:14:25
93	AXBT	S	69	28.80	-13	-59.40	11:27:45
95	AXBT	S	69	29.70	-15	-59.00	11:37:16
102	AXBT	S	67	45.80	-16	-2.40	11:58:48
104	AXBT	S	67	20.60	-16	-2.50	12:03:52
108	AXBT	S	66	59.30	-15	-.60	12:22:55
109	AXBT	S	67	20.00	-15	-3.20	12:27:33
110	AXBT	S	67	21.10	-17	.00	12:37:37
111	AXBT	S	67	.30	-17	-4.80	12:42:05

113	AXBT	S	66	39.30	-18	-4.80	12:52:13
114	AXBT	S	66	59.30	-18	-1.80	12:56:36
116	AXBT	S	67	39.60	-17	-58.60	13:05:21
121	AXBT	S	69	30.10	-18	-45.30	13:33:23
124	AXBT	S	68	29.70	-19	-30.50	13:50:01
125	AXBT	S	68	.60	-19	-30.20	13:56:05
126	AXBT	S	67	40.60	-19	-30.60	14:00:16
127	AXBT	S	67	20.60	-19	-31.50	14:04:25
128	AXBT	S	67	.50	-19	-30.20	14:08:37
130	AXBT	S	66	38.00	-18	-45.00	14:17:00
132	AXBT	S	67	19.70	-18	-46.80	14:26:24
133	AXBT	S	67	19.00	-20	-14.00	14:34:00
135	AXBT	S	66	41.10	-20	-18.80	14:42:35
140	AXBT	S	67	59.50	-20	-58.80	15:05:32
143	AXBT	S	69	9.60	-21	-.50	15:20:44
144	AXBT	S	69	13.60	-22	-.80	15:25:53
147	AXBT	S	68	.60	-22	-2.50	15:41:50
150	AXBT	S	67	.70	-21	-59.60	15:54:35
155	AXBT	S	67	36.00	-23	-8.00	16:13:40
157	AXBT	S	68	4.50	-23	-37.00	16:20:25
158	AXBT	S	68	17.70	-23	-52.30	16:23:33
161	AXBT	S	68	30.70	-26	-.70	16:38:22
162	AXBT	S	68	16.40	-25	-48.80	16:41:43
166	AXBT	S	67	17.40	-24	-44.70	16:55:11

DATE: 10/12/87 FLIGHT: 3
REGION: ICELAND-FAEROE FRONT

#	TYPE	D/S	LATITUDE (DEG MIN)		LONGITUDE (DEG MIN)		TIME (Z)
170	AXBT	D	62	21.30	-14	-9.60	09:25:21
171	AXBT	S	62	21.30	-13	-4.50	09:31:39
172	AXBT	D	62	20.50	-12	-2.70	09:37:29
174	AXBT	D	62	23.00	-11	-14.90	09:41:58
181	AXBT	D	63	41.60	-8	-28.40	10:06:51
184	AXBT	D	64	7.00	-7	-30.00	10:15:59
186	AXBT	D	64	26.50	-6	-53.00	10:26:52
187	AXBT	S	64	32.00	-6	-29.20	10:31:05
188	AXBT	D	64	39.70	-6	-9.40	10:33:54
189	AXBT	D	64	48.00	-5	-49.00	10:36:59
190	AXBT	D	64	55.60	-5	-26.30	10:40:01
192	AXBT	S	64	40.00	-4	-59.00	10:50:16
195	AXBT	D	63	50.20	-5	-12.00	11:01:38
196	AXBT	S	63	39.60	-5	-13.40	11:04:03
197	AXBT	D	63	20.20	-5	-17.50	11:08:22
201	AXBT	D	63	40.70	-6	-23.90	11:28:22

202	AXBT	S	64	.40	-6	-19.60	11:32:20
203	AXBT	D	64	20.20	-6	-14.50	11:36:19
206	AXBT	S	65	29.70	-5	-57.10	11:50:21
208	AXBT	D	66	.00	-5	-51.00	11:56:32
209	AXBT	D	66	.00	-7	-7.40	12:03:57
211	AXBT	D	65	19.80	-7	-15.30	12:12:21
212	AXBT	S	65	.20	-7	-18.20	12:16:30
214	AXBT	S	64	20.00	-7	-24.70	12:25:00
215	AXBT	S	64	.10	-7	-26.90	12:29:11
216	AXBT	S	63	40.30	-7	-28.80	12:33:24
224	AXBT	S	64	29.80	-8	-30.50	13:06:36
226	AXBT	S	65	9.80	-8	-25.10	13:14:48
228	AXBT	D	65	59.80	-8	-18.40	13:25:05
232	AXBT	S	65	.00	-9	-41.00	13:45:00
234	AXBT	S	64	34.50	-9	-40.90	13:50:34
235	AXBT	S	64	19.70	-9	-40.70	13:53:42
237	AXBT	S	63	40.40	-9	-45.20	14:02:00
240	AXBT	S	62	49.30	-9	-49.50	14:12:41
243	AXBT	S	62	34.90	-10	-57.80	14:28:49
244	AXBT	S	62	49.90	-10	-56.90	14:31:54
246	AXBT	S	63	19.90	-10	-54.50	14:38:01
249	AXBT	S	64	5.20	-10	-51.50	14:47:10
250	AXBT	S	64	20.10	-10	-50.30	14:50:10
251	AXBT	S	64	50.10	-10	-57.10	15:03:39
253	AXBT	S	65	21.80	-10	-46.80	15:11:28
254	AXBT	S	65	39.60	-10	-45.50	15:15:10
257	AXBT	S	65	45.50	-12	-1.30	15:29:39
259	AXBT	S	65	15.40	-12	-2.70	15:36:09
260	AXBT	S	65	1.20	-12	-1.40	15:39:12
261	AXBT	S	64	45.30	-12	-.40	15:42:37
263	AXBT	S	64	15.10	-12	.00	15:49:08
265	AXBT	S	63	45.30	-11	-59.40	15:55:29
267	AXBT	S	63	15.70	-11	-58.60	16:01:50
268	AXBT	S	63	.50	-11	-58.10	16:05:08
270	AXBT	S	62	39.10	-13	-11.40	16:17:10
273	AXBT	S	63	24.40	-13	-10.40	16:26:33

DATE: 10/14/87 FLIGHT: 4
REGION: SOUTHERN NORWEGIAN SEA

#	TYPE	D/S	LATITUDE (DEG MIN)		LONGITUDE (DEG MIN)		TIME (Z)
280	AXBT	S	67	28.00	-1	-32.40	10:41:13
285	AXBT	S	65	42.00	2	29.90	11:12:09
293	AXBT	D	63	22.60	4	14.90	12:06:29
294	AXSV	S	63	34.10	3	54.00	12:09:55

297	AXSV	S	63	58.00	3	9.00	12:17:35
298	AXBT	D	64	8.20	2	47.40	12:20:28
299	AXSV	S	64	20.00	2	24.00	12:24:09
301	AXSV	S	64	41.00	1	38.00	12:31:49
302	AXBT	D	64	53.60	1	11.80	12:36:03
303	AXSV	S	65	25.80	0	-.20	12:47:16
304	AXBT	D	65	36.30	0	-24.30	12:50:56
305	AXSV	S	65	47.00	0	-49.00	12:54:41
306	AXBT	D	65	58.40	-1	-14.40	12:58:31
307	AXSV	S	66	9.00	-1	-41.00	13:02:21
311	AXBT	D	66	42.70	-3	-13.50	13:15:03
312	AXBT	S	66	50.00	-3	-35.90	13:17:55
314	AXBT	S	66	18.90	-3	-57.30	13:32:10
316	AXBT	S	65	39.30	-3	-42.10	13:41:12
318	AXBT	D	64	59.20	-3	-31.30	13:50:17
324	AXBT	D	63	21.60	-2	-35.70	14:15:12
326	AXBT	D	63	6.00	-1	-42.00	14:22:06
329	AXBT	S	62	20.20	0	-21.20	14:37:22
330	AXBT	D	62	.40	0	-3.70	14:42:54
331	AXBT	S	61	37.40	0	13.20	14:48:58
335	AXBT	D	61	26.80	-2	-.50	11:26:53
337	AXBT	D	61	41.20	-2	-43.00	15:18:45
339	AXBT	D	62	14.00	-3	-45.00	15:27:59
341	AXBT	D	62	44.00	-4	-52.00	15:36:35

DATE: 10/17/87 FLIGHT: 5
REGION: ICELAND-FAEROE FRONT

#	TYPE	D/S	LATITUDE (DEG MIN)		LONGITUDE (DEG MIN)		TIME (Z)
345	AXBT	D	67	2.20	-9	-1.30	09:36:37
346	AXBT	S	67	2.90	-8	-22.00	09:40:29
347	AXBT	D	67	3.10	-7	-44.10	09:43:43
351	AXBT	D	67	.50	-4	-35.40	09:59:15
352	AXBT	S	67	.40	-4	-29.80	09:59:43
353	AXBT	D	66	59.10	-3	-53.10	10:02:48
356	AXBT	D	65	57.90	-4	-12.20	10:15:47
358	AXBT	D	65	29.30	-4	-22.10	10:21:49
360	AXBT	D	64	59.40	-4	-31.70	10:28:07
361	AXBT	S	64	43.30	-4	-37.00	10:31:33
364	AXBT	D	63	59.80	-4	-48.00	10:41:12
365	AXBT	S	63	45.10	-4	-51.30	10:44:33
367	AXBT	S	63	14.00	-4	-59.00	10:51:31
369	AXBT	D	62	59.60	-6	-10.90	11:02:36
371	AXBT	D	63	31.10	-6	-2.50	11:09:54
372	AXBT	D	64	1.10	-5	-54.50	11:16:22

377	AXBT	S	65	15.00	-5	-35.00	11:32:57
381	AXBT	D	65	29.10	-6	-48.90	11:57:58
386	AXBT	S	64	15.00	-7	-3.50	12:13:42
387	AXBT	D	64	.30	-7	-6.00	12:16:47
388	AXBT	S	63	44.50	-7	-8.40	12:20:05
390	AXBT	D	63	.60	-7	-15.90	12:29:30
391	AXBT	D	62	59.80	-8	-21.40	12:35:59
392	AXBT	S	63	15.00	-8	-20.00	12:39:35
395	AXBT	D	64	.70	-8	-13.70	12:49:33
396	AXBT	S	64	15.10	-8	-11.80	12:52:43
397	AXBT	D	64	30.70	-8	-8.70	12:56:09
399	AXBT	D	64	59.90	-8	-2.60	13:02:37
400	AXBT	S	65	15.00	-8	.00	13:05:54
401	AXBT	D	65	30.30	-7	-59.80	13:09:20
402	AXBT	S	65	46.10	-7	-58.40	13:12:54
403	AXBT	D	66	.00	-7	-57.20	13:16:03
404	AXBT	D	66	.70	-9	-7.00	13:22:17
406	AXBT	D	65	30.30	-9	-13.90	13:28:48
407	AXBT	S	65	14.00	-9	-15.60	13:32:37
408	AXBT	D	64	59.90	-9	-17.10	13:35:56
410	AXBT	D	64	30.20	-9	-16.30	13:42:54
412	AXBT	D	64	.20	-9	-18.20	13:49:50
414	AXBT	D	63	30.30	-9	-22.10	13:56:41
416	AXBT	S	63	4.00	-9	-25.70	14:02:38
417	AXBT	D	63	.30	-9	-26.10	14:03:28
419	AXBT	D	62	18.90	-10	-34.20	14:21:40
420	AXBT	D	62	59.80	-10	-34.10	14:31:09
421	AXBT	S	63	14.80	-10	-33.50	14:34:33
422	AXBT	D	63	29.90	-10	-33.00	14:37:59
424	AXBT	D	63	59.10	-10	-28.40	14:44:42
426	AXBT	D	64	30.10	-10	-26.40	14:51:52
429	AXBT	S	65	15.20	-10	-24.60	15:02:11
430	AXBT	D	65	30.00	-10	-23.90	15:05:36
433	AXBT	S	65	45.50	-11	-38.10	15:23:06
434	AXBT	D	65	30.10	-11	-38.70	15:26:37
436	AXBT	D	65	.20	-11	-38.10	15:33:27
439	AXBT	S	64	13.90	-11	-38.00	15:43:55
443	AXBT	D	63	.40	-11	-37.60	16:00:57
445	AXBT	D	62	20.80	-11	-37.30	16:10:33
449	AXBT	D	63	.00	-12	-45.30	16:27:04
450	AXBT	S	63	14.90	-12	-45.10	16:30:20
451	AXBT	D	63	31.30	-12	-45.10	16:34:04
453	AXBT	S	64	29.80	-12	-44.40	16:48:06

DATE: 10/19/87 FLIGHT: 6
REGION: ICELAND AND NORWEGIAN SEAS

#	TYPE	D/S	LATITUDE (DEG MIN)		LONGITUDE (DEG MIN)		TIME (Z)
455	AXBT	S	66	44.60	-24	-9.00	09:12:30
457	AXBT	S	67	14.50	-24	-22.00	09:19:08
467	AXBT	S	69	1.80	-19	-38.40	10:01:20
472	AXBT	S	69	.80	-16	-31.70	10:16:27
47€	AXBT	S	68	15.30	-16	-1.30	10:29:21
483	AXBT	D	68	5.50	-12	-.80	10:53:39
484	AXBT	S	68	6.10	-11	-18.50	10:57:05
485	AXBT	S	68	5.70	-10	-39.10	11:00:13
486	AXBT	D	68	5.00	-10	.00	11:03:18
489	AXBT	S	68	2.00	-8	.00	11:13:10
490	AXBT	D	68	.30	-7	-21.70	11:16:24
492	AXBT	S	67	59.30	-6	-7.30	11:22:37
493	AXBT	D	67	59.00	-5	-30.00	11:25:43
495	AXBT	S	67	59.50	-4	-13.50	11:31:59
497	AXBT	S	67	59.90	-3	-.10	11:37:55
499	AXBT	S	67	40.40	-2	-.50	11:45:10
500	AXBT	D	67	29.90	-1	-34.50	11:48:27
501	AXBT	D	67	19.10	-1	-7.60	11:51:54
502	AXBT	S	67	3.10	0	-41.20	11:55:23
503	AXBT	D	66	55.60	0	-11.90	11:59:19
505	AXBT	S	66	33.60	0	23.10	12:05:37
506	AXBT	D	66	30.60	0	25.40	12:06:25
507	AXBT	D	66	13.30	0	38.20	12:11:23
509	AXBT	D	65	37.40	1	1.30	12:21:39
512	AXBT	S	64	44.70	1	18.70	12:35:58
514	AXBT	D	64	6.10	1	46.10	12:45:27
515	AXBT	S	63	45.90	1	55.00	12:50:24
516	AXBT	D	63	23.20	2	2.30	12:56:20
518	AXBT	S	63	11.20	1	50.00	13:05:27
520	AXBT	D	63	33.90	1	6.60	13:11:56
522	AXBT	D	63	54.50	0	20.30	13:18:38
525	AXBT	D	64	32.50	-1	-3.90	13:30:40
527	AXBT	D	64	56.80	-1	-39.00	13:36:36
528	AXBT	S	65	14.60	-2	-4.40	13:41:06
529	AXBT	S	65	22.00	-2	-15.60	13:43:02
530	AXBT	D	65	37.00	-2	-42.00	13:46:56
531	AXBT	S	65	47.00	-3	-1.00	13:49:56
532	AXBT	D	65	58.80	-3	-20.80	13:53:24
535	AXBT	S	66	28.80	-4	-6.10	14:01:11
536	AXBT	D	66	32.00	-4	-33.00	14:04:08
540	AXBT	S	66	33.60	-6	-56.50	14:17:15
542	AXBT	S	66	33.40	-8	-5.50	14:23:27

544	AXBT	D	66	32.90	-9	-6.70	14:28:52
547	AXBT	D	66	32.00	-10	-26.00	14:36:12
548	AXBT	S	66	31.30	-11	-2.00	14:39:30
550	AXBT	S	66	30.00	-12	-17.00	14:46:45
551	AXBT	S	66	30.10	-12	-57.20	14:50:22
554	AXBT	D	67	11.80	-13	-1.10	15:00:17
557	AXBT	S	67	45.00	-14	-19.00	15:30:27

DATE: 10/19/87 FLIGHT: OPERATIONAL P-3
REGION: ICELAND-FAEROE FRONT

#	TYPE	D/S	LATITUDE (DEG MIN)		LONGITUDE (DEG MIN)		TIME (Z)
1062	AXBT	S	65	30.00	-12	.00	11:10:00
1063	AXBT	S	65	30.00	-11	.00	11:15:00
1064	AXBT	S	65	30.00	-10	.00	11:20:00
1065	AXBT	S	65	30.00	-9	.00	11:25:00
1066	AXBT	S	65	30.00	-8	.00	11:30:00
1067	AXBT	S	65	30.00	-7	.00	11:35:00
1068	AXBT	S	65	.00	-7	.00	11:40:00
1069	AXBT	S	65	.00	-8	.00	11:45:00
1070	AXBT	S	65	.00	-9	.00	11:50:00
1071	AXBT	S	65	.00	-10	.00	11:55:00
1072	AXBT	S	65	.00	-11	.00	12:00:00
1073	AXBT	S	65	.00	-12	.00	12:05:00
1074	AXBT	S	64	30.00	-12	.00	12:10:00
1075	AXBT	S	64	30.00	-11	.00	12:15:00
1076	AXBT	S	64	30.00	-10	.00	12:20:00
1077	AXBT	S	64	30.00	-9	.00	12:25:00
1078	AXBT	S	64	30.00	-8	.00	12:30:00
1079	AXBT	S	64	30.00	-7	.00	12:35:00
1080	AXBT	S	64	.00	-7	.00	12:40:00
1081	AXBT	S	64	.00	-8	.00	12:45:00
1082	AXBT	S	64	.00	-9	.00	12:50:00
1083	AXBT	S	64	.00	-10	.00	12:55:00
1084	AXBT	S	64	.00	-11	.00	13:00:00
1085	AXBT	S	64	.00	-12	.00	13:05:00
1086	AXBT	S	63	30.00	-12	.00	13:10:00
1087	AXBT	S	63	30.00	-11	.00	13:15:00
1088	AXBT	S	63	30.00	-10	.00	13:20:00
1089	AXBT	S	63	30.00	-9	.00	13:25:00
1090	AXBT	S	63	30.00	-8	.00	13:30:00
1091	AXBT	S	63	30.00	-7	.00	13:35:00
1092	AXBT	S	63	.00	-7	.00	13:40:00
1093	AXBT	S	63	.00	-8	.00	13:45:00
1094	AXBT	S	63	.00	-9	.00	13:50:00

1095	AXBT	S	63	.00	-10	.00	13:55:00
1096	AXBT	S	63	.00	-11	.00	14:00:00
1097	AXBT	S	63	.00	-12	.00	14:05:00

DATE: 10/21/87 FLIGHT: 7
REGION: ICELAND-FAEROE FRONT

#	TYPE	D/S	LATITUDE (DEG MIN)		LONGITUDE (DEG MIN)		TIME (Z)
563	AXBT	D	64	42.90	0	-5.60	10:25:16
564	AXBT	S	64	25.00	0	-13.70	10:29:21
565	AXBT	D	64	13.30	0	-19.30	10:32:10
567	AXBT	D	63	43.30	0	-33.10	10:39:19
571	AXBT	D	62	45.00	0	-54.70	10:53:11
572	AXBT	S	62	30.40	0	-59.40	10:56:45
573	AXBT	S	62	15.00	-1	-6.10	11:00:52
579	AXBT	S	63	1.10	-3	-4.00	11:26:41
580	AXBT	D	63	15.70	-2	-57.30	11:30:00
581	AXBT	S	63	30.00	-2	-52.00	11:33:17
582	AXBT	S	63	45.60	-2	-45.90	11:36:46
585	AXBT	D	64	30.50	-2	-28.80	11:46:52
586	AXBT	D	64	44.60	-2	-22.50	11:49:59
587	AXBT	S	64	45.00	-4	-18.60	12:02:15
588	AXBT	D	64	29.40	-4	-18.40	12:05:53
589	AXBT	S	64	15.00	-4	-23.00	12:09:15
590	AXBT	D	64	.30	-4	-27.90	12:12:37
591	AXBT	S	63	45.70	-4	-31.70	12:16:20
593	AXBT	D	63	15.50	-4	-39.30	12:24:05
595	AXBT	S	62	58.80	-5	-47.30	12:34:56
596	AXBT	D	63	16.10	-5	-50.40	12:39:27
598	AXBT	D	63	45.30	-5	-39.90	12:46:19
601	AXBT	D	64	29.50	-5	-24.90	12:56:37
602	AXBT	S	64	45.10	-5	-20.70	13:00:09
603	AXBT	S	65	.10	-5	-16.90	13:03:29
605	AXBT	D	65	30.40	-5	-9.00	13:10:12
607	AXBT	S	65	15.30	-6	-26.60	13:21:55
609	AXBT	D	64	45.20	-6	-33.70	13:28:55
615	AXBT	D	63	16.00	-6	-50.70	13:50:00
616	AXBT	D	63	1.10	-6	-53.70	13:53:24
619	AXBT	D	63	30.90	-8	-19.30	14:06:06
623	AXBT	D	64	30.50	-7	-52.40	14:19:58
627	AXBT	S	65	29.30	-7	-36.50	14:33:07
628	AXBT	S	65	30.90	-8	-49.10	14:39:59
629	AXBT	D	65	15.50	-8	-52.00	14:43:34
630	AXBT	S	65	.90	-8	-52.70	14:46:50
632	AXBT	S	64	30.30	-8	-53.60	14:53:53

634	AXBT	S	64	.00	-8	-57.00	15:00:34
635	AXBT	D	63	45.50	-8	-59.70	15:04:01
640	AXBT	D	62	30.80	-9	-7.70	15:20:35
641	AXBT	D	62	29.00	-10	-14.00	15:28:36
643	AXBT	D	62	59.70	-10	-12.50	15:35:19
644	AXBT	S	63	14.90	-10	-11.10	15:38:41
645	AXBT	D	63	29.90	-10	-9.50	15:41:58
647	AXBT	D	63	59.20	-10	-5.70	15:48:27
648	AXBT	S	64	14.90	-10	-3.70	15:51:54
649	AXBT	D	64	30.00	-10	-2.00	11:16:55
651	AXBT	S	65	1.60	-10	-.60	16:01:56
652	AXBT	D	65	16.20	-10	-.40	16:05:03
655	AXBT	D	65	14.50	-11	-14.90	16:18:01
656	AXBT	S	65	.20	-11	-15.30	16:21:21
659	AXBT	D	64	14.20	-11	-14.60	16:32:05
663	AXBT	D	63	15.80	-11	-13.90	16:45:19
666	AXBT	D	62	32.30	-11	-15.80	16:55:01
668	AXBT	S	62	49.80	-12	-45.60	17:05:27
670	AXBT	D	63	5.10	-13	-41.10	17:12:02

DATE: 10/23/87 FLIGHT: 8
REGION: NORTHERN NORWEGIAN SEA

#	TYPE	D/S	LATITUDE (DEG MIN)		LONGITUDE (DEG MIN)		TIME (Z)
674	AXBT	D	62	41.00	-4	-55.00	13:29:27
675	AXBT	D	62	22.00	-4	-5.00	10:15:00
676	AXBT	S	62	6.80	-3	-28.10	10:20:32
677	AXBT	D	62	1.60	-3	-15.90	10:22:17
678	AXBT	D	61	51.30	-2	-51.70	10:25:47
679	AXBT	D	61	41.40	-2	-28.70	10:29:20
680	AXBT	D	61	21.40	-1	-41.80	10:36:46
685	AXBT	D	61	33.90	0	11.90	10:54:50
686	AXBT	S	61	45.60	0	35.20	10:58:23
690	AXBT	D	62	28.20	2	4.90	11:13:09
692	AXBT	D	62	52.5	2	58.50	11:21:39
693	AXBT	D	62	59.70	3	14.70	11:24:18
696	AXBT	S	63	29.90	4	30.90	11:35:23
698	AXBT	D	63	50.20	5	19.60	11:42:21
699	AXBT	S	64	.50	5	44.00	11:46:01
700	AXBT	D	64	14.30	5	24.50	11:50:07
704	AXBT	S	65	3.50	3	52.10	12:05:02
705	AXBT	D	65	15.70	3	30.10	12:08:36
706	AXBT	S	65	27.30	3	6.70	12:12:06
707	AXBT	S	65	45.10	2	28.40	12:17:27
709	AXBT	D	66	1.00	1	53.20	12:22:25

710	AXBT	D	66	4.50	2	26.70	12:26:54
712	AXBT	S	66	3.60	3	41.20	12:34:41
713	AXBT	D	66	2.80	4	19.20	12:38:20
714	AXBT	D	66	2.30	4	53.80	12:41:45
715	AXBT	S	66	1.40	5	50.60	12:47:36
717	AXBT	D	66	.50	6	44.90	12:53:09
718	AXBT	S	66	.40	7	23.40	12:57:07
720	AXBT	S	66	29.20	8	5.20	13:07:13
722	AXBT	D	67	4.80	7	16.10	13:18:52
723	AXBT	S	67	5.20	6	42.80	13:21:54
725	AXBT	D	67	4.10	5	18.70	13:29:23
729	AXBT	D	67	1.10	2	50.00	13:42:51
730	AXBT	D	67	.70	2	14.20	13:46:09
731	AXBT	S	67	.20	1	34.60	13:49:48
733	AXBT	D	67	8.20	0	31.10	13:56:10
736	AXBT	S	67	40.10	0	-57.30	14:06:41
740	AXBT	S	68	6.60	0	-31.90	14:22:27
741	AXBT	S	68	5.70	0	-3.60	14:25:00
742	AXBT	D	68	4.20	0	37.50	14:28:41
745	AXBT	S	68	3.80	2	46.90	14:40:17
747	AXBT	D	68	3.70	3	58.70	14:46:49
748	AXBT	S	68	3.90	4	39.30	14:50:27
749	AXBT	D	68	3.70	5	18.20	14:53:58
752	AXBT	D	68	.90	7	17.40	15:04:31
754	AXBT	S	68	36.90	8	5.40	15:16:03
755	AXBT	D	68	59.90	8	7.30	15:20:54
756	AXBT	S	69	2.70	7	24.70	15:24:33
757	AXBT	D	69	3.90	6	42.80	15:28:03
758	AXBT	S	69	4.00	6	4.00	15:31:17
760	AXBT	D	69	5.70	4	21.90	15:39:41
761	AXBT	S	69	6.10	3	56.10	15:41:52
763	AXBT	D	69	5.90	2	21.80	15:49:49
769	AXBT	D	69	1.90	-1	-41.30	16:09:31
770	AXBT	S	69	1.40	-2	-24.00	16:12:52
774	AXBT	S	68	59.20	-5	-18.50	16:26:38
775	AXBT	D	68	59.00	-5	-51.00	16:28:31
776	AXBT	D	68	57.00	-6	-34.00	16:32:00

TOTAL NO. OF PROBES: 356 NORDA
36 OPERATIONAL

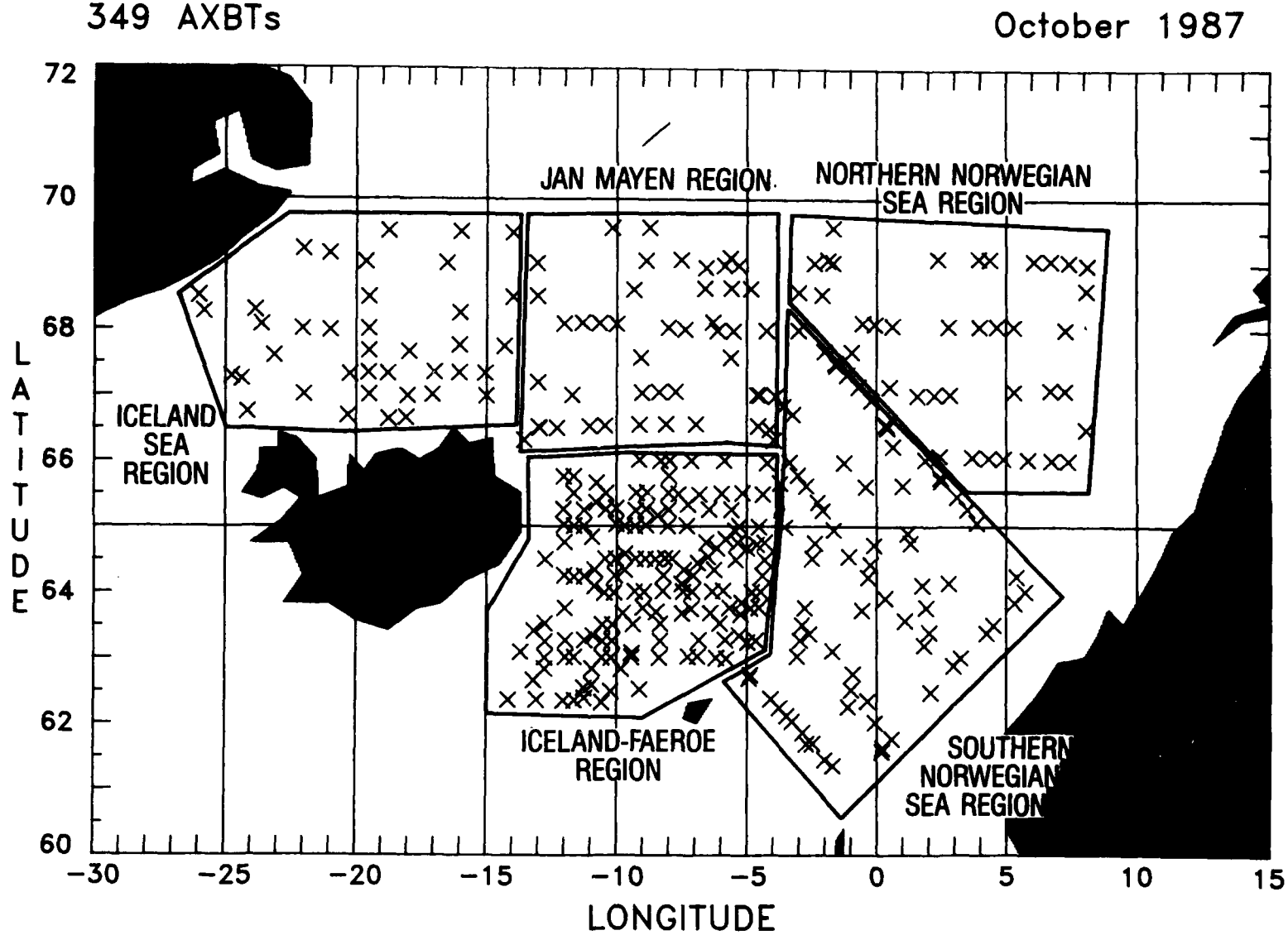


Figure 1. Experimental regions and ensemble of drop positions, Tactical Oceanography Project Prediction Experiment "Chair Helix," October 1987.

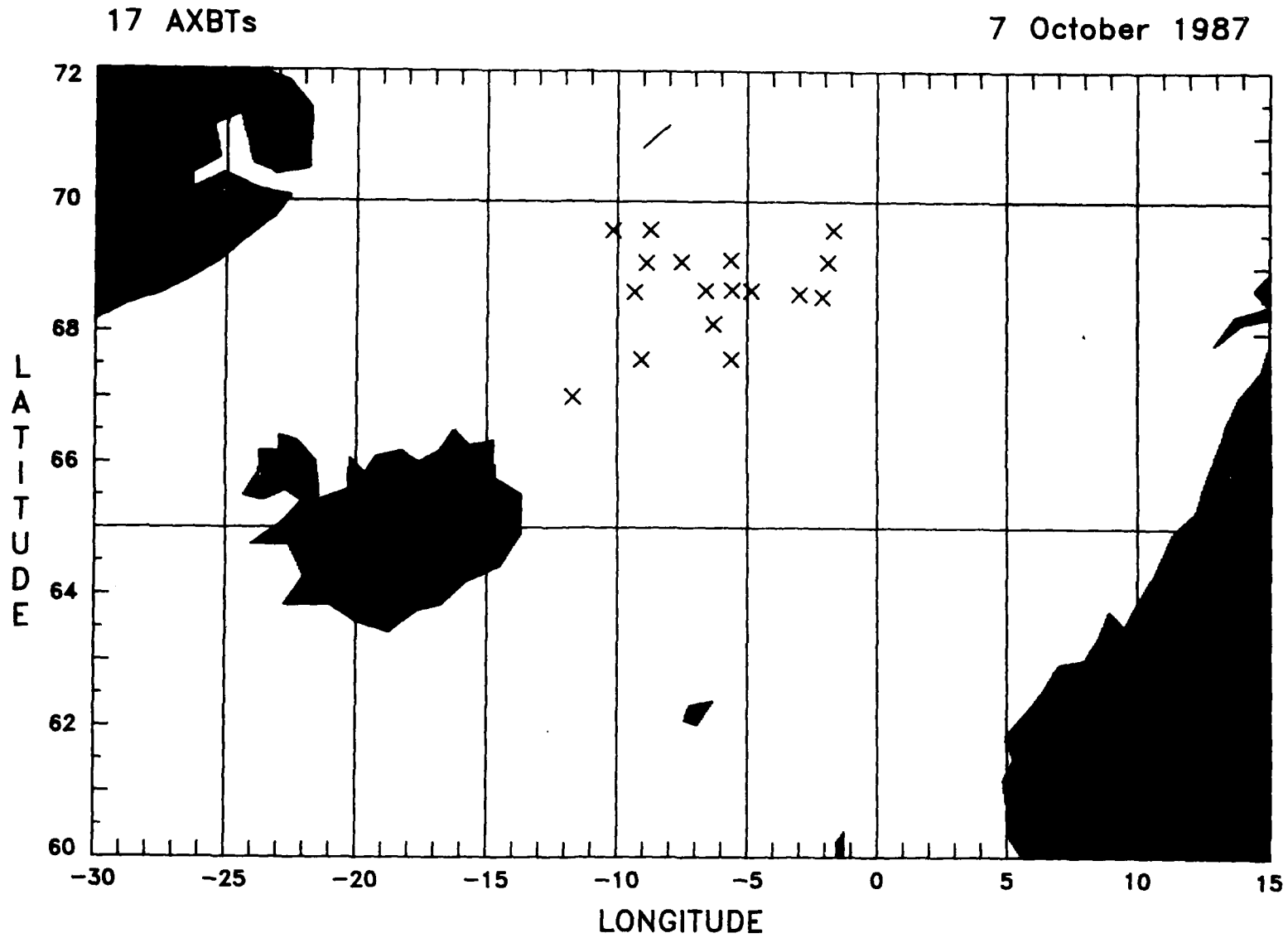


Figure 2. AXBT drop positions, Flight 1, 7 October 1987, Jan Mayen Front region.

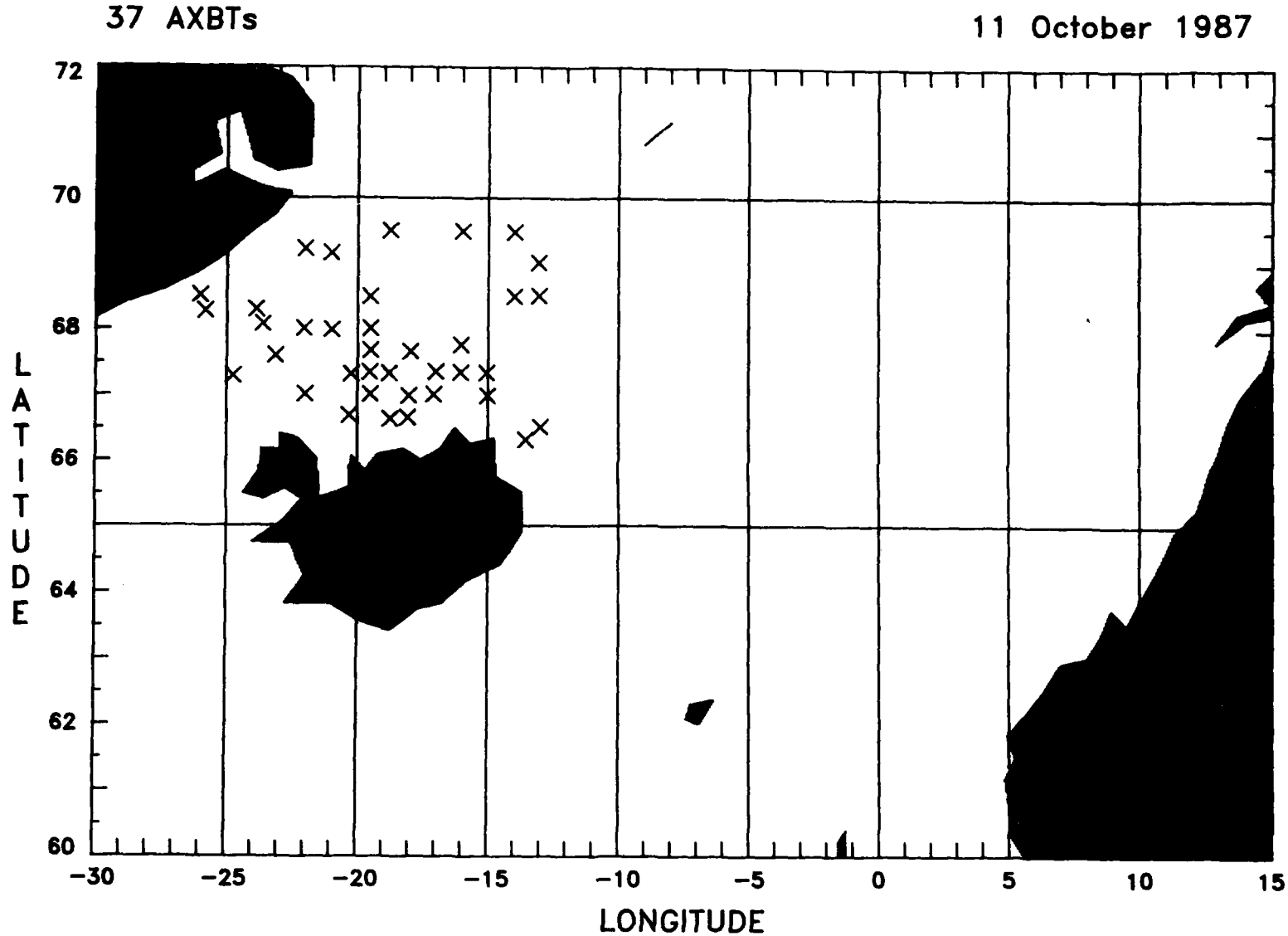


Figure 3. AXBT drop positions, Flight 2, 11 October 1987, Iceland Sea.

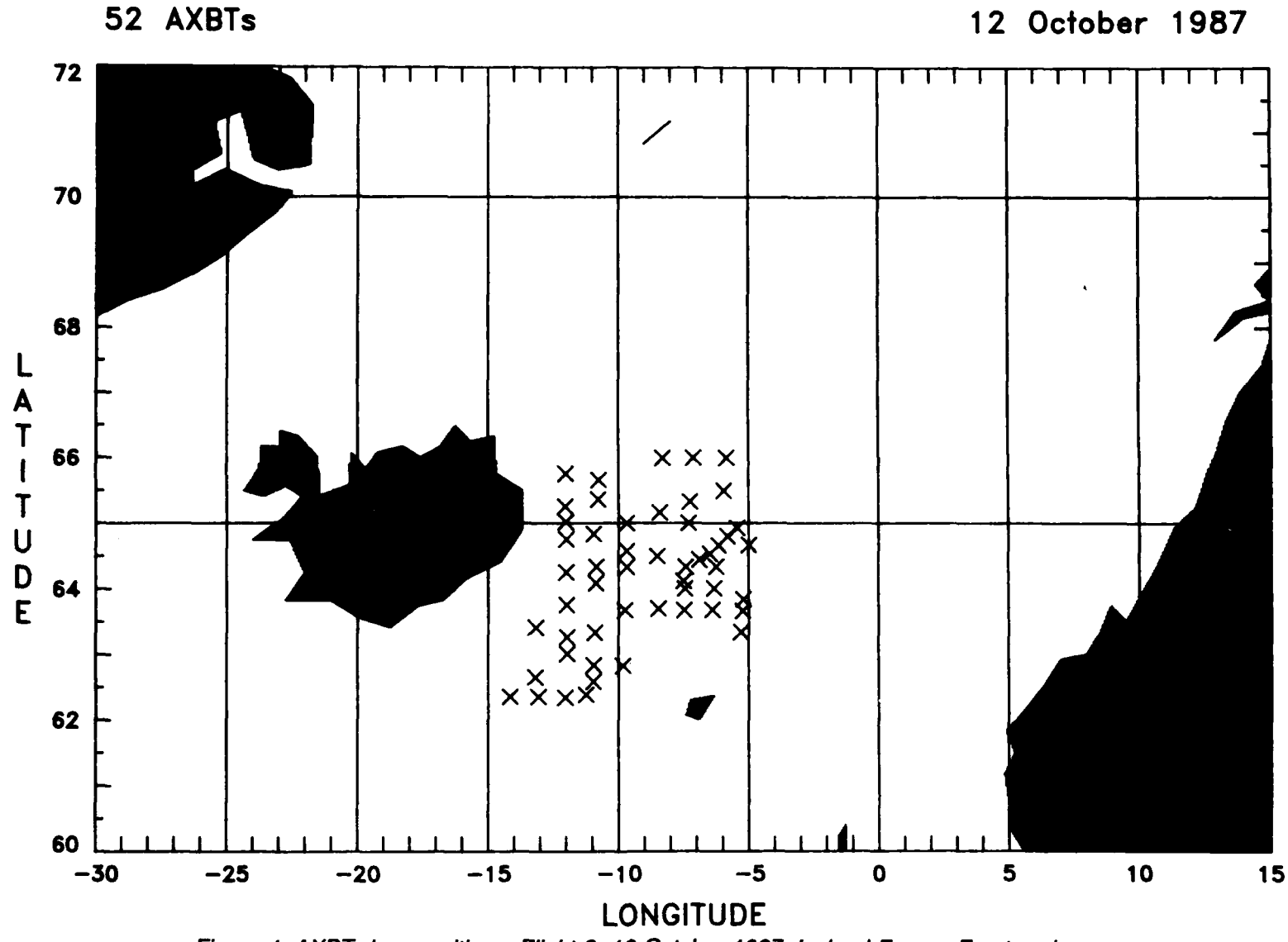


Figure 4. AXBT drop positions, Flight 3, 12 October 1987, Iceland-Faeroe Front region.

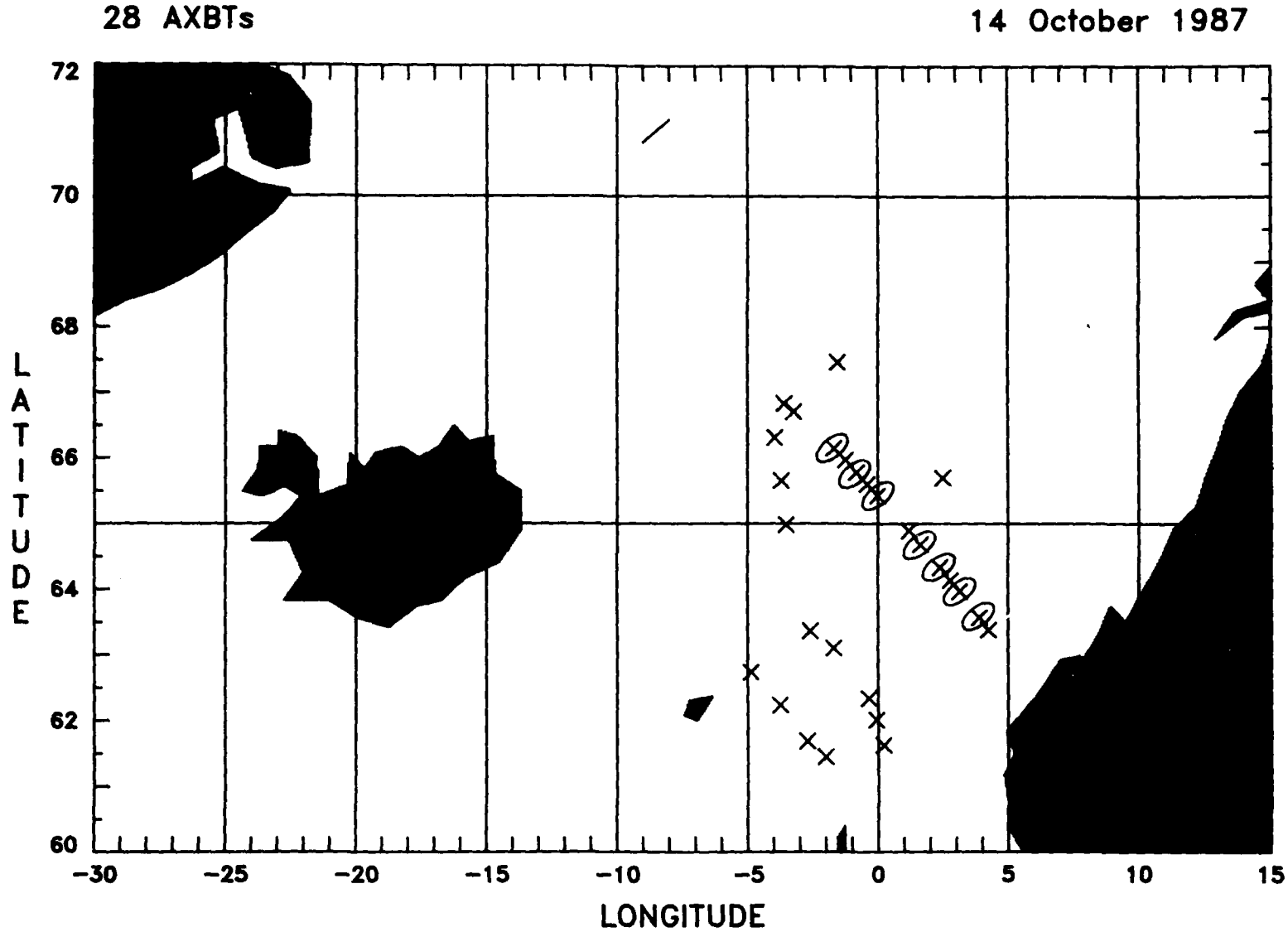


Figure 5. AXBT and AXSV drop positions, Flight 4, 14 October 1987, Southern Norwegian Sea. Circled drops were AXSVs.

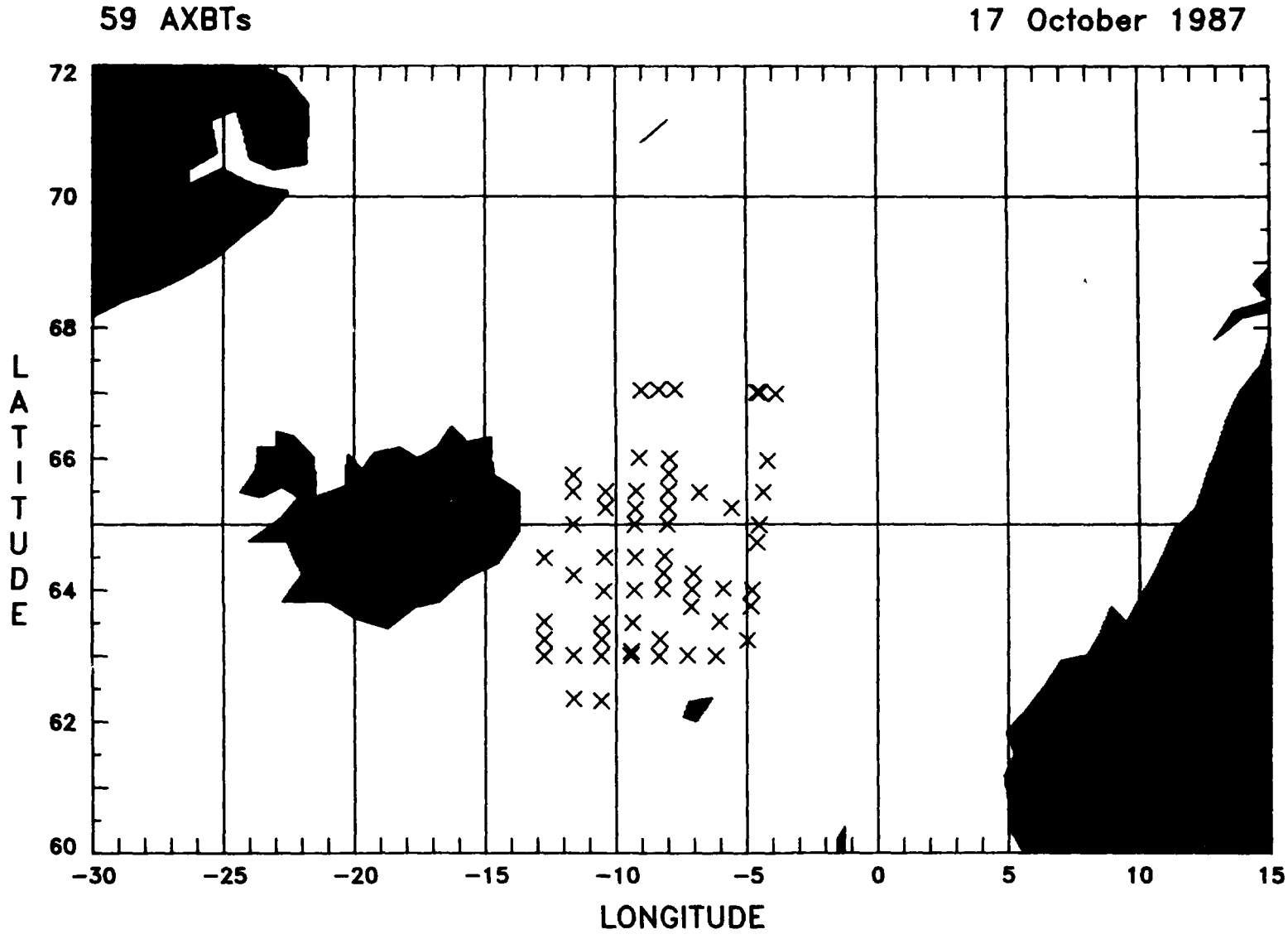


Figure 6. AXBT drop positions, Flight 5, 17 October 1987, Iceland-Faeroe Front region.

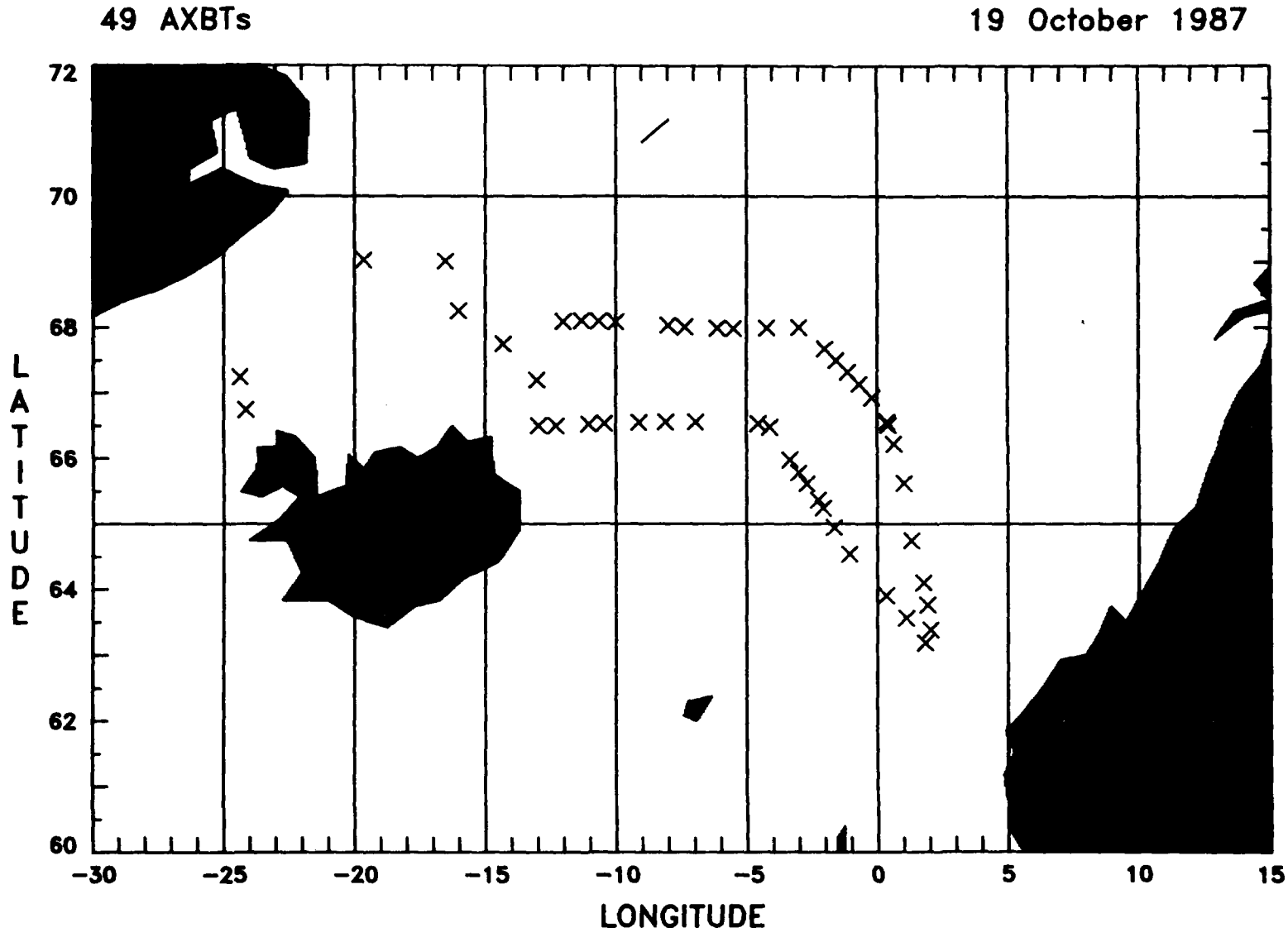


Figure 7. AXBT drop positions, Flight 6, 19 October 1987, Selected parts of Iceland and Norwegian Seas.

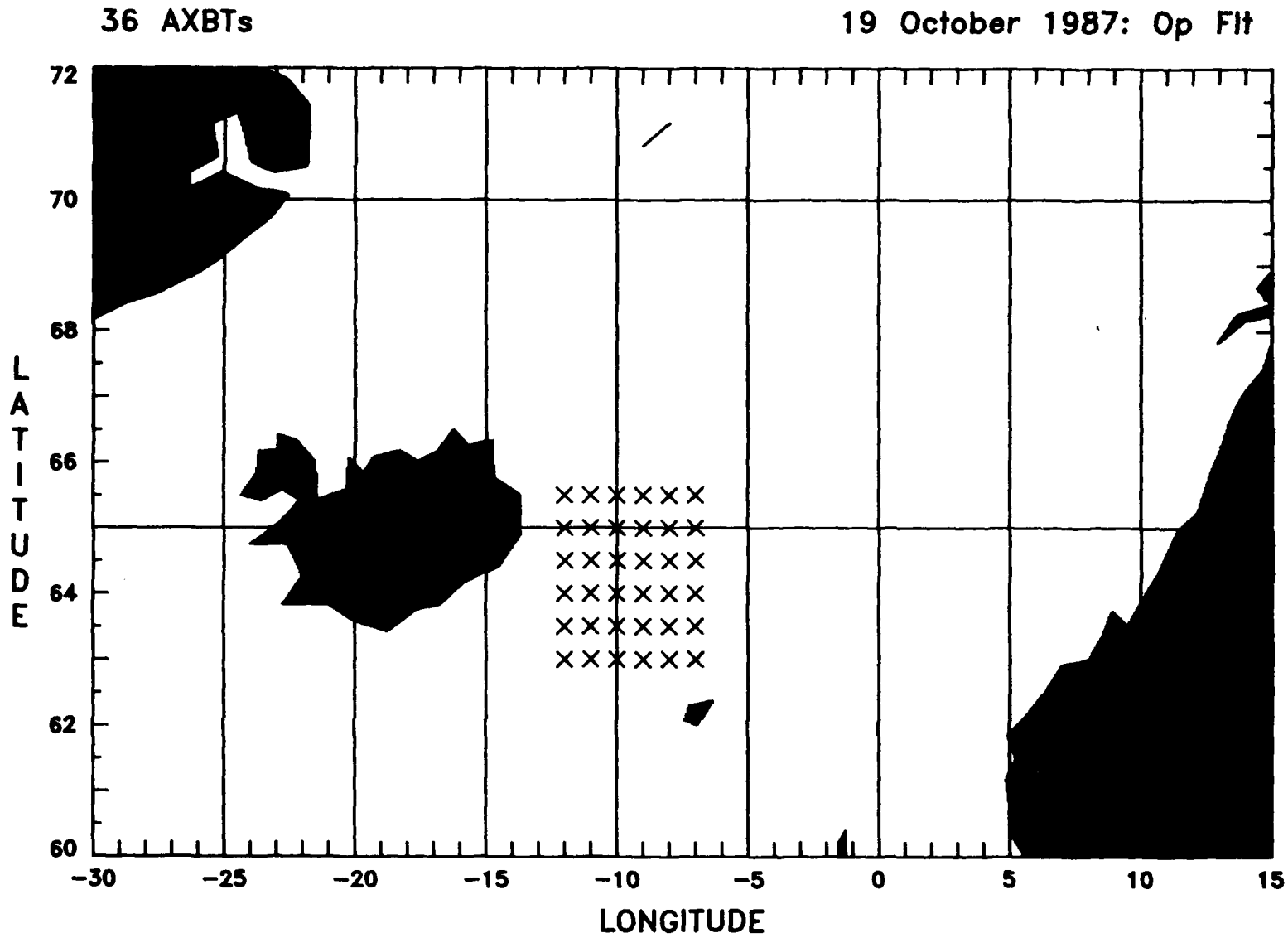


Figure 8. AXBT drop positions, operational P-3 flight, 19 October 1987, Iceland Faeroe-Front region.

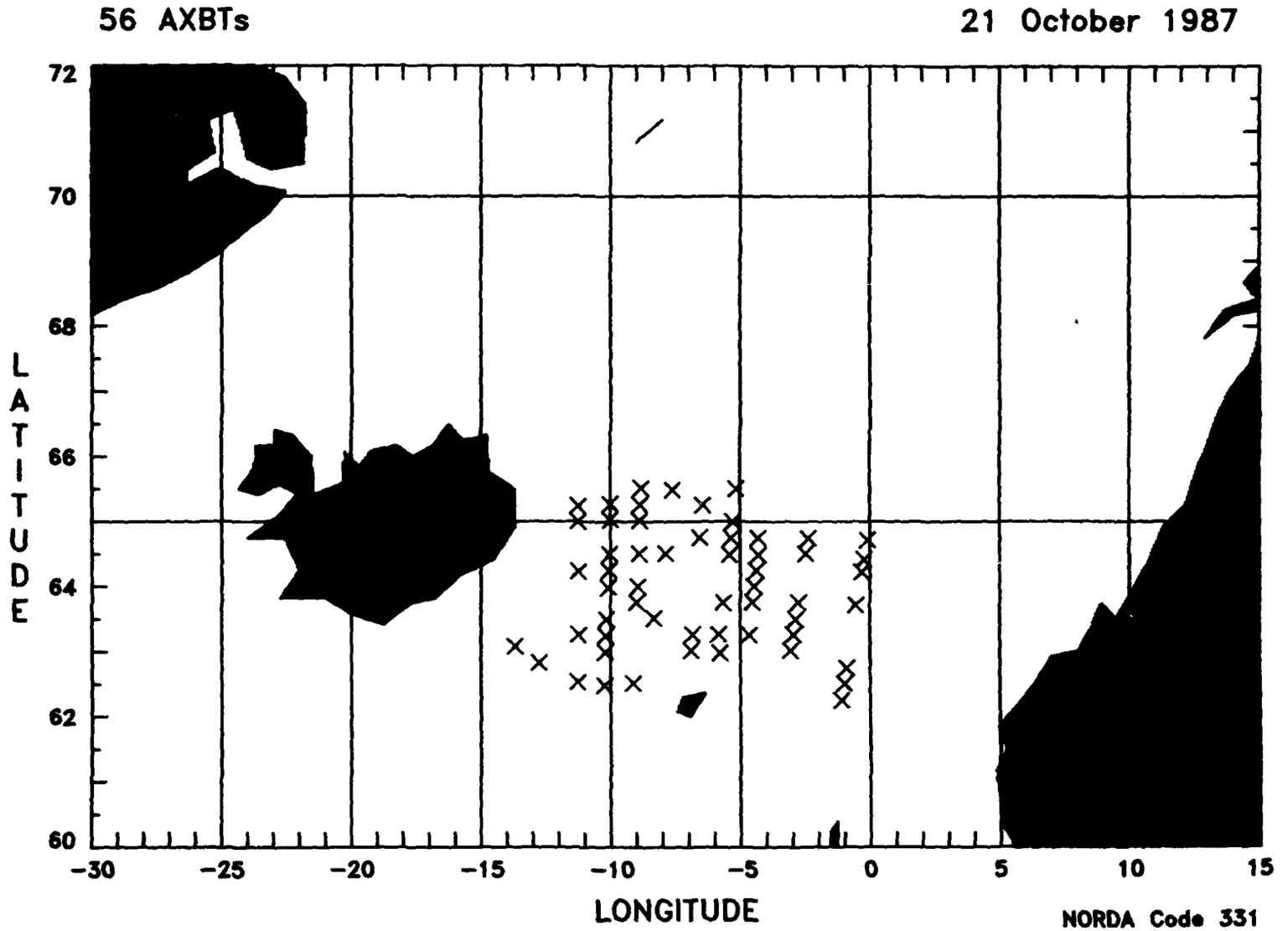


Figure 9. AXBT drop positions, Flight 7, 21 October 1987, Iceland-Faeroe Front region.

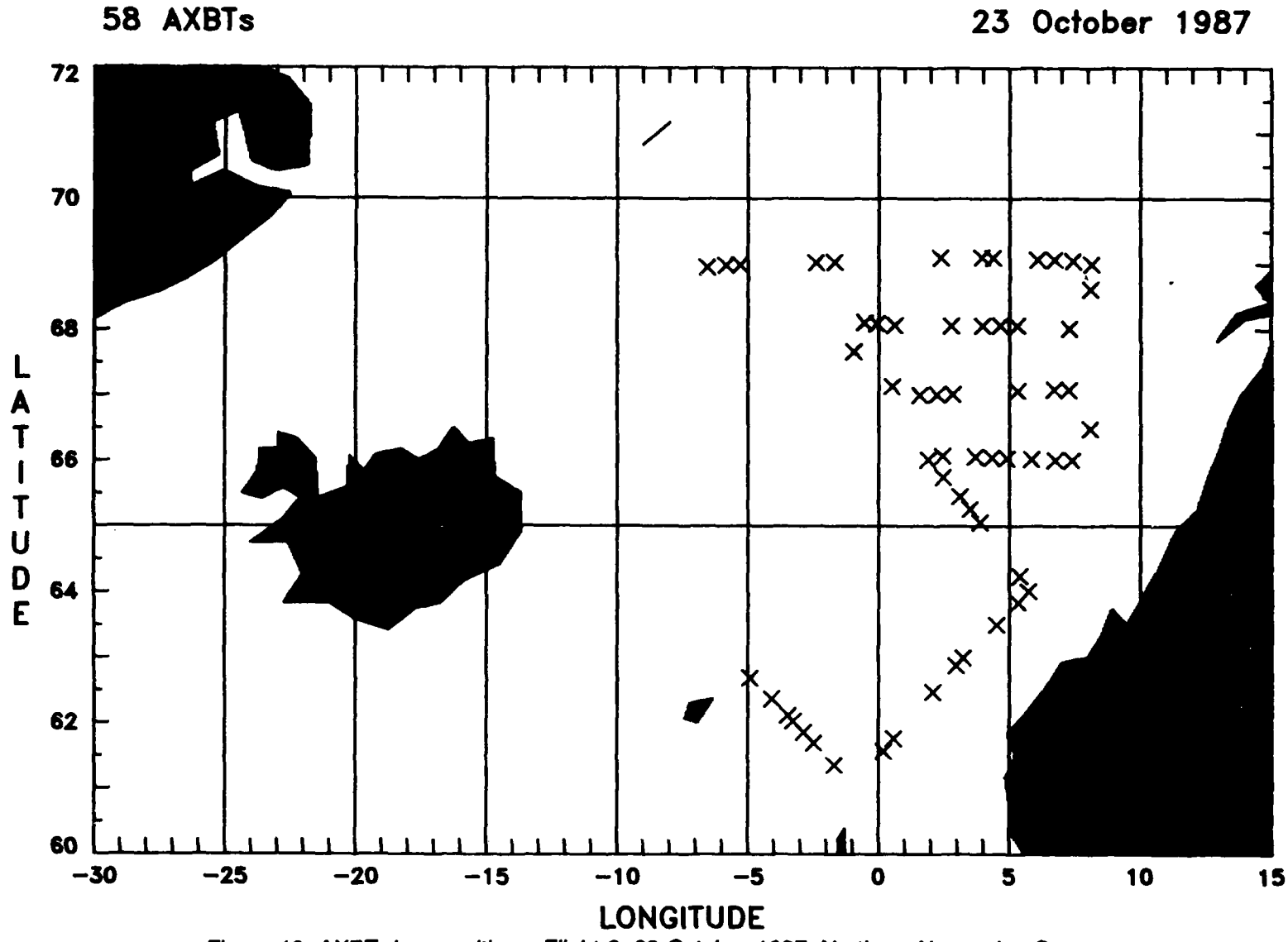


Figure 10. AXBT drop positions, Flight 8, 23 October 1987, Northern Norwegian Sea.

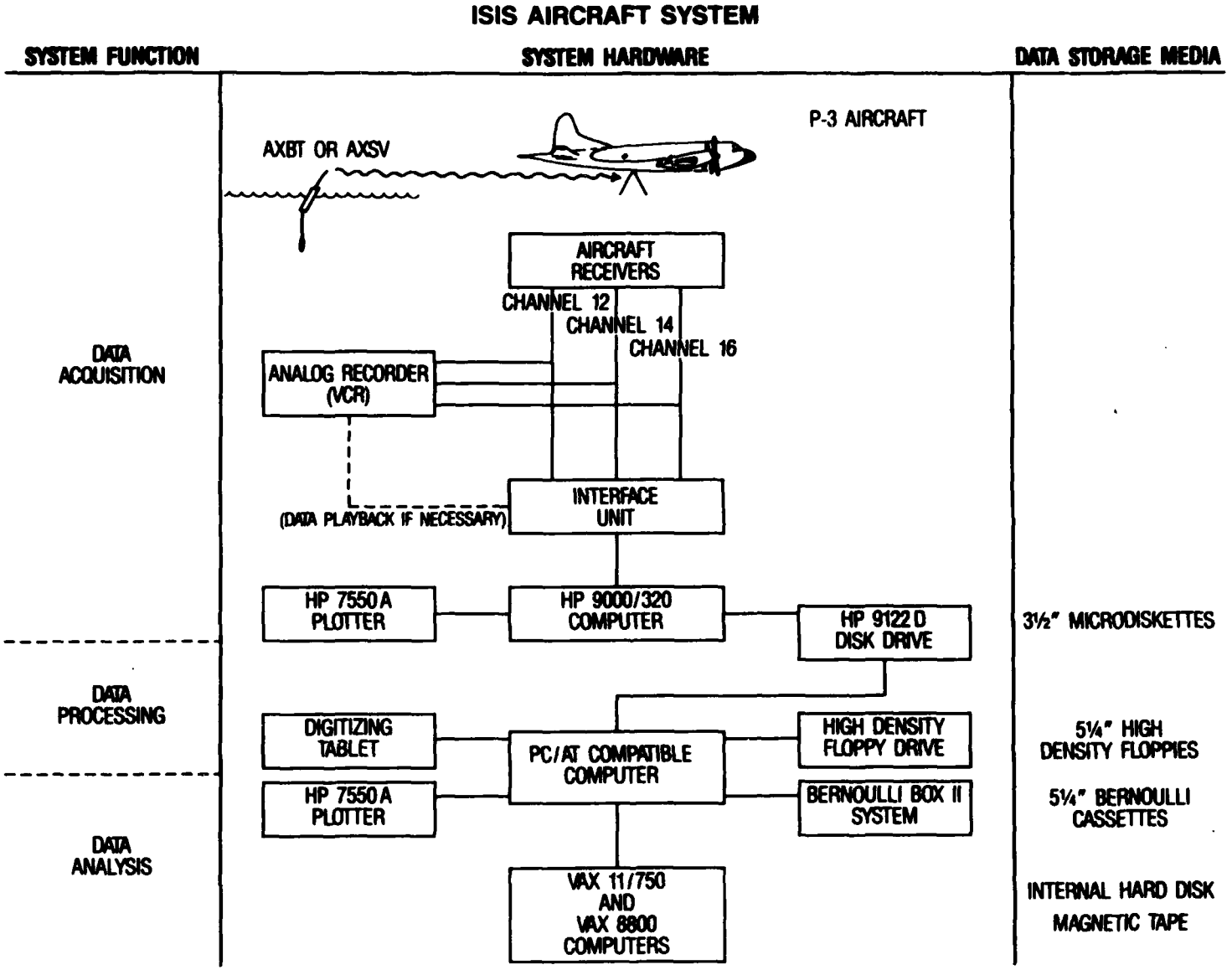


Figure 11. Isis airborne data acquisition, processing and analysis system.

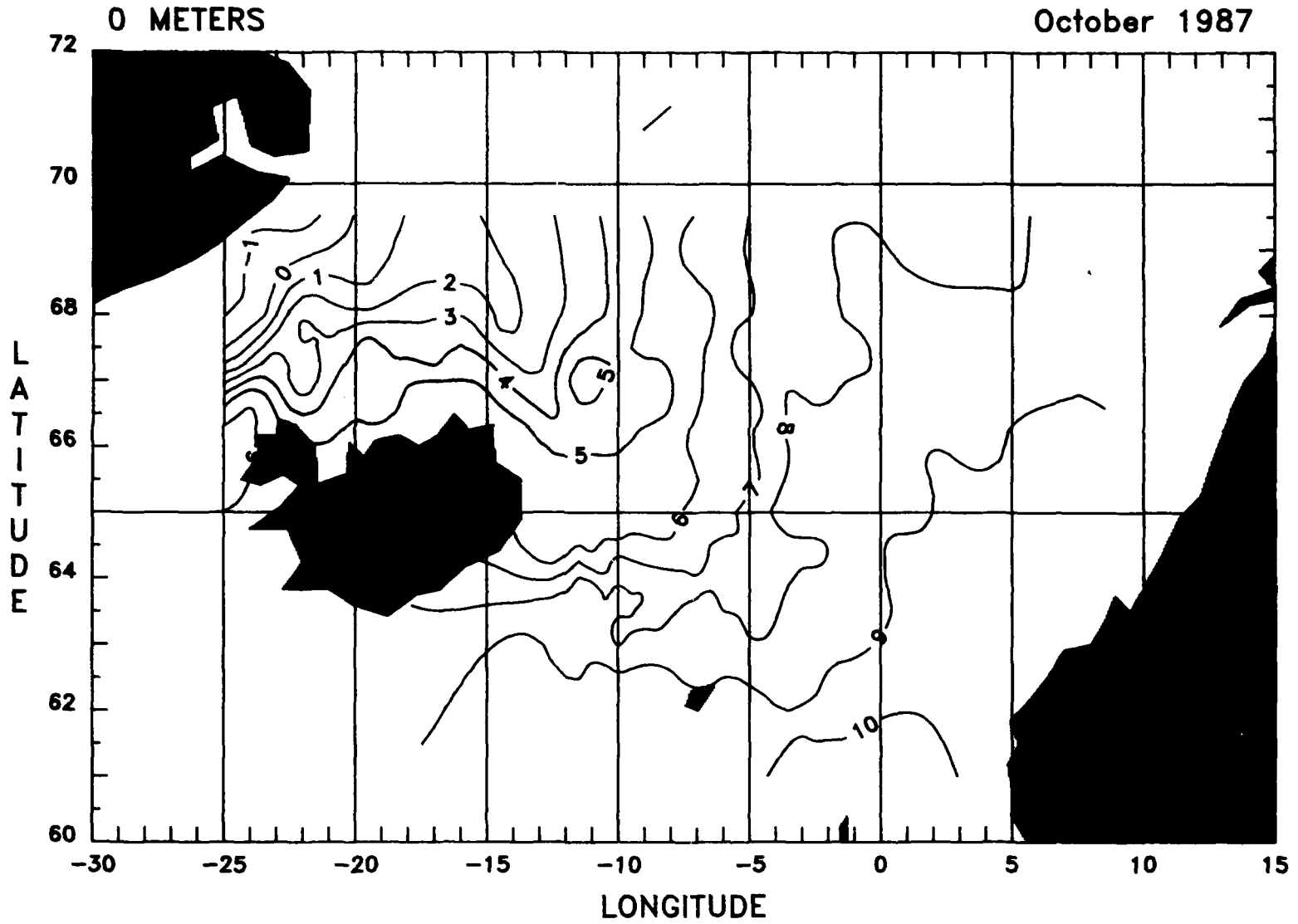


Figure 12. Temperature (°C) at 0 m, all flights, October 1987.

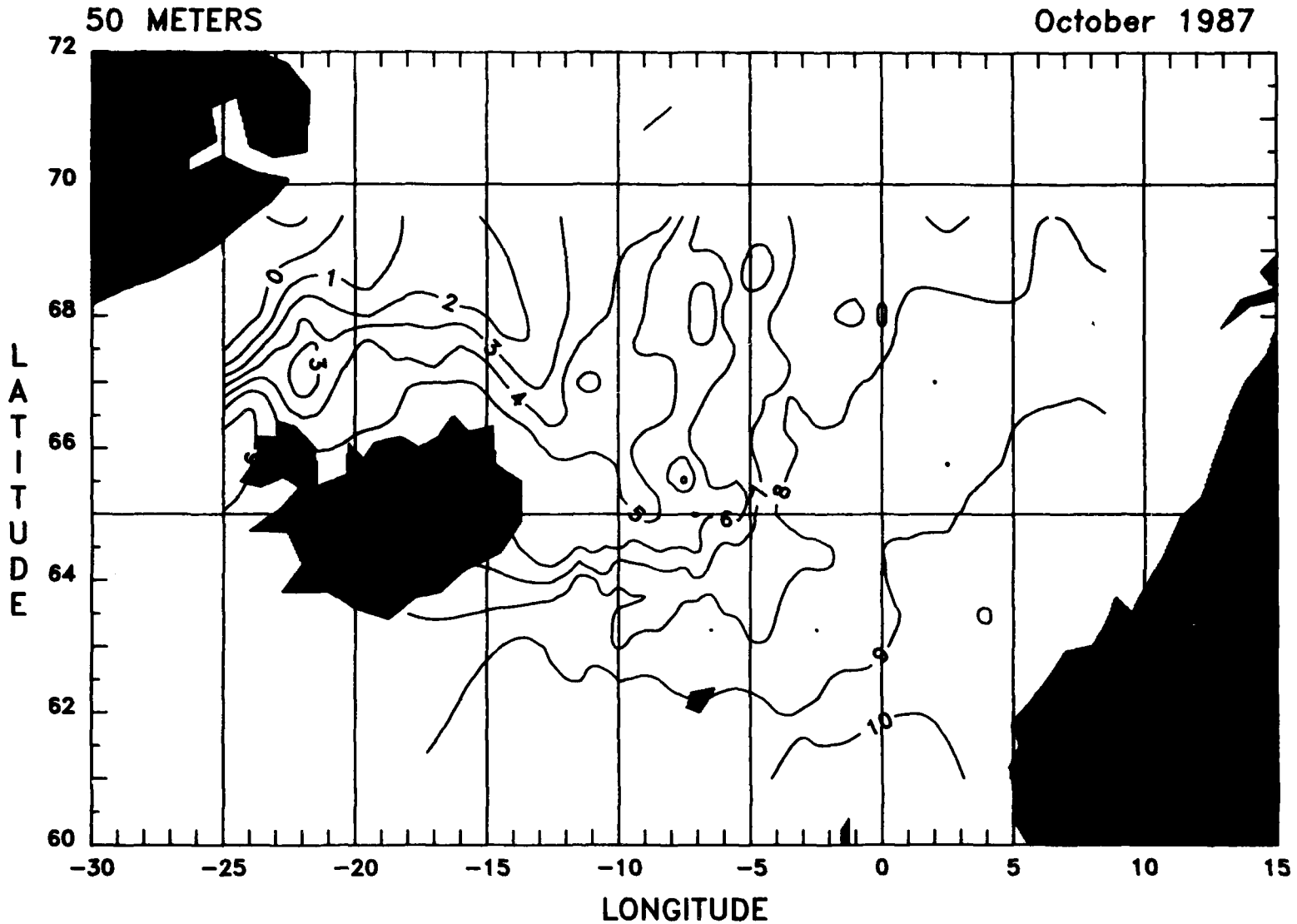


Figure 13. Temperature (°C) at 50 m, all flights, October 1987.

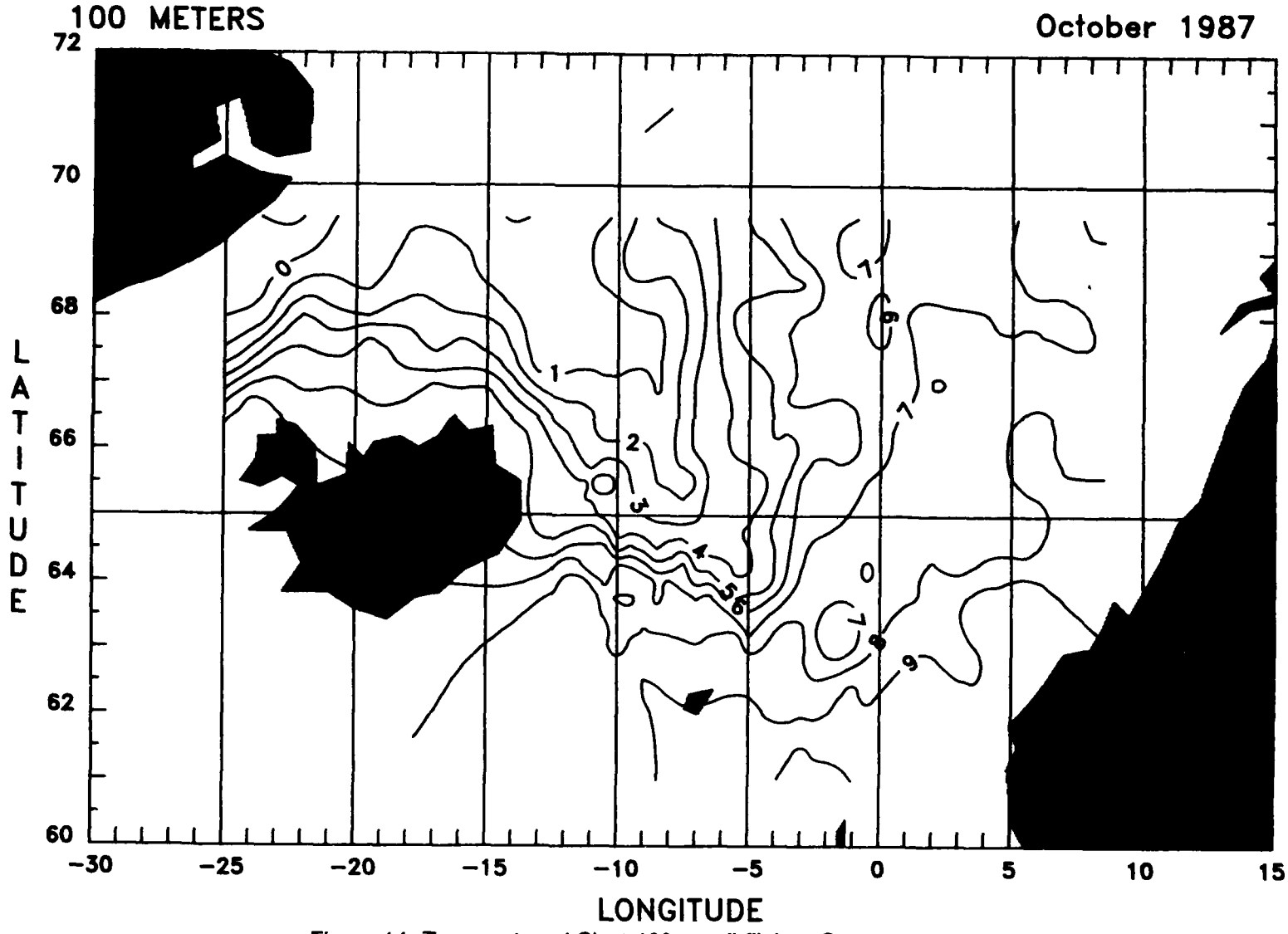


Figure 14. Temperature (°C) at 100 m, all flights, October 1987.

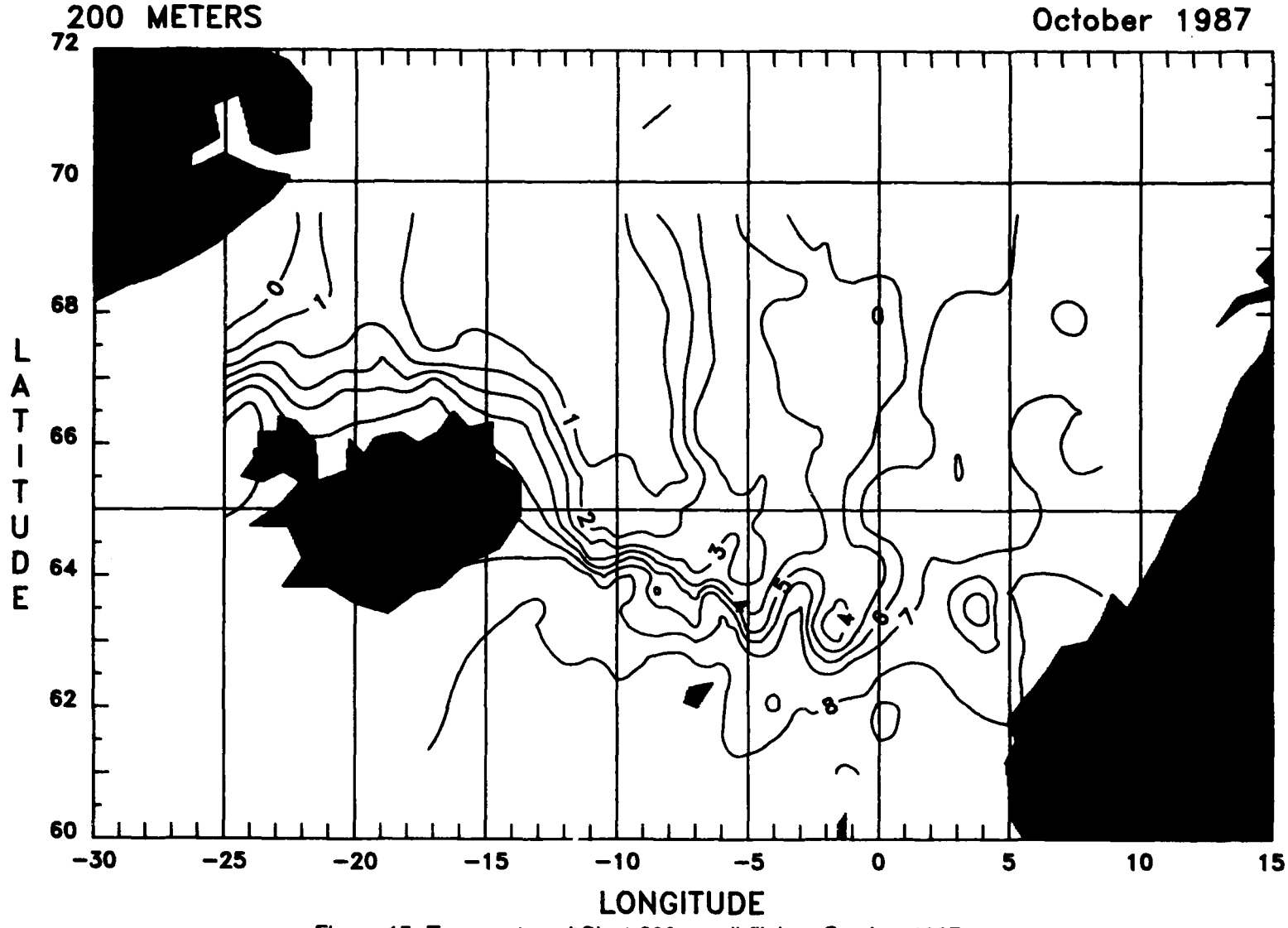


Figure 15. Temperature (°C) at 200 m, all flights, October 1987.

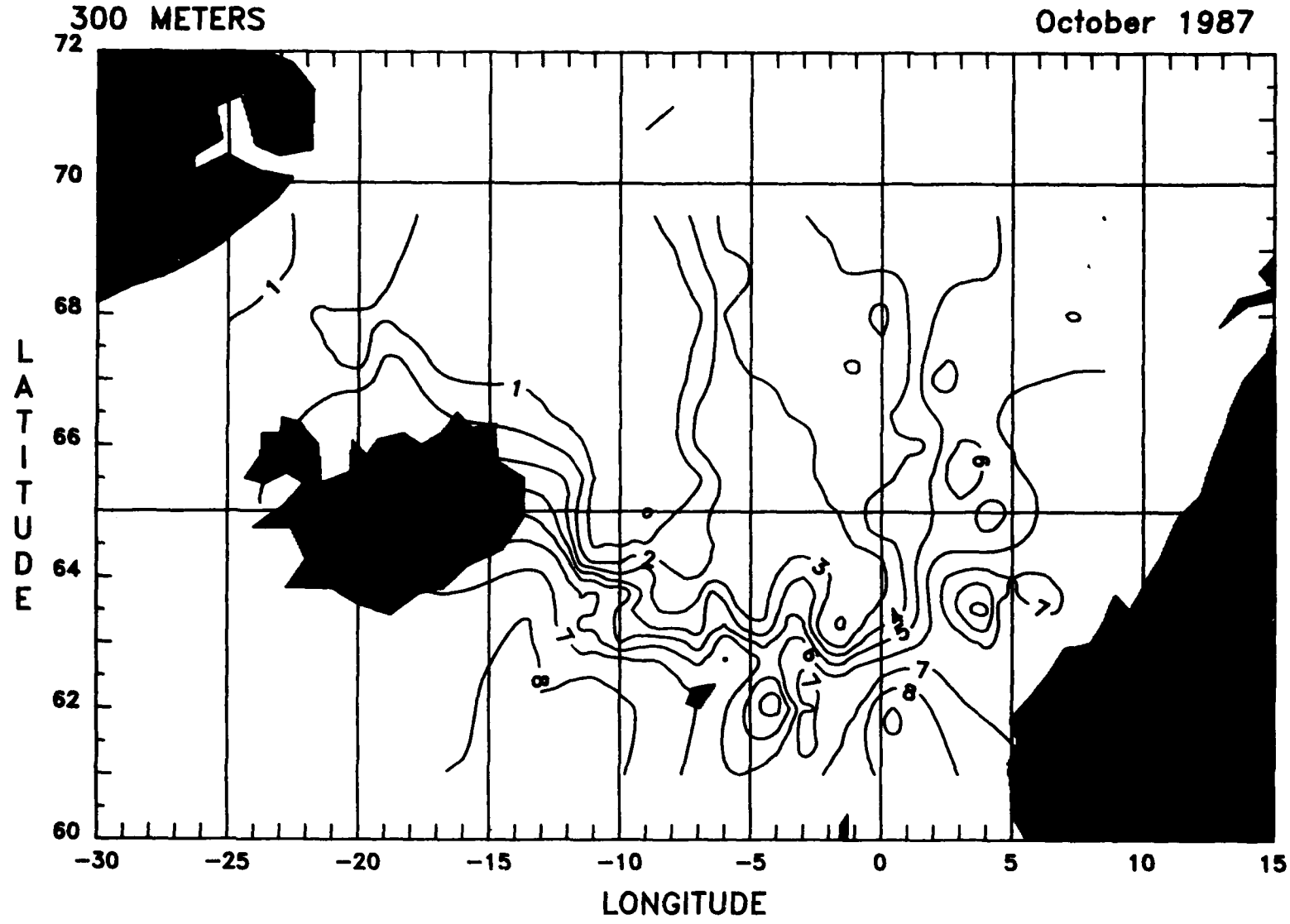


Figure 16. Temperature (°C) at 300 m, all flights, October 1987.

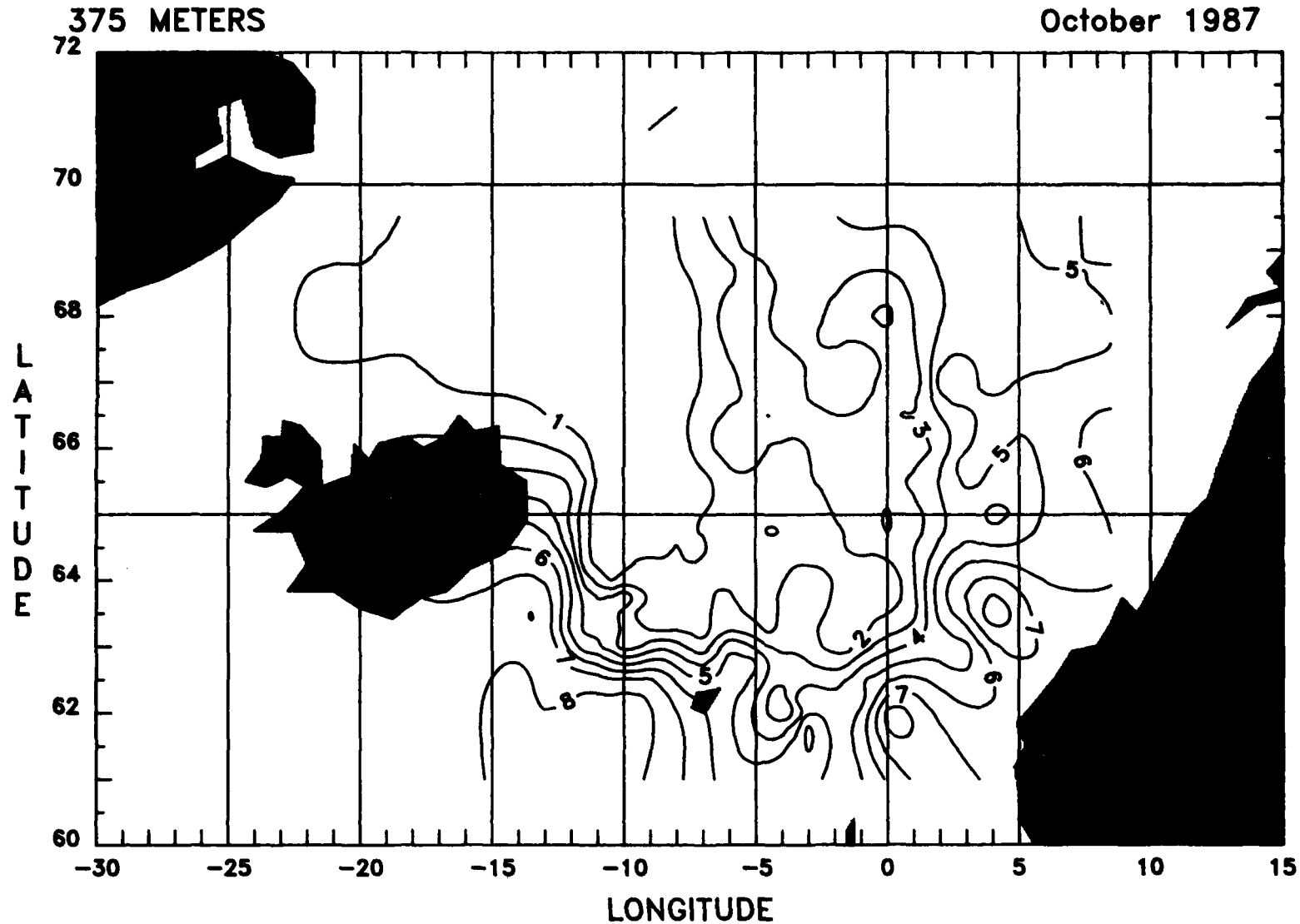
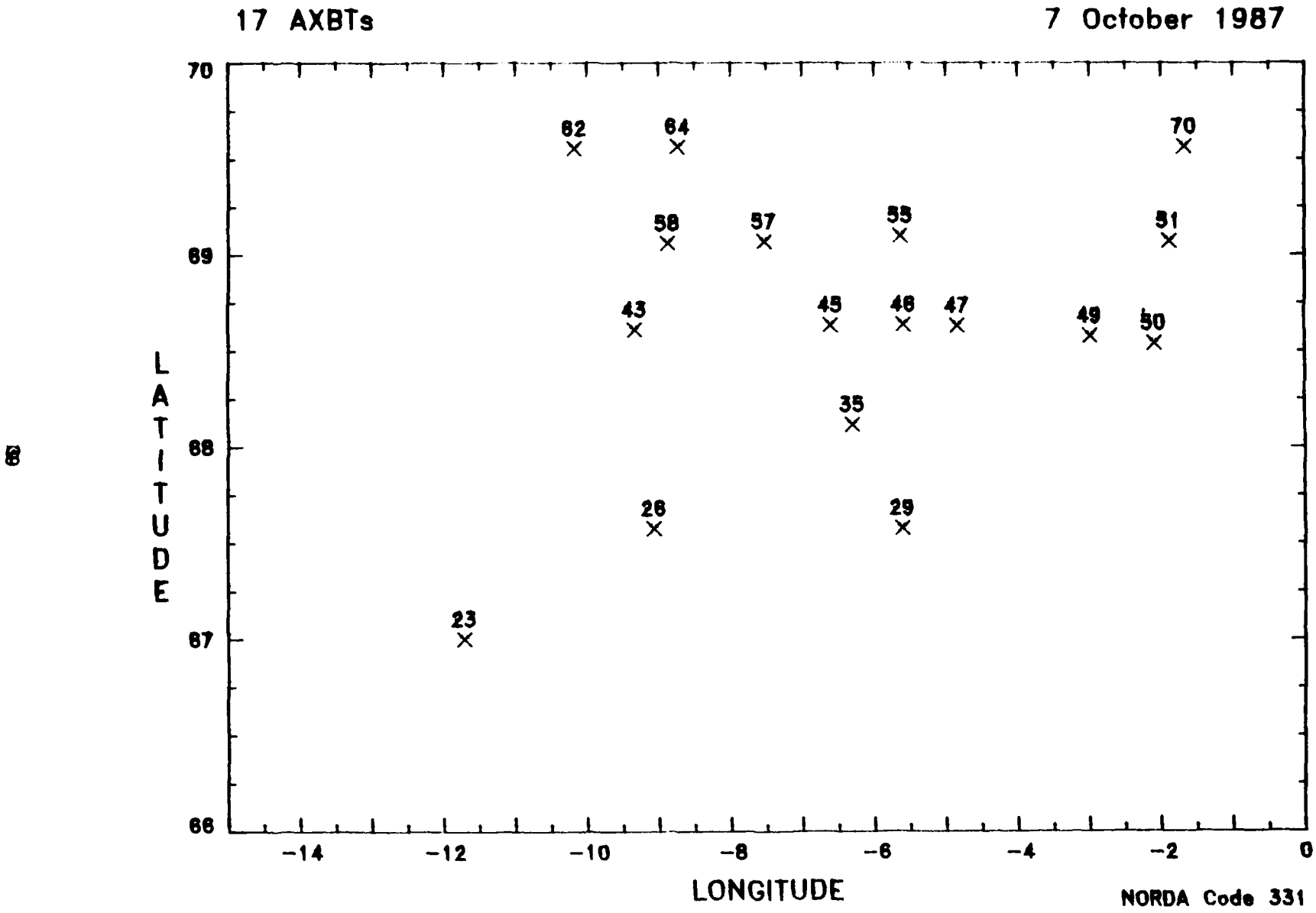
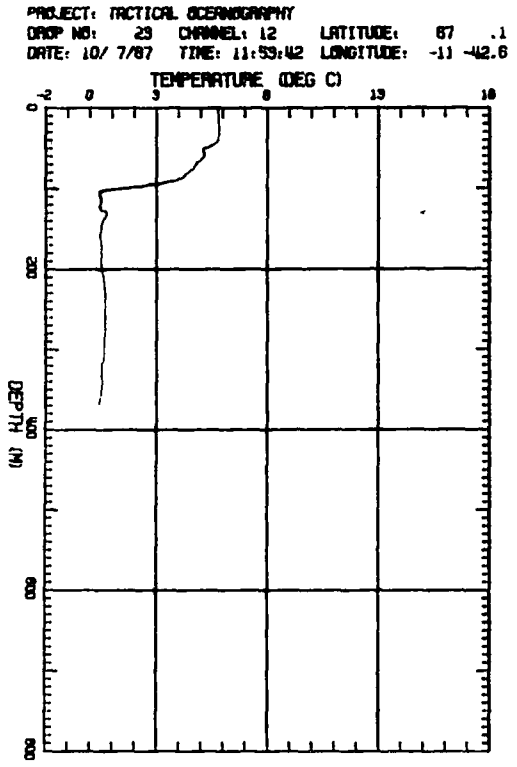
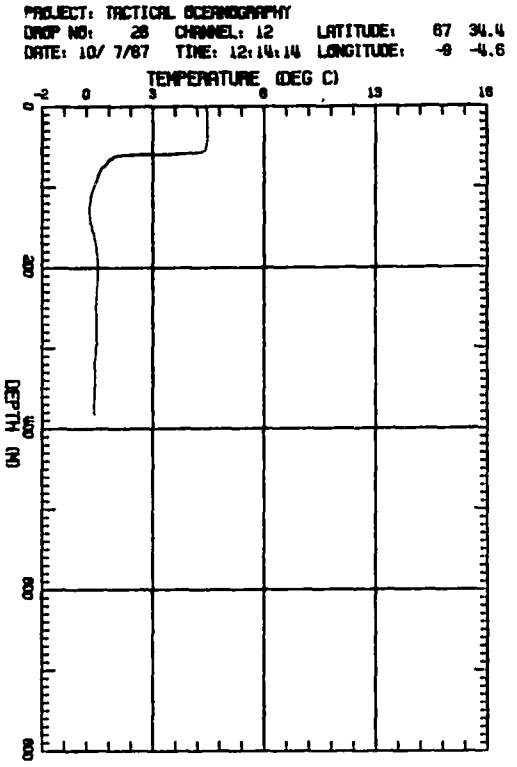


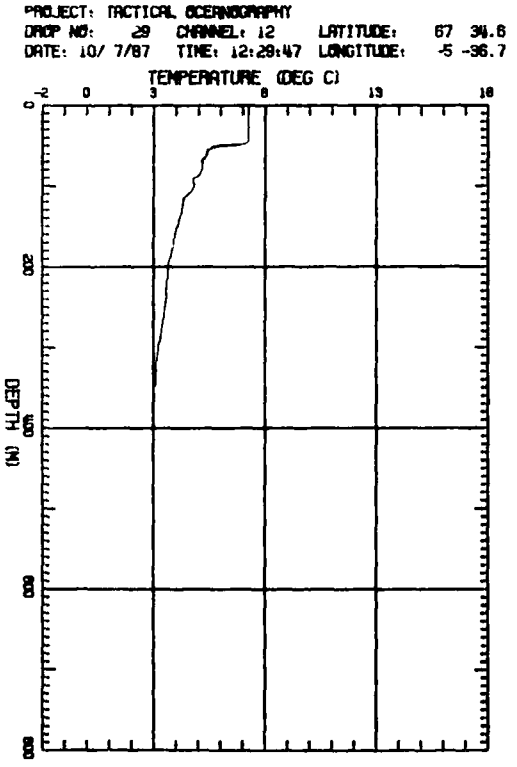
Figure 17. Temperature (°C) at 375 m, all flights, October 1987.

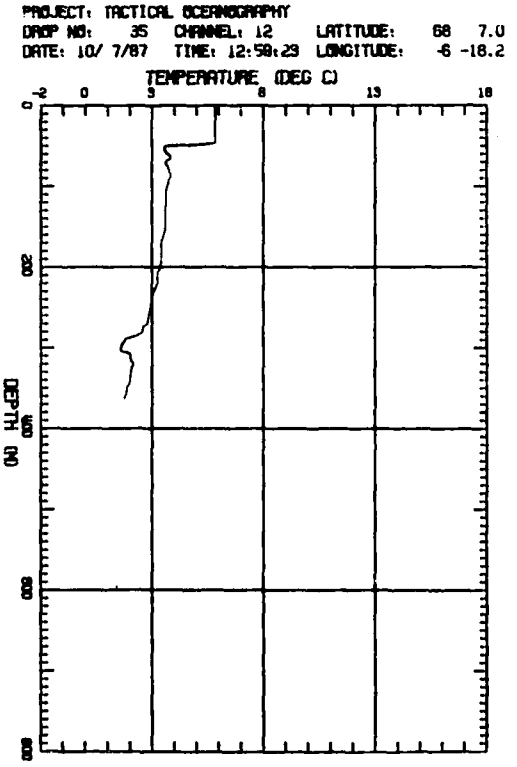
Appendix A.
Drop Positions and Data Profiles, Flight 1, 7 October 1987, Jan Mayen Front Region.


17 AXBTs
7 October 1987
70
69
68
67
66
LATITUDE
62
64
70
58
57
55
51
43
45
46
47
49
50
35
26
29
23
−14
−12
−10
−8
−6
−4
−2
0
LONGITUDE
NORDA Code 331

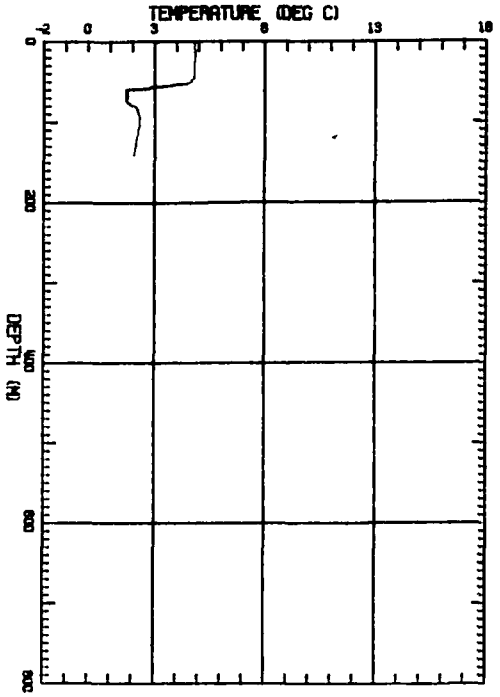

PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 23 CHANNEL: 12 LATITUDE: 67 .1
DATE: 10/ 7/87 TIME: 11:53:42 LONGITUDE: -11 -42.6
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)


PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 28 CHANNEL: 12 LATITUDE: 67 34.4
DATE: 10/ 7/87 TIME: 12:14:14 LONGITUDE: -9 -4.6
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)

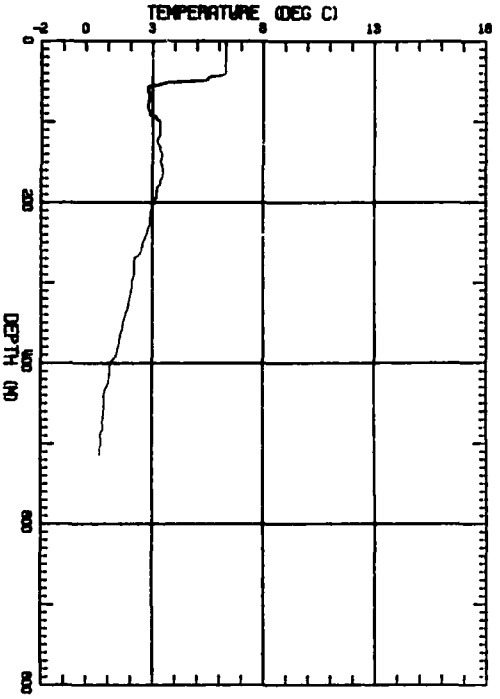

PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 29 CHANNEL: 12 LATITUDE: 67 34.6
DATE: 10/ 7/87 TIME: 12:29:47 LONGITUDE: -5 -36.7
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)


PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 35 CHANNEL: 12 LATITUDE: 68 7.0
DATE: 10/ 7/87 TIME: 12:58:23 LONGITUDE: -6 -18.2
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)

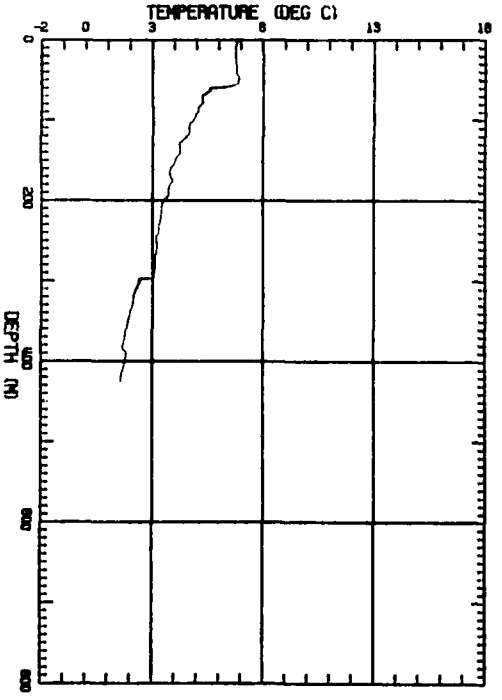
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 43 CHANNEL: 16 LATITUDE: 68 38.5
DATE: 10/ 7/87 TIME: 14:25:48 LONGITUDE: -9 -20.3



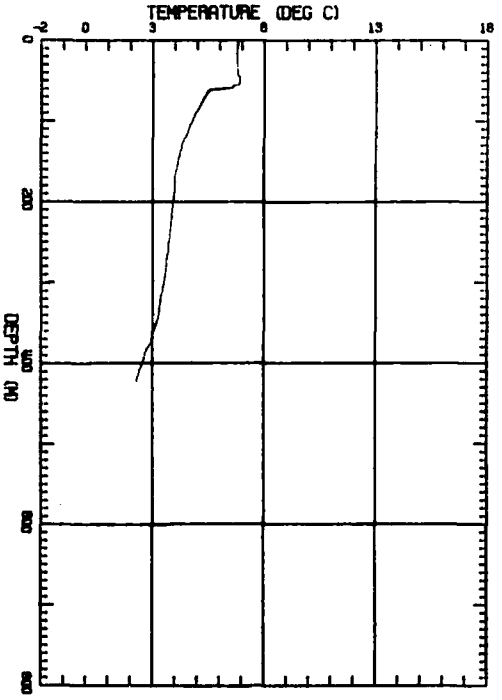
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 45 CHANNEL: 12 LATITUDE: 68 38.0
DATE: 10/ 7/87 TIME: 14:37:28 LONGITUDE: -6 -36.4



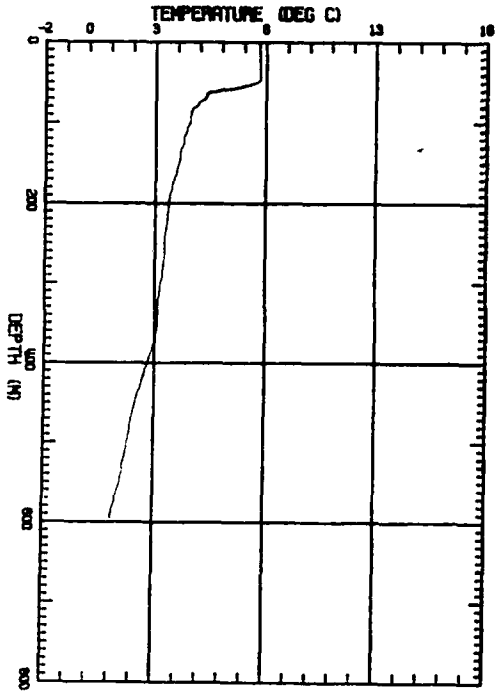
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 46 CHANNEL: 16 LATITUDE: 68 38.2
DATE: 10/ 7/87 TIME: 14:41:26 LONGITUDE: -5 -35.4



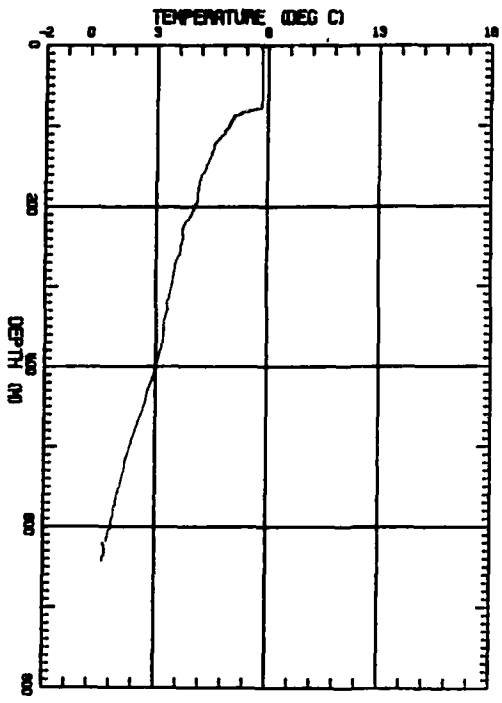
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 47 CHANNEL: 14 LATITUDE: 68 37.9
DATE: 10/ 7/87 TIME: 14:44:25 LONGITUDE: -4 -50.4



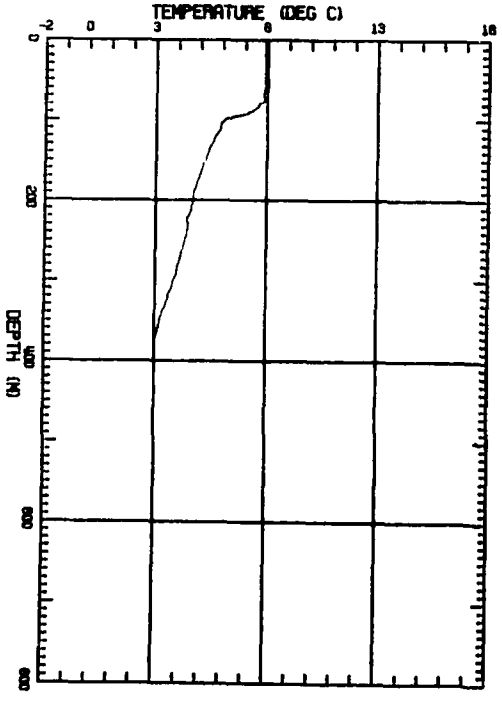
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 49 CHANNEL: 16 LATITUDE: 69 36.6
DATE: 10/ 7/87 TIME: 14:51:59 LONGITUDE: -2 -59.6



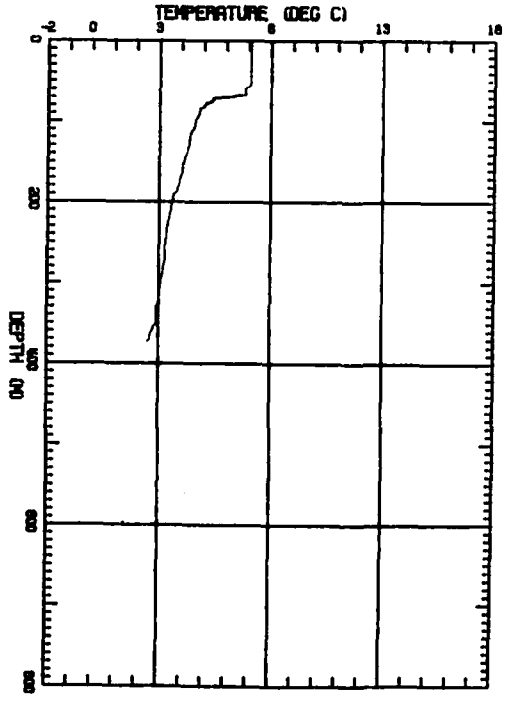
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 50 CHANNEL: 16 LATITUDE: 69 32.4
DATE: 10/ 7/87 TIME: 14:55:59 LONGITUDE: -2 -6.0



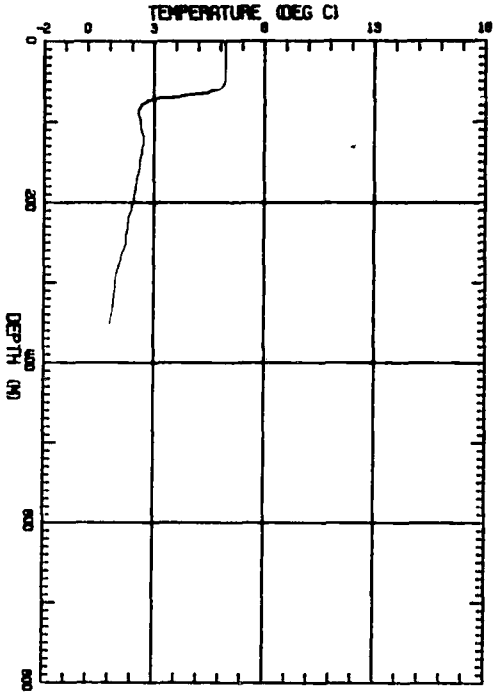
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 51 CHANNEL: 12 LATITUDE: 69 4.3
DATE: 10/ 7/87 TIME: 15: 3:22 LONGITUDE: -1 -52.9



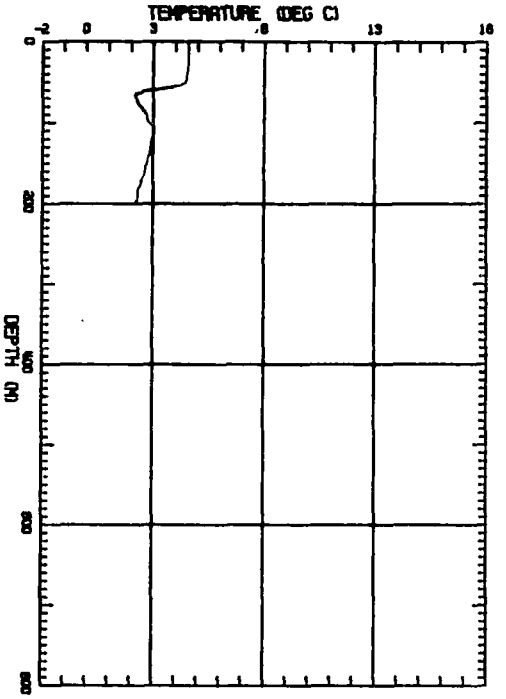
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 55 CHANNEL: 16 LATITUDE: 69 5.9
DATE: 10/ 7/87 TIME: 15:21:12 LONGITUDE: -5 -37.9



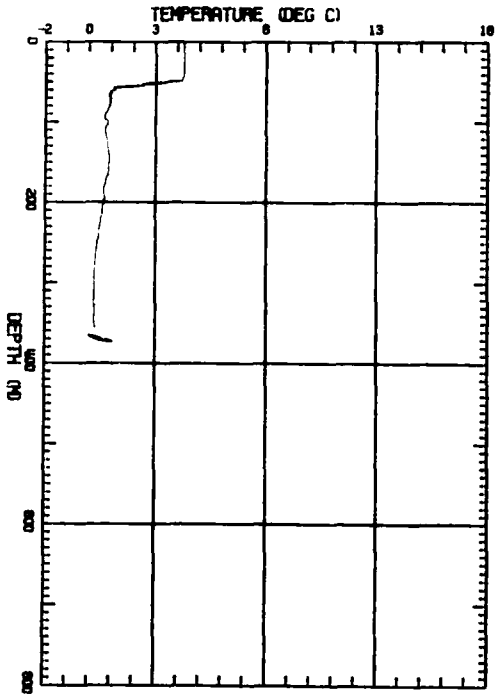
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 57 CHANNEL: 12 LATITUDE: 69 4.1
DATE: 10/ 7/87 TIME: 15:29:47 LONGITUDE: -7 -51.7



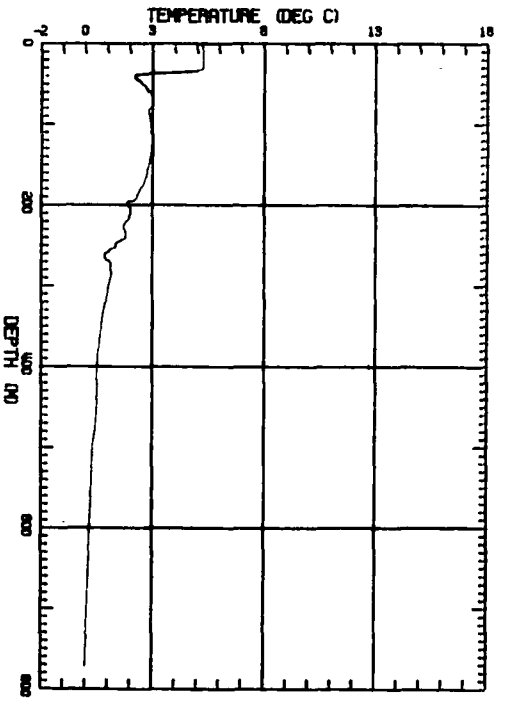
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 58 CHANNEL: 16 LATITUDE: 69 3.4
DATE: 10/ 7/87 TIME: 15:38: 1 LONGITUDE: -8 -52.5

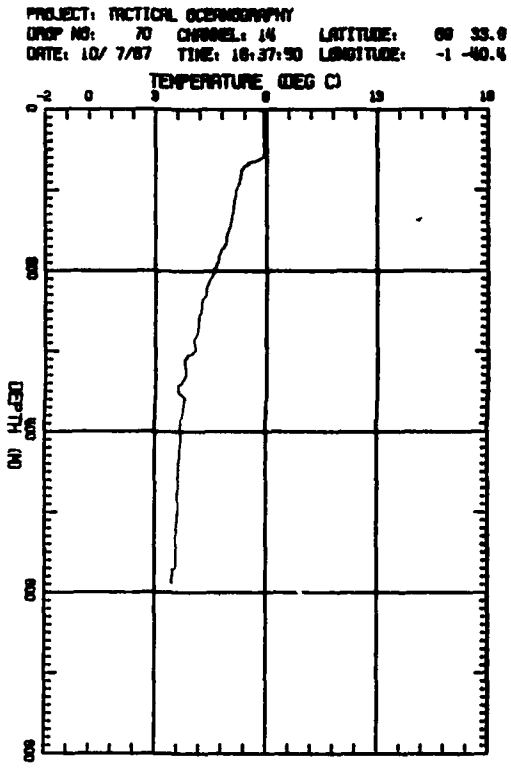


PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 62 CHANNEL: 14 LATITUDE: 68 33.3
DATE: 10/ 7/87 TIME: 18: 2:49 LONGITUDE: -10 -10.5

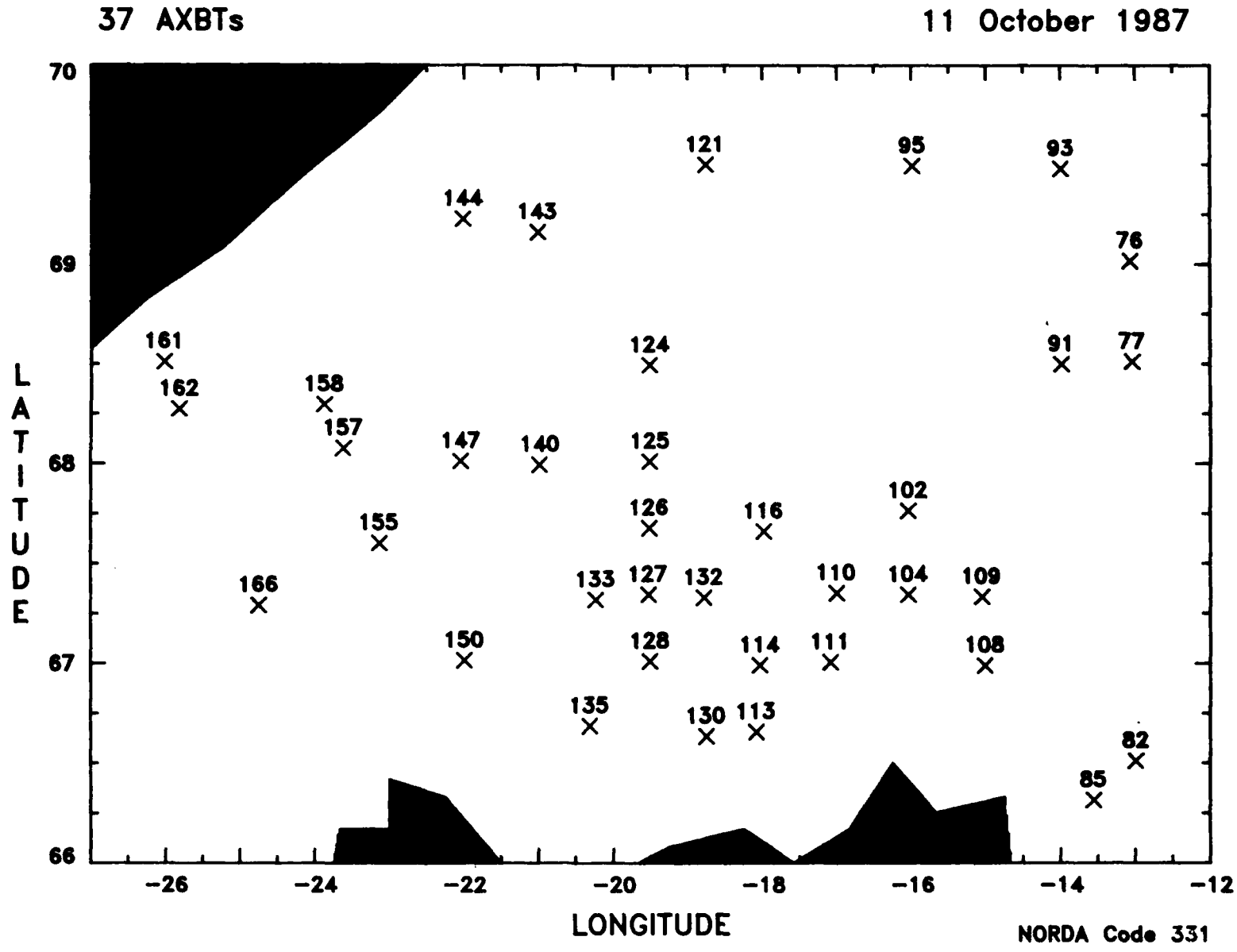


PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 64 CHANNEL: 12 LATITUDE: 69 33.7
DATE: 10/ 7/87 TIME: 18: 8:45 LONGITUDE: -8 -44.1

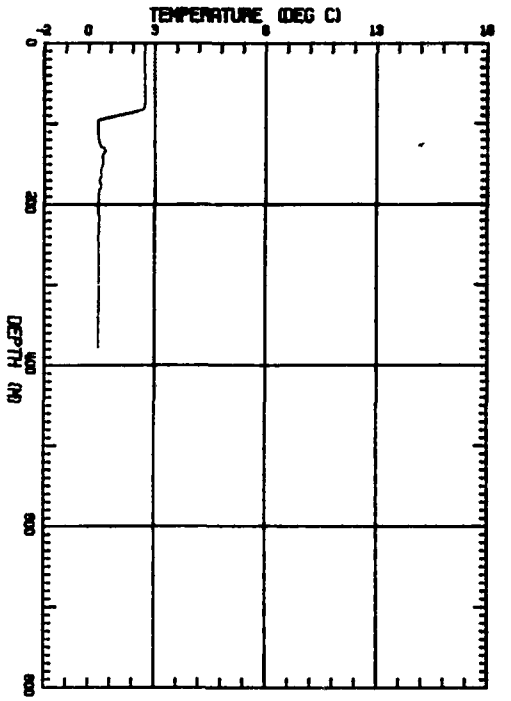



PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 70 CHANNEL: 14 LATITUDE: 60 33.0
DATE: 10/ 7/87 TIME: 18:37:50 LONGITUDE: -1 -40.4
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)

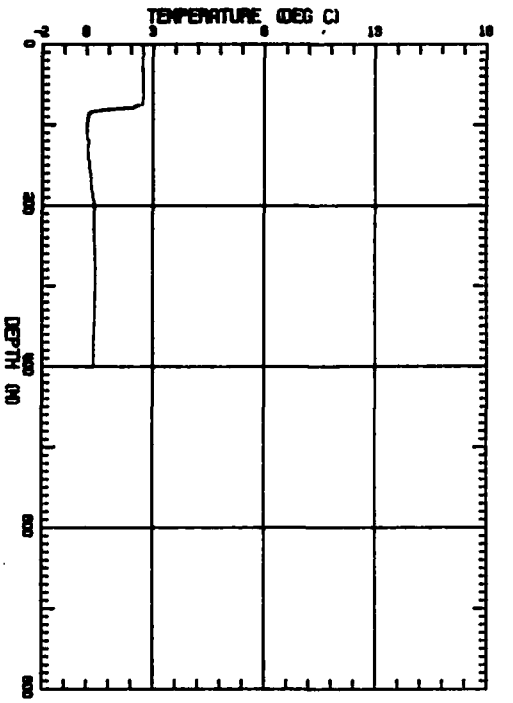
Appendix B.
Drop Positions and Data Profiles, Flight 2, 11 October 1987, Iceland Sea Region.


37 AXBTs
11 October 1987
70
69
68
67
66
LATITUDE
-26
-24
-22
-20
-18
-16
-14
-12
LONGITUDE
NORDA Code 331
121
95
93
144
143
76
161
124
91
77
162
158
157
147
140
125
102
155
126
116
166
133
127
132
110
104
109
150
128
114
111
108
135
130
113
82
85

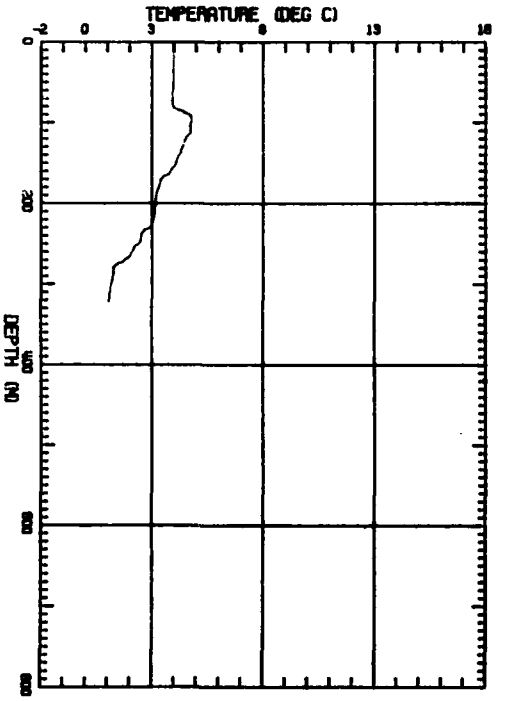
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 76 CHANNEL: 14 LATITUDE: 66 1.0
DATE: 10/11/87 TIME: 10:01:00 LONGITUDE: -13 -4.0



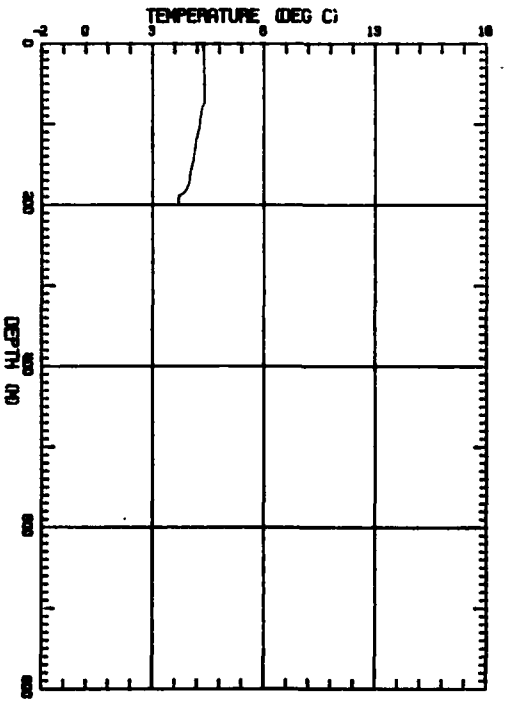
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 77 CHANNEL: 16 LATITUDE: 66 30.7
DATE: 10/11/87 TIME: 10: 7: 3 LONGITUDE: -13 -2.5



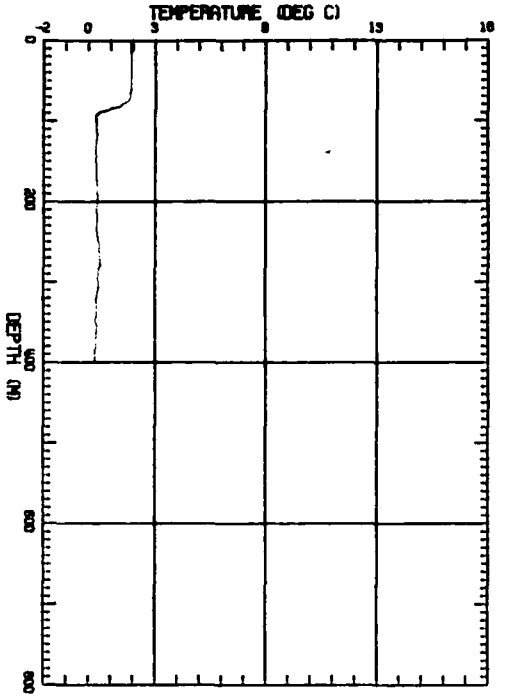
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 82 CHANNEL: 14 LATITUDE: 66 30.7
DATE: 10/11/87 TIME: 10:31:40 LONGITUDE: -12 -59.4



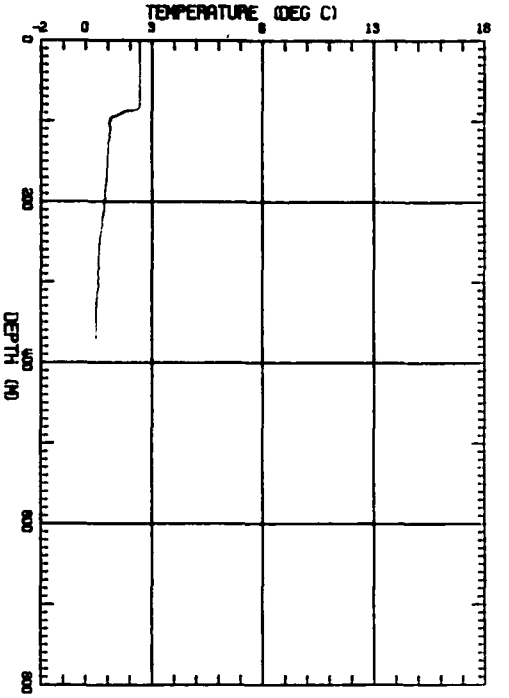
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 85 CHANNEL: 14 LATITUDE: 66 18.9
DATE: 10/11/87 TIME: 10:44:39 LONGITUDE: -13 -33.3



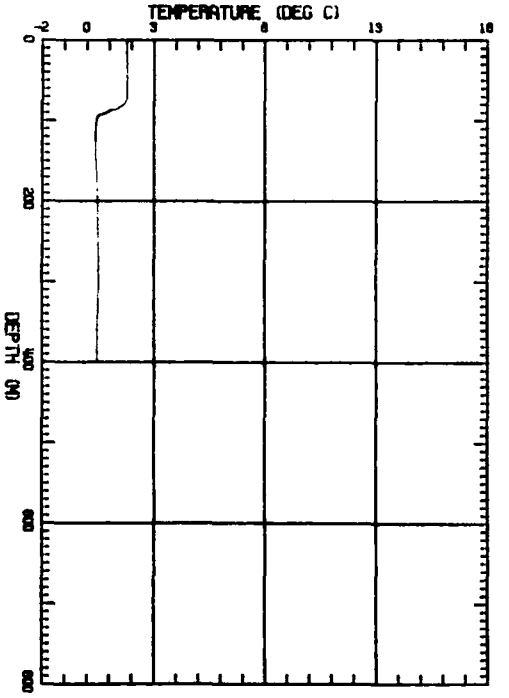
PROJECT: ARCTICAL OCEANOGRAPHY
DROP NO: 91 CHANNEL: 14 LATITUDE: 68 29.9
DATE: 10/11/87 TIME: 11:14:25 LONGITUDE: -13 -59.3



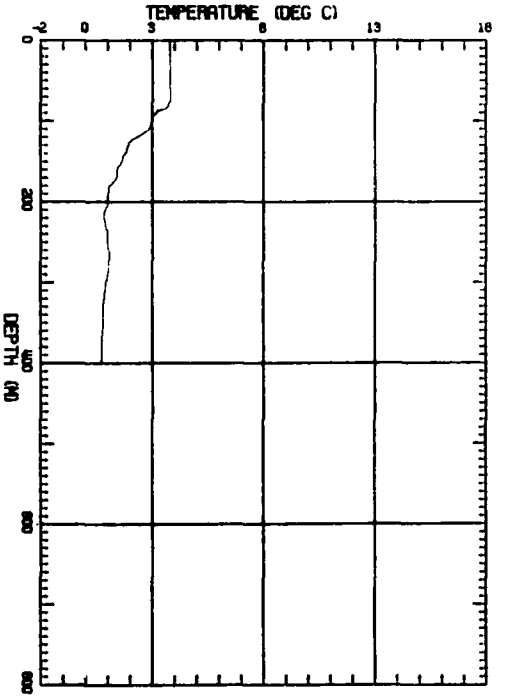
PROJECT: ARCTICAL OCEANOGRAPHY
DROP NO: 93 CHANNEL: 12 LATITUDE: 68 28.6
DATE: 10/11/87 TIME: 11:27:45 LONGITUDE: -13 -59.4

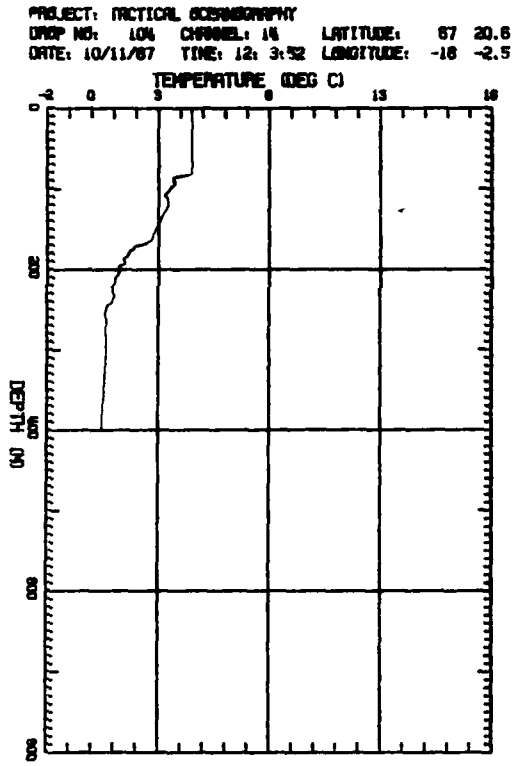


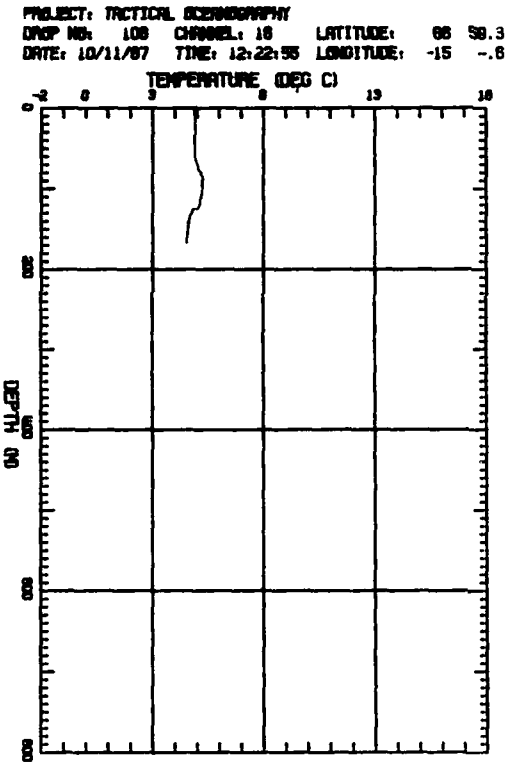
PROJECT: ARCTICAL OCEANOGRAPHY
DROP NO: 95 CHANNEL: 16 LATITUDE: 68 29.7
DATE: 10/11/87 TIME: 11:37:16 LONGITUDE: -15 -59.0

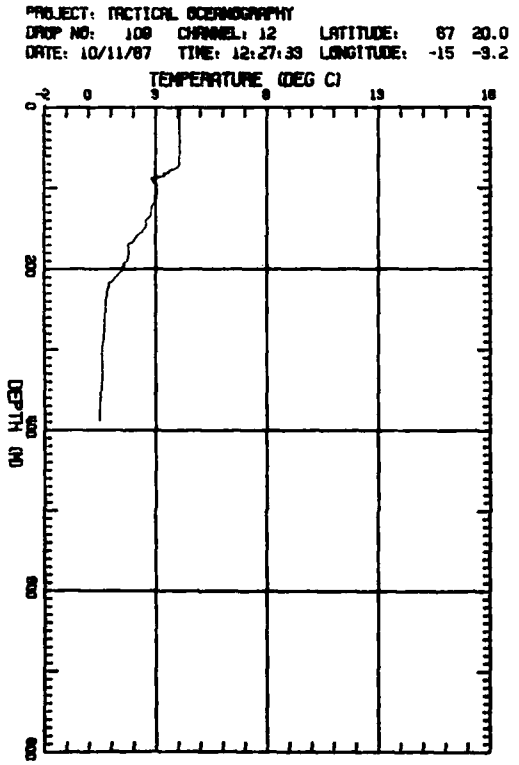


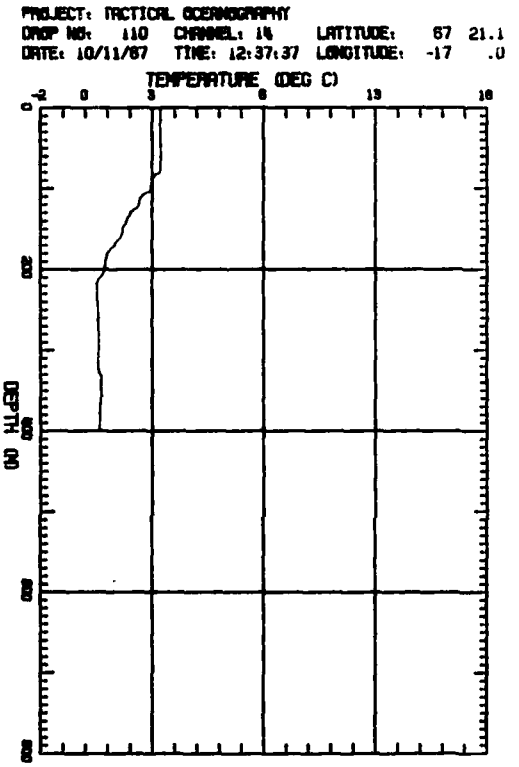
PROJECT: ARCTICAL OCEANOGRAPHY
DROP NO: 102 CHANNEL: 16 LATITUDE: 67 45.6
DATE: 10/11/87 TIME: 11:58:48 LONGITUDE: -16 -2.4

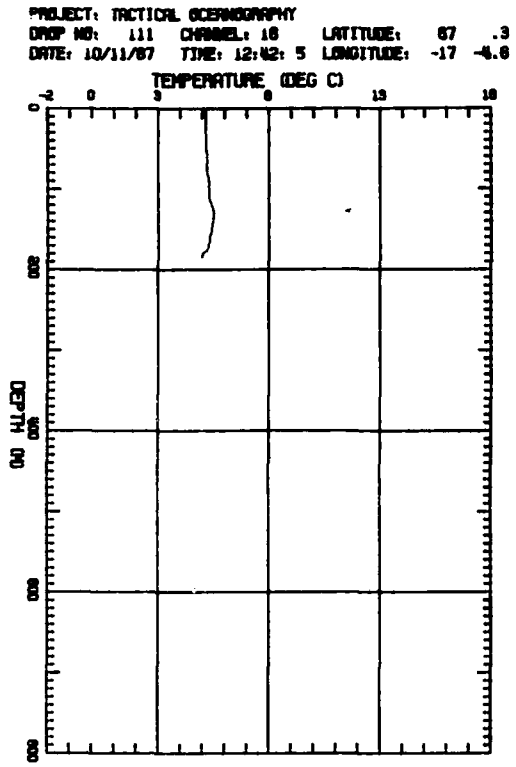


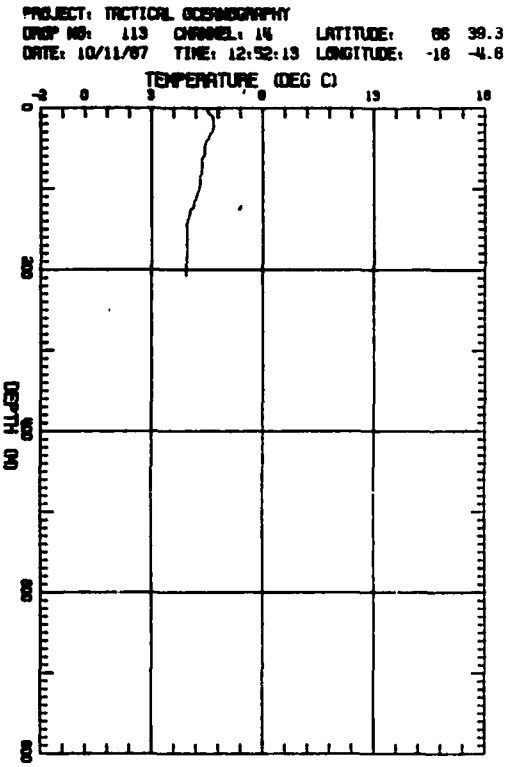

PROJECT: ARCTICAL OCEANOGRAPHY
DROP NO: 104 CHANNEL: 16 LATITUDE: 67 20.6
DATE: 10/11/87 TIME: 12: 3:52 LONGITUDE: -16 -2.5
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)

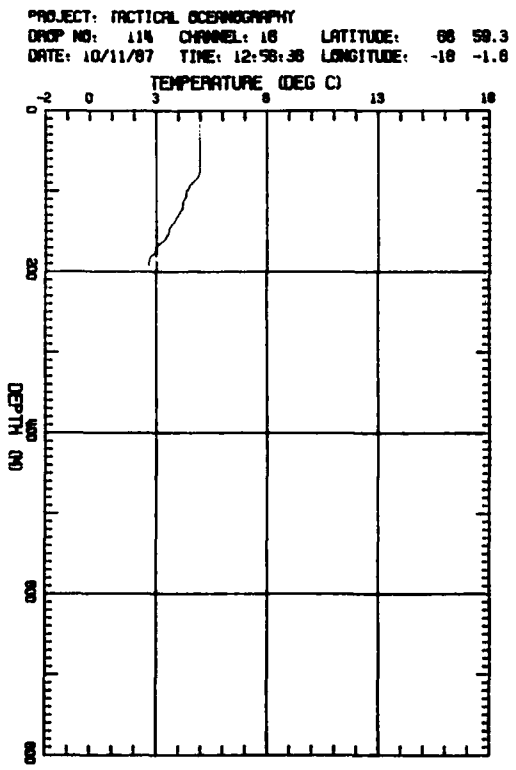

PROJECT: ARCTICAL OCEANOGRAPHY
DROP NO: 108 CHANNEL: 16 LATITUDE: 66 59.3
DATE: 10/11/87 TIME: 12:22:55 LONGITUDE: -15 -.6
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)

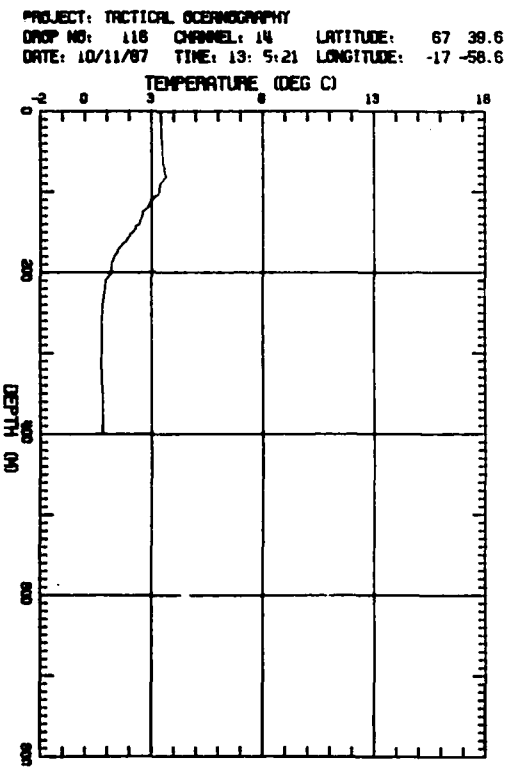

PROJECT: ARCTICAL OCEANOGRAPHY
DROP NO: 109 CHANNEL: 12 LATITUDE: 67 20.0
DATE: 10/11/87 TIME: 12:27:33 LONGITUDE: -15 -9.2
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)


PROJECT: ARCTICAL OCEANOGRAPHY
DROP NO: 110 CHANNEL: 16 LATITUDE: 67 21.1
DATE: 10/11/87 TIME: 12:37:37 LONGITUDE: -17 .0
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)

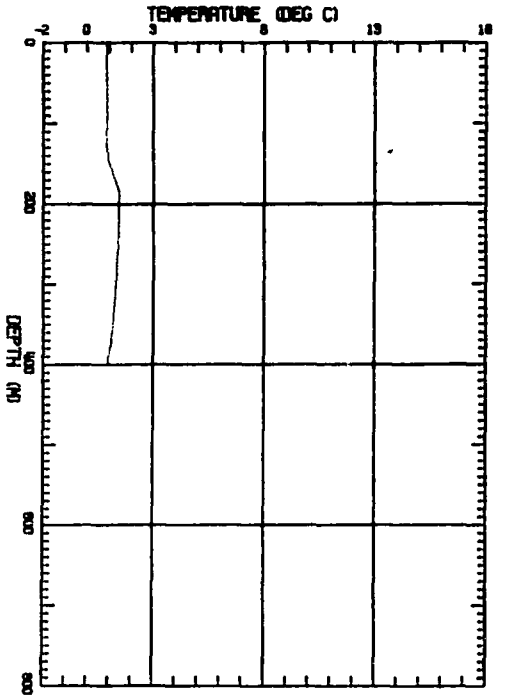

PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 111 CHANNEL: 16 LATITUDE: 67 .3
DATE: 10/11/87 TIME: 12:42: 5 LONGITUDE: -17 -4.8
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)


PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 113 CHANNEL: 14 LATITUDE: 66 39.3
DATE: 10/11/87 TIME: 12:52:13 LONGITUDE: -18 -4.8
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)

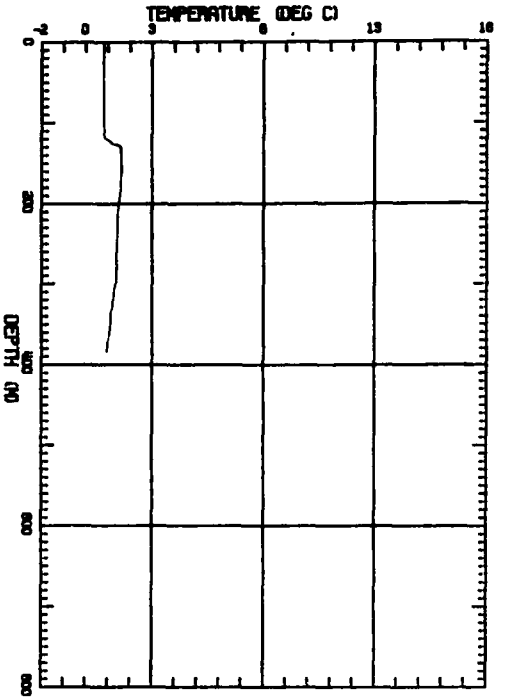

PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 114 CHANNEL: 16 LATITUDE: 66 59.3
DATE: 10/11/87 TIME: 12:58:38 LONGITUDE: -18 -1.8
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)


PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 116 CHANNEL: 14 LATITUDE: 67 39.6
DATE: 10/11/87 TIME: 13: 5:21 LONGITUDE: -17 -58.6
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)

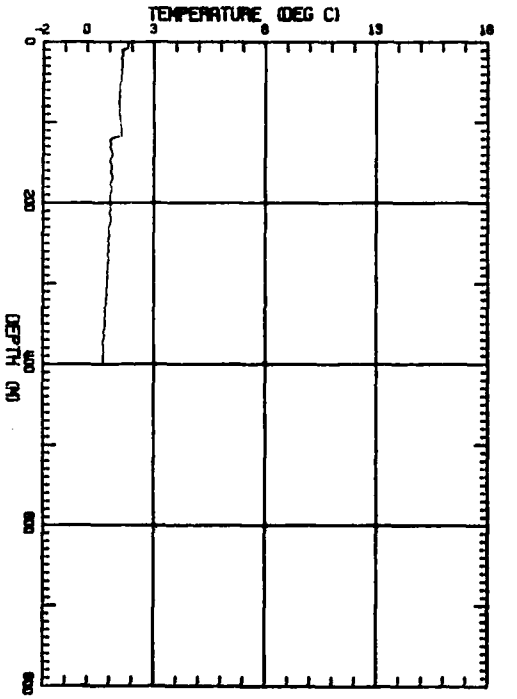
PROJECT: ARCTICAL OCEANOGRAPHY
DROP NO: 121 CHANNEL: 12 LATITUDE: 68 30.1
DATE: 10/11/87 TIME: 13:39:23 LONGITUDE: -18 -45.3



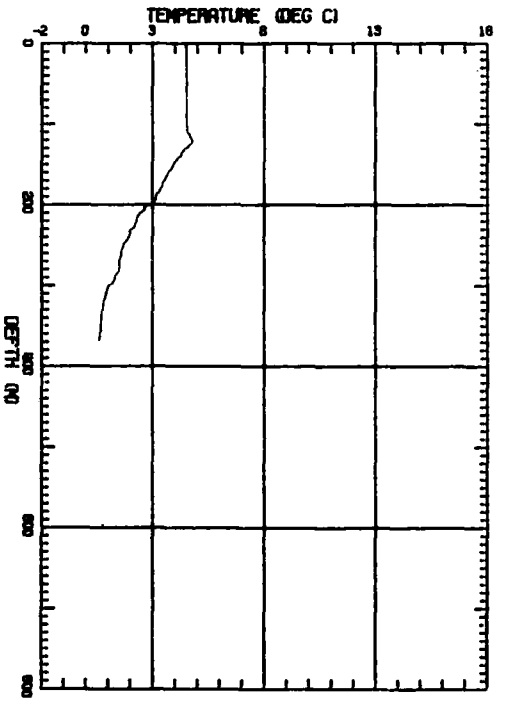
PROJECT: ARCTICAL OCEANOGRAPHY
DROP NO: 124 CHANNEL: 12 LATITUDE: 68 29.7
DATE: 10/11/87 TIME: 13:50: 1 LONGITUDE: -19 -30.5

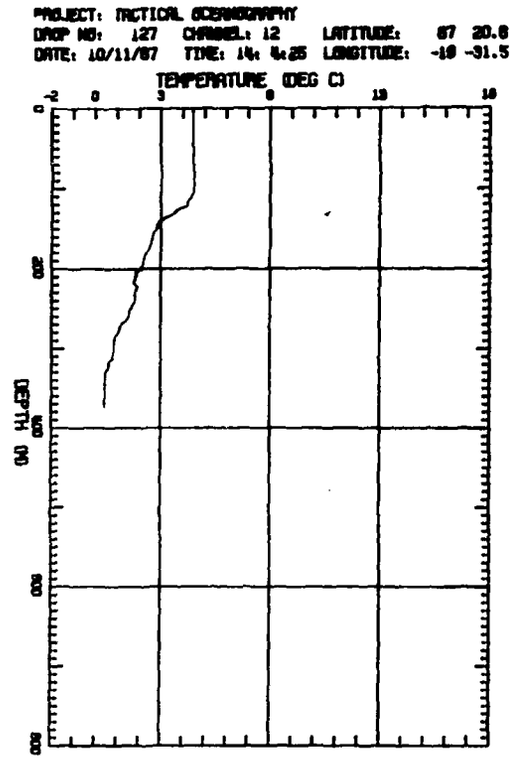


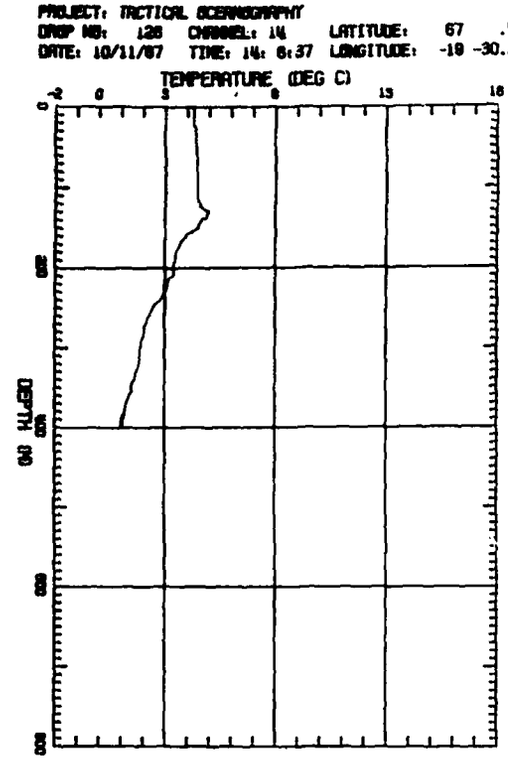
PROJECT: ARCTICAL OCEANOGRAPHY
DROP NO: 125 CHANNEL: 14 LATITUDE: 68 .6
DATE: 10/11/87 TIME: 13:56: 5 LONGITUDE: -19 -30.2

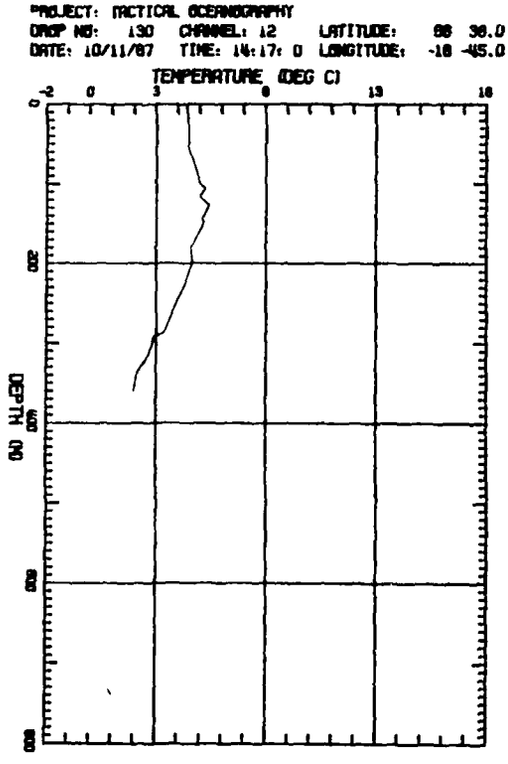


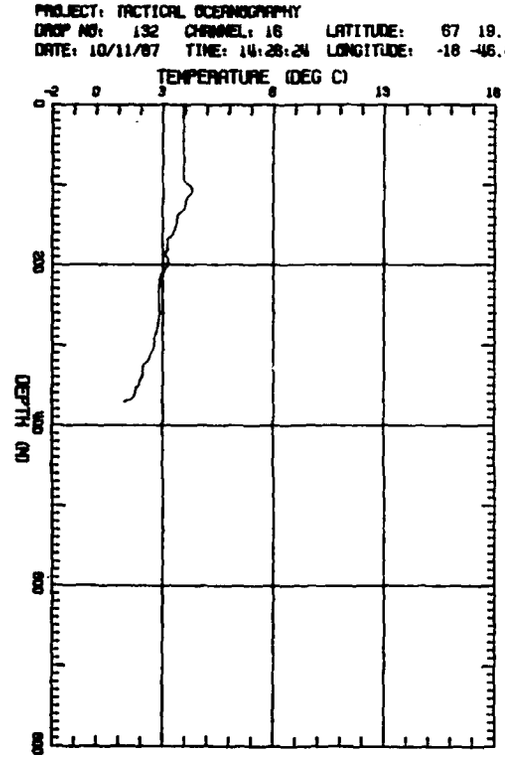
PROJECT: ARCTICAL OCEANOGRAPHY
DROP NO: 128 CHANNEL: 18 LATITUDE: 67 40.6
DATE: 10/11/87 TIME: 14: 0:18 LONGITUDE: -19 -30.8



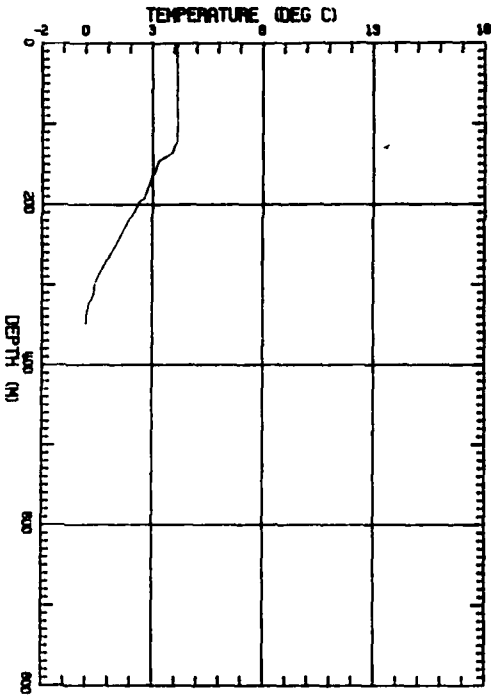

PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 127 CHANNEL: 12 LATITUDE: 67 20.6
DATE: 10/11/87 TIME: 14: 6:25 LONGITUDE: -18 -31.5
TEMPERATURE (DEG C)
-2 0 3 6 13 18
0
200
400
600
800
DEPTH (M)


PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 128 CHANNEL: 14 LATITUDE: 67 .5
DATE: 10/11/87 TIME: 14: 8:37 LONGITUDE: -18 -30.2
TEMPERATURE (DEG C)
-2 0 3 6 13 18
0
200
400
600
800
DEPTH (M)

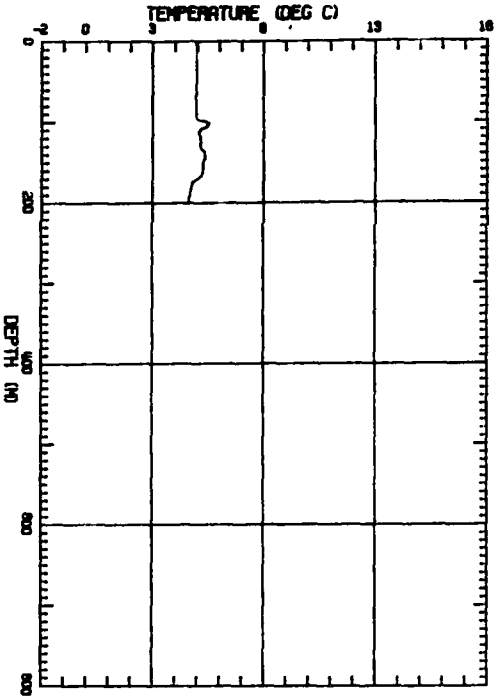

PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 130 CHANNEL: 12 LATITUDE: 66 36.0
DATE: 10/11/87 TIME: 14:17: 0 LONGITUDE: -18 -45.0
TEMPERATURE (DEG C)
-2 0 3 6 13 18
0
200
400
600
800
DEPTH (M)


PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 132 CHANNEL: 16 LATITUDE: 67 19.7
DATE: 10/11/87 TIME: 14:28:24 LONGITUDE: -18 -46.8
TEMPERATURE (DEG C)
-2 0 3 6 13 18
0
200
400
600
800
DEPTH (M)

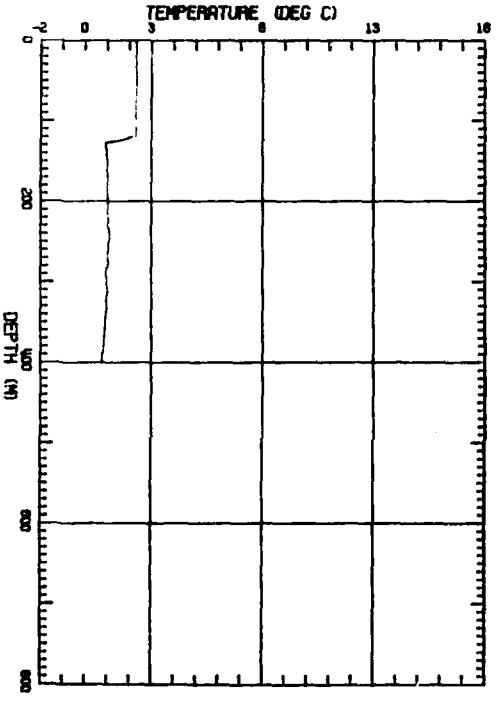
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 133 CHANNEL: 12 LATITUDE: 67 10.0
DATE: 10/11/87 TIME: 14:34: 0 LONGITUDE: -20 -14.0



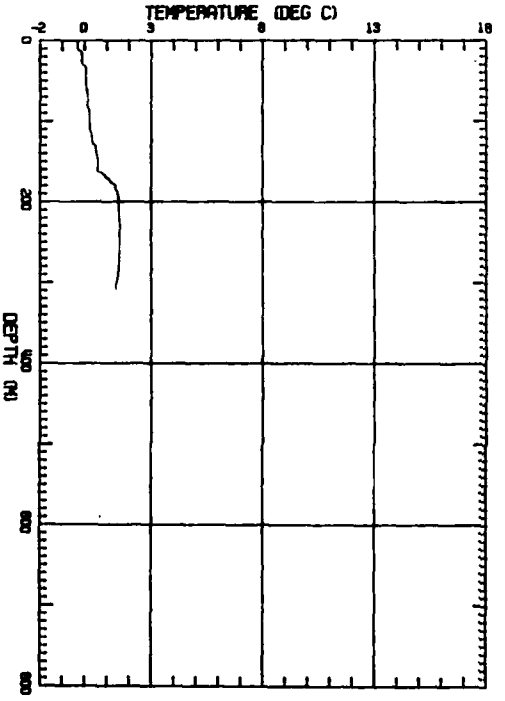
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 135 CHANNEL: 18 LATITUDE: 68 41.1
DATE: 10/11/87 TIME: 14:42:35 LONGITUDE: -20 -18.8



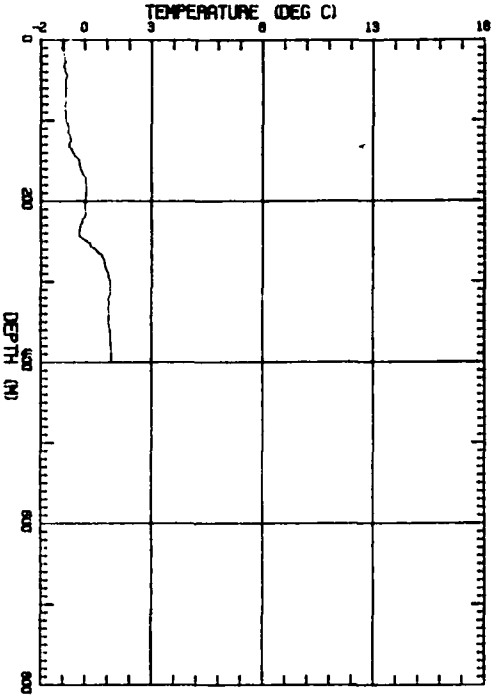
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 140 CHANNEL: 14 LATITUDE: 67 59.5
DATE: 10/11/87 TIME: 15: 5:32 LONGITUDE: -20 -58.8



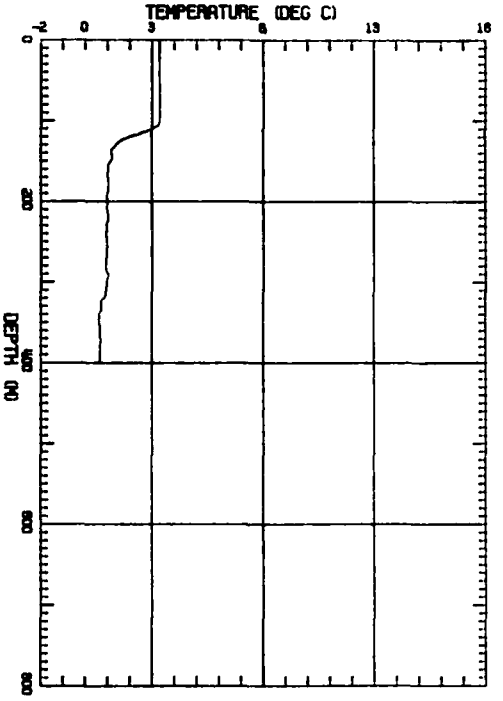
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 143 CHANNEL: 16 LATITUDE: 69 9.6
DATE: 10/11/87 TIME: 15:20:44 LONGITUDE: -21 -.5



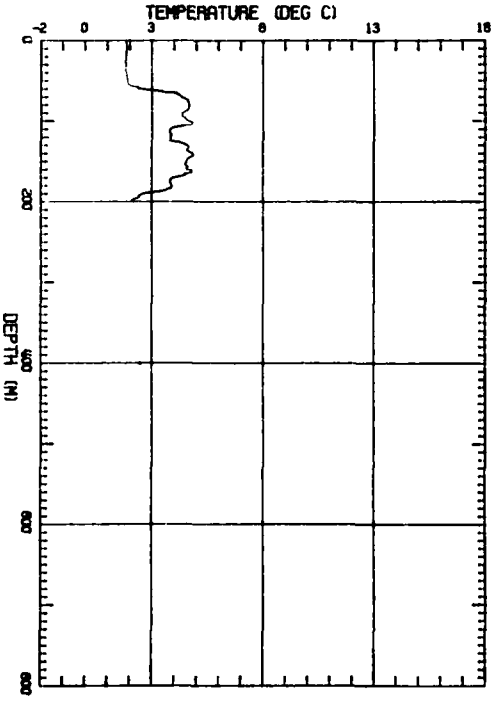
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 144 CHANNEL: 14 LATITUDE: 68 13.6
DATE: 10/11/87 TIME: 15:25:53 LONGITUDE: -22 -.8



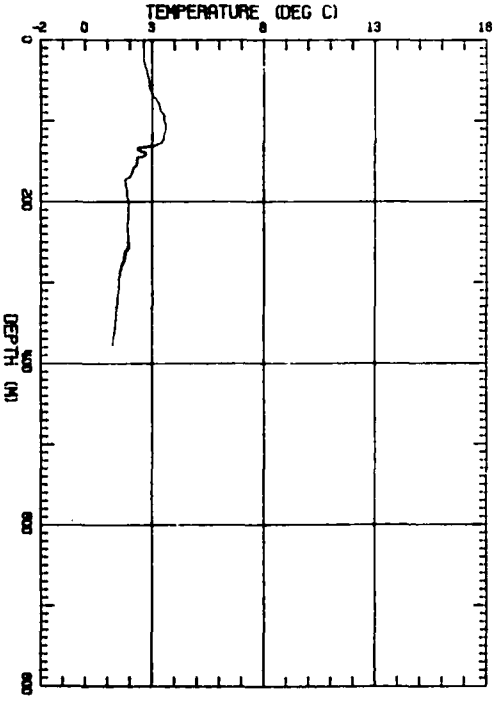
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 147 CHANNEL: 14 LATITUDE: 68 .6
DATE: 10/11/87 TIME: 15:41:50 LONGITUDE: -22 -2.5

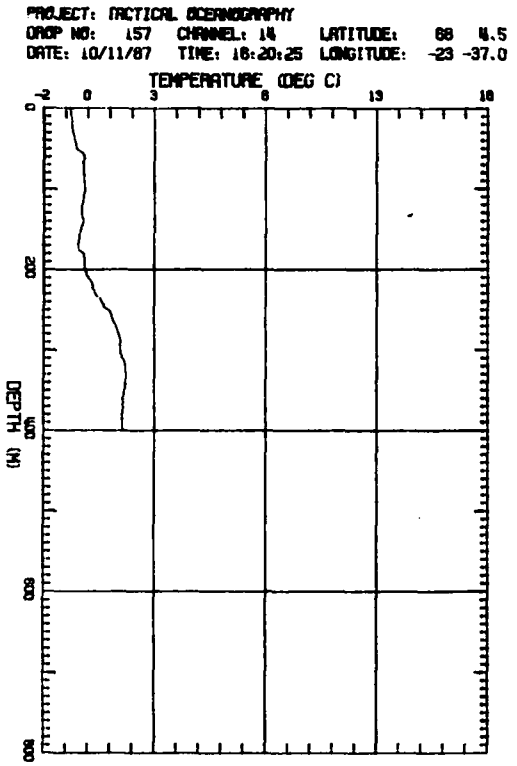


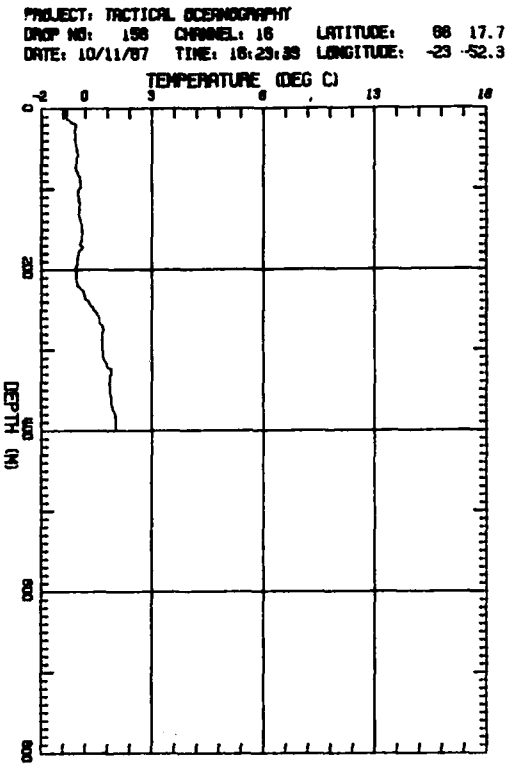
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 150 CHANNEL: 14 LATITUDE: 67 .7
DATE: 10/11/87 TIME: 15:54:35 LONGITUDE: -21 -59.6

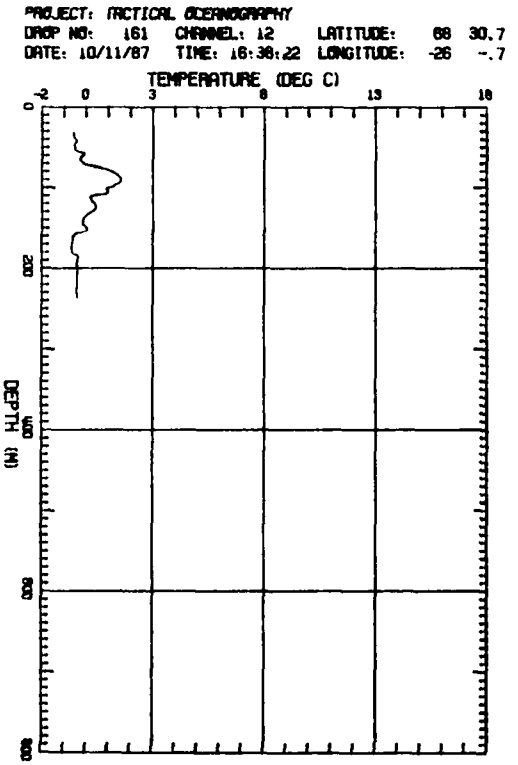


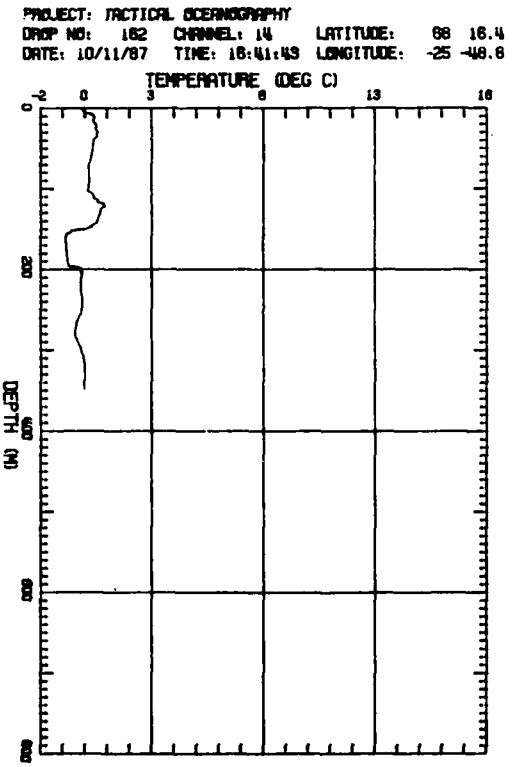
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 155 CHANNEL: 14 LATITUDE: 67 36.0
DATE: 10/11/87 TIME: 18:13:40 LONGITUDE: -23 -8.0



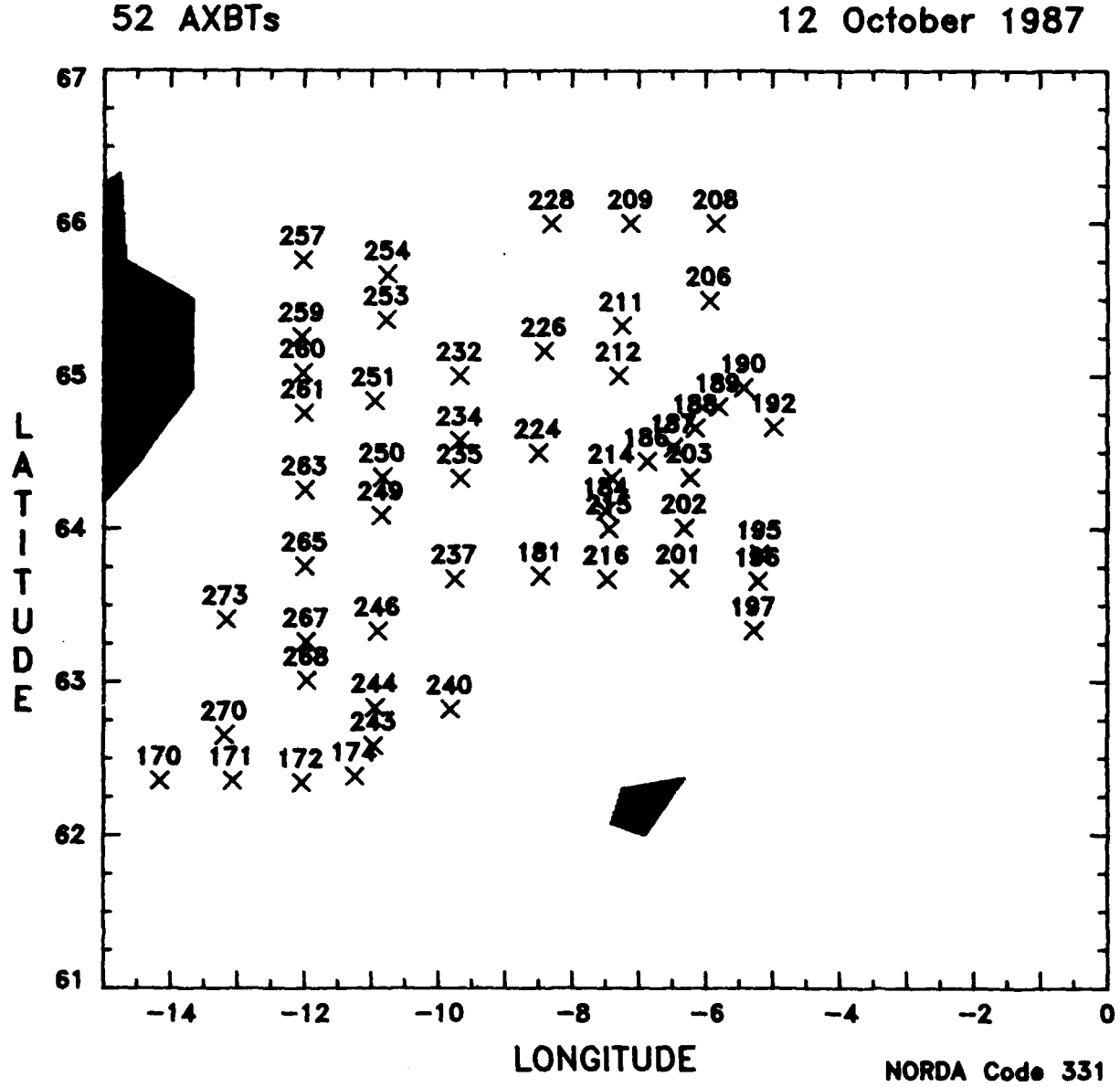

PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 157 CHANNEL: 14 LATITUDE: 68 6.5
DATE: 10/11/87 TIME: 16:20:25 LONGITUDE: -23 -37.0
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)

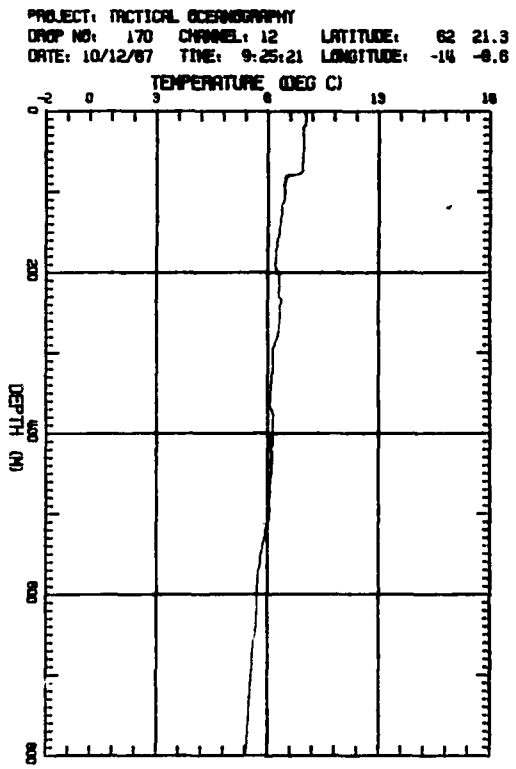

PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 158 CHANNEL: 16 LATITUDE: 68 17.7
DATE: 10/11/87 TIME: 16:23:39 LONGITUDE: -23 -52.3
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)

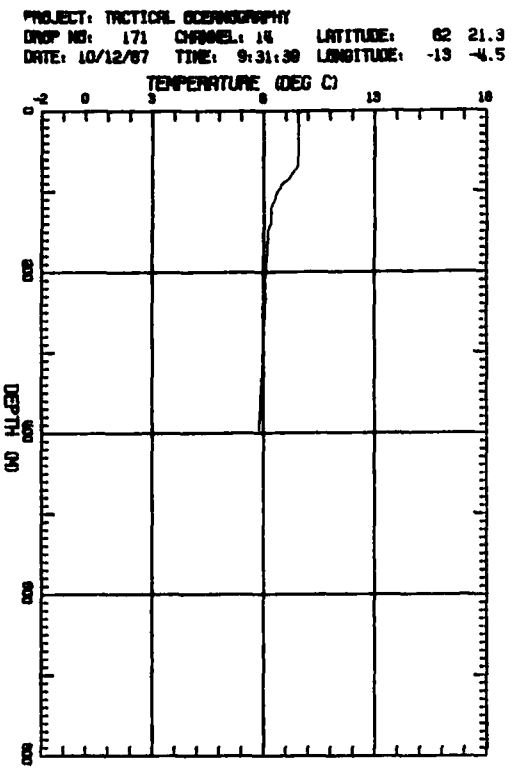

PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 161 CHANNEL: 12 LATITUDE: 68 30.7
DATE: 10/11/87 TIME: 16:38:22 LONGITUDE: -26 -.7
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)

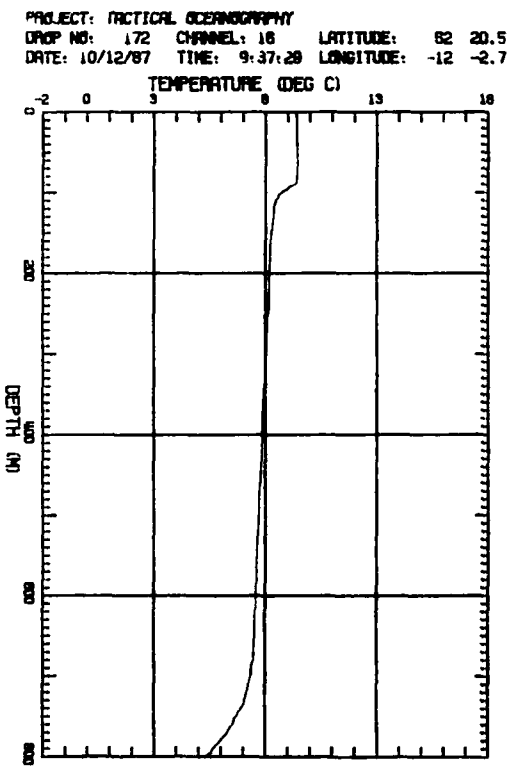

PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 162 CHANNEL: 14 LATITUDE: 68 16.4
DATE: 10/11/87 TIME: 16:41:43 LONGITUDE: -25 -48.8
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)

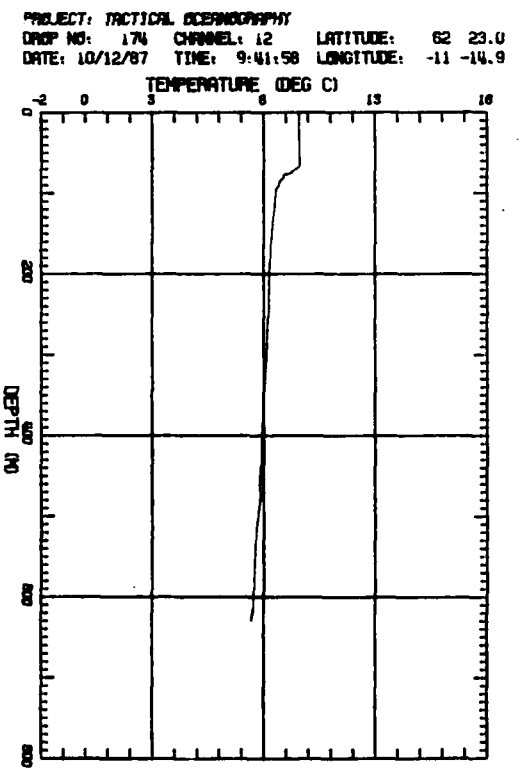
Appendix C.
Drop Positions and Data Profiles, Flight 3, 12 October 1987, Iceland-Faeroe Front Region.


52 AXBTs
12 October 1987
67
66
65
64
63
62
61
LATITUDE
-14
-12
-10
-8
-6
-4
-2
0
LONGITUDE
NORDA Code 331
228
209
208
257
254
206
253
211
259
226
260
232
212
190
251
261
189
192
234
224
263
250
235
214
203
249
202
265
237
181
216
201
195
273
197
267
246
268
244
240
270
243
170
171
172
174

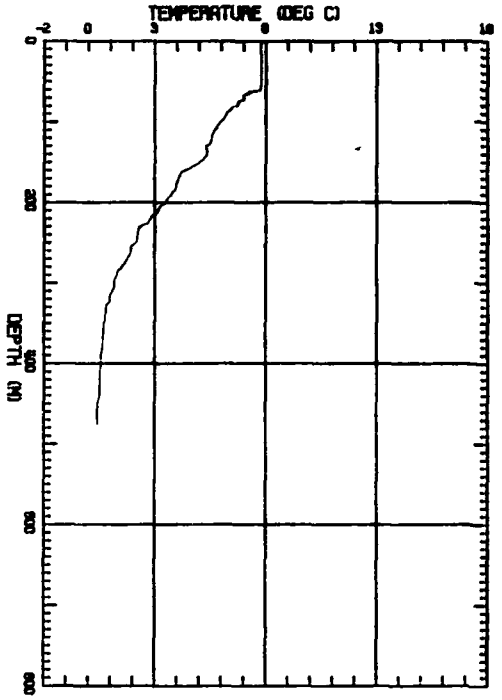

PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 170 CHANNEL: 12 LATITUDE: 62 21.3
DATE: 10/12/87 TIME: 9:25:21 LONGITUDE: -14 -8.6
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)


PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 171 CHANNEL: 14 LATITUDE: 62 21.3
DATE: 10/12/87 TIME: 9:31:30 LONGITUDE: -13 -4.5
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)

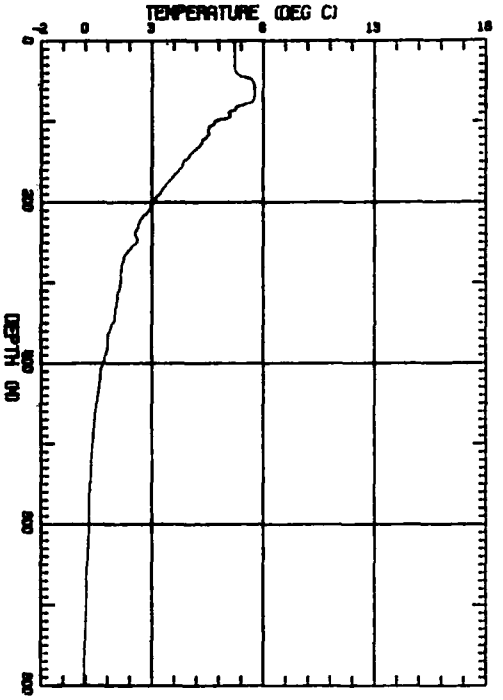

PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 172 CHANNEL: 16 LATITUDE: 62 20.5
DATE: 10/12/87 TIME: 9:37:20 LONGITUDE: -12 -2.7
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)


PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 174 CHANNEL: 12 LATITUDE: 62 23.0
DATE: 10/12/87 TIME: 9:41:58 LONGITUDE: -11 -14.9
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)

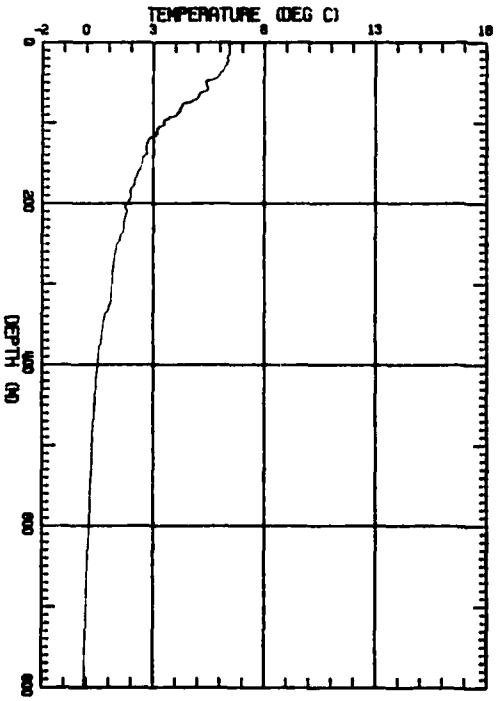
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 181 CHANNEL: 14 LATITUDE: 63 41.6
DATE: 10/12/87 TIME: 10: 8:51 LONGITUDE: -8 -28.4



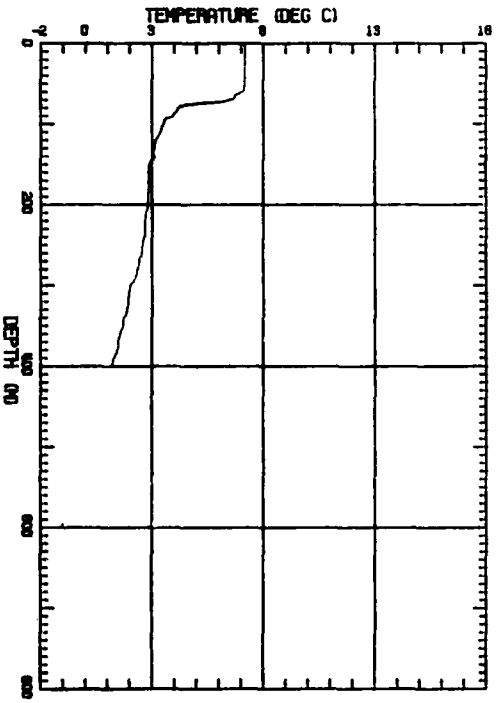
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 186 CHANNEL: 14 LATITUDE: 64 7.0
DATE: 10/12/87 TIME: 10:15:58 LONGITUDE: -7 -30.0

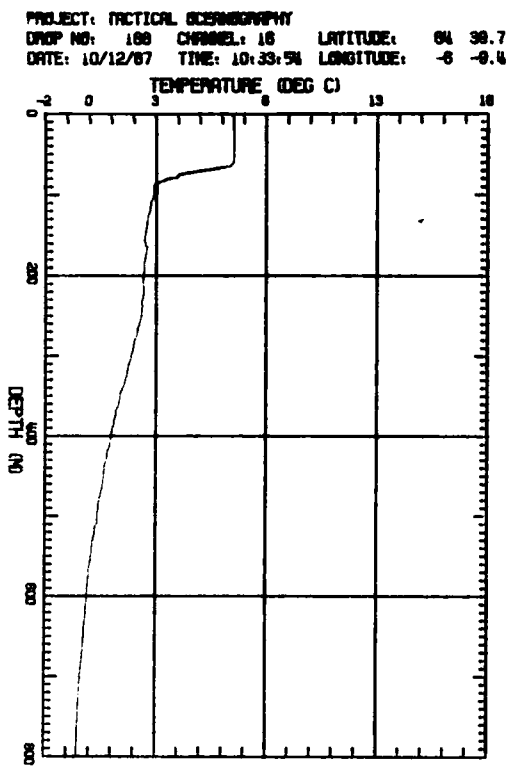


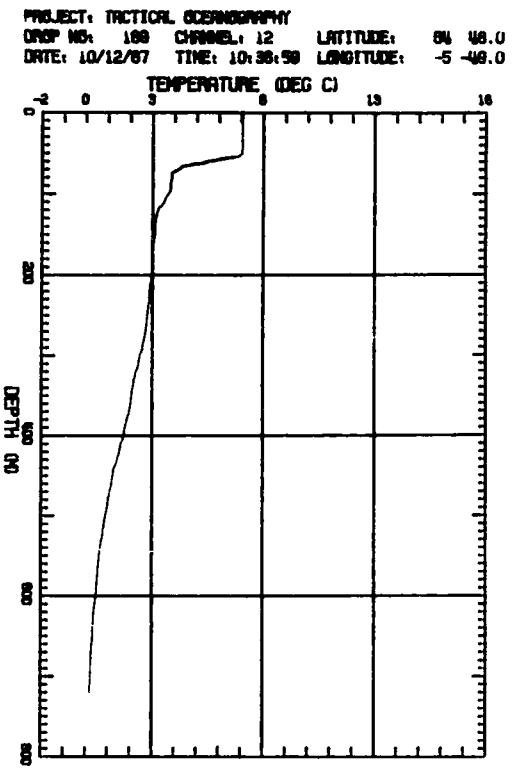
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 186 CHANNEL: 12 LATITUDE: 64 28.5
DATE: 10/12/87 TIME: 10:28:52 LONGITUDE: -6 -59.0

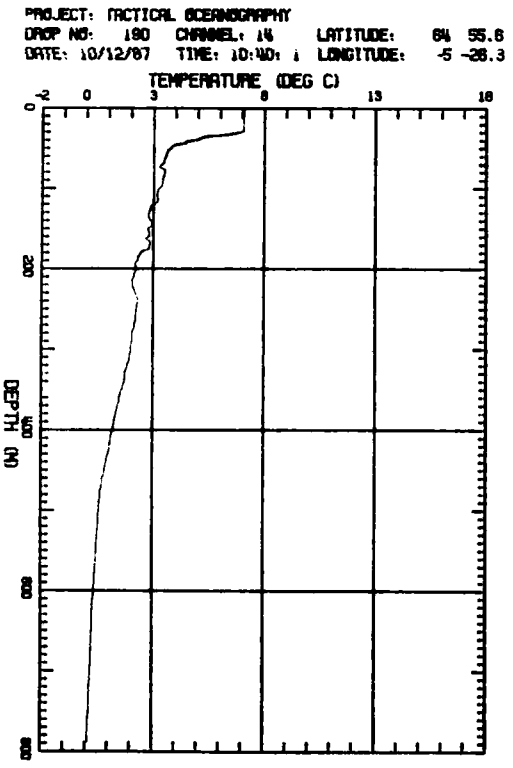


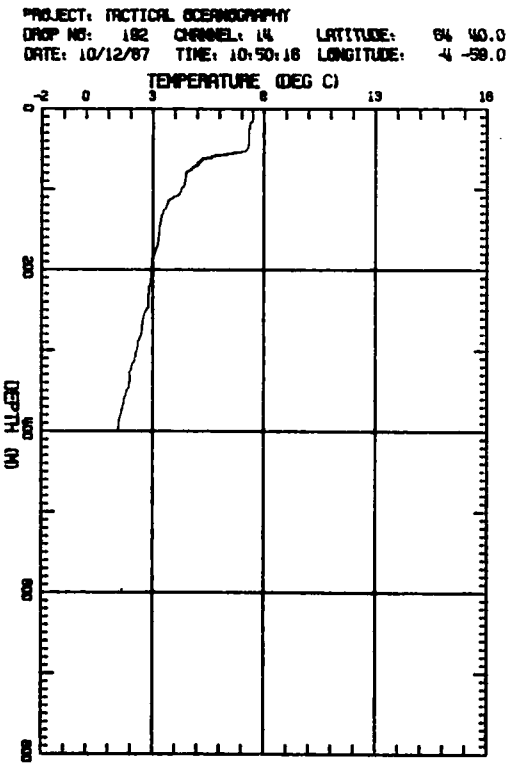
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 187 CHANNEL: 14 LATITUDE: 64 32.0
DATE: 10/12/87 TIME: 10:31: 5 LONGITUDE: -6 -29.2



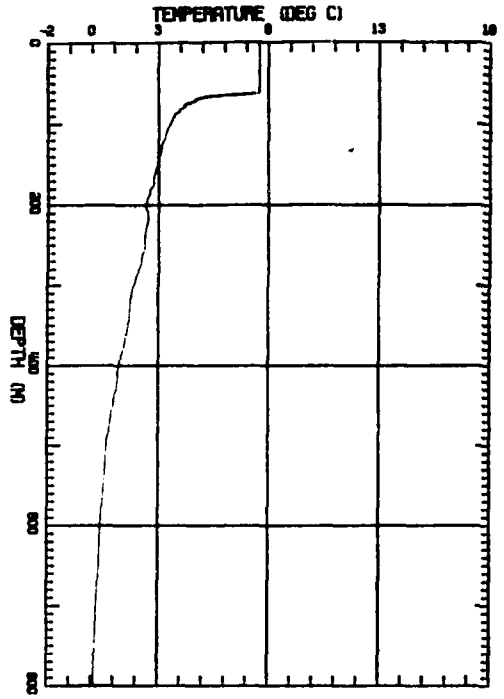

PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 188 CHANNEL: 16 LATITUDE: 64 38.7
DATE: 10/12/87 TIME: 10:33:54 LONGITUDE: -6 -8.4
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)


PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 189 CHANNEL: 12 LATITUDE: 64 48.0
DATE: 10/12/87 TIME: 10:38:58 LONGITUDE: -5 -48.0
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)

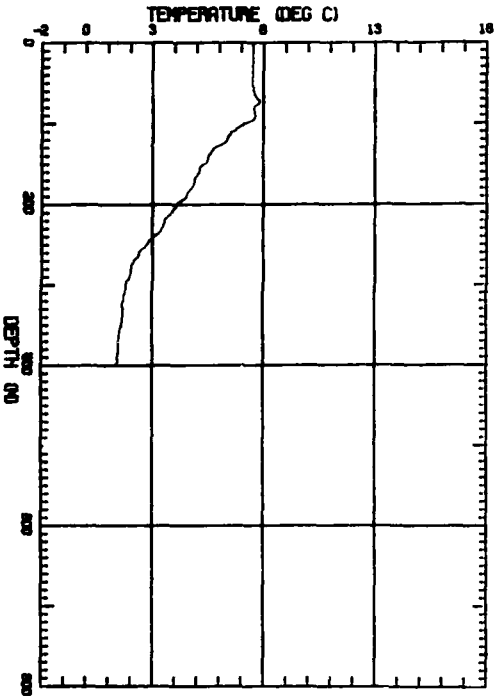

PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 190 CHANNEL: 14 LATITUDE: 64 55.6
DATE: 10/12/87 TIME: 10:40: 1 LONGITUDE: -5 -28.3
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)


PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 192 CHANNEL: 14 LATITUDE: 64 40.0
DATE: 10/12/87 TIME: 10:50:18 LONGITUDE: -4 -59.0
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)

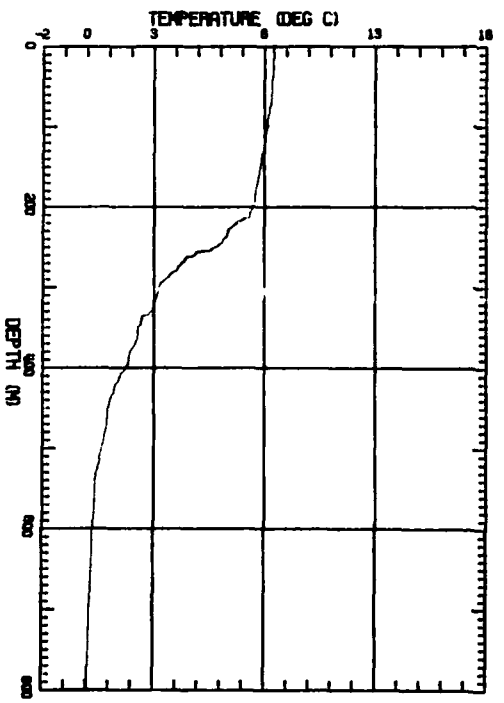
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 195 CHANNEL: 12 LATITUDE: 63 50.2
DATE: 10/12/87 TIME: 11: 1:38 LONGITUDE: -5 -12.0



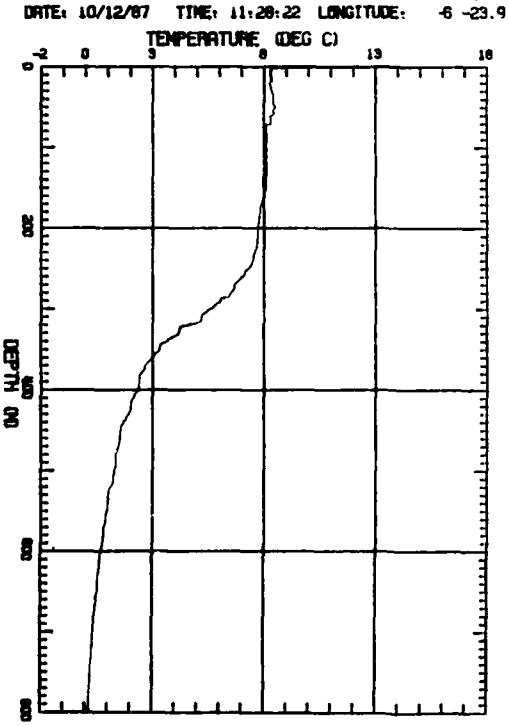
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 199 CHANNEL: 14 LATITUDE: 63 39.6
DATE: 10/12/87 TIME: 11: 4: 3 LONGITUDE: -5 -13.4



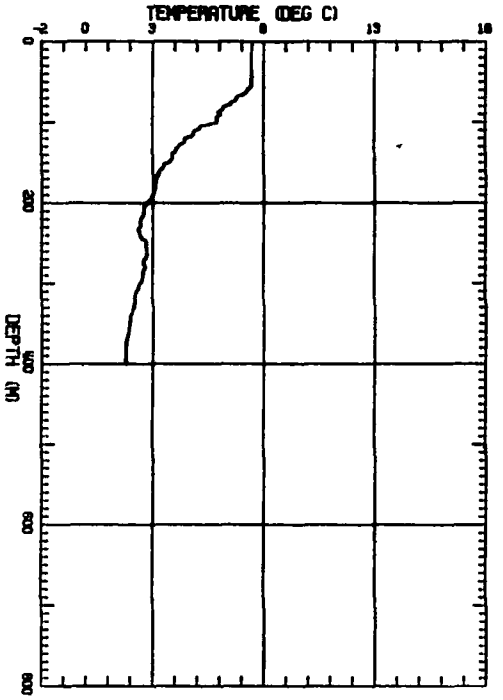
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 197 CHANNEL: 16 LATITUDE: 63 20.2
DATE: 10/12/87 TIME: 11: 8:22 LONGITUDE: -5 -17.5



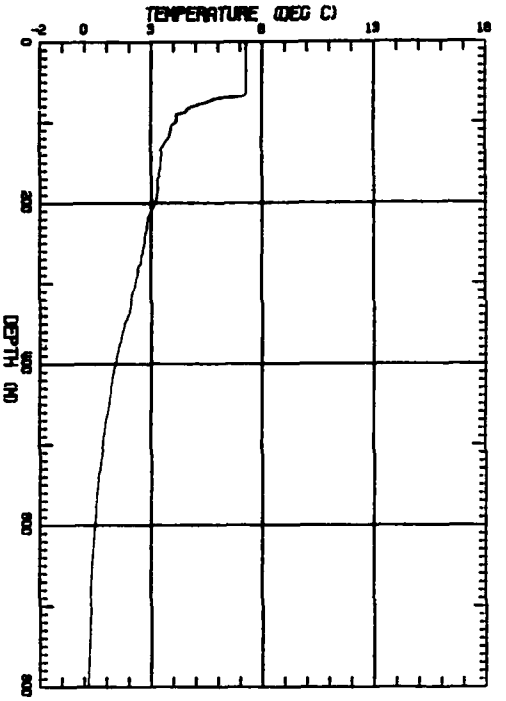
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 201 CHANNEL: 12 LATITUDE: 63 40.7
DATE: 10/12/87 TIME: 11:20:22 LONGITUDE: -6 -23.9



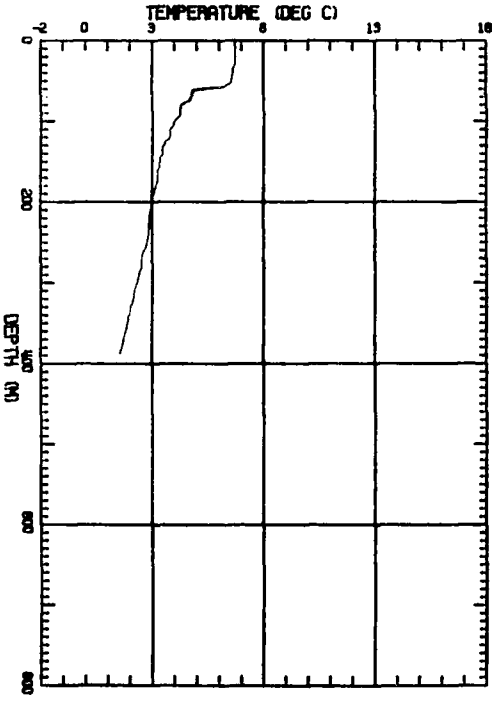
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 202 CHANNEL: 14 LATITUDE: 64 .4
DATE: 10/12/87 TIME: 11:32:20 LONGITUDE: -6 -10.6



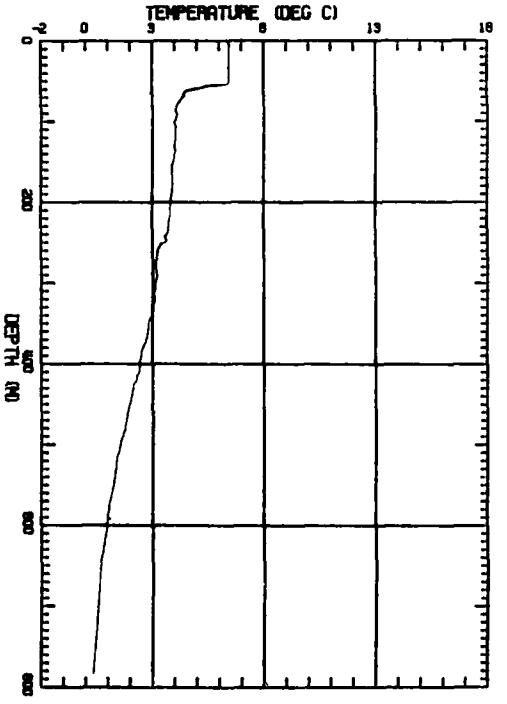
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 203 CHANNEL: 18 LATITUDE: 64 20.2
DATE: 10/12/87 TIME: 11:38:18 LONGITUDE: -6 -14.5



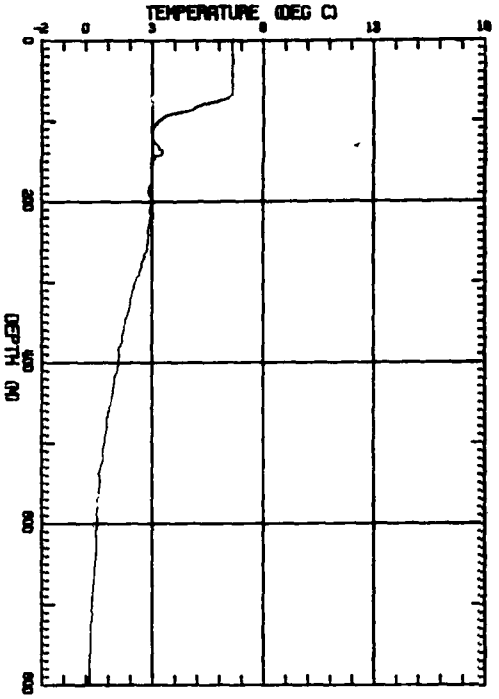
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 208 CHANNEL: 12 LATITUDE: 65 29.7
DATE: 10/12/87 TIME: 11:50:21 LONGITUDE: -5 -57.1



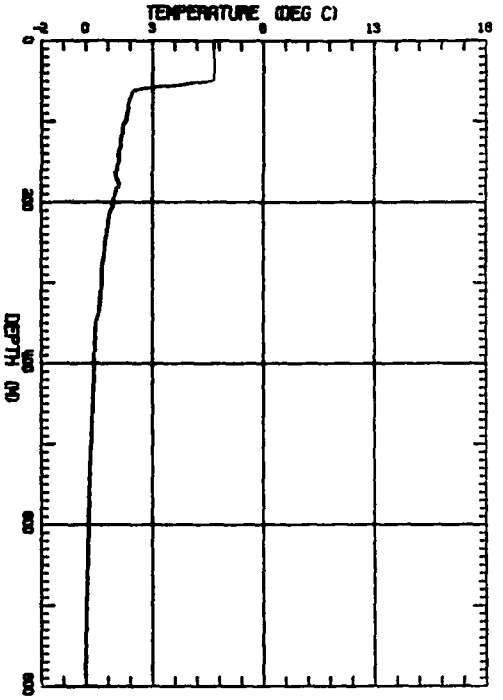
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 208 CHANNEL: 12 LATITUDE: 66 .0
DATE: 10/12/87 TIME: 11:56:32 LONGITUDE: -5 -51.0



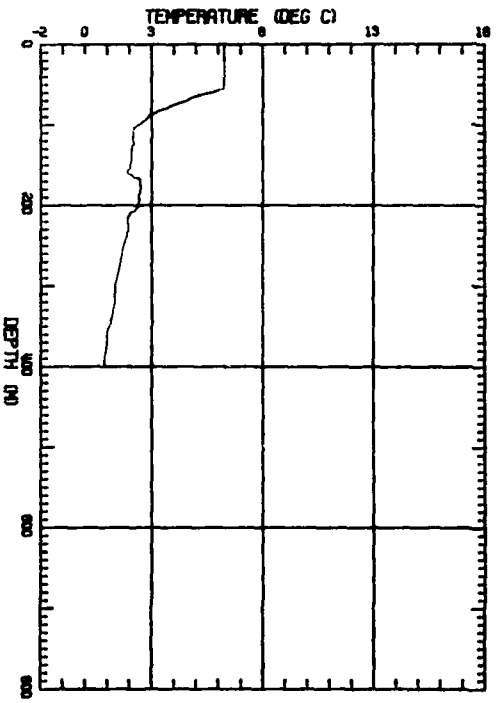
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 209 CHANNEL: 14 LATITUDE: 66 .0
DATE: 10/12/87 TIME: 12: 3:57 LONGITUDE: -7 -7.4



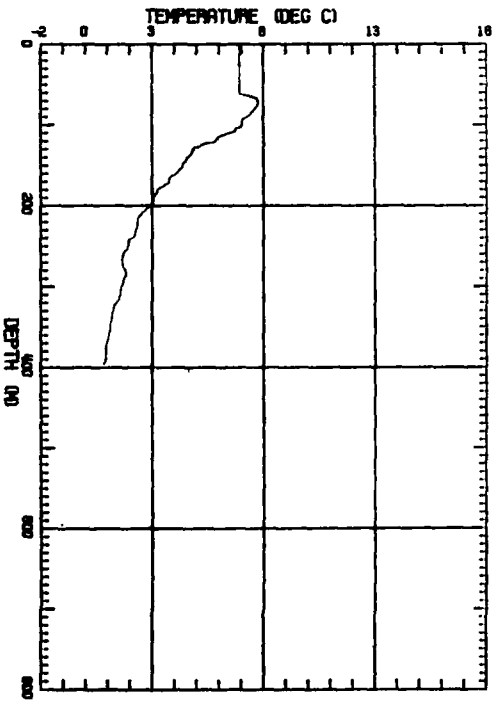
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 211 CHANNEL: 12 LATITUDE: 65 19.6
DATE: 10/12/87 TIME: 12:12:21 LONGITUDE: -7 -15.3

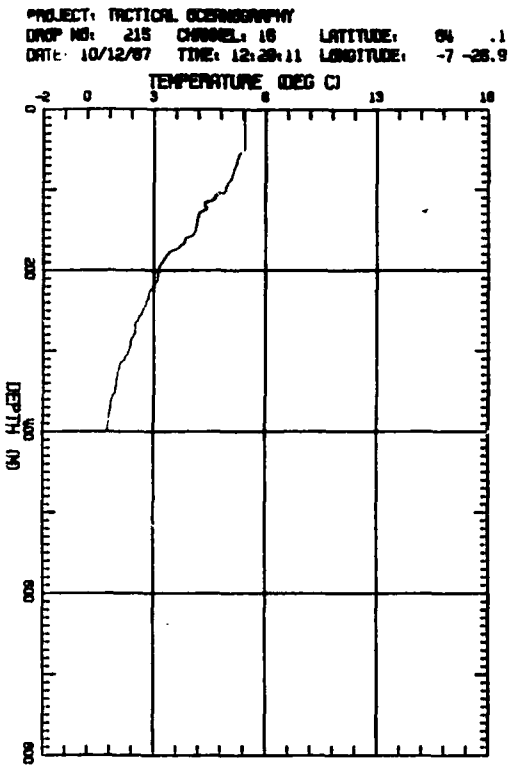


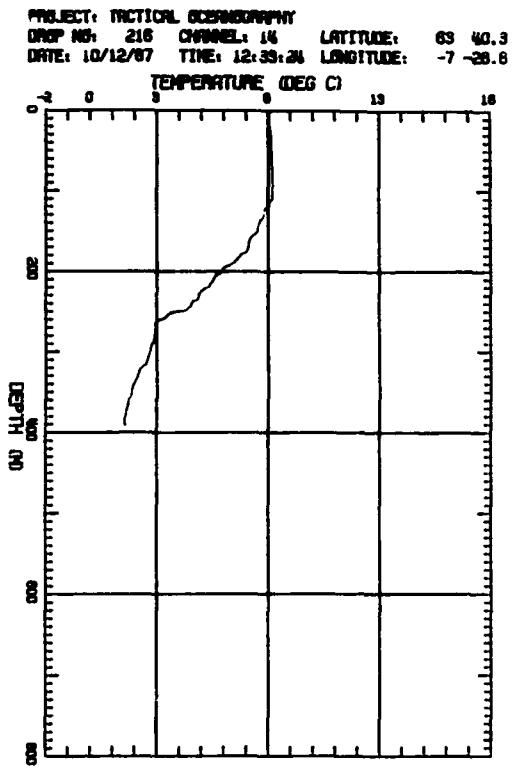
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 212 CHANNEL: 14 LATITUDE: 65 .2
DATE: 10/12/87 TIME: 12:16:30 LONGITUDE: -7 -16.2

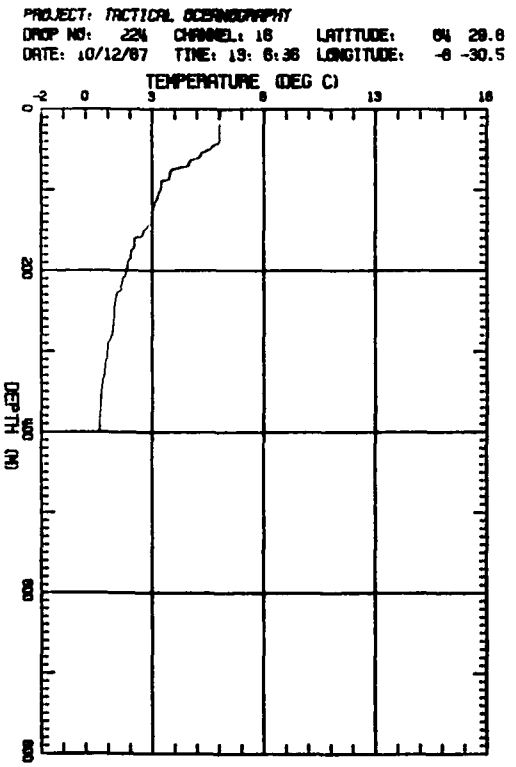


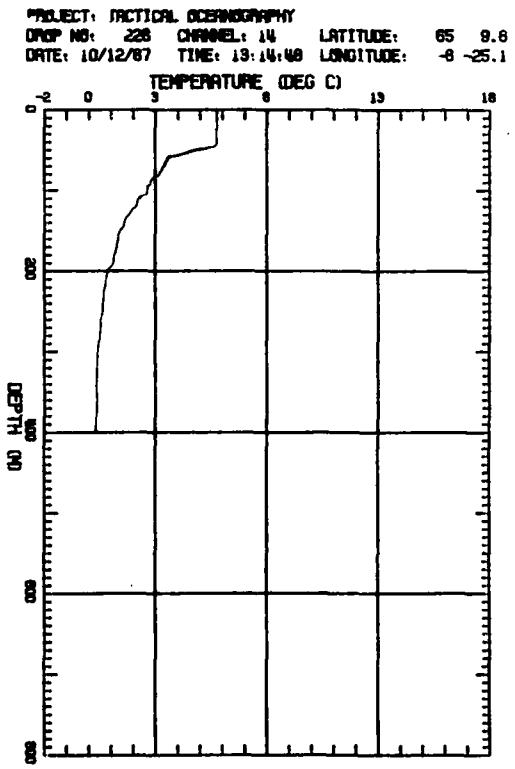
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 214 CHANNEL: 12 LATITUDE: 64 20.0
DATE: 10/12/87 TIME: 12:25: 0 LONGITUDE: -7 -24.7

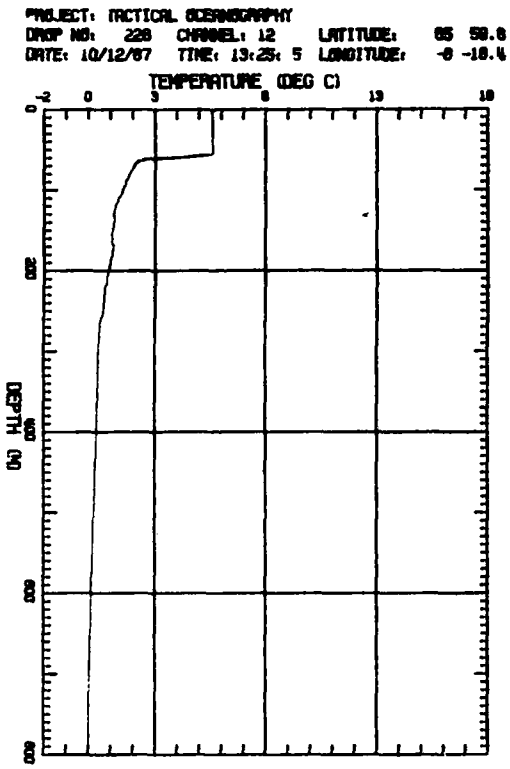


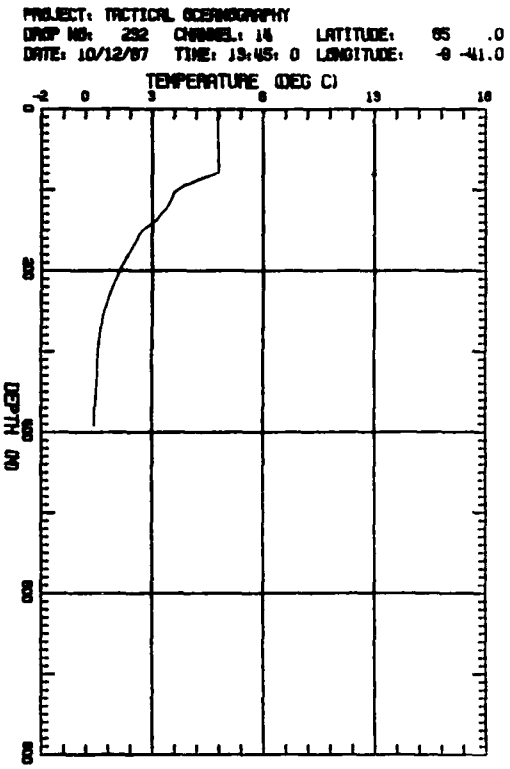

PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 215 CHANNEL: 16 LATITUDE: 64 .1
DATE: 10/12/87 TIME: 12:29:11 LONGITUDE: -7 -28.9
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
DEPTH (M)

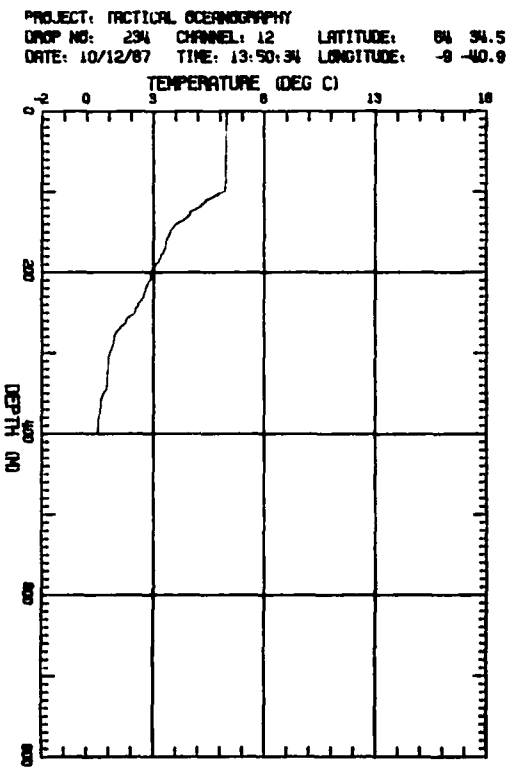

PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 216 CHANNEL: 14 LATITUDE: 63 40.3
DATE: 10/12/87 TIME: 12:33:26 LONGITUDE: -7 -28.8
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
DEPTH (M)

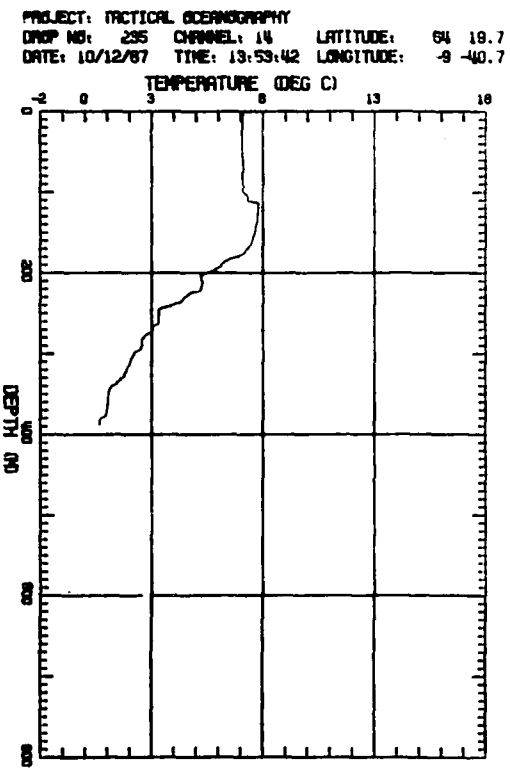

PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 224 CHANNEL: 16 LATITUDE: 64 29.8
DATE: 10/12/87 TIME: 19: 6:36 LONGITUDE: -8 -30.5
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
DEPTH (M)


PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 226 CHANNEL: 14 LATITUDE: 65 9.6
DATE: 10/12/87 TIME: 19:14:48 LONGITUDE: -8 -25.1
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
DEPTH (M)

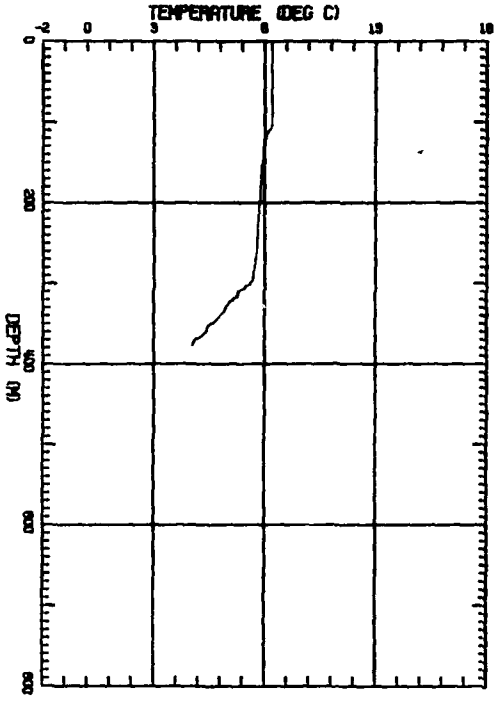

PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 228 CHANNEL: 12 LATITUDE: 65 59.8
DATE: 10/12/87 TIME: 13:25: 5 LONGITUDE: -8 -18.4
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)


PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 232 CHANNEL: 14 LATITUDE: 65 .0
DATE: 10/12/87 TIME: 13:45: 0 LONGITUDE: -8 -41.0
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)

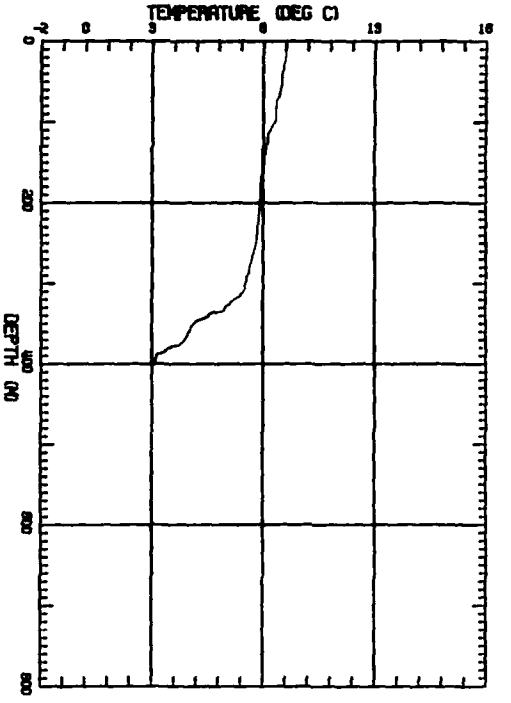

PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 234 CHANNEL: 12 LATITUDE: 64 34.5
DATE: 10/12/87 TIME: 13:50:34 LONGITUDE: -8 -40.9
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)


PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 235 CHANNEL: 14 LATITUDE: 64 19.7
DATE: 10/12/87 TIME: 13:53:42 LONGITUDE: -8 -40.7
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)

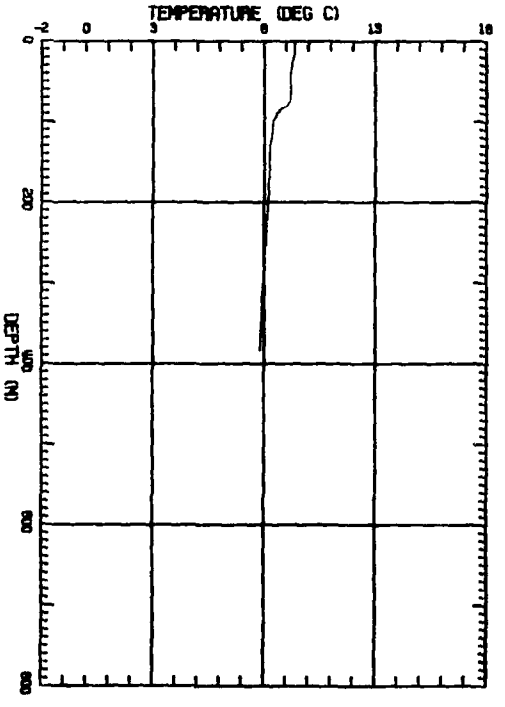
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 237 CHANNEL: 14 LATITUDE: 63 40.4
DATE: 10/12/87 TIME: 14: 2: 0 LONGITUDE: -9 -45.2



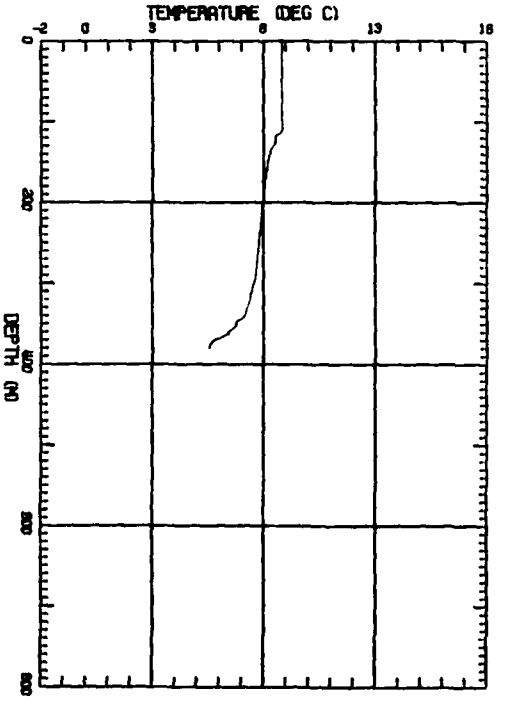
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 240 CHANNEL: 14 LATITUDE: 62 49.3
DATE: 10/12/87 TIME: 14:12:41 LONGITUDE: -8 -48.5



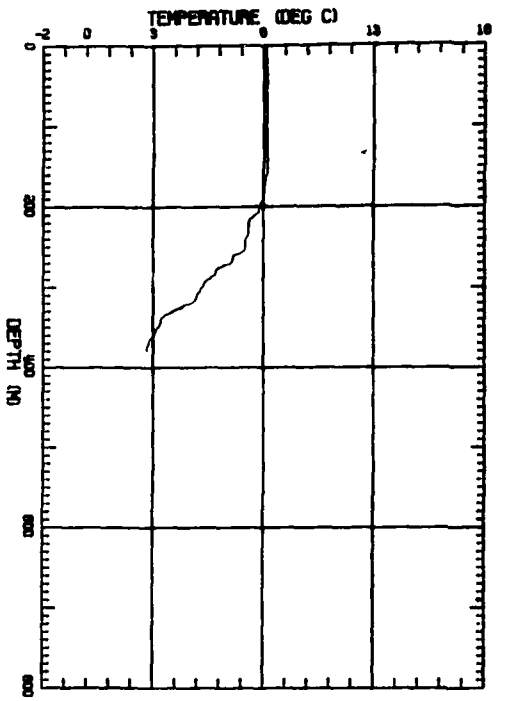
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 243 CHANNEL: 14 LATITUDE: 62 34.9
DATE: 10/12/87 TIME: 14:28:48 LONGITUDE: -10 -57.8



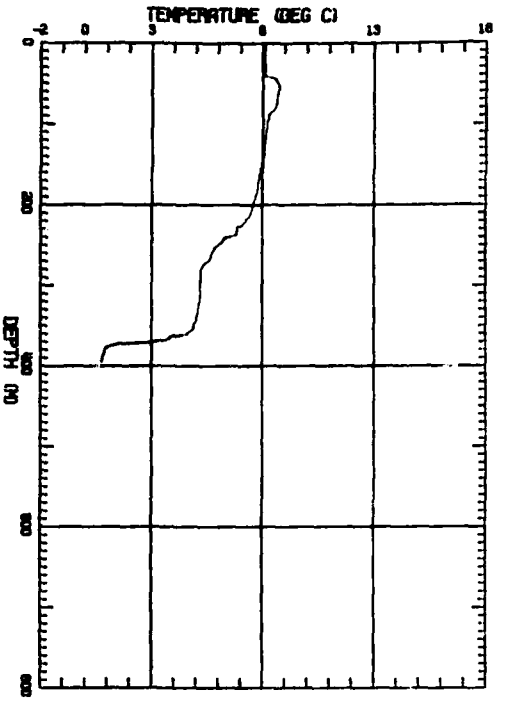
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 244 CHANNEL: 12 LATITUDE: 62 49.9
DATE: 10/12/87 TIME: 14:31:54 LONGITUDE: -10 -56.9



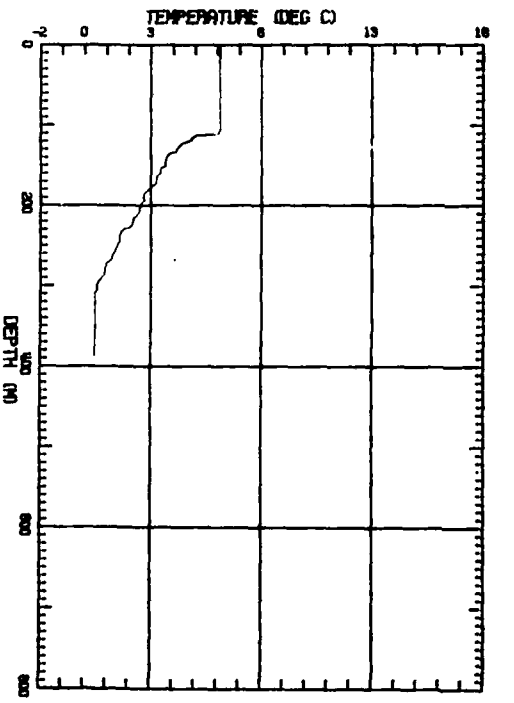
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 248 CHANNEL: 14 LATITUDE: 69 19.9
DATE: 10/12/87 TIME: 14:38: 1 LONGITUDE: -10 -54.5



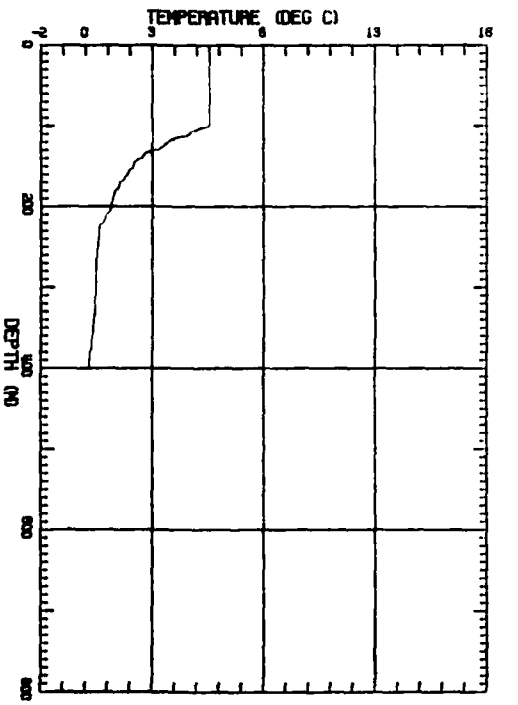
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 249 CHANNEL: 14 LATITUDE: 69 5.2
DATE: 10/12/87 TIME: 14:47:10 LONGITUDE: -10 -51.5



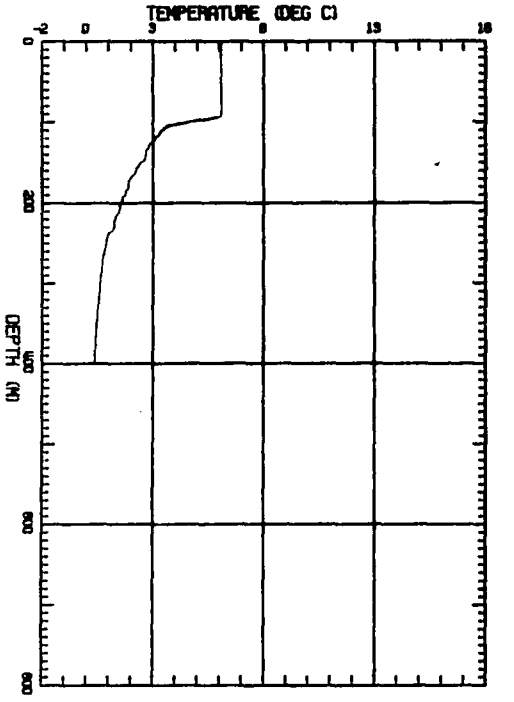
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 250 CHANNEL: 16 LATITUDE: 69 20.1
DATE: 10/12/87 TIME: 14:50:10 LONGITUDE: -10 -50.3



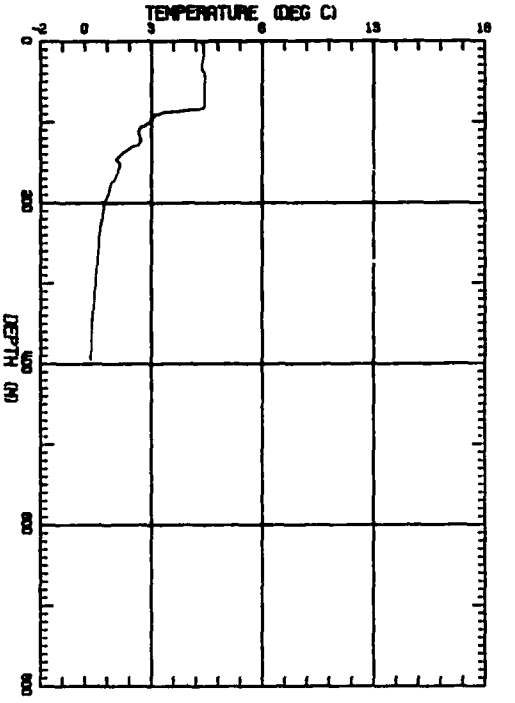
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 251 CHANNEL: 14 LATITUDE: 69 50.1
DATE: 10/12/87 TIME: 15: 3:39 LONGITUDE: -10 -57.1



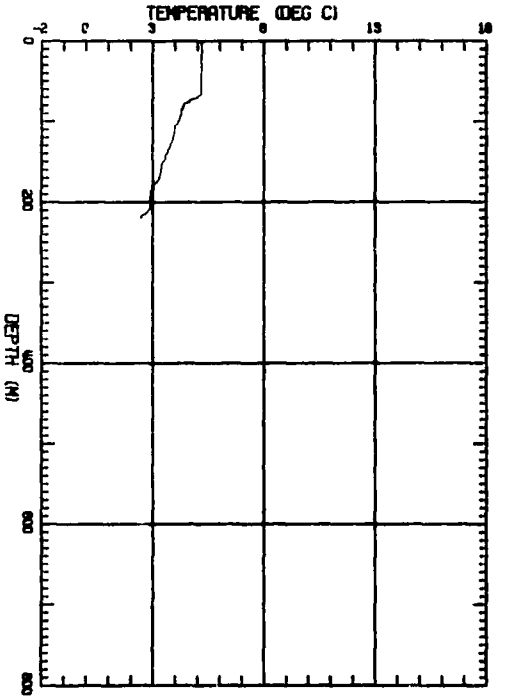
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 259 CHANNEL: 14 LATITUDE: 65 21.8
DATE: 10/12/87 TIME: 15:11:28 LONGITUDE: -10 -48.8



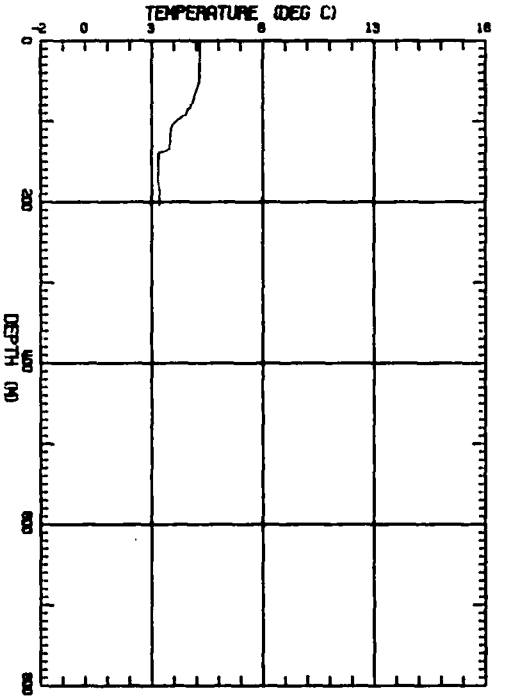
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 254 CHANNEL: 12 LATITUDE: 65 30.6
DATE: 10/12/87 TIME: 15:15:10 LONGITUDE: -10 -45.5

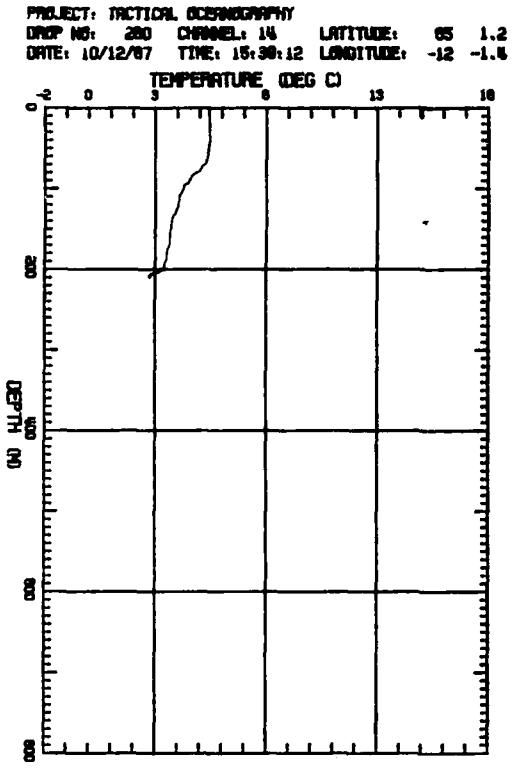


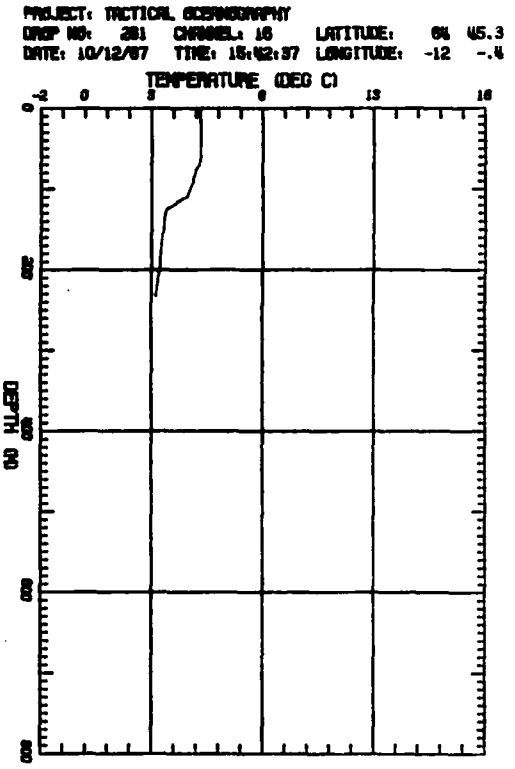
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 257 CHANNEL: 14 LATITUDE: 65 45.5
DATE: 10/12/87 TIME: 15:29:38 LONGITUDE: -12 -1.3

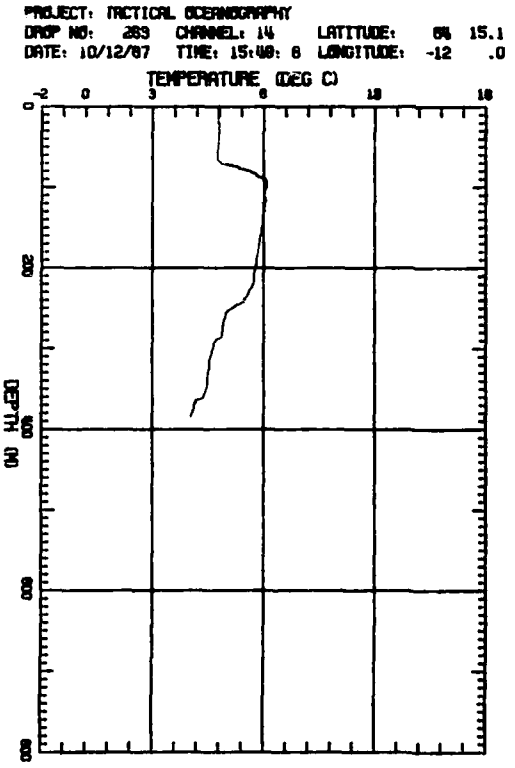


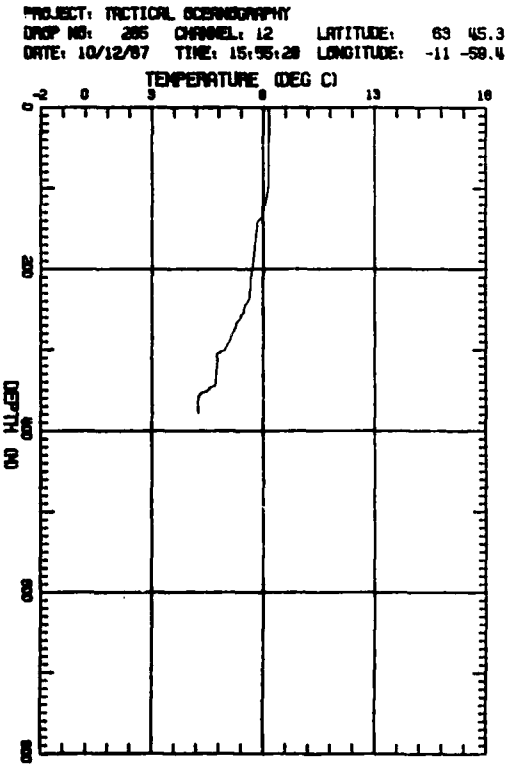
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 258 CHANNEL: 12 LATITUDE: 65 15.4
DATE: 10/12/87 TIME: 15:36: 9 LONGITUDE: -12 -2.7

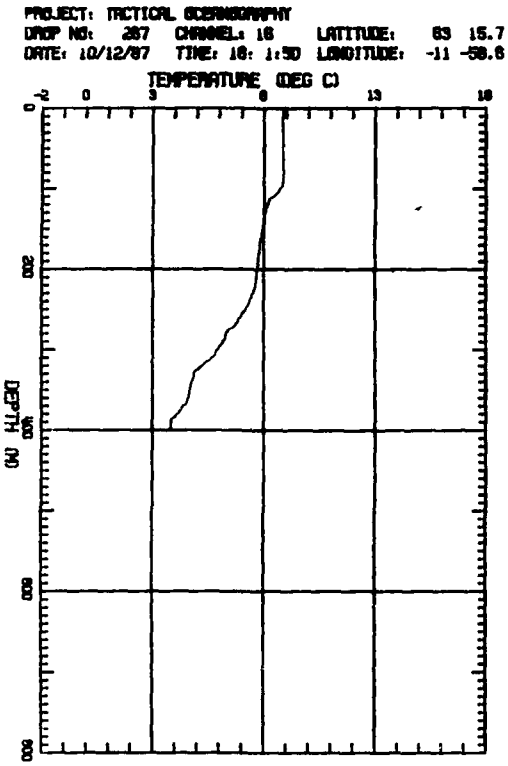


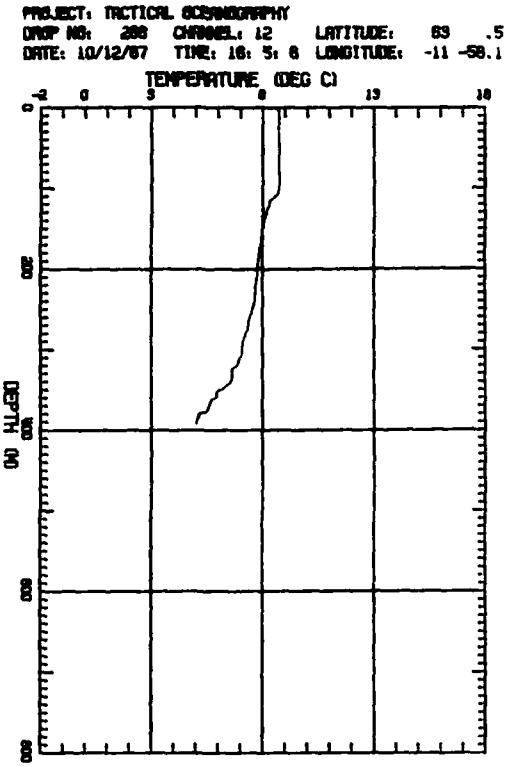

PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 280 CHANNEL: 14 LATITUDE: 65 1.2
DATE: 10/12/87 TIME: 15:30:12 LONGITUDE: -12 -1.6
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)

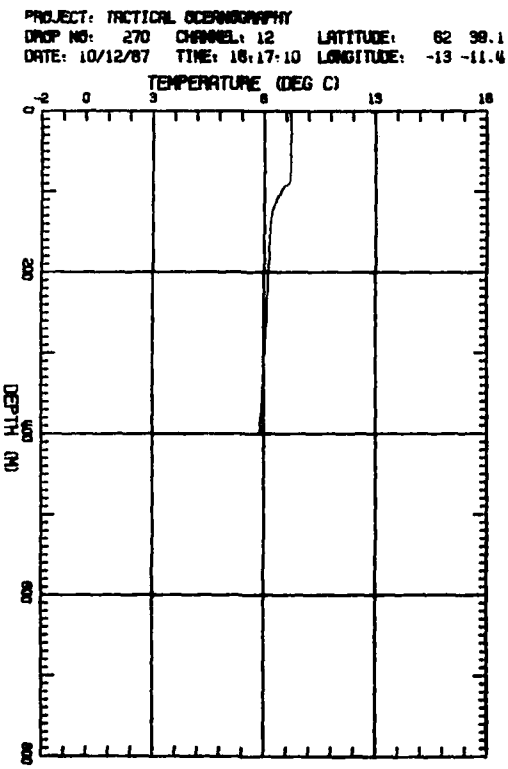

PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 281 CHANNEL: 16 LATITUDE: 64 45.3
DATE: 10/12/87 TIME: 15:42:37 LONGITUDE: -12 -.4
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)

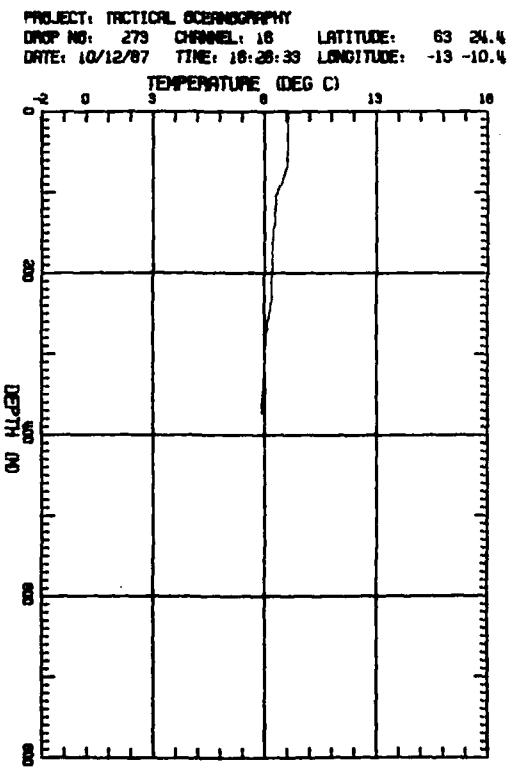

PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 283 CHANNEL: 14 LATITUDE: 64 15.1
DATE: 10/12/87 TIME: 15:48: 8 LONGITUDE: -12 .0
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)


PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 285 CHANNEL: 12 LATITUDE: 63 45.3
DATE: 10/12/87 TIME: 15:55:28 LONGITUDE: -11 -59.4
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)

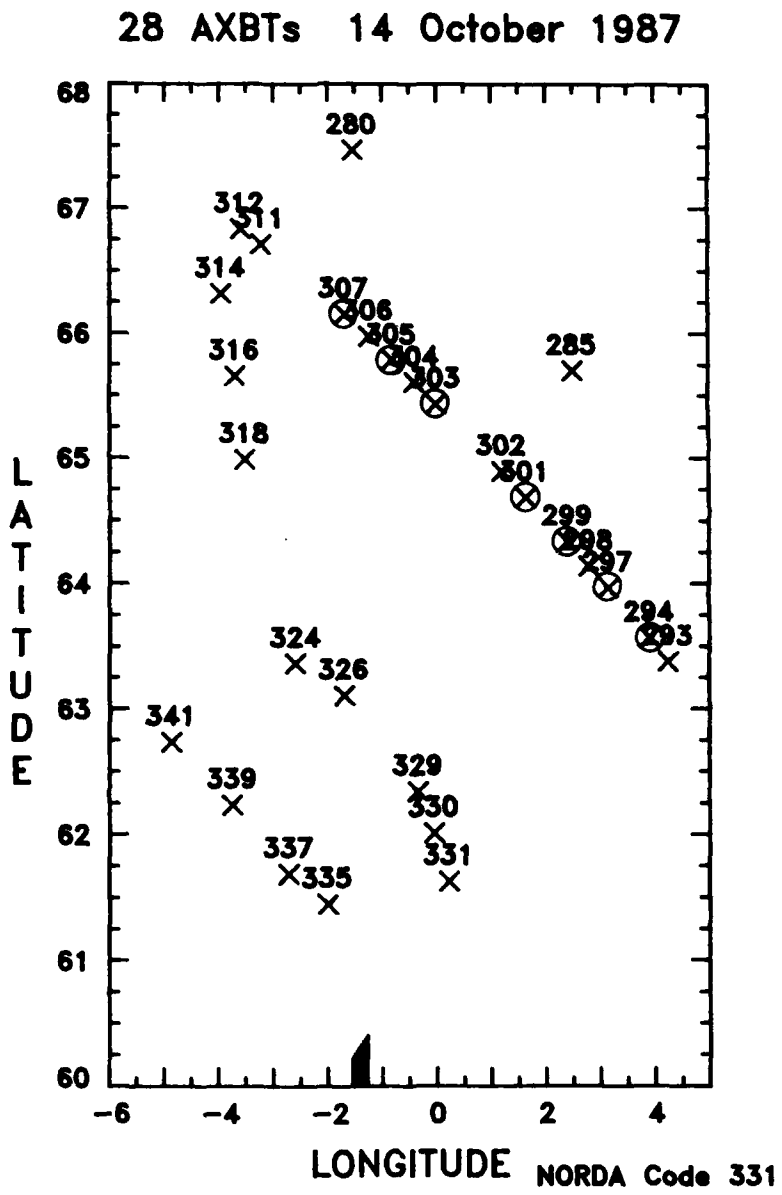

PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 267 CHANNEL: 16 LATITUDE: 63 15.7
DATE: 10/12/87 TIME: 16: 1:50 LONGITUDE: -11 -58.6
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)


PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 268 CHANNEL: 12 LATITUDE: 63 .5
DATE: 10/12/87 TIME: 16: 5: 6 LONGITUDE: -11 -58.1
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)

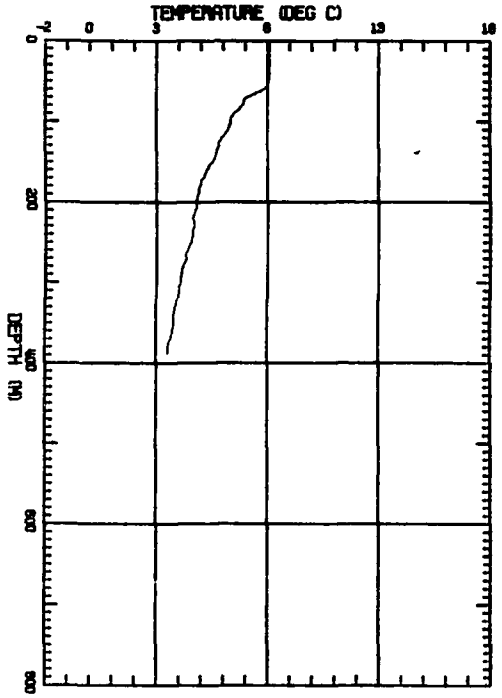

PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 270 CHANNEL: 12 LATITUDE: 62 39.1
DATE: 10/12/87 TIME: 16:17:10 LONGITUDE: -13 -11.4
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)


PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 279 CHANNEL: 16 LATITUDE: 63 24.4
DATE: 10/12/87 TIME: 16:28:33 LONGITUDE: -13 -10.4
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)

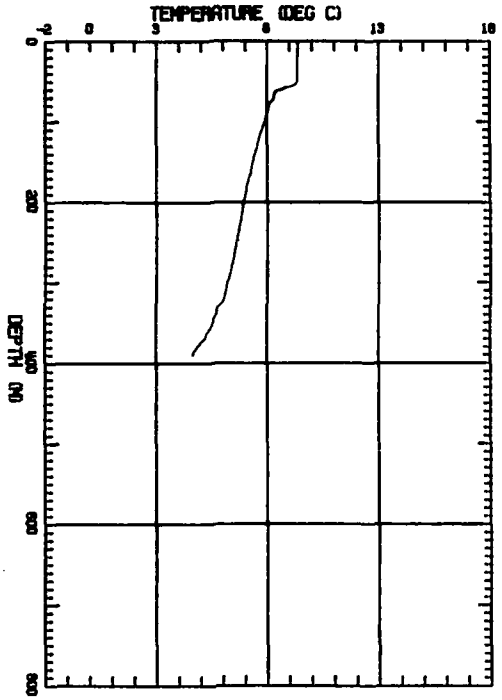
Appendix D.
Drop Positions and Data Profiles, Flight 4, 14 October 1987, Southern Norwegian Sea. Circled Drops Were AXSVs.


28 AXBTs 14 October 1987
LATITUDE
LONGITUDE
NORDA Code 331
68
67
66
65
64
63
62
61
60
-6
-4
-2
0
2
4
280
312
311
314
307
306
305
304
303
316
285
318
302
301
299
298
297
294
293
324
326
341
329
339
330
337
335
331

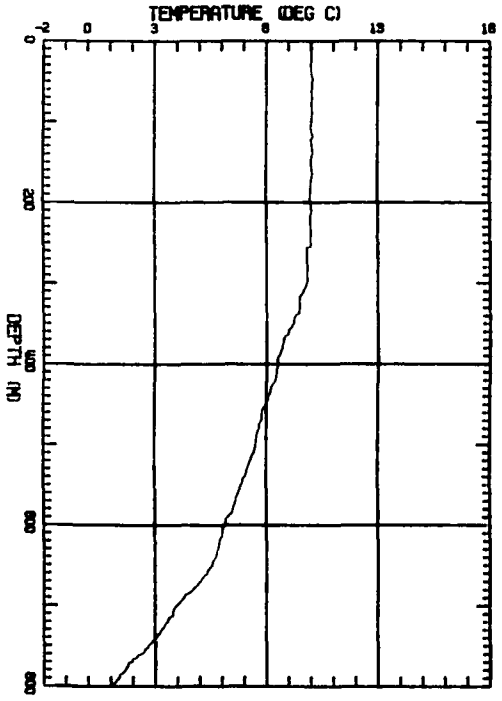
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 280 CHANNEL: 14 LATITUDE: 67 28.0
DATE: 10/14/87 TIME: 10:41:19 LONGITUDE: -1 -32.4



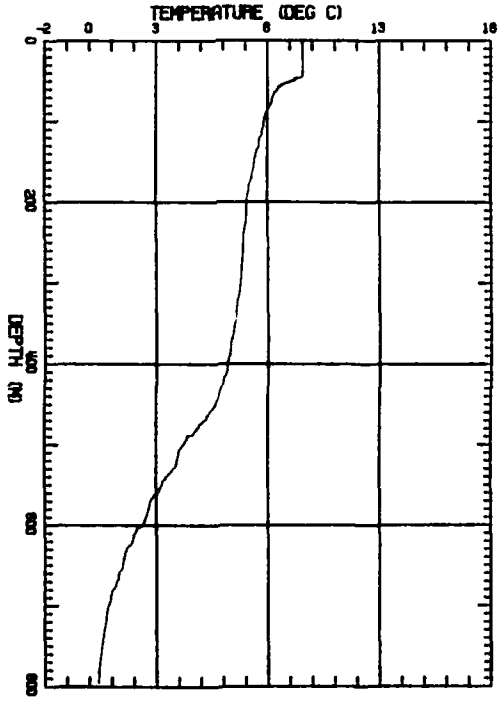
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 285 CHANNEL: 14 LATITUDE: 65 42.0
DATE: 10/14/87 TIME: 11:12: 9 LONGITUDE: 2 28.9

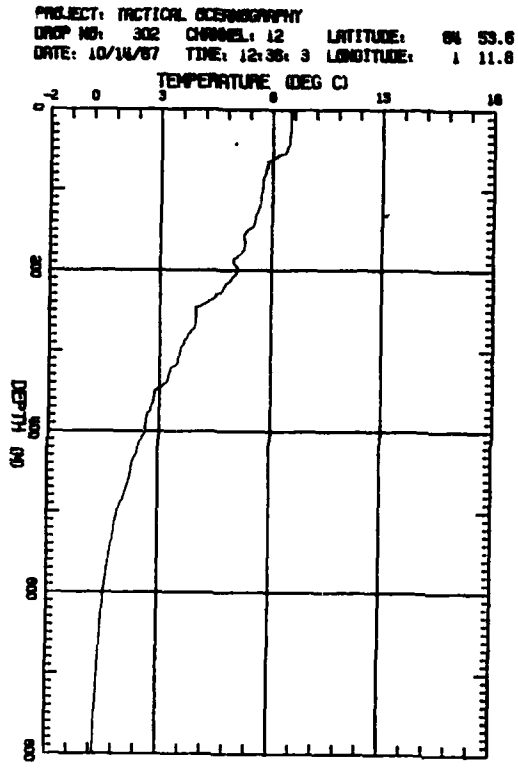


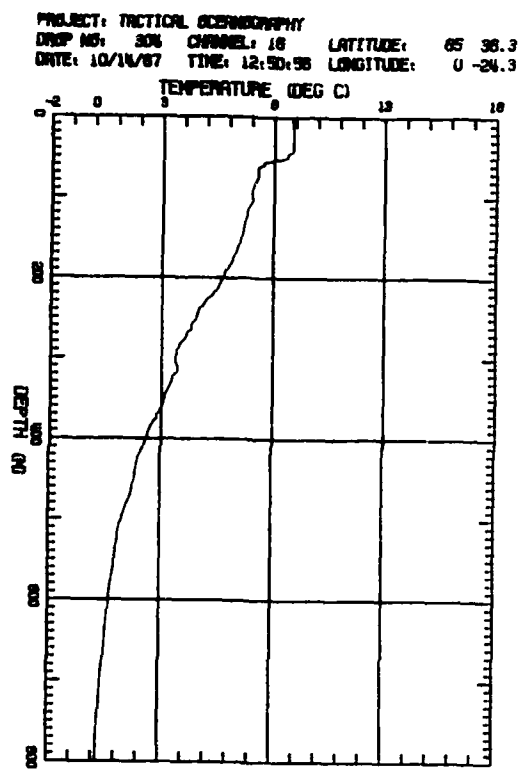
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 289 CHANNEL: 12 LATITUDE: 63 22.6
DATE: 10/14/87 TIME: 12: 6:29 LONGITUDE: 4 14.9

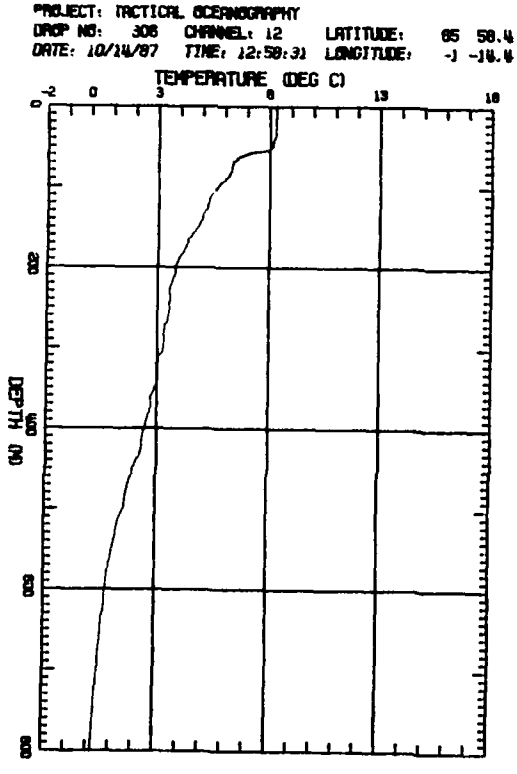


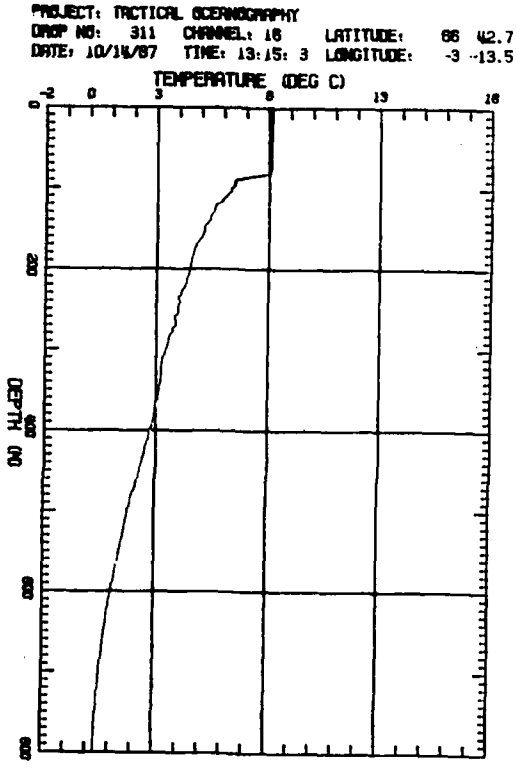
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 298 CHANNEL: 12 LATITUDE: 64 8.2
DATE: 10/14/87 TIME: 12:20:28 LONGITUDE: 2 47.4



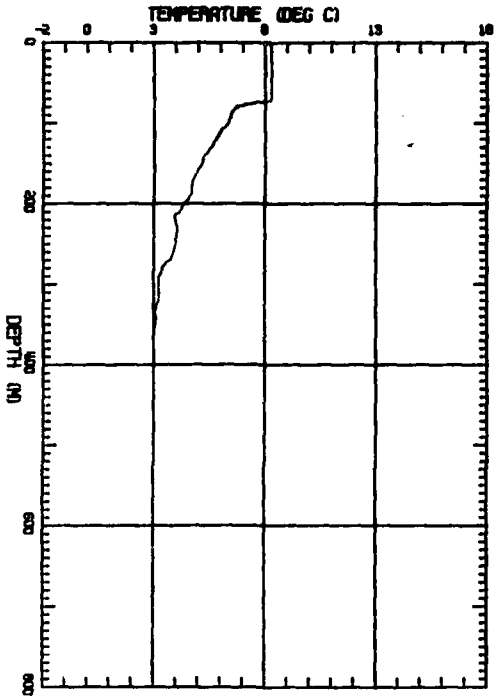

PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 302 CHANNEL: 12 LATITUDE: 64 53.6
DATE: 10/14/87 TIME: 12:38: 3 LONGITUDE: 1 11.8
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)


PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 304 CHANNEL: 18 LATITUDE: 65 36.3
DATE: 10/14/87 TIME: 12:50:58 LONGITUDE: 0 -24.3
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)

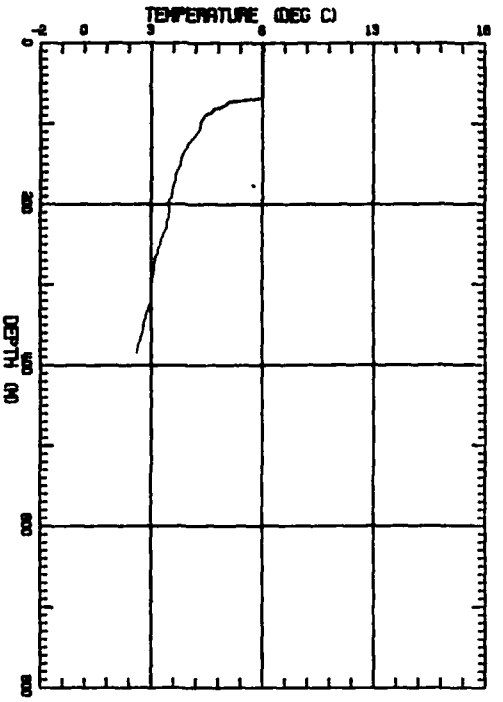

PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 306 CHANNEL: 12 LATITUDE: 65 58.4
DATE: 10/14/87 TIME: 12:58:31 LONGITUDE: -1 -14.4
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)


PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 311 CHANNEL: 18 LATITUDE: 66 42.7
DATE: 10/14/87 TIME: 13:15: 3 LONGITUDE: -3 -13.5
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)

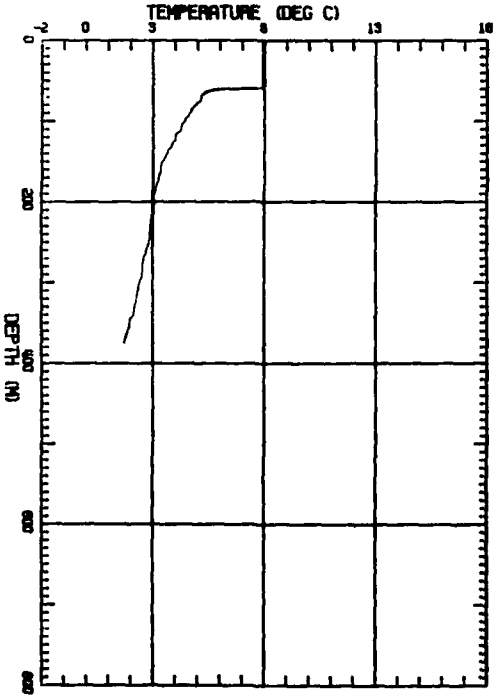
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 312 CHANNEL: 12 LATITUDE: 66 50.0
DATE: 10/[illegible]/87 TIME: 19:17:55 LONGITUDE: -3 -35.9



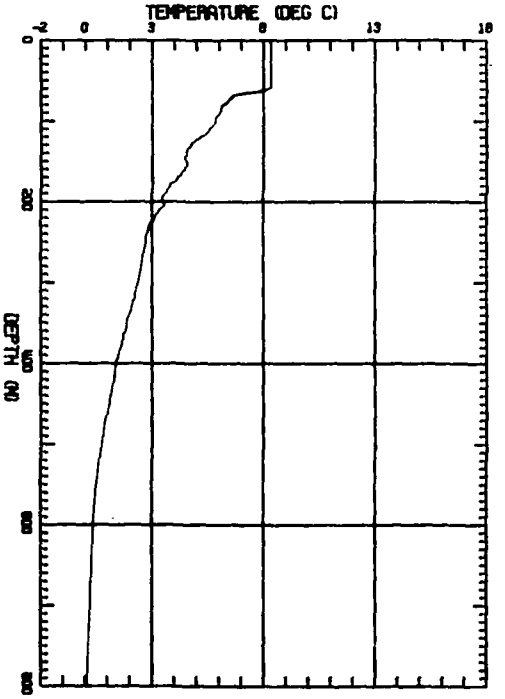
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 314 CHANNEL: 12 LATITUDE: 66 18.9
DATE: 10/14/87 TIME: 13:32:10 LONGITUDE: -3 -57.3



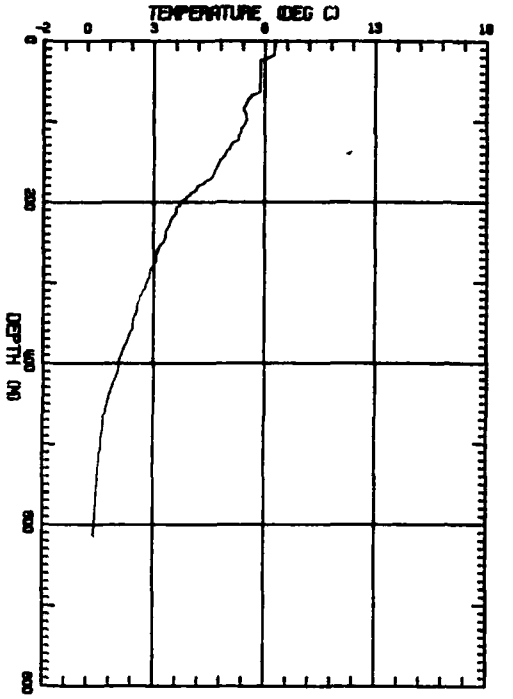
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 316 CHANNEL: 12 LATITUDE: 65 39.3
DATE: 10/14/87 TIME: 19:41:12 LONGITUDE: -3 -42.1



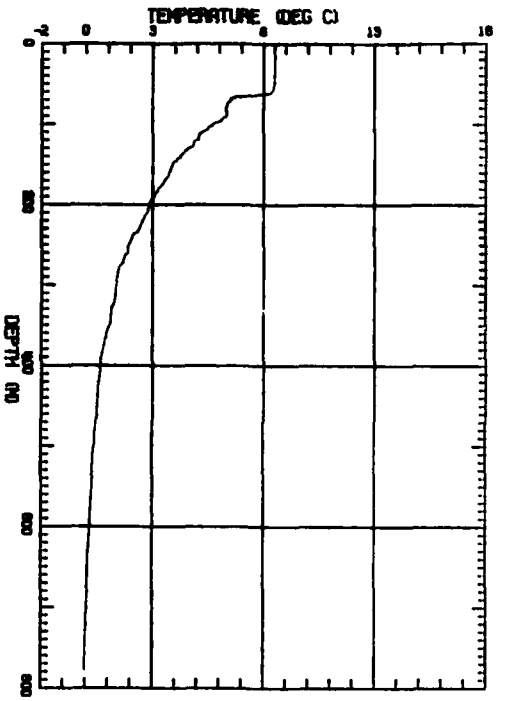
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 318 CHANNEL: 12 LATITUDE: 64 59.2
DATE: 10/14/87 TIME: 13:50:17 LONGITUDE: -3 -31.3



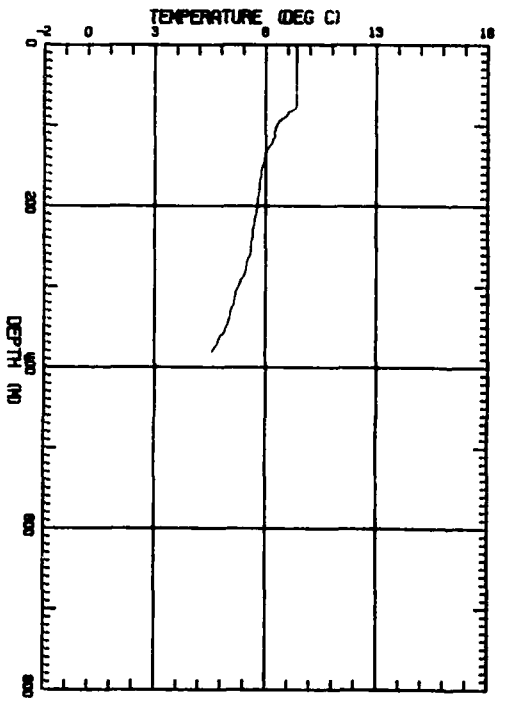
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 326 CHANNEL: 12 LATITUDE: 69 21.6
DATE: 10/14/87 TIME: 14:15:12 LONGITUDE: -2 -35.7



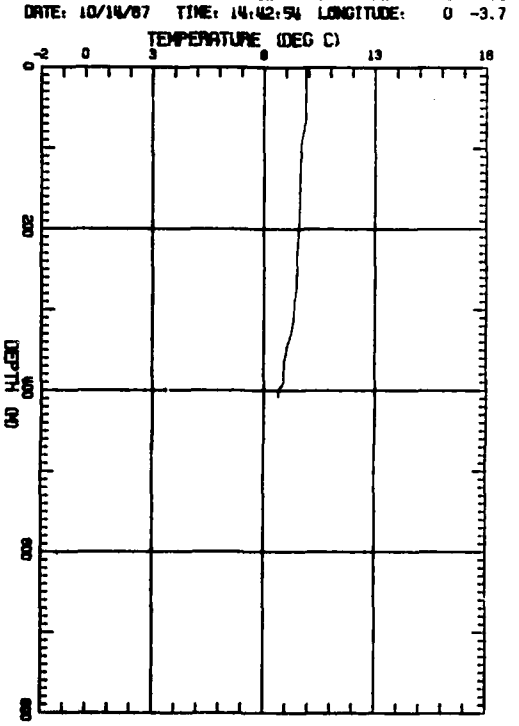
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 328 CHANNEL: 12 LATITUDE: 69 6.0
DATE: 10/14/87 TIME: 14:22: 8 LONGITUDE: -1 -42.0

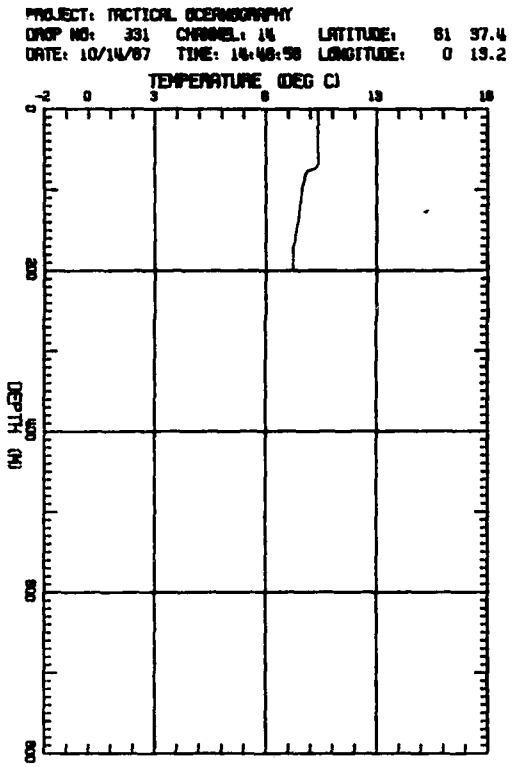


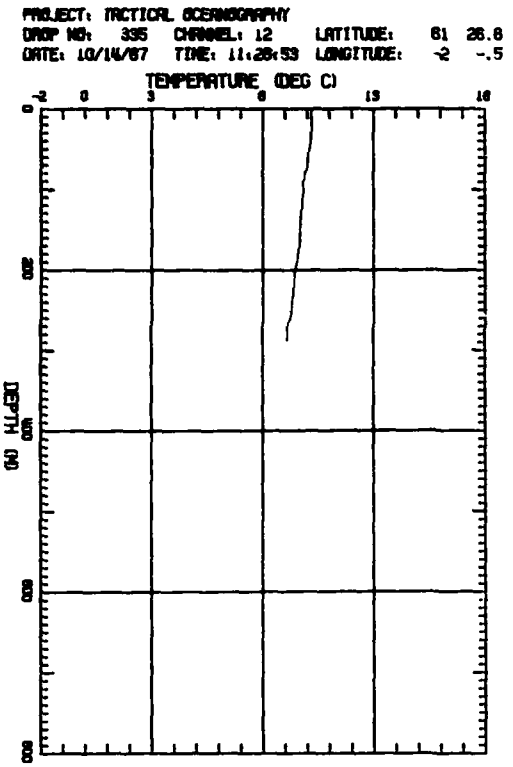
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 329 CHANNEL: 14 LATITUDE: 62 20.2
DATE: 10/14/87 TIME: 14:37:22 LONGITUDE: 0 -21.2

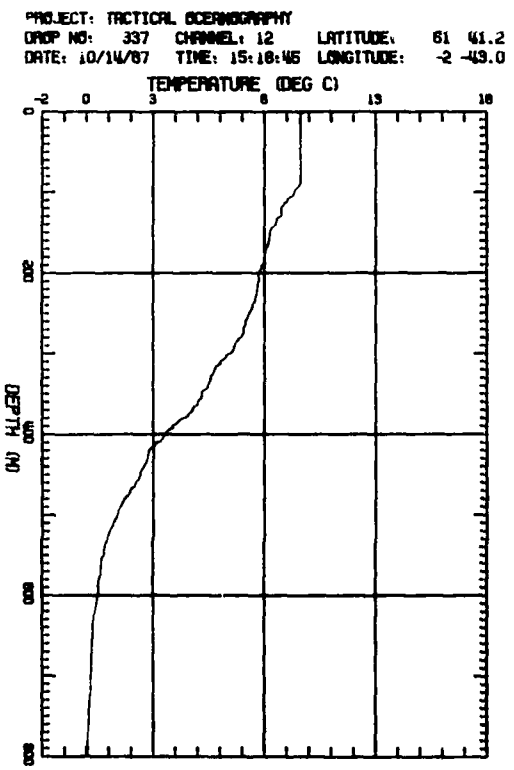


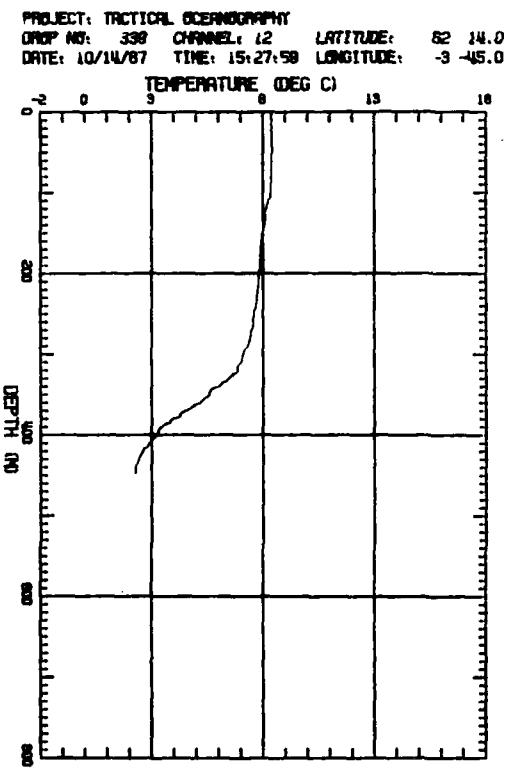
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 330 CHANNEL: 12 LATITUDE: 62 .4
DATE: 10/14/87 TIME: 14:42:54 LONGITUDE: 0 -3.7

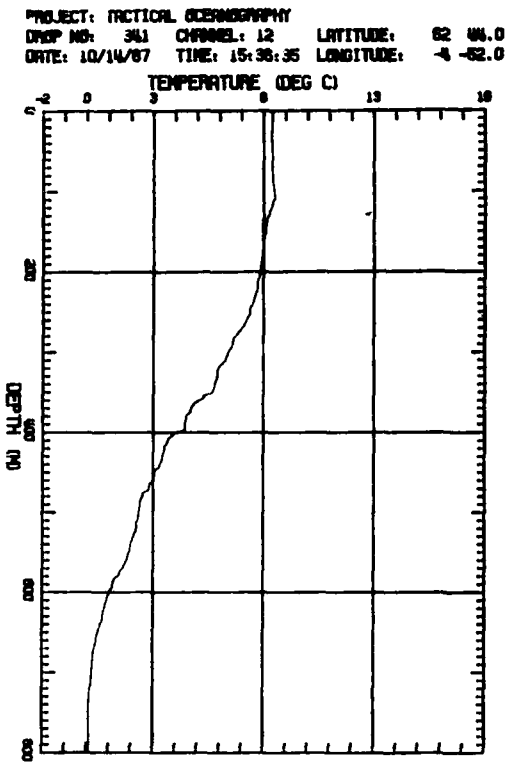



PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 331 CHANNEL: 16 LATITUDE: 61 37.4
DATE: 10/14/87 TIME: 14:48:58 LONGITUDE: 0 19.2
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)

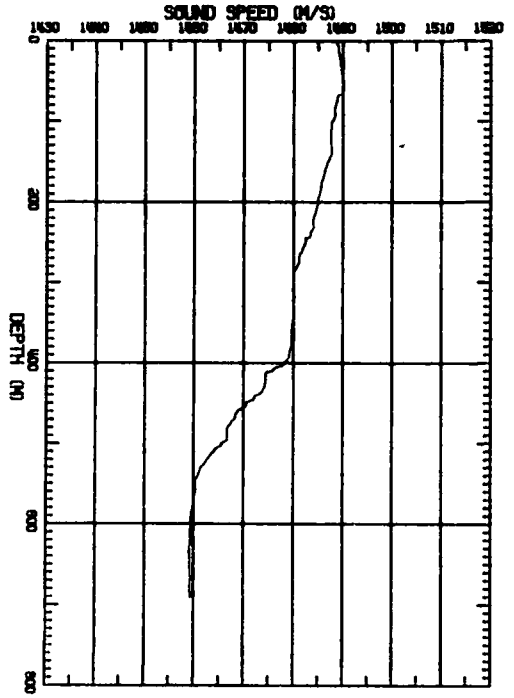

PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 335 CHANNEL: 12 LATITUDE: 61 26.8
DATE: 10/14/87 TIME: 11:28:53 LONGITUDE: -2 -.5
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)


PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 337 CHANNEL: 12 LATITUDE: 61 41.2
DATE: 10/14/87 TIME: 15:18:45 LONGITUDE: -2 -43.0
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)

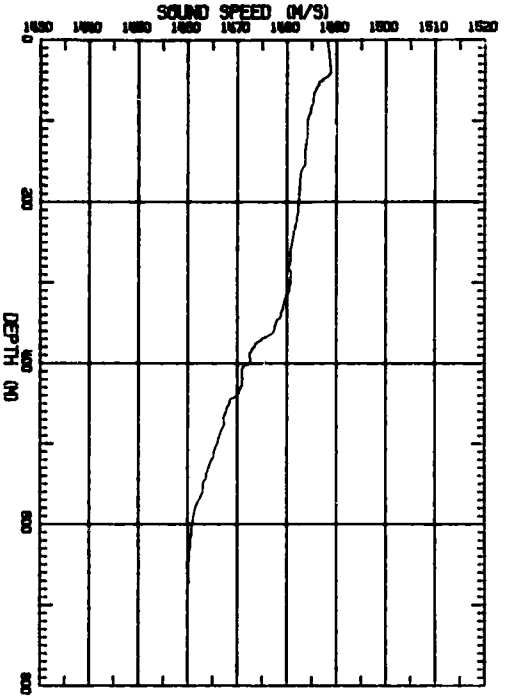

PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 338 CHANNEL: 12 LATITUDE: 62 14.0
DATE: 10/14/87 TIME: 15:27:58 LONGITUDE: -3 -45.0
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)


PROJECT: ARCTICAL OCEANOGRAPHY
DROP NO: 341 CHANNEL: 12 LATITUDE: 82 44.0
DATE: 10/14/87 TIME: 15:38:35 LONGITUDE: -4 -52.0
TEMPERATURE (DEG C)
-2
0
3
8
13
18
0
200
400
600
800
DEPTH (M)

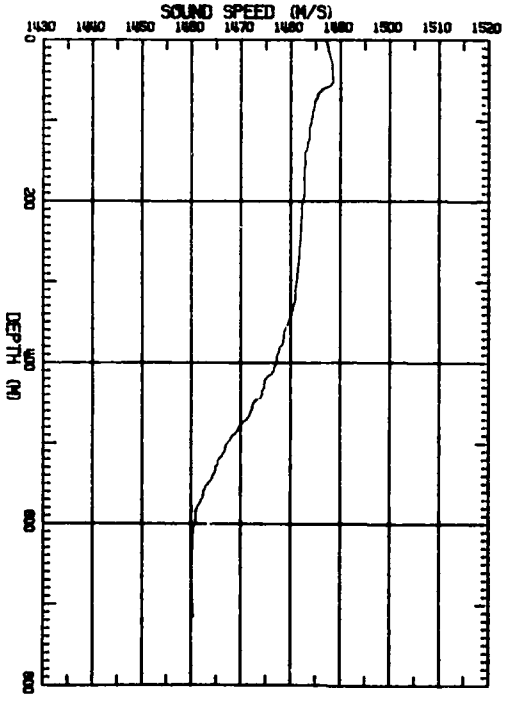
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 296 CHANNEL: 14 LATITUDE: 63 34.1
DATE: 10/14/87 TIME: 12: 9:55 LONGITUDE: 3 54.0



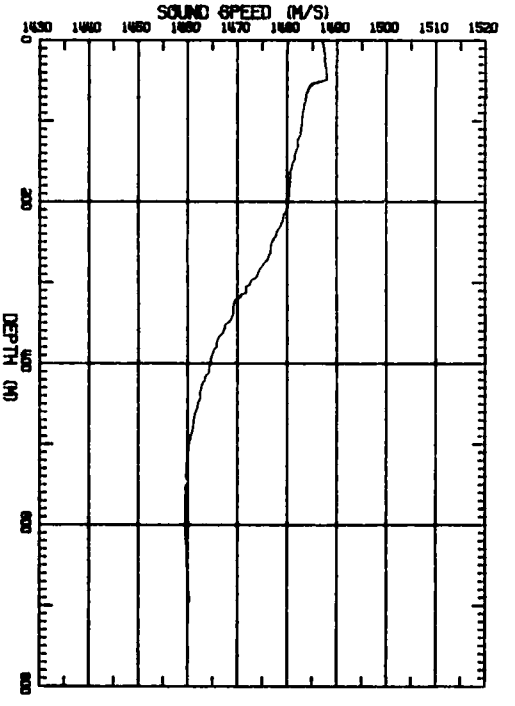
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 297 CHANNEL: 14 LATITUDE: 63 58.0
DATE: 10/14/87 TIME: 12:17:35 LONGITUDE: 3 9.0



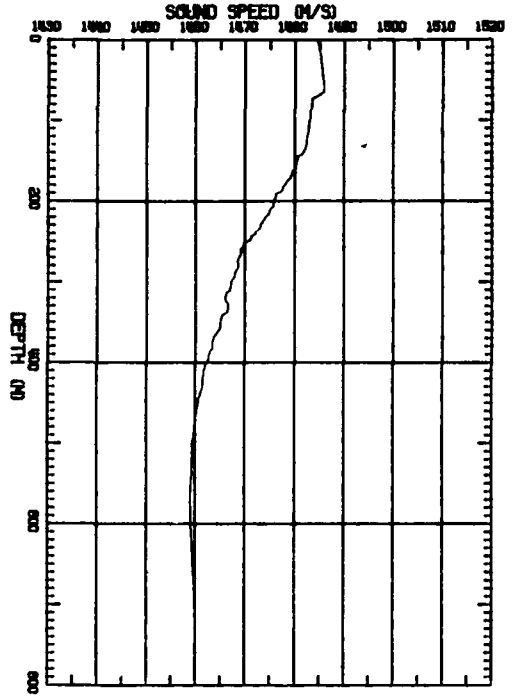
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 299 CHANNEL: 14 LATITUDE: 64 20.0
DATE: 10/14/87 TIME: 12:24: 9 LONGITUDE: 2 24.0



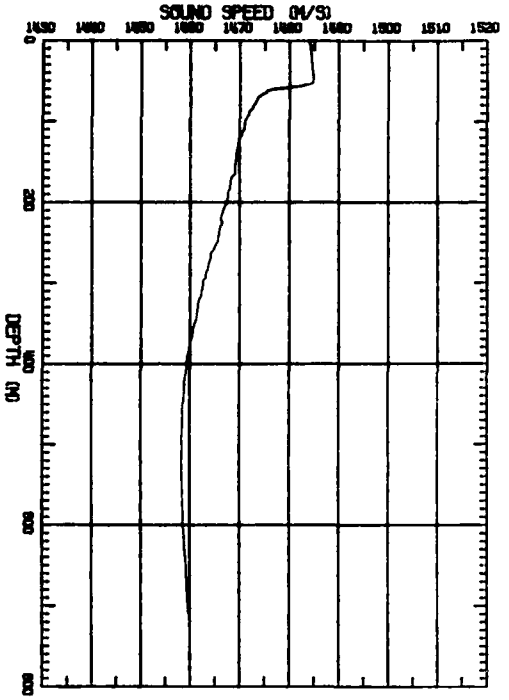
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 301 CHANNEL: 14 LATITUDE: 64 41.0
DATE: 10/14/87 TIME: 12:31:48 LONGITUDE: 1 38.0



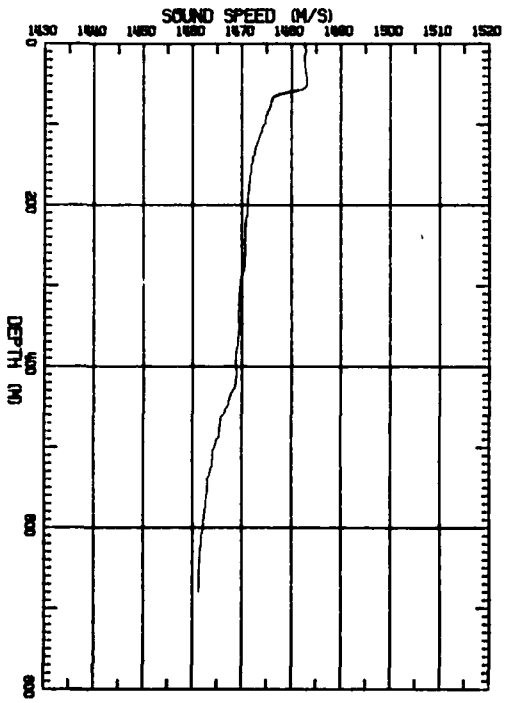
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 309 CHANNEL: 14 LATITUDE: 65 25.8
DATE: 10/14/87 TIME: 12:47:18 LONGITUDE: 0 -.2



PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 305 CHANNEL: 14 LATITUDE: 65 47.0
DATE: 10/14/87 TIME: 12:54:41 LONGITUDE: 0 -48.0



PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 307 CHANNEL: 14 LATITUDE: 66 9.0
DATE: 10/14/87 TIME: 13: 2:21 LONGITUDE: -1 -41.0



Appendix E.
Drop Positions and Data Profiles, Flight 5, 17 October 1987, Iceland-Faeroe Front Region.

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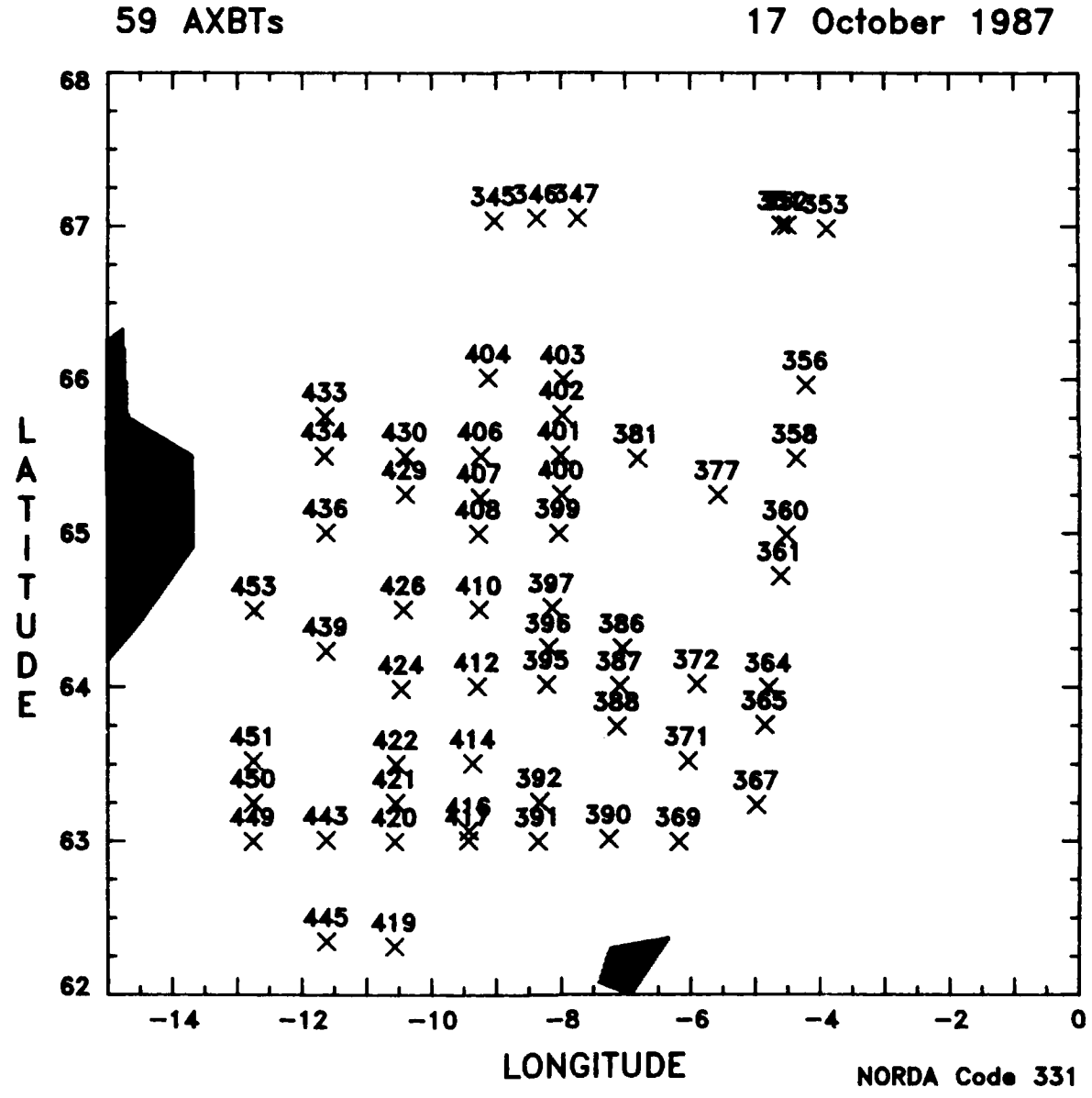
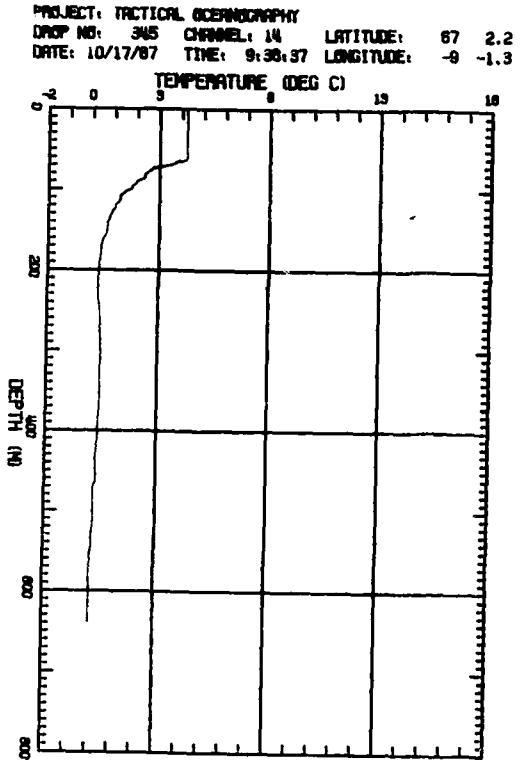
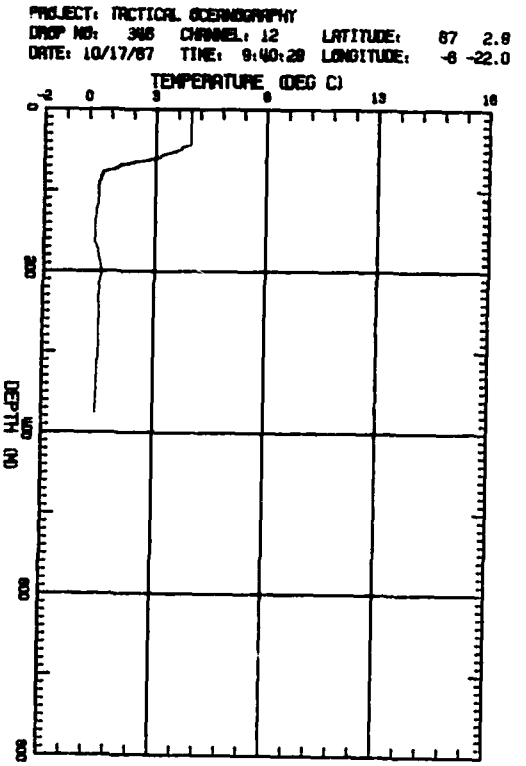
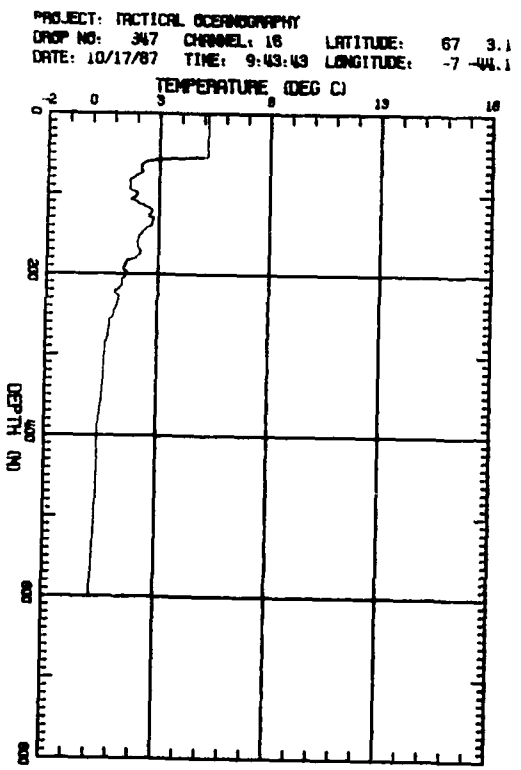
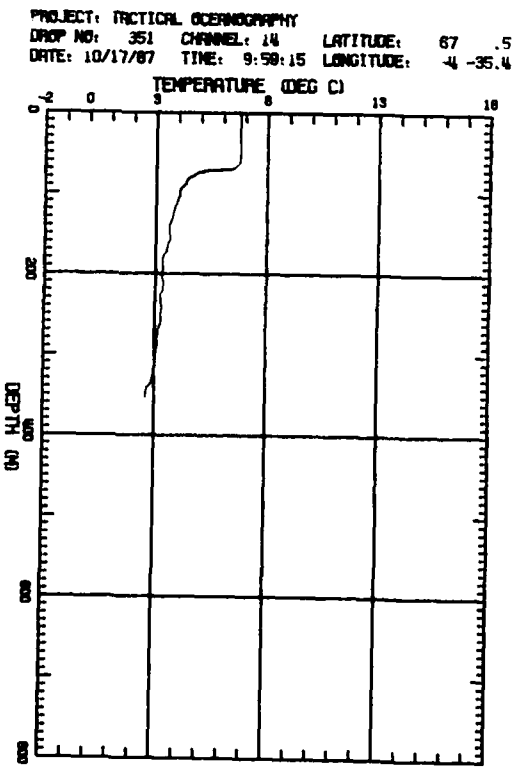

59 AXBTs
17 October 1987
68
67
66
65
64
63
62
LATITUDE
−14
−12
−10
−8
−6
−4
−2
0
LONGITUDE
NORDA Code 331
345
346
347
353
404
403
356
433
402
434
430
406
401
381
358
429
407
400
377
436
408
399
360
361
453
426
410
397
439
396
386
424
412
395
387
372
364
388
365
451
422
414
371
450
421
392
367
449
443
420
391
390
369
445
419

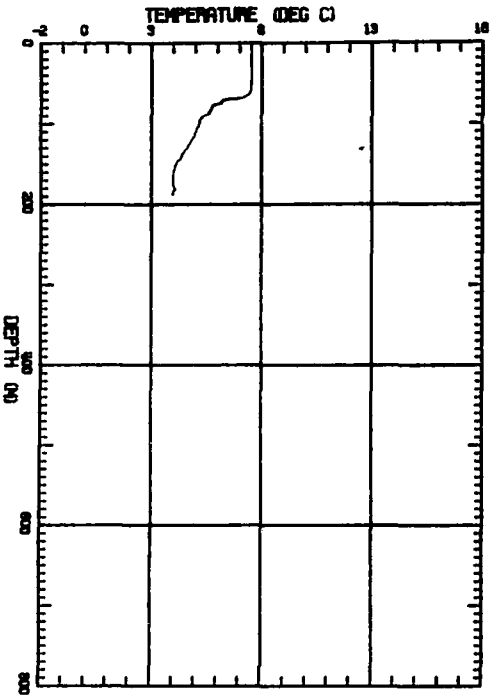

PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 345 CHANNEL: 14 LATITUDE: 67 2.2
DATE: 10/17/87 TIME: 9:36:37 LONGITUDE: -9 -1.3
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
DEPTH (M)


PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 346 CHANNEL: 12 LATITUDE: 67 2.8
DATE: 10/17/87 TIME: 9:40:29 LONGITUDE: -8 -22.0
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
DEPTH (M)

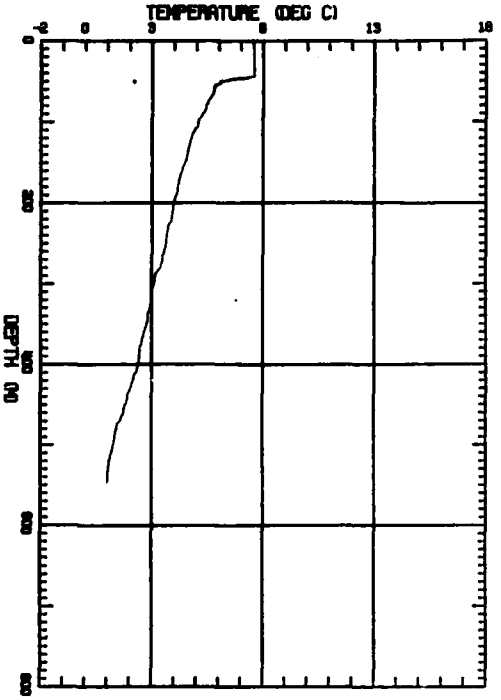

PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 347 CHANNEL: 16 LATITUDE: 67 3.1
DATE: 10/17/87 TIME: 9:43:43 LONGITUDE: -7 -44.1
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
DEPTH (M)


PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 351 CHANNEL: 14 LATITUDE: 67 .5
DATE: 10/17/87 TIME: 9:58:15 LONGITUDE: -4 -35.4
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
DEPTH (M)

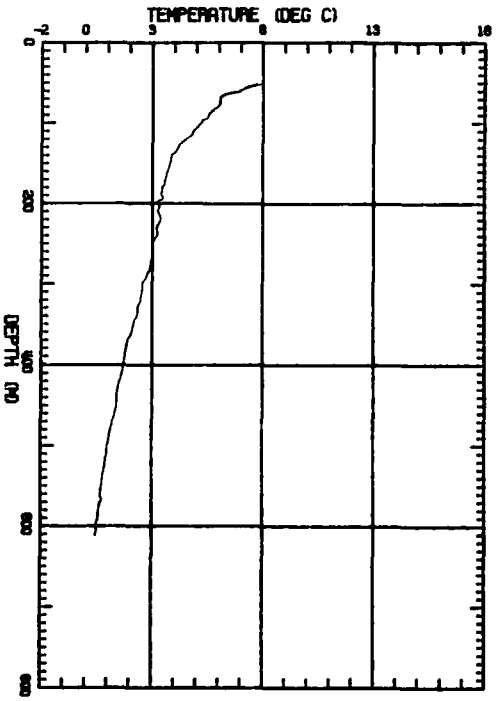
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 352 CHANNEL: 12 LATITUDE: 67 .4
DATE: 10/17/87 TIME: 9:50:43 LONGITUDE: -4 -28.8



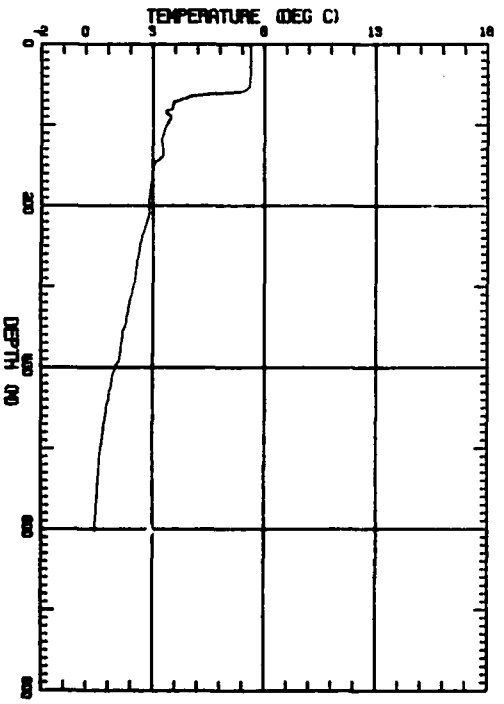
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 353 CHANNEL: 16 LATITUDE: 66 59.1
DATE: 10/17/87 TIME: 10: 2:48 LONGITUDE: -3 -53.1



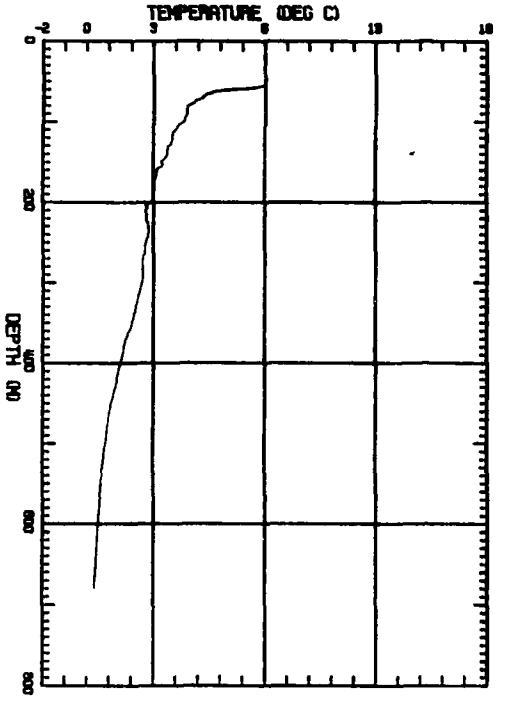
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 358 CHANNEL: 14 LATITUDE: 65 57.9
DATE: 10/17/87 TIME: 10:15:47 LONGITUDE: -4 -12.2



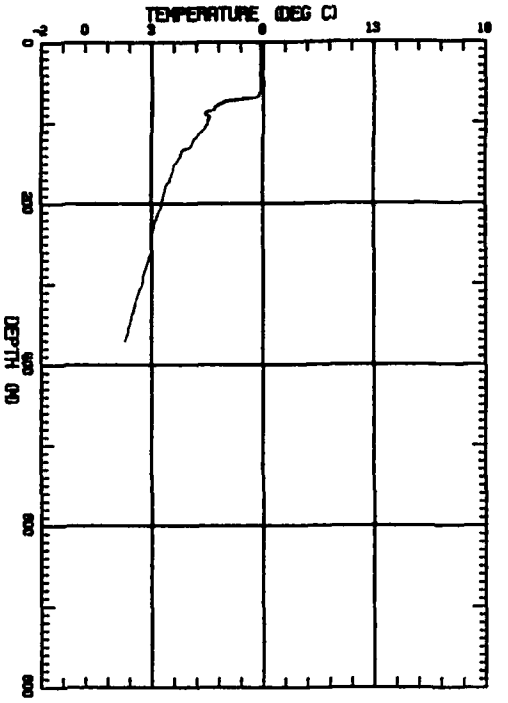
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 358 CHANNEL: 16 LATITUDE: 65 29.3
DATE: 10/17/87 TIME: 10:21:48 LONGITUDE: -4 -22.1



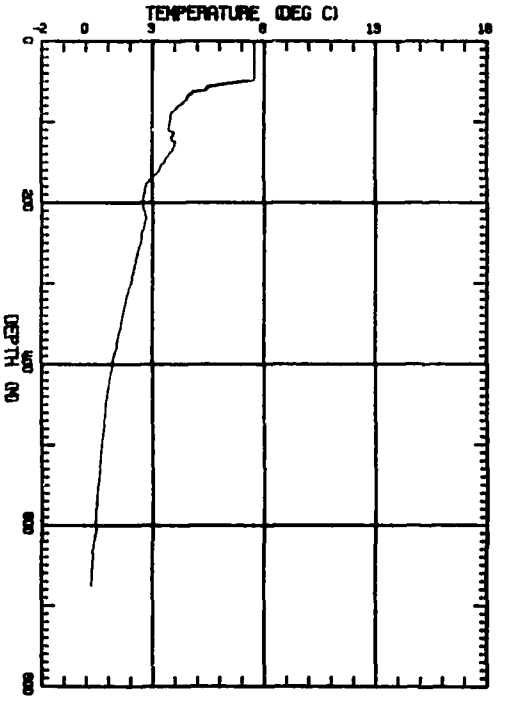
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 380 CHANNEL: 12 LATITUDE: 64 59.4
DATE: 10/17/87 TIME: 10:28: 7 LONGITUDE: -4 -31.7



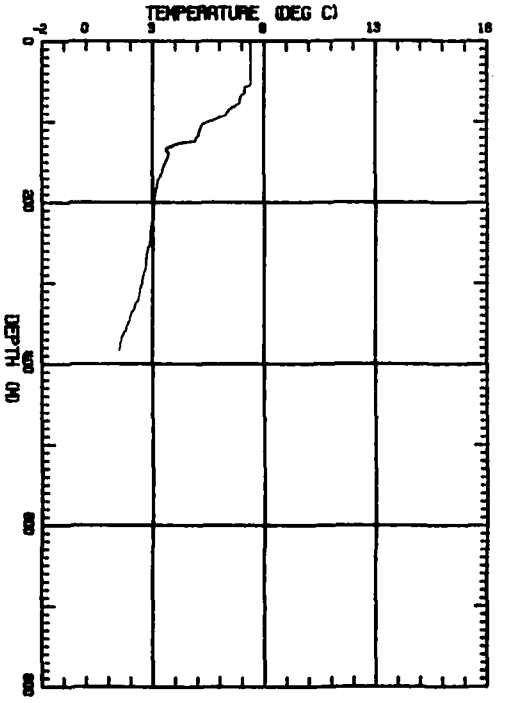
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 381 CHANNEL: 16 LATITUDE: 64 49.3
DATE: 10/17/87 TIME: 10:31:33 LONGITUDE: -4 -37.0

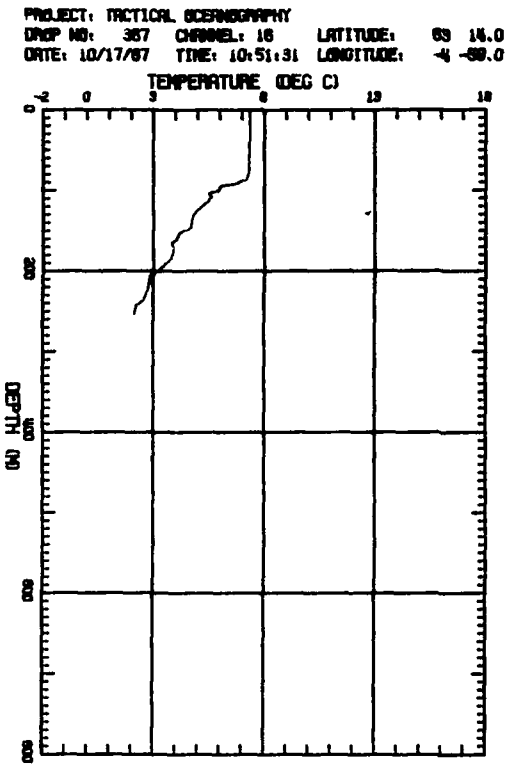


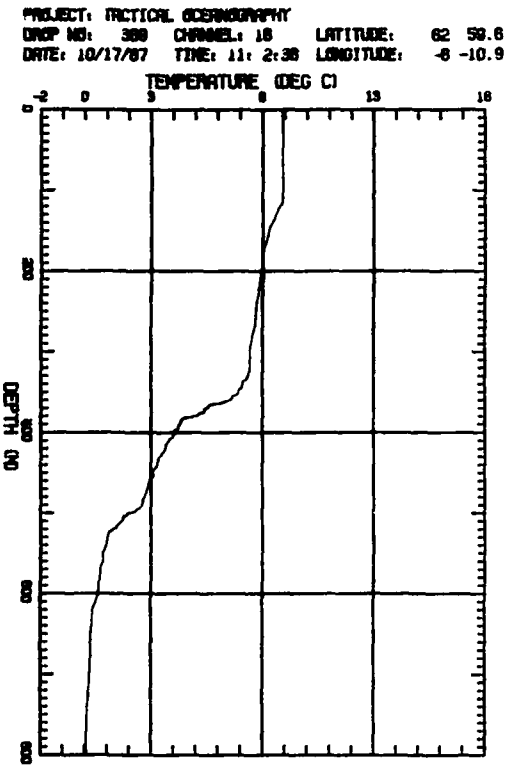
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 384 CHANNEL: 16 LATITUDE: 63 59.8
DATE: 10/17/87 TIME: 10:41:12 LONGITUDE: -4 -48.0

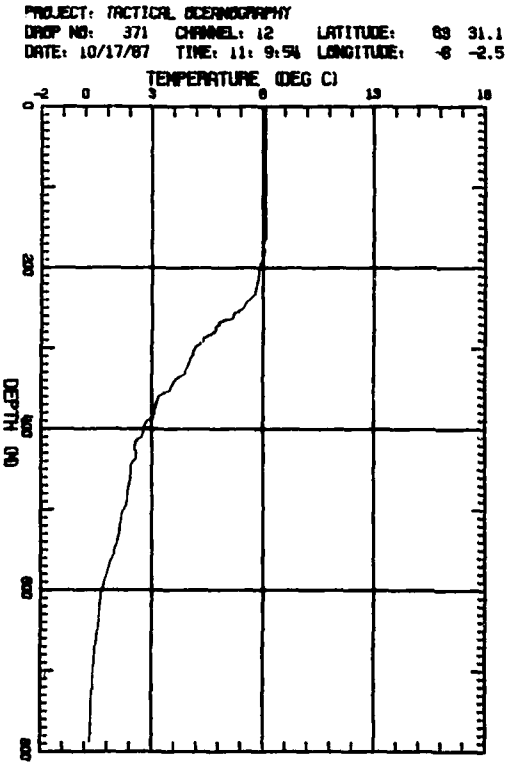


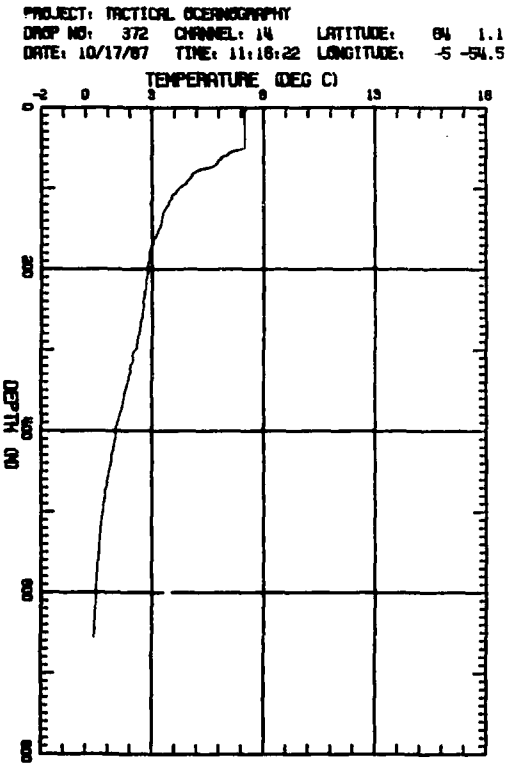
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 385 CHANNEL: 14 LATITUDE: 63 45.1
DATE: 10/17/87 TIME: 10:44:39 LONGITUDE: -4 -51.3

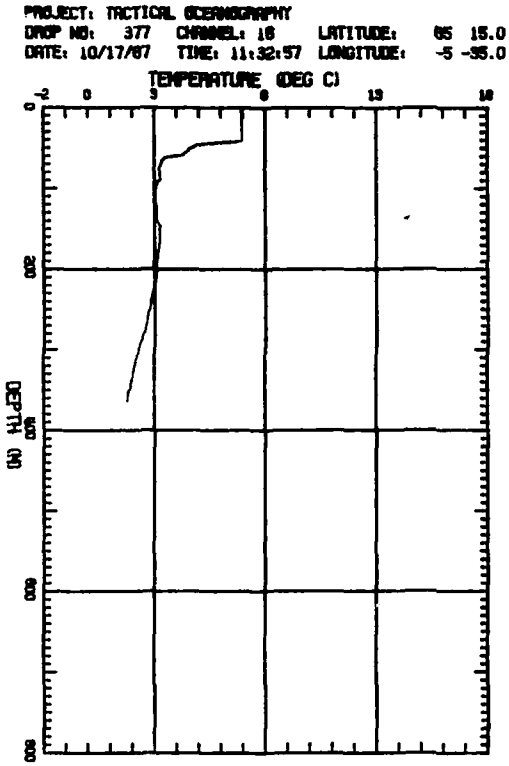


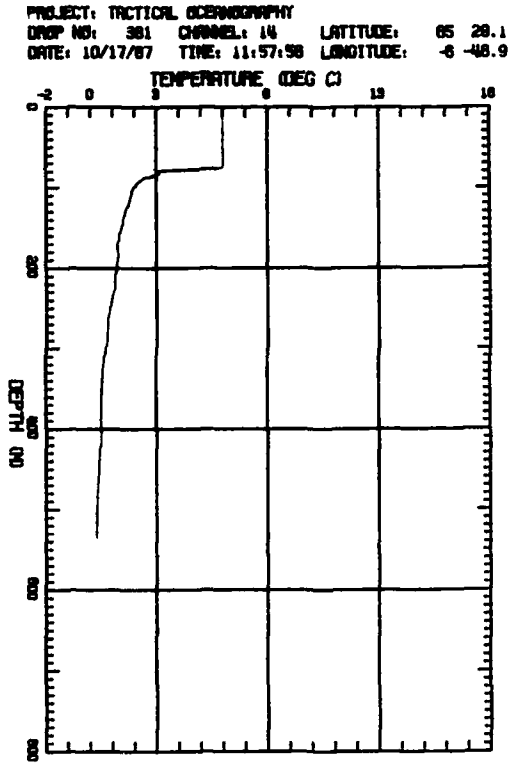

PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 367 CHANNEL: 16 LATITUDE: 63 16.0
DATE: 10/17/87 TIME: 10:51:31 LONGITUDE: -4 -59.0
TEMPERATURE (DEG C)
DEPTH (M)

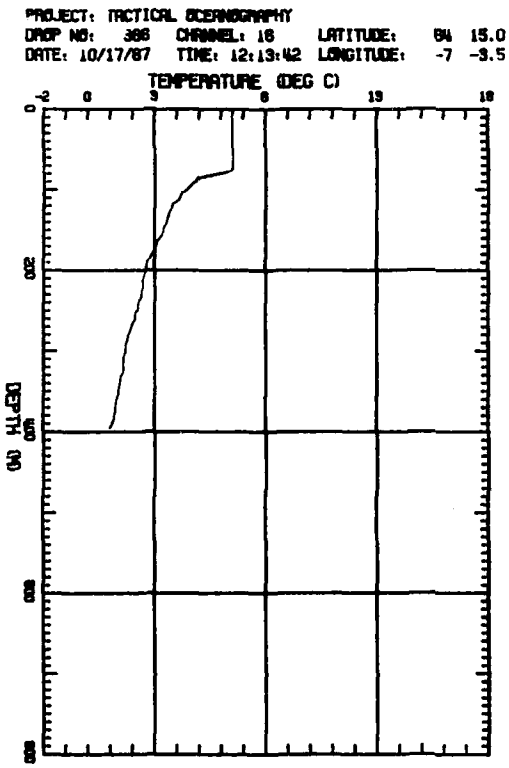

PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 369 CHANNEL: 18 LATITUDE: 62 59.6
DATE: 10/17/87 TIME: 11: 2:38 LONGITUDE: -6 -10.9
TEMPERATURE (DEG C)
DEPTH (M)

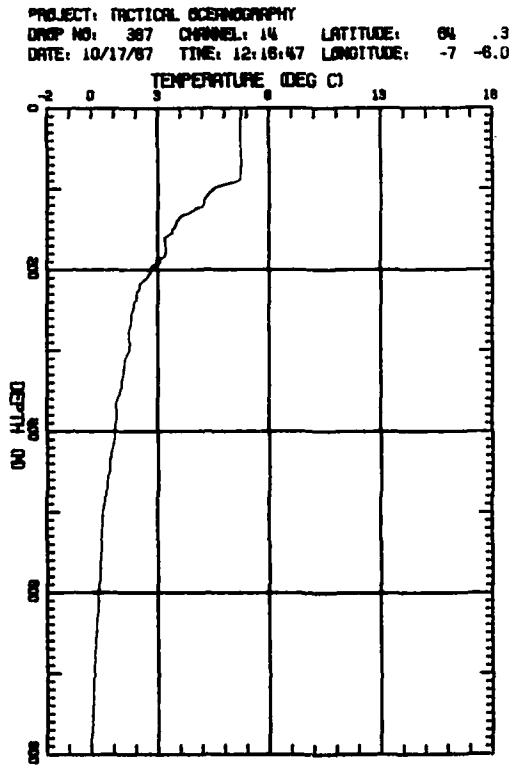

PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 371 CHANNEL: 12 LATITUDE: 63 31.1
DATE: 10/17/87 TIME: 11: 9:54 LONGITUDE: -6 -2.5
TEMPERATURE (DEG C)
DEPTH (M)

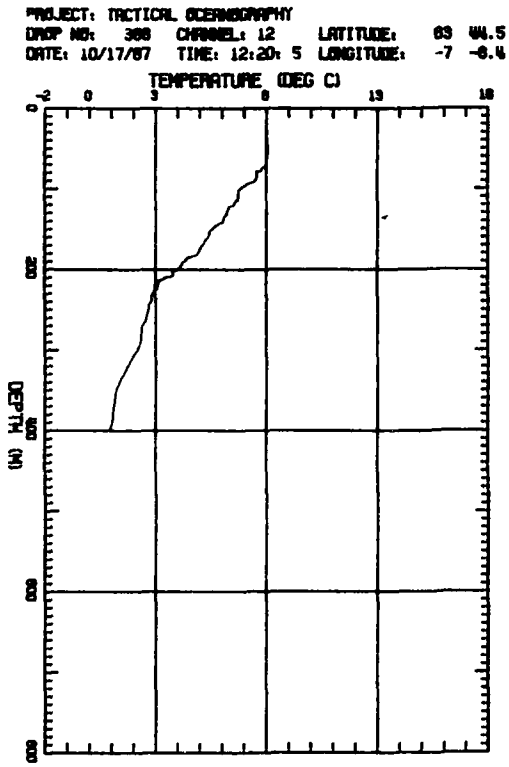

PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 372 CHANNEL: 14 LATITUDE: 64 1.1
DATE: 10/17/87 TIME: 11:16:22 LONGITUDE: -5 -54.5
TEMPERATURE (DEG C)
DEPTH (M)

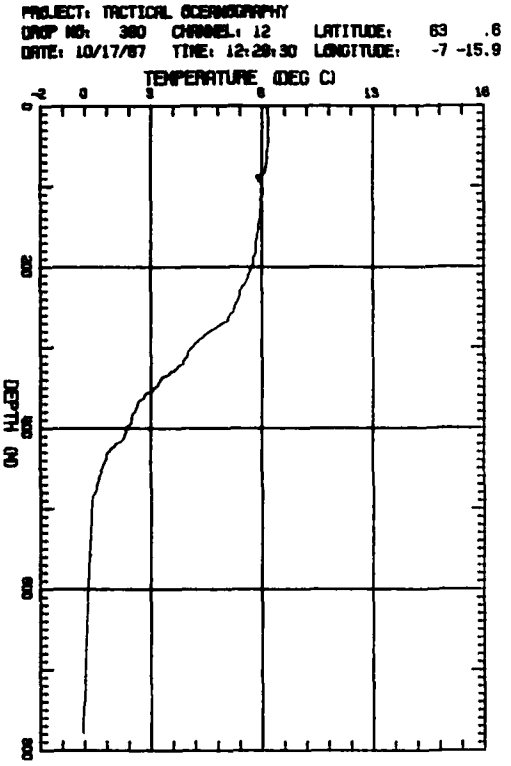

PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 377 CHANNEL: 16 LATITUDE: 65 15.0
DATE: 10/17/87 TIME: 11:32:57 LONGITUDE: -5 -55.0
TEMPERATURE (DEG C)
-2 0 3 6 13 16
0
200
400
600
800
DEPTH (M)

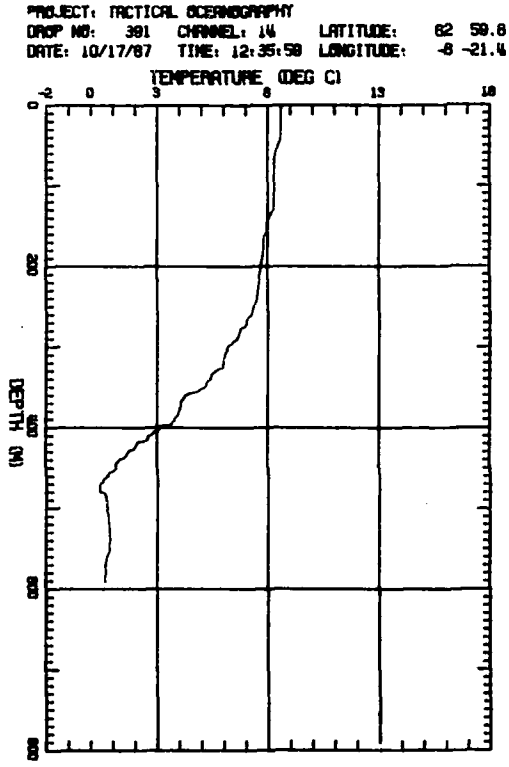

PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 381 CHANNEL: 14 LATITUDE: 65 28.1
DATE: 10/17/87 TIME: 11:57:58 LONGITUDE: -6 -48.9
TEMPERATURE (DEG C)
-2 0 3 6 13 16
0
200
400
600
800
DEPTH (M)

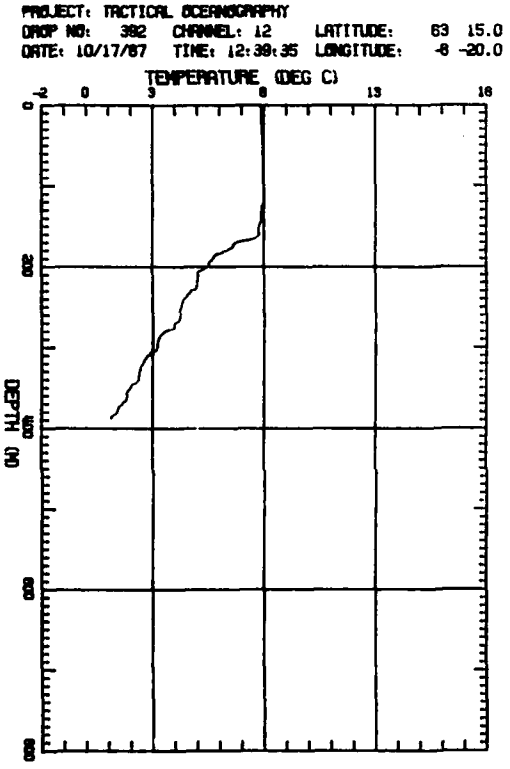

PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 388 CHANNEL: 16 LATITUDE: 64 15.0
DATE: 10/17/87 TIME: 12:13:42 LONGITUDE: -7 -3.5
TEMPERATURE (DEG C)
-2 0 3 6 13 16
0
200
400
600
800
DEPTH (M)


PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 387 CHANNEL: 14 LATITUDE: 64 .3
DATE: 10/17/87 TIME: 12:16:47 LONGITUDE: -7 -6.0
TEMPERATURE (DEG C)
-2 0 3 6 13 16
0
200
400
600
800
DEPTH (M)

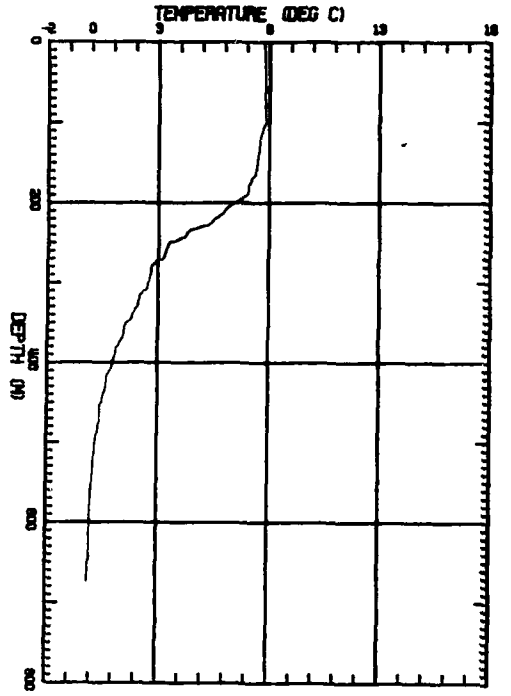

PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 388 CHANNEL: 12 LATITUDE: 63 44.5
DATE: 10/17/87 TIME: 12:20: 5 LONGITUDE: -7 -8.4
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)


PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 390 CHANNEL: 12 LATITUDE: 63 .6
DATE: 10/17/87 TIME: 12:29:30 LONGITUDE: -7 -15.9
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)

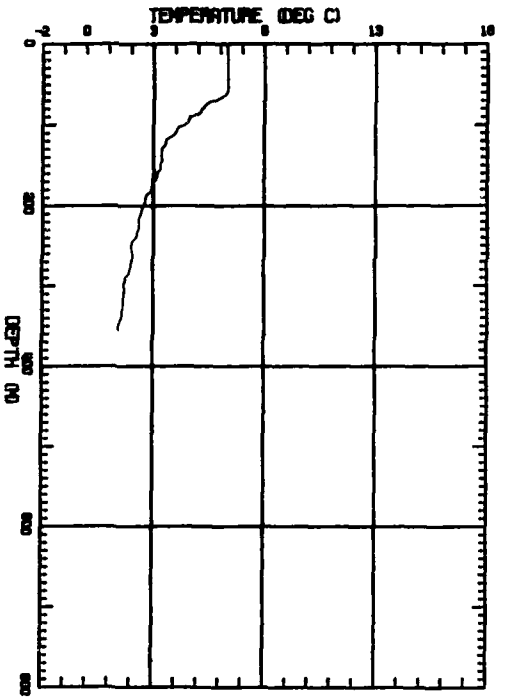

PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 391 CHANNEL: 14 LATITUDE: 62 59.8
DATE: 10/17/87 TIME: 12:35:58 LONGITUDE: -8 -21.4
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)


PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 392 CHANNEL: 12 LATITUDE: 63 15.0
DATE: 10/17/87 TIME: 12:39:35 LONGITUDE: -8 -20.0
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)

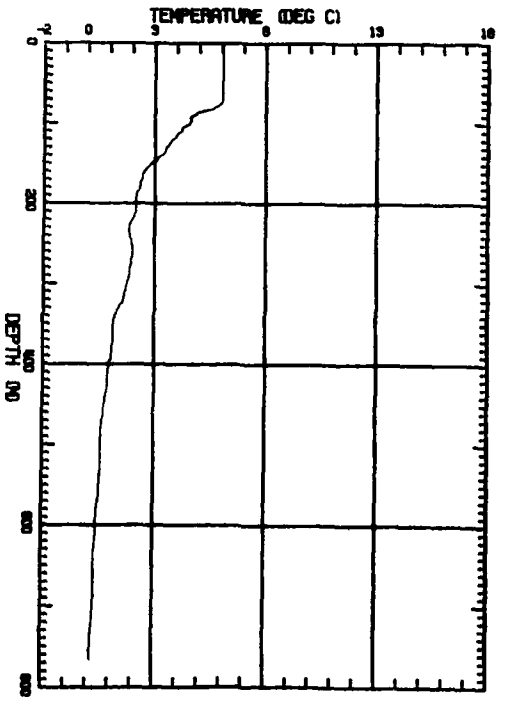
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 385 CHANNEL: 12 LATITUDE: 64 .7
DATE: 10/17/87 TIME: 12:48:38 LONGITUDE: -8 -13.7



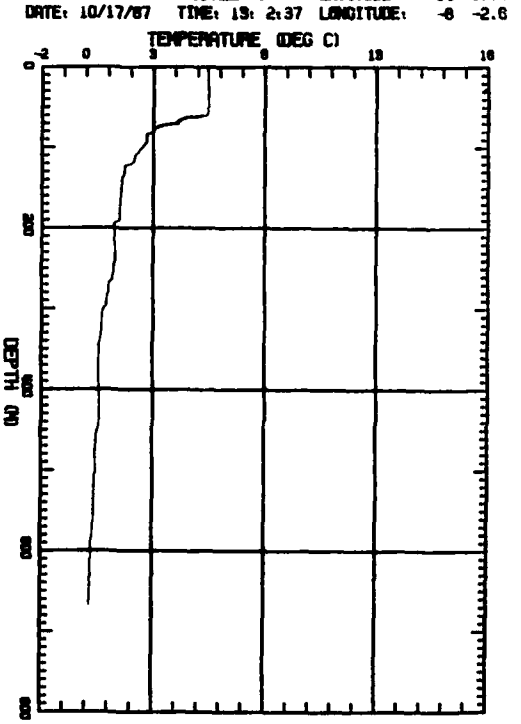
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 386 CHANNEL: 16 LATITUDE: 64 15.1
DATE: 10/17/87 TIME: 12:52:43 LONGITUDE: -8 -11.6



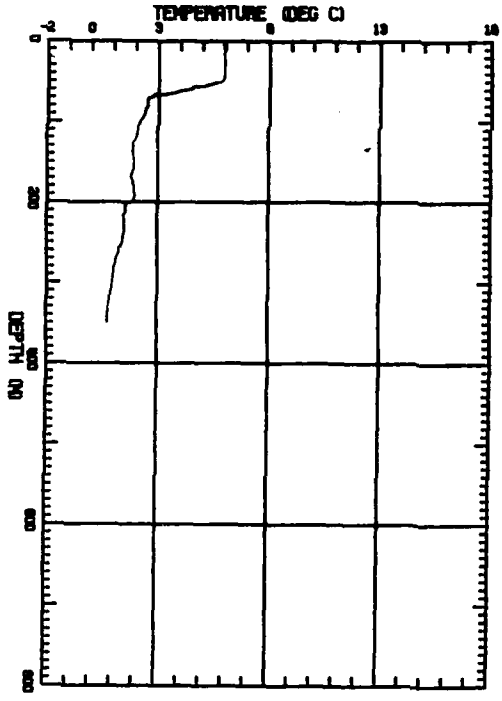
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 387 CHANNEL: 14 LATITUDE: 64 30.7
DATE: 10/17/87 TIME: 12:58: 9 LONGITUDE: -8 -8.7



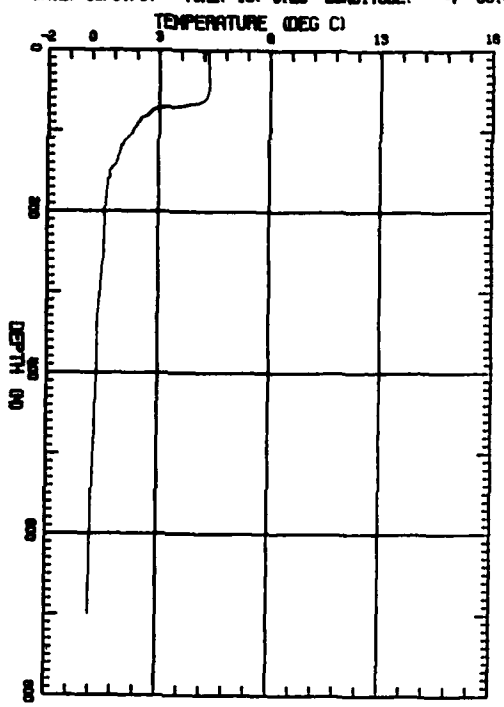
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 388 CHANNEL: 16 LATITUDE: 64 59.9
DATE: 10/17/87 TIME: 19: 2:37 LONGITUDE: -8 -2.6



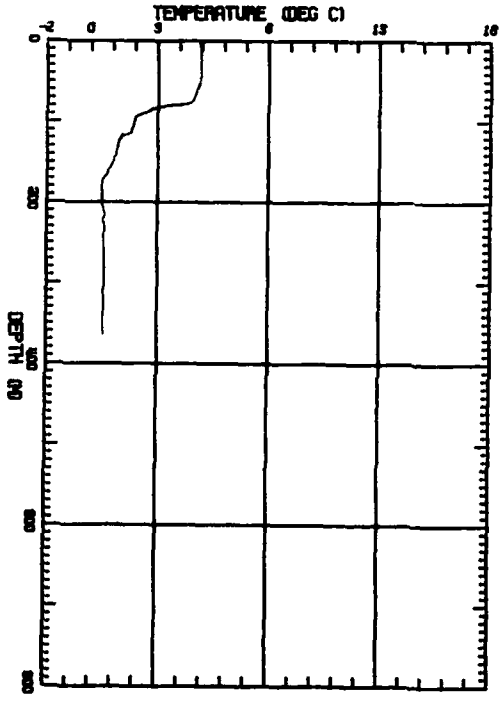
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 400 CHANNEL: 16 LATITUDE: 65 15.0
DATE: 10/17/87 TIME: 13: 5:56 LONGITUDE: -8 .0



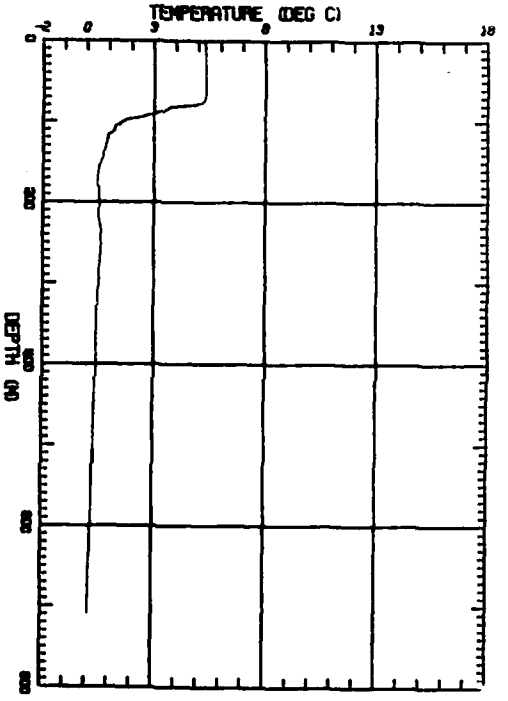
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 401 CHANNEL: 12 LATITUDE: 65 30.3
DATE: 10/17/87 TIME: 13: 9:20 LONGITUDE: -7 -59.6



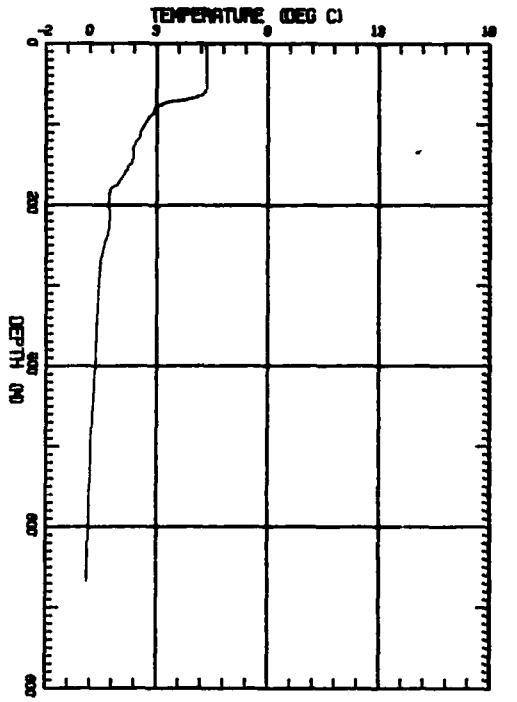
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 402 CHANNEL: 16 LATITUDE: 65 46.1
DATE: 10/17/87 TIME: 13:12:56 LONGITUDE: -7 -58.4



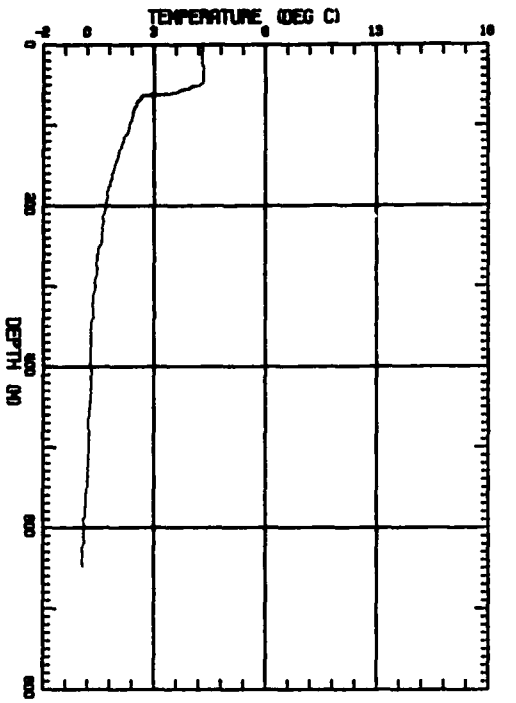
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 403 CHANNEL: 16 LATITUDE: 66 .0
DATE: 10/17/87 TIME: 13:16: 3 LONGITUDE: -7 -57.2



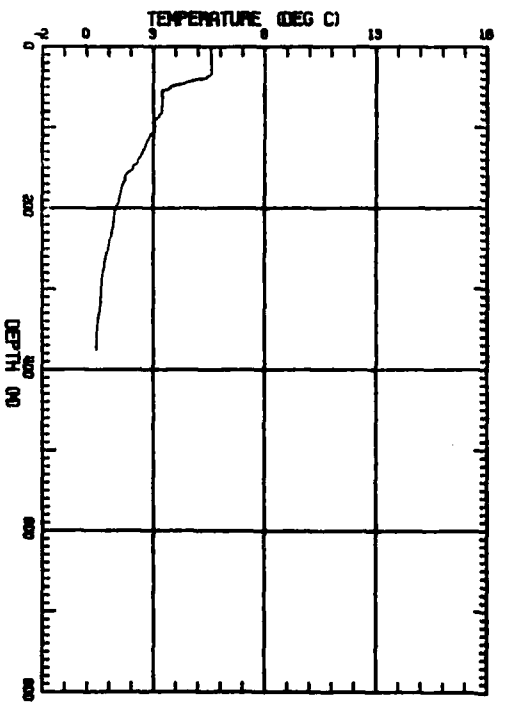
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 406 CHANNEL: 16 LATITUDE: 66 .7
DATE: 10/17/87 TIME: 19:22:17 LONGITUDE: -8 -7.0



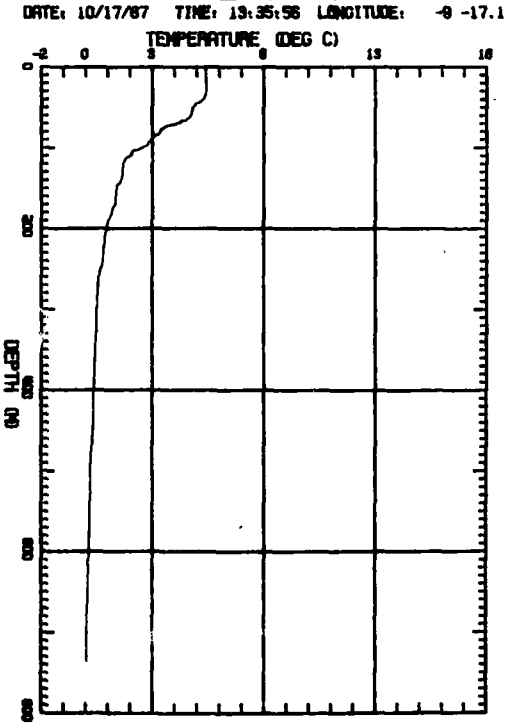
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 408 CHANNEL: 12 LATITUDE: 65 30.3
DATE: 10/17/87 TIME: 19:28:08 LONGITUDE: -8 -13.9



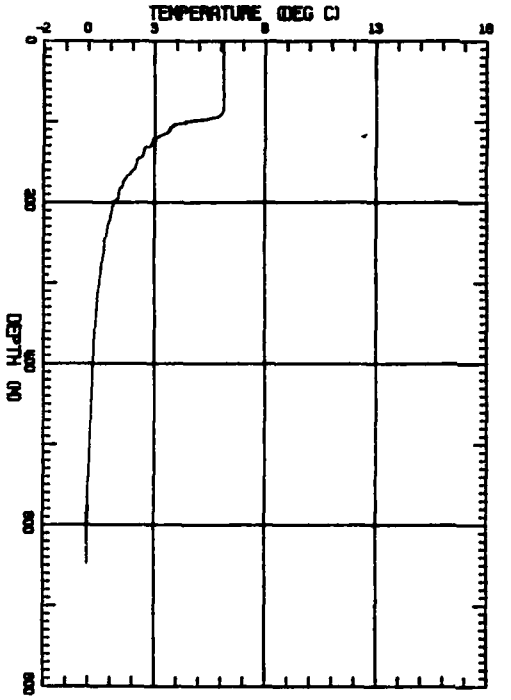
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 407 CHANNEL: 16 LATITUDE: 65 14.0
DATE: 10/17/87 TIME: 19:32:37 LONGITUDE: -8 -15.6



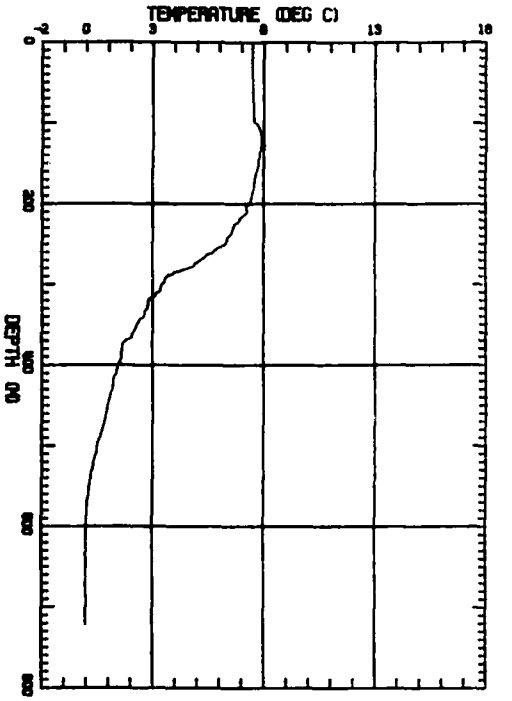
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 409 CHANNEL: 16 LATITUDE: 64 59.9
DATE: 10/17/87 TIME: 19:35:56 LONGITUDE: -8 -17.1



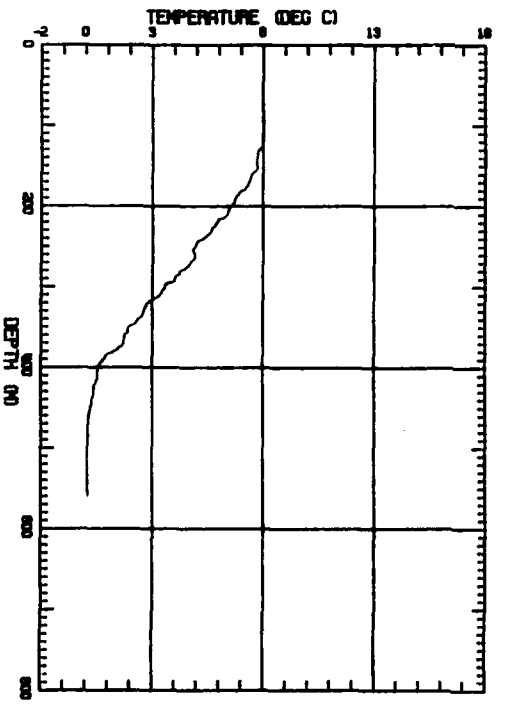
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 410 CHANNEL: 16 LATITUDE: 64 30.2
DATE: 10/17/87 TIME: 19:42:56 LONGITUDE: -8 -16.9



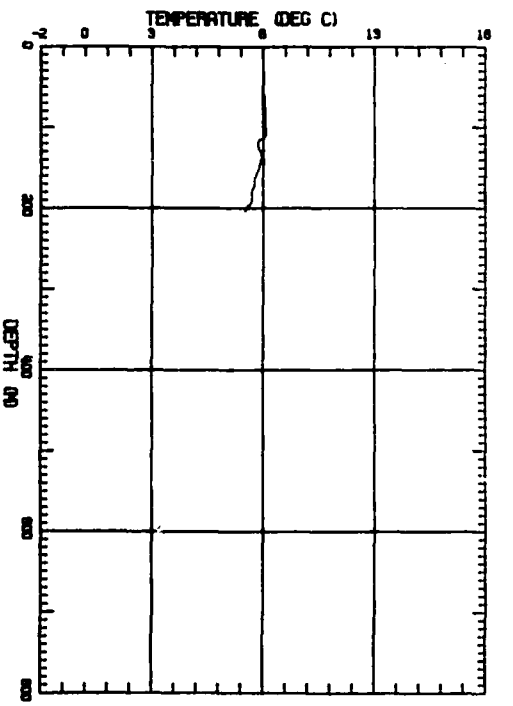
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 412 CHANNEL: 12 LATITUDE: 64 .2
DATE: 10/17/87 TIME: 19:49:50 LONGITUDE: -8 -16.2



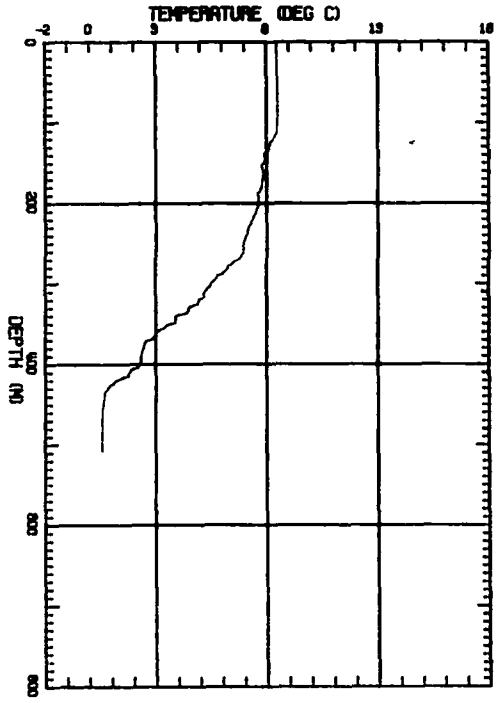
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 414 CHANNEL: 16 LATITUDE: 63 30.3
DATE: 10/17/87 TIME: 19:58:41 LONGITUDE: -8 -22.1



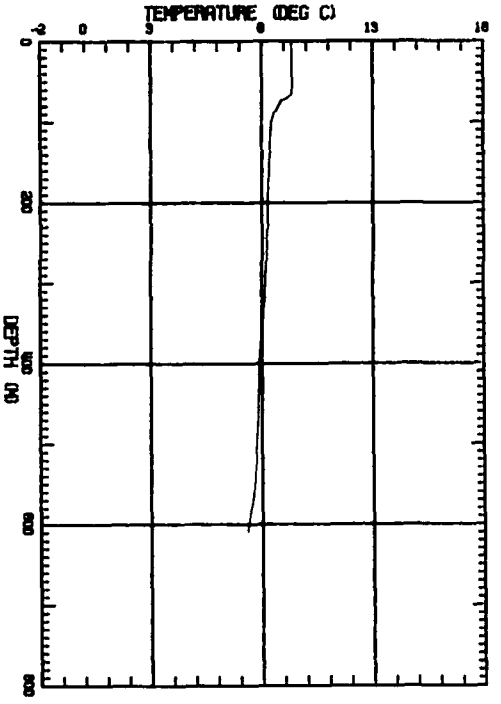
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 416 CHANNEL: 12 LATITUDE: 63 4.0
DATE: 10/17/87 TIME: 20:38 LONGITUDE: -8 -25.7



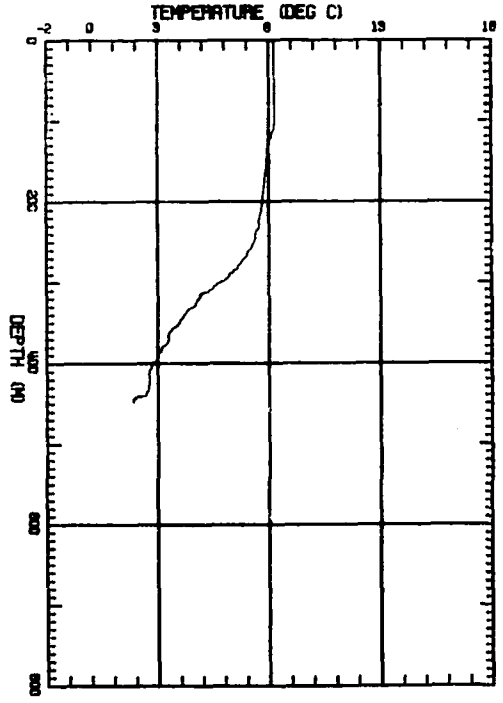
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 417 CHANNEL: 16 LATITUDE: 63 .3
DATE: 10/17/87 TIME: 14: 3:28 LONGITUDE: -9 -26.1



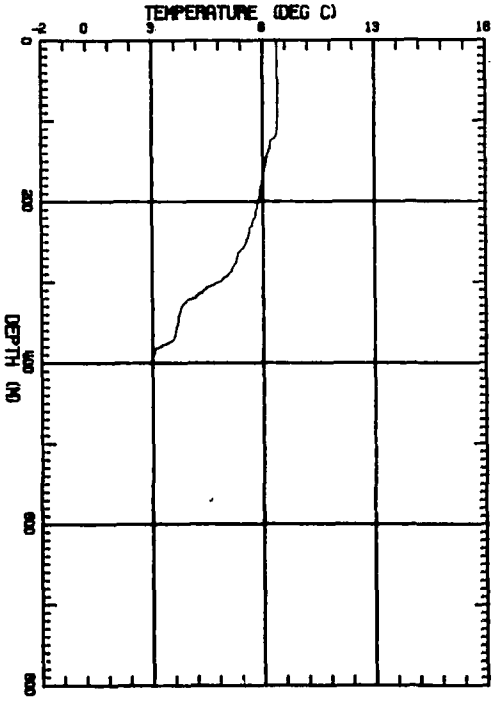
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 419 CHANNEL: 14 LATITUDE: 62 18.9
DATE: 10/17/87 TIME: 14:21:40 LONGITUDE: -10 -34.2



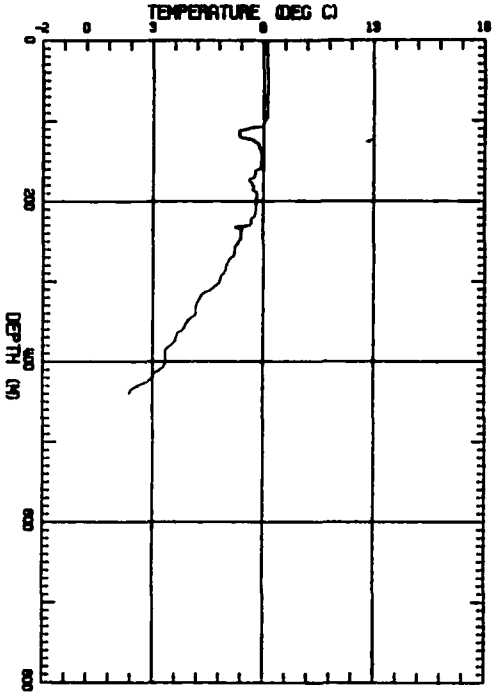
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 420 CHANNEL: 16 LATITUDE: 62 59.8
DATE: 10/17/87 TIME: 14:31: 9 LONGITUDE: -10 -34.1



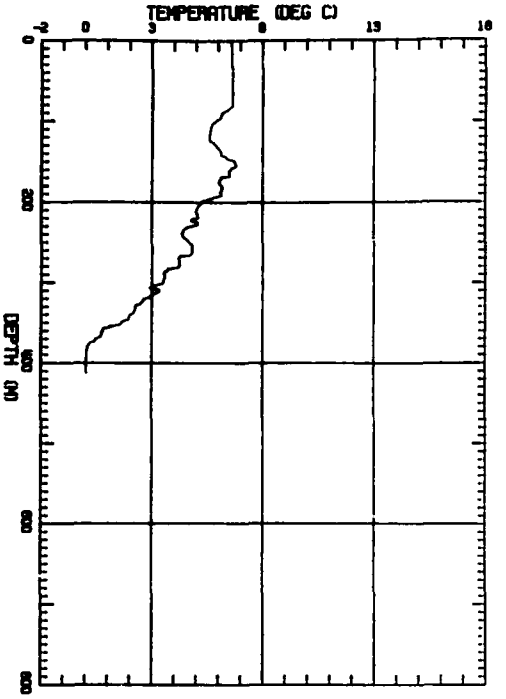
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 421 CHANNEL: 14 LATITUDE: 63 14.8
DATE: 10/17/87 TIME: 14:34:33 LONGITUDE: -10 -33.5



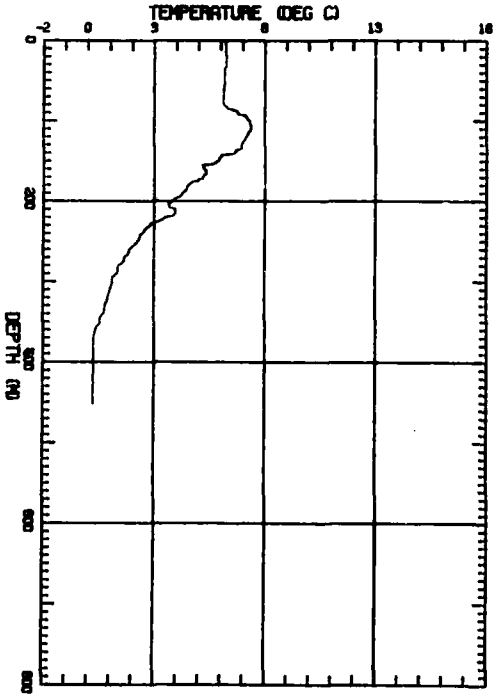
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 422 CHANNEL: 12 LATITUDE: 63 28.8
DATE: 10/17/87 TIME: 14:37:59 LONGITUDE: -10 -33.0



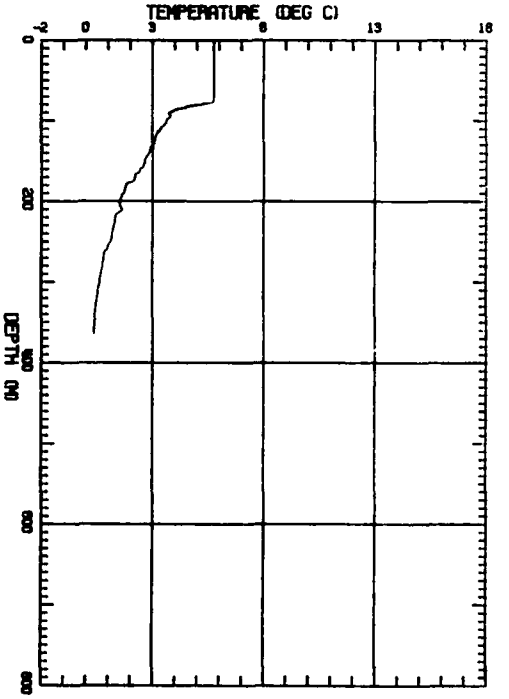
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 426 CHANNEL: 16 LATITUDE: 63 58.1
DATE: 10/17/87 TIME: 14:44:42 LONGITUDE: -10 -28.4



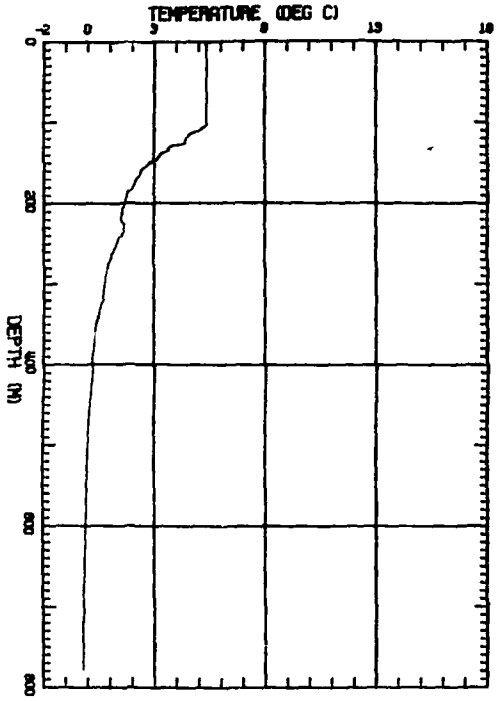
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 428 CHANNEL: 16 LATITUDE: 64 30.1
DATE: 10/17/87 TIME: 14:51:52 LONGITUDE: -10 -26.4



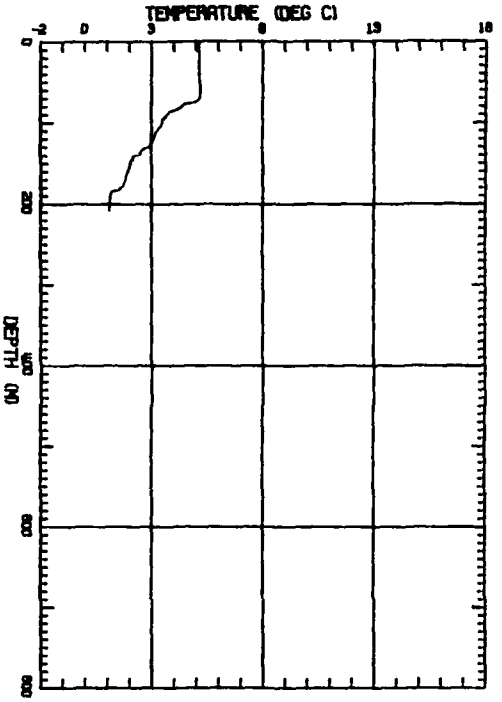
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 429 CHANNEL: 16 LATITUDE: 65 15.2
DATE: 10/17/87 TIME: 15: 2:11 LONGITUDE: -10 -24.6



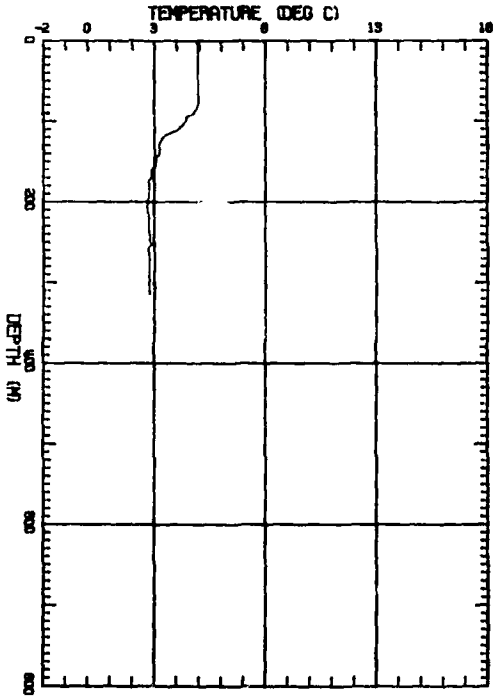
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 430 CHANNEL: 14 LATITUDE: 65 30.0
DATE: 10/17/87 TIME: 15: 5:38 LONGITUDE: -10 -23.9



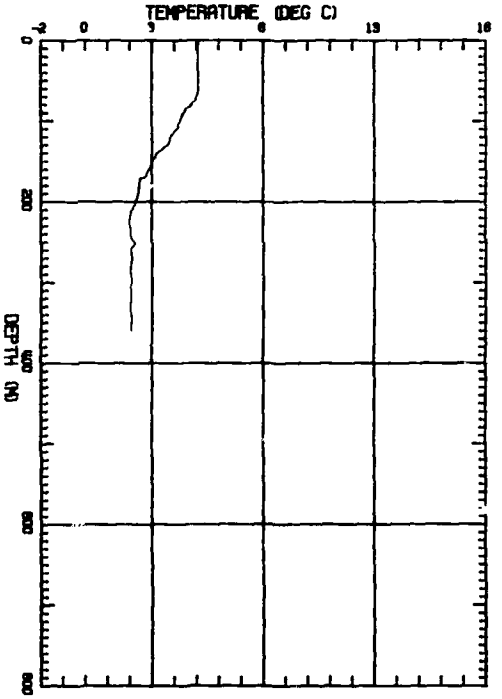
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 433 CHANNEL: 16 LATITUDE: 65 45.5
DATE: 10/17/87 TIME: 15:29: 8 LONGITUDE: -11 -38.1



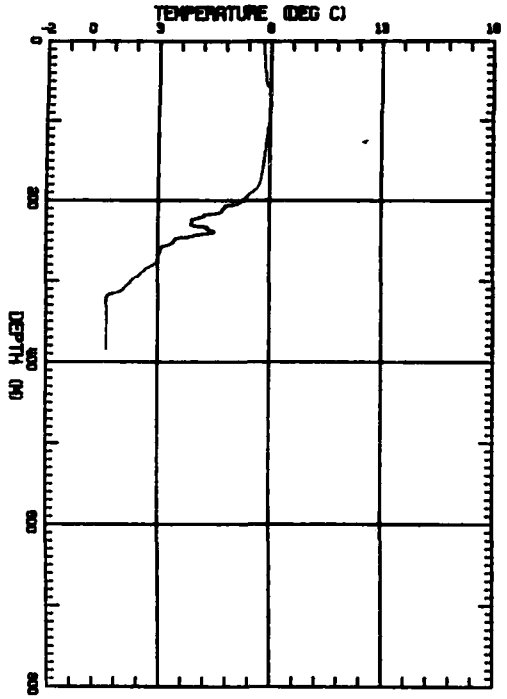
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 434 CHANNEL: 14 LATITUDE: 65 30.1
DATE: 10/17/87 TIME: 15:26:37 LONGITUDE: -11 -38.7



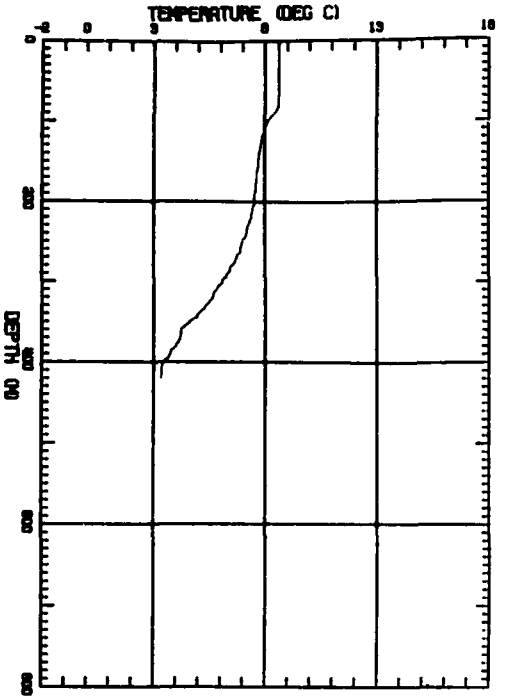
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 436 CHANNEL: 16 LATITUDE: 65 .2
DATE: 10/17/87 TIME: 15:33:27 LONGITUDE: -11 -38.1



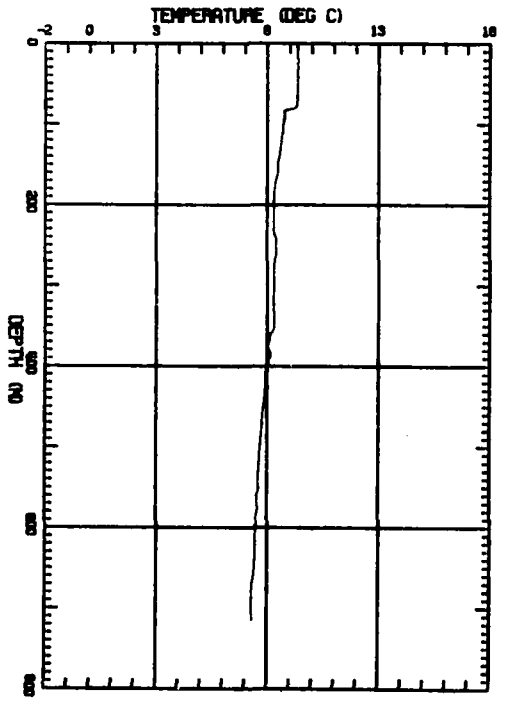
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 430 CHANNEL: 16 LATITUDE: 64 19.9
DATE: 10/17/87 TIME: 15:43:55 LONGITUDE: -11 -38.0



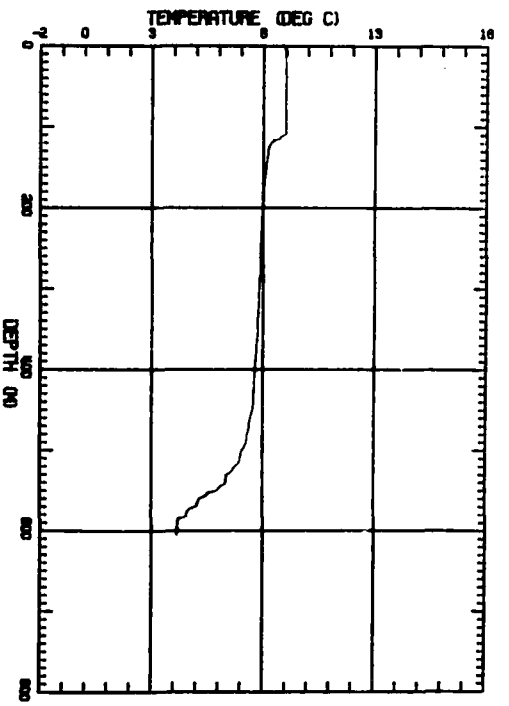
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 435 CHANNEL: 12 LATITUDE: 63 .4
DATE: 10/17/87 TIME: 18: 0:57 LONGITUDE: -11 -37.6



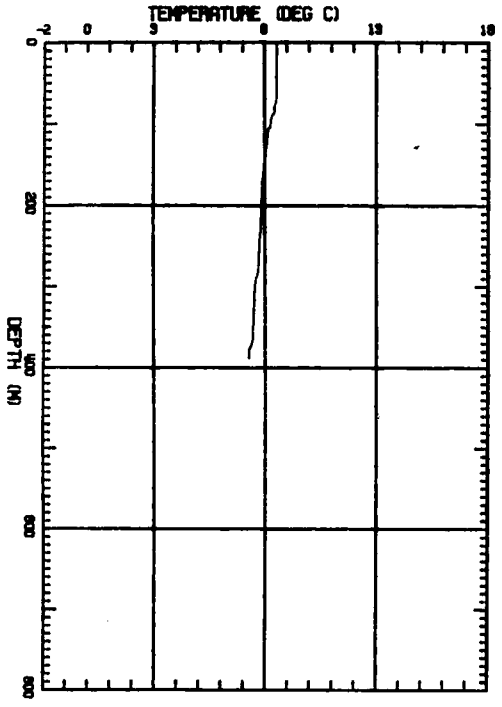
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 445 CHANNEL: 16 LATITUDE: 62 20.8
DATE: 10/17/87 TIME: 18:10:33 LONGITUDE: -11 -37.3



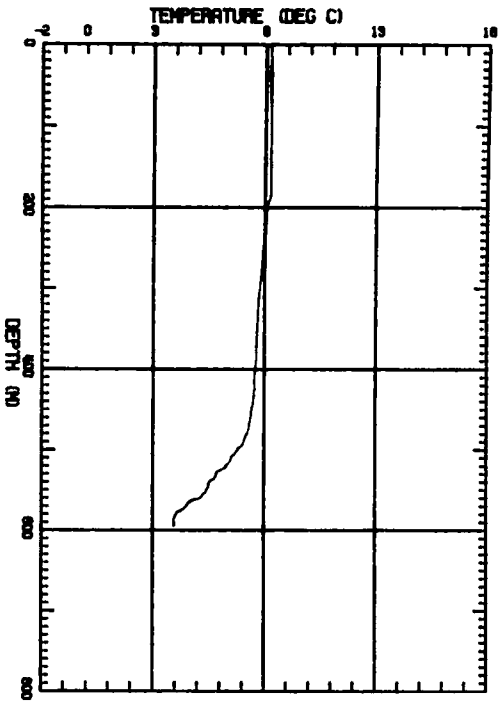
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 449 CHANNEL: 16 LATITUDE: 63 .0
DATE: 10/17/87 TIME: 18:27: 4 LONGITUDE: -12 -45.3



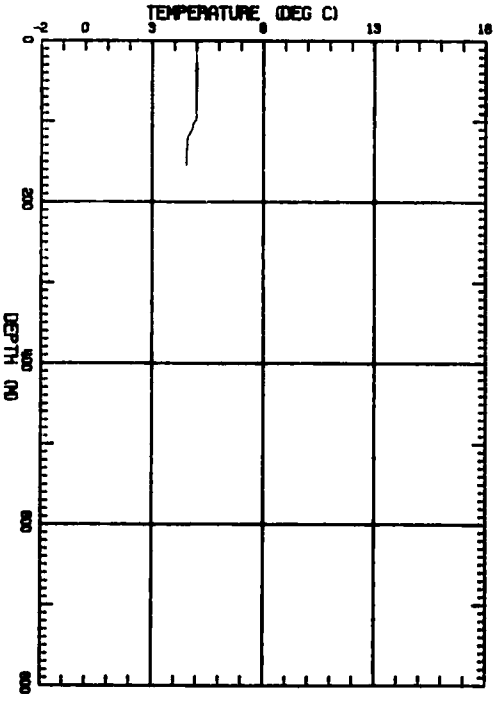
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 450 CHANNEL: 12 LATITUDE: 63 14.9
DATE: 10/17/87 TIME: 16:30:20 LONGITUDE: -12 -45.1



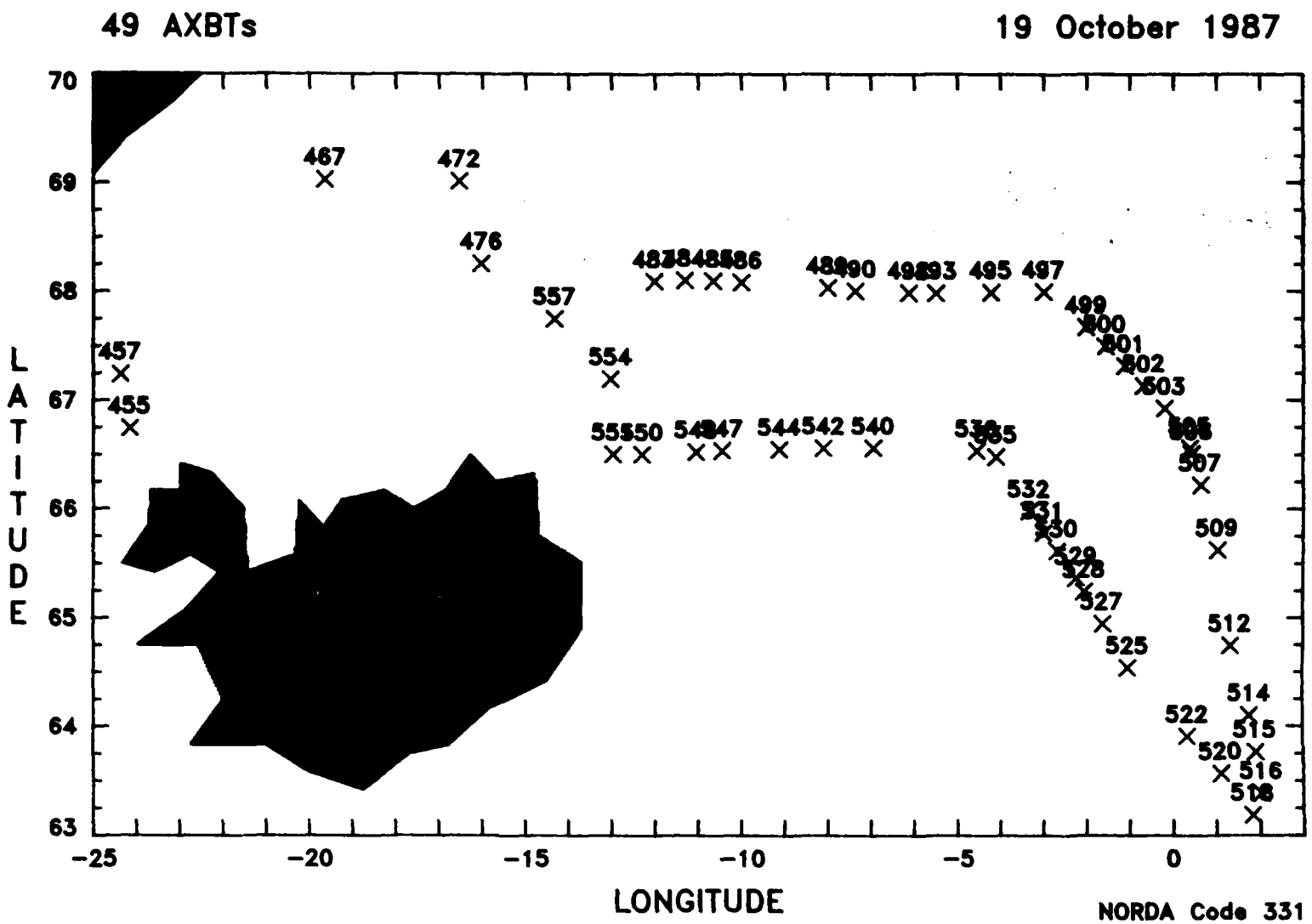
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 451 CHANNEL: 14 LATITUDE: 63 31.3
DATE: 10/17/87 TIME: 16:34: 4 LONGITUDE: -12 -45.1



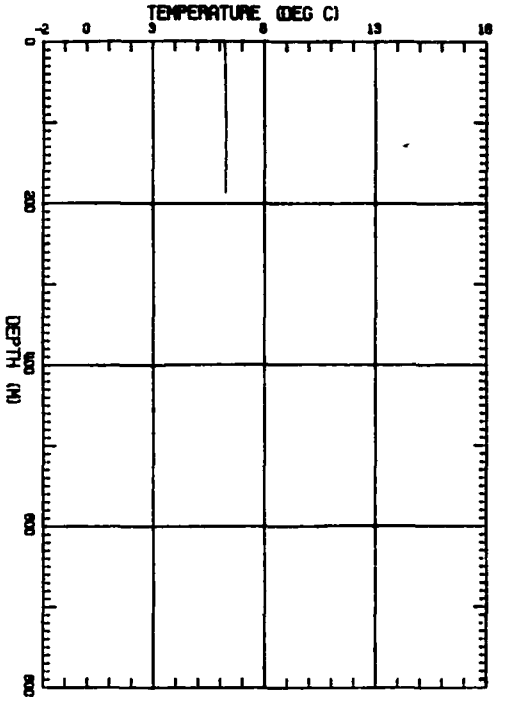
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 453 CHANNEL: 16 LATITUDE: 64 20.6
DATE: 10/17/87 TIME: 16:48: 6 LONGITUDE: -12 -44.4



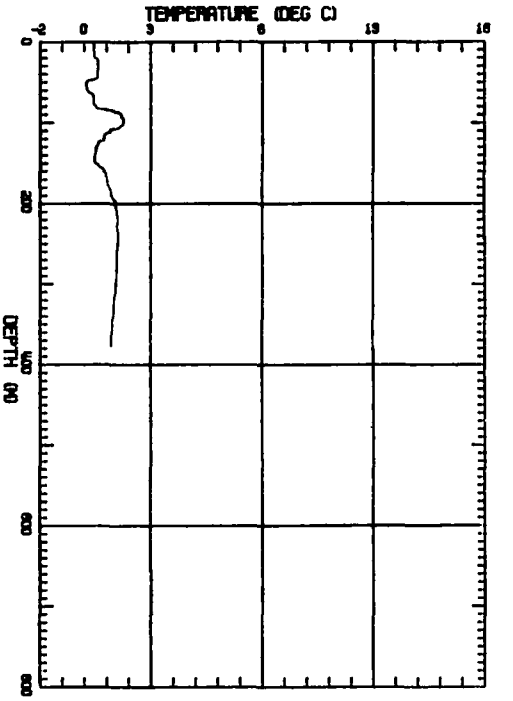
Appendix F.
Drop Positions and Data Profiles, Flight 6, 19 October 1987, Selected Regions of Iceland and Norwegian Seas.


49 AXBTs
19 October 1987
70
69
68
67
66
65
64
63
LATITUDE
-25
-20
-15
-10
-5
0
LONGITUDE
467
472
476
557
554
457
455
550
542
540
532
509
512
525
514
522
515
520
516
NORDA Code 331

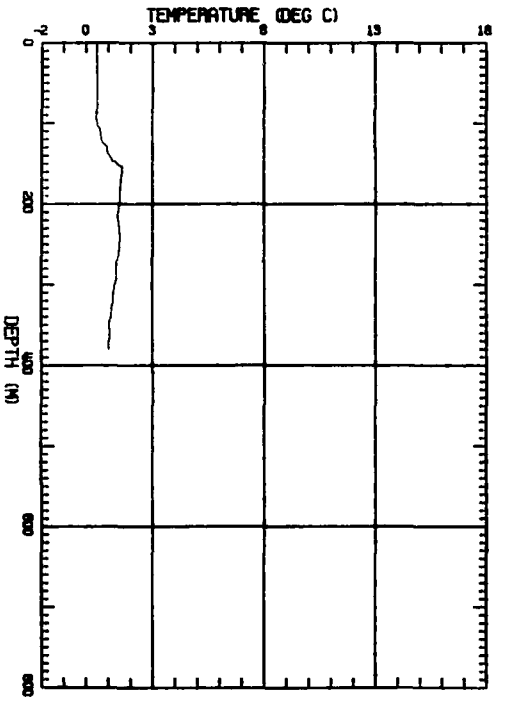
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 456 CHANNEL: 16 LATITUDE: 66 44.6
DATE: 10/18/87 TIME: 9:12:30 LONGITUDE: -24 -8.0



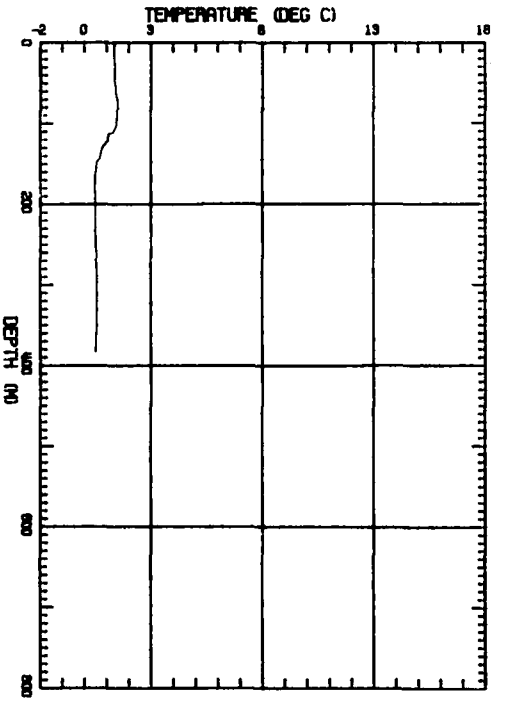
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 457 CHANNEL: 14 LATITUDE: 67 14.5
DATE: 10/18/87 TIME: 9:19: 8 LONGITUDE: -24 -22.0

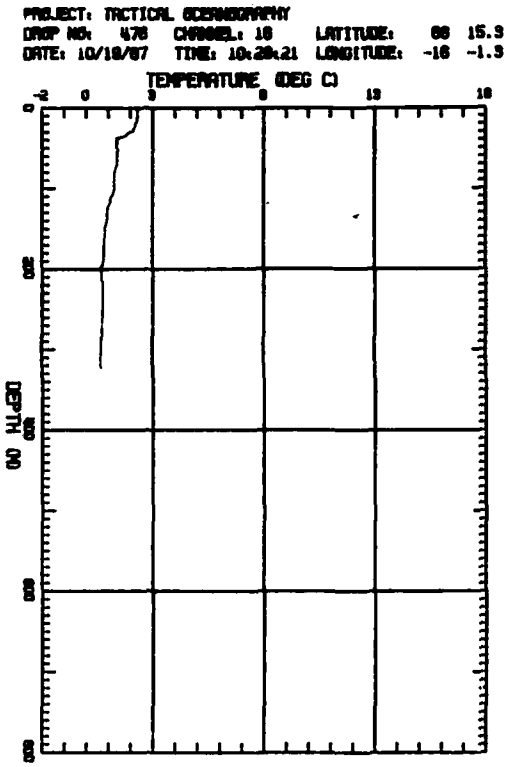


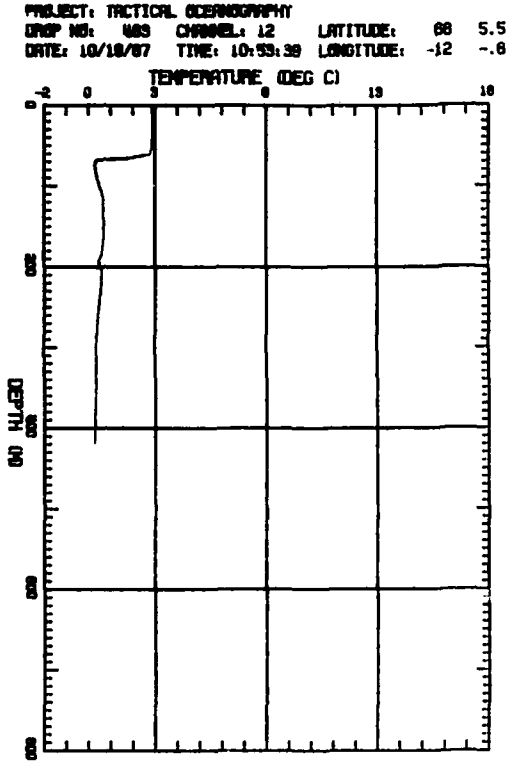
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 467 CHANNEL: 16 LATITUDE: 69 1.6
DATE: 10/19/87 TIME: 10: 1:20 LONGITUDE: -19 -38.4

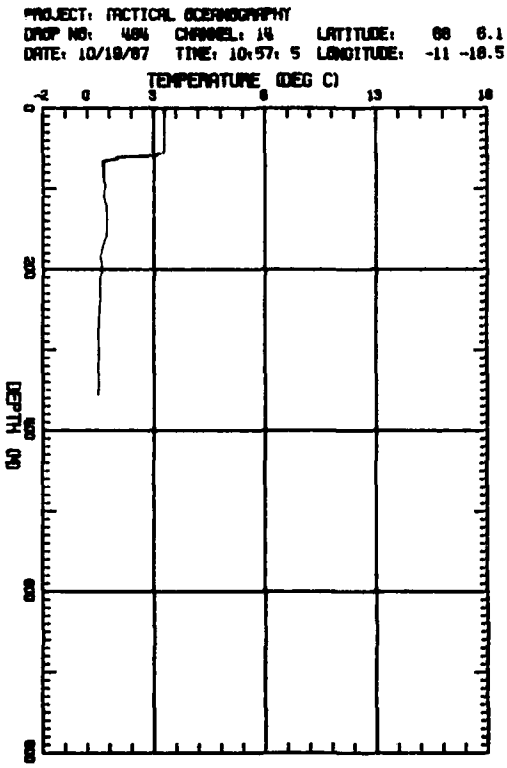


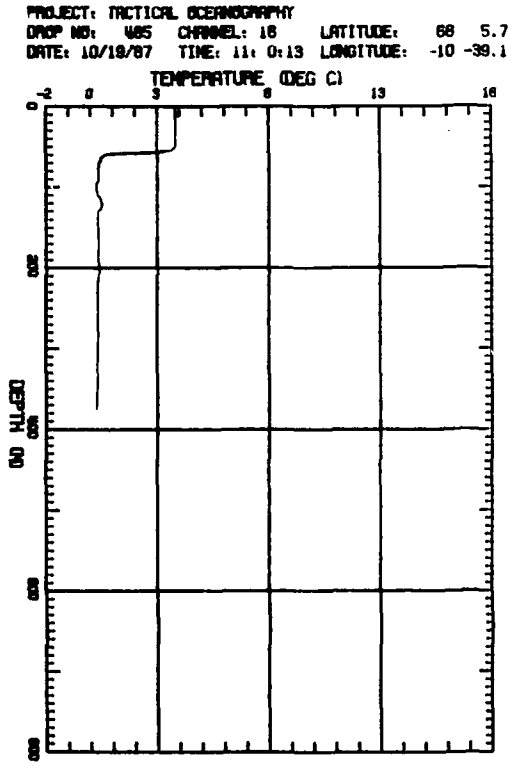
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 472 CHANNEL: 14 LATITUDE: 69 .8
DATE: 10/19/87 TIME: 10:16:27 LONGITUDE: -16 -31.7

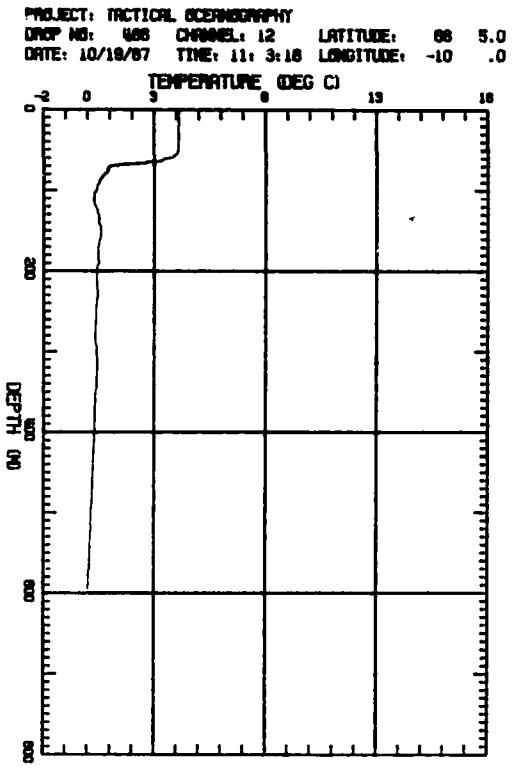


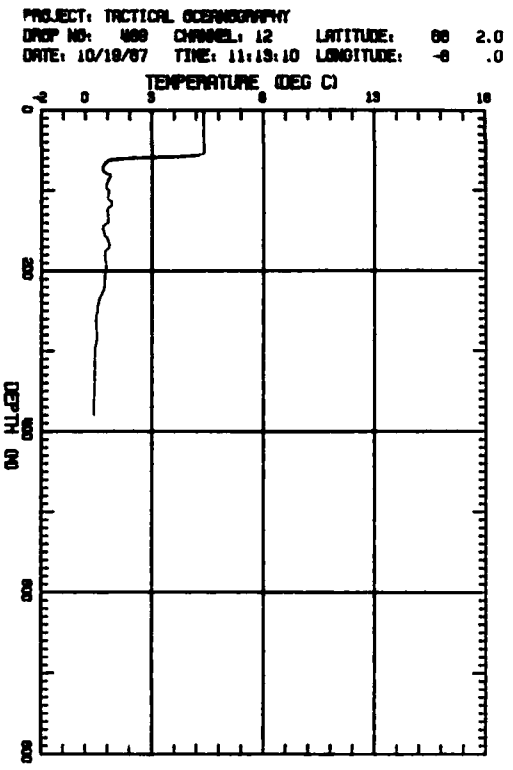

PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 478 CHANNEL: 18 LATITUDE: 68 15.9
DATE: 10/18/87 TIME: 10:28:21 LONGITUDE: -16 -1.3
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)

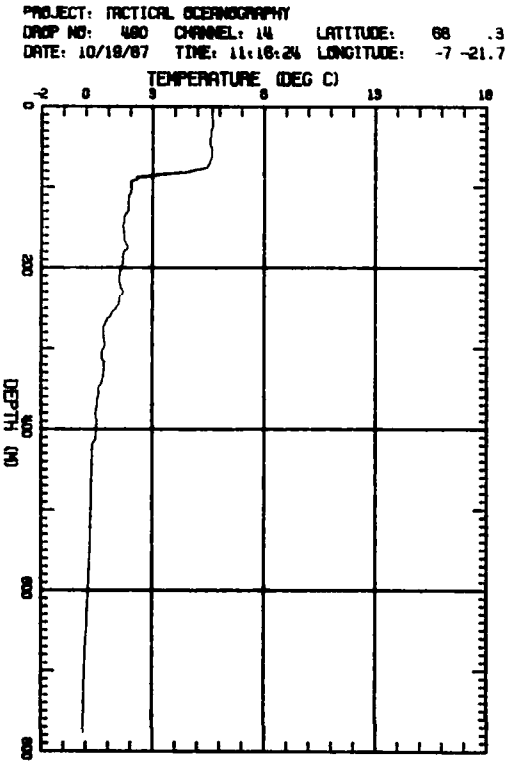

PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 483 CHANNEL: 12 LATITUDE: 68 5.5
DATE: 10/18/87 TIME: 10:53:39 LONGITUDE: -12 -.8
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)

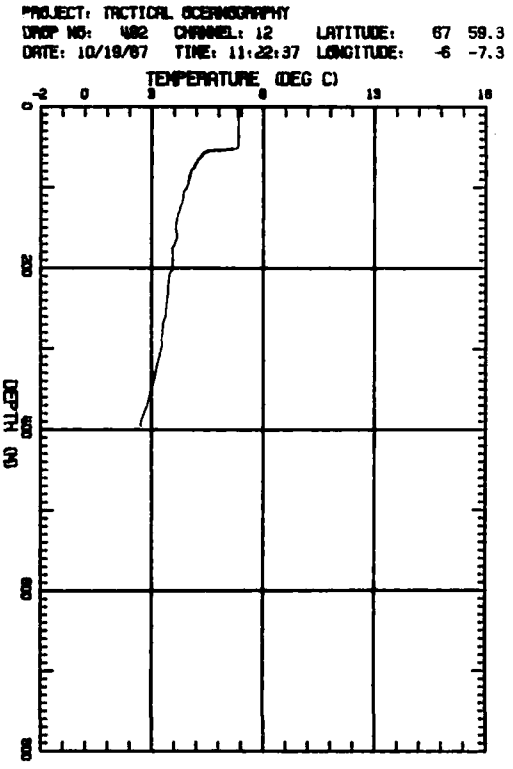

PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 484 CHANNEL: 14 LATITUDE: 68 6.1
DATE: 10/18/87 TIME: 10:57: 5 LONGITUDE: -11 -18.5
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)

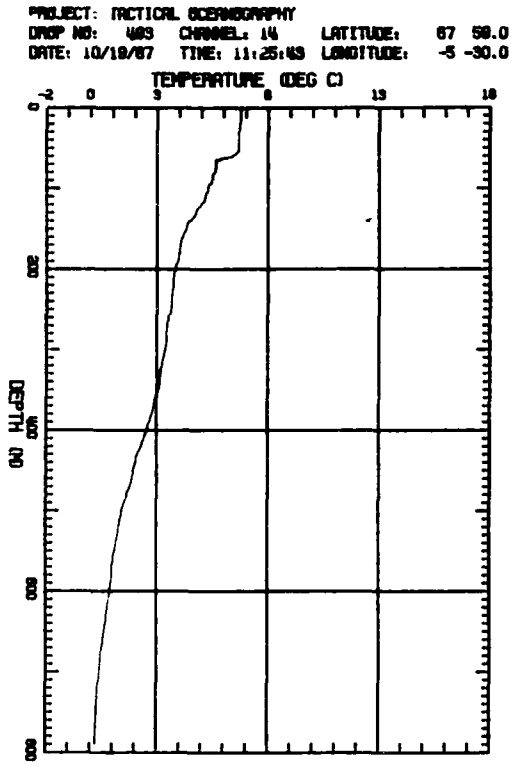

PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 485 CHANNEL: 16 LATITUDE: 68 5.7
DATE: 10/18/87 TIME: 11: 0:13 LONGITUDE: -10 -39.1
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)

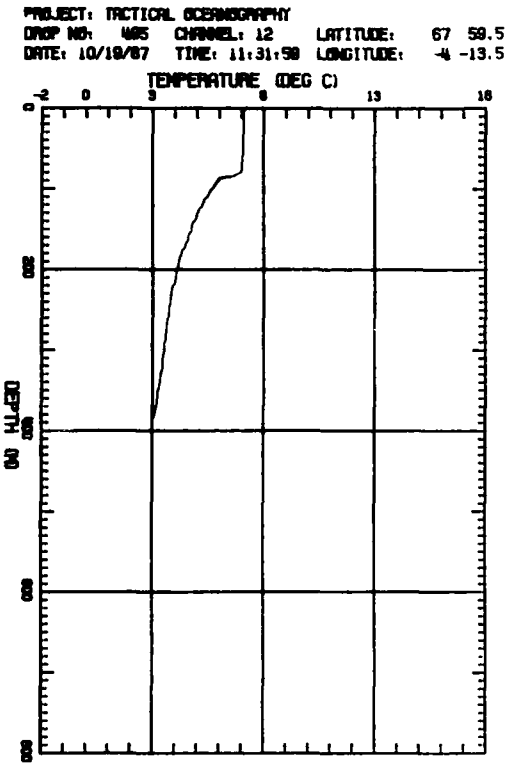

PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 486 CHANNEL: 12 LATITUDE: 66 5.0
DATE: 10/19/87 TIME: 11: 3:18 LONGITUDE: -10 .0
TEMPERATURE (DEG C)
-2 0 5 8 13 16
0
200
400
600
800
DEPTH (M)

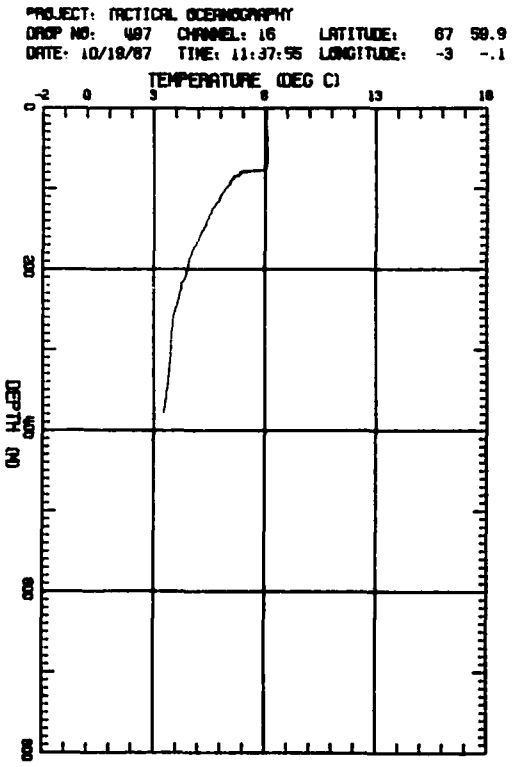

PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 488 CHANNEL: 12 LATITUDE: 66 2.0
DATE: 10/19/87 TIME: 11:19:10 LONGITUDE: -8 .0
TEMPERATURE (DEG C)
-2 0 5 8 13 16
0
200
400
600
800
DEPTH (M)

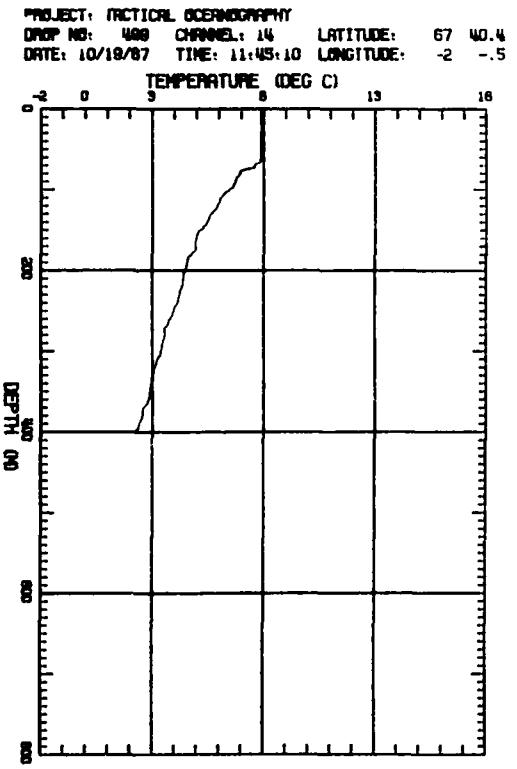

PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 480 CHANNEL: 14 LATITUDE: 66 .3
DATE: 10/19/87 TIME: 11:16:24 LONGITUDE: -7 -21.7
TEMPERATURE (DEG C)
-2 0 5 8 13 16
0
200
400
600
800
DEPTH (M)


PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 482 CHANNEL: 12 LATITUDE: 67 59.3
DATE: 10/19/87 TIME: 11:22:37 LONGITUDE: -6 -7.3
TEMPERATURE (DEG C)
-2 0 5 8 13 16
0
200
400
600
800
DEPTH (M)

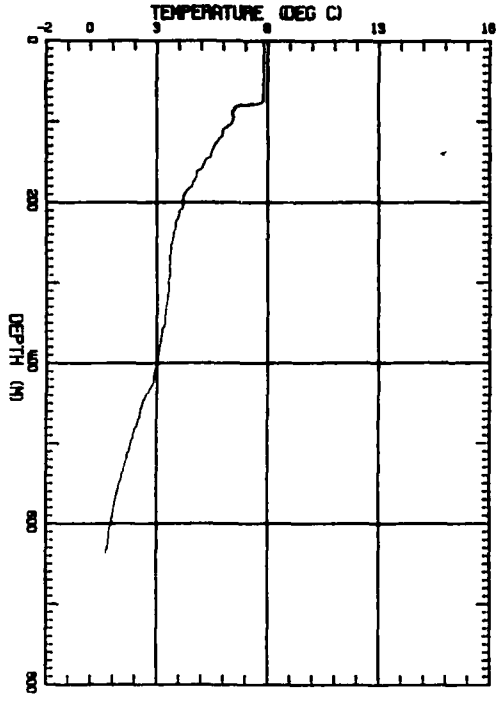

PROJECT: ARCTICAL OCEANOGRAPHY
DROP NO: 493 CHANNEL: 14 LATITUDE: 67 59.0
DATE: 10/19/87 TIME: 11:25:43 LONGITUDE: -5 -30.0
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)


PROJECT: ARCTICAL OCEANOGRAPHY
DROP NO: 495 CHANNEL: 12 LATITUDE: 67 59.5
DATE: 10/19/87 TIME: 11:31:58 LONGITUDE: -4 -13.5
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)

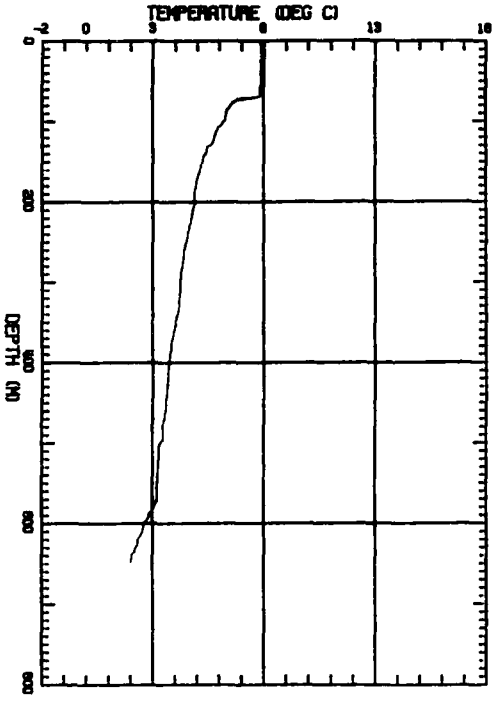

PROJECT: ARCTICAL OCEANOGRAPHY
DROP NO: 497 CHANNEL: 16 LATITUDE: 67 59.9
DATE: 10/19/87 TIME: 11:37:55 LONGITUDE: -3 -.1
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)


PROJECT: ARCTICAL OCEANOGRAPHY
DROP NO: 499 CHANNEL: 14 LATITUDE: 67 40.4
DATE: 10/19/87 TIME: 11:45:10 LONGITUDE: -2 -.5
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)

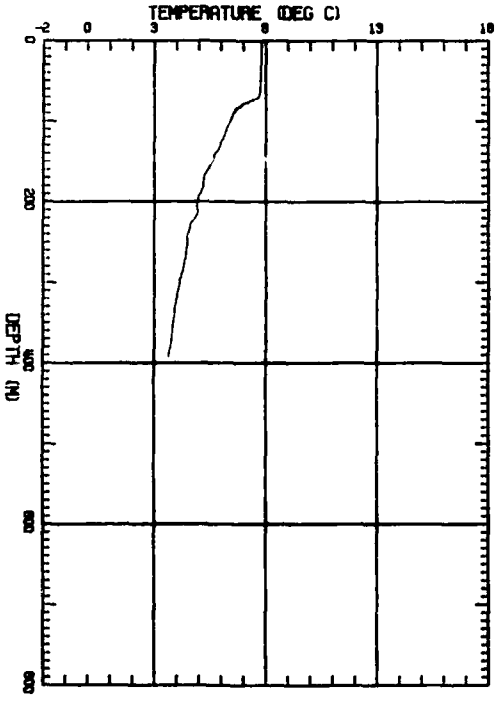
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 500 CHANNEL: 16 LATITUDE: 67 29.9
DATE: 10/19/87 TIME: 11:48:27 LONGITUDE: -1 -34.5



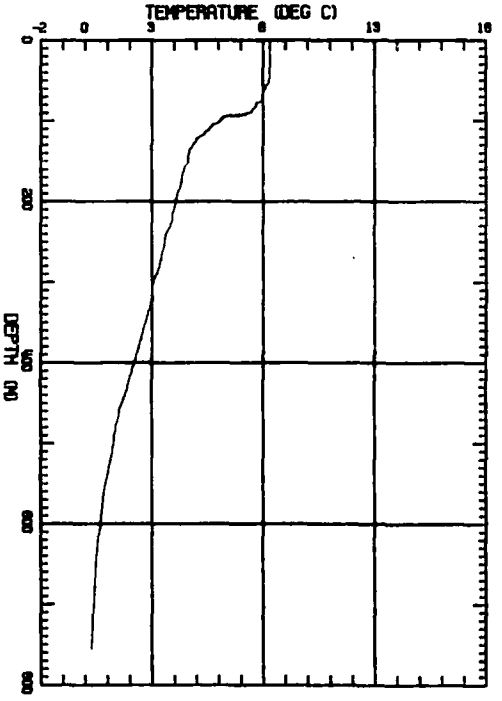
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 501 CHANNEL: 12 LATITUDE: 67 18.1
DATE: 10/19/87 TIME: 11:51:54 LONGITUDE: -1 -7.6

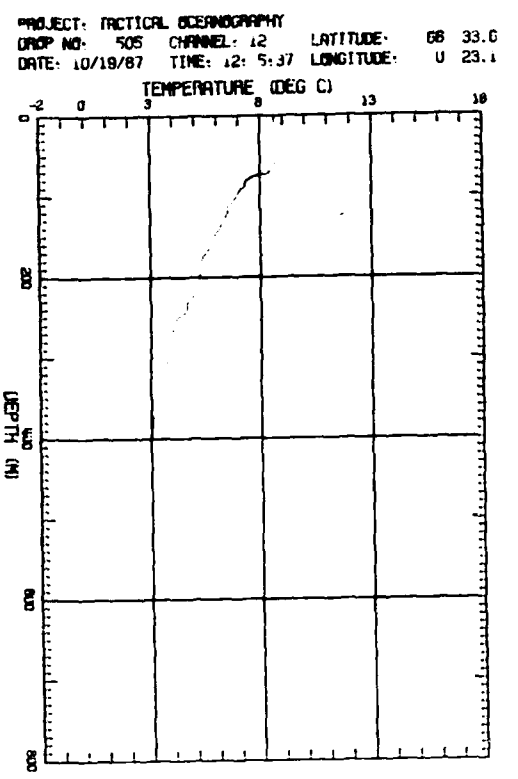


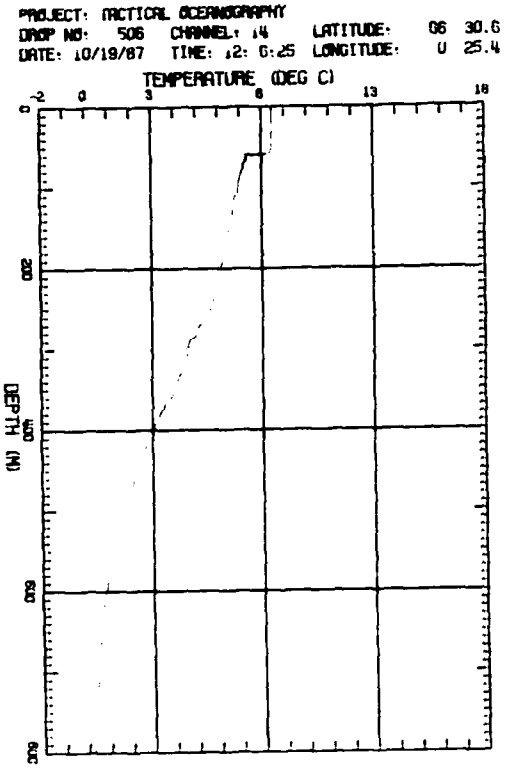
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 502 CHANNEL: 14 LATITUDE: 67 8.1
DATE: 10/19/87 TIME: 11:55:29 LONGITUDE: 0 -41.2

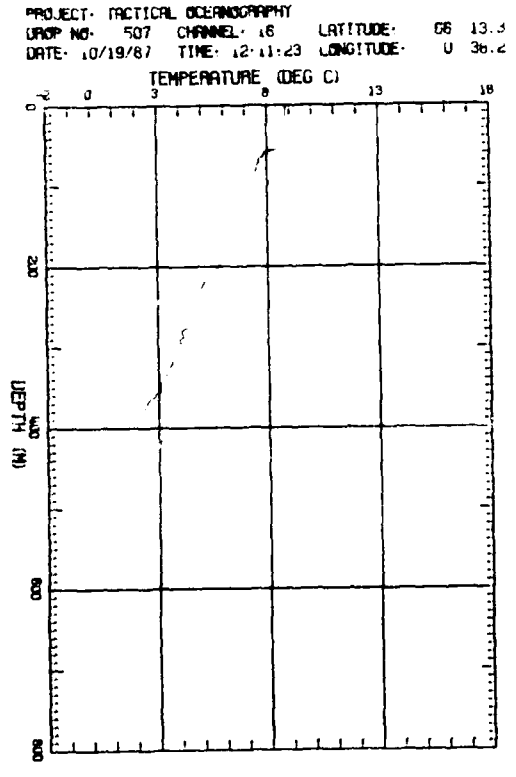


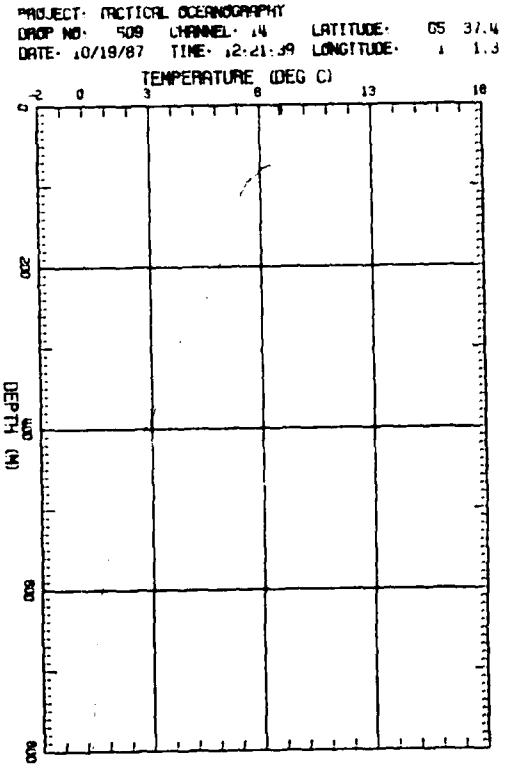
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 509 CHANNEL: 16 LATITUDE: 66 55.6
DATE: 10/19/87 TIME: 11:59:19 LONGITUDE: 0 -11.9

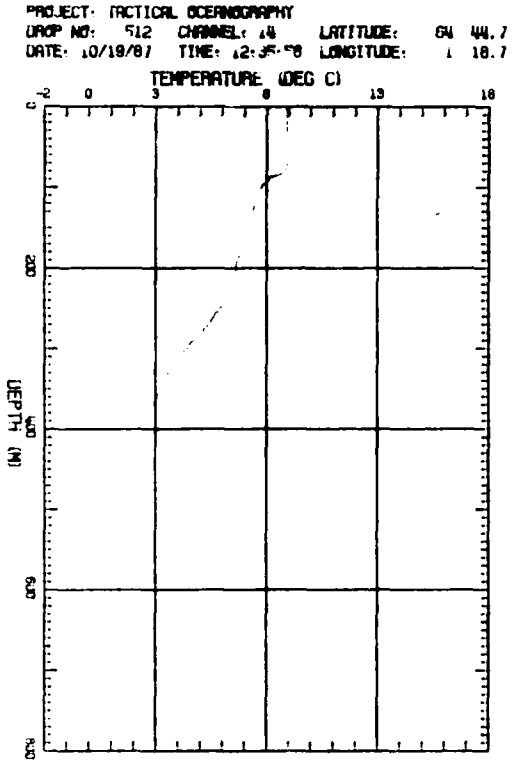


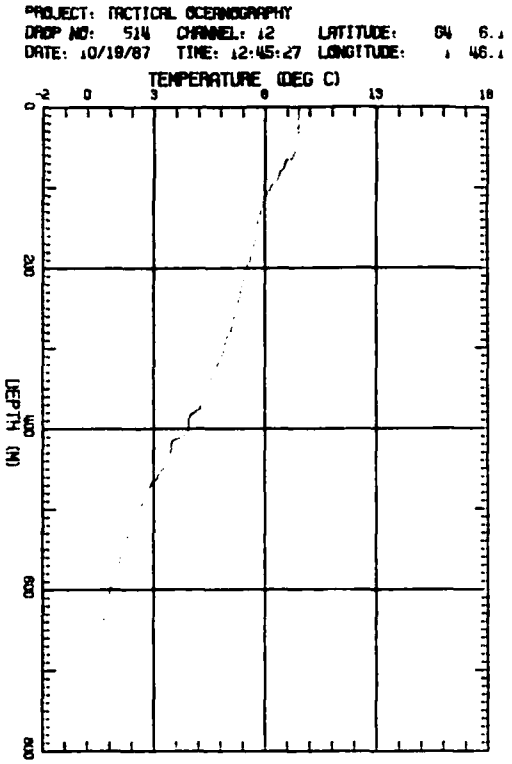

PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 505 CHANNEL: 12 LATITUDE: 08 33.0
DATE: 10/19/87 TIME: 12: 5:37 LONGITUDE: 0 23.1
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
DEPTH (M)

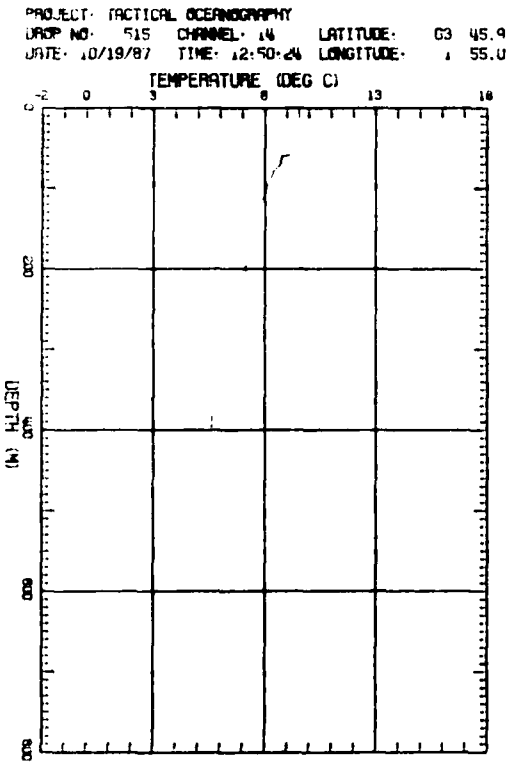

PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 506 CHANNEL: 14 LATITUDE: 06 30.6
DATE: 10/19/87 TIME: 12: 6:25 LONGITUDE: 0 25.4
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
DEPTH (M)

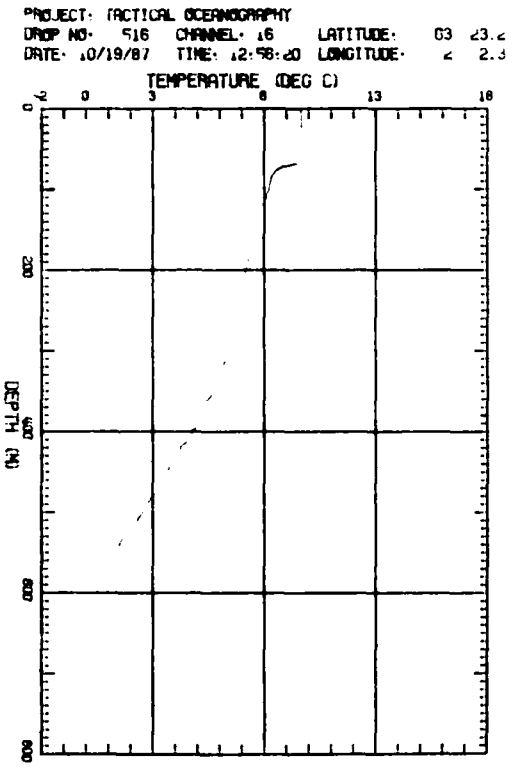

PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 507 CHANNEL: 16 LATITUDE: 06 13.3
DATE: 10/19/87 TIME: 12:11:23 LONGITUDE: 0 36.2
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
DEPTH (M)


PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 509 CHANNEL: 14 LATITUDE: 05 37.4
DATE: 10/19/87 TIME: 12:21:39 LONGITUDE: 1 1.3
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
DEPTH (M)

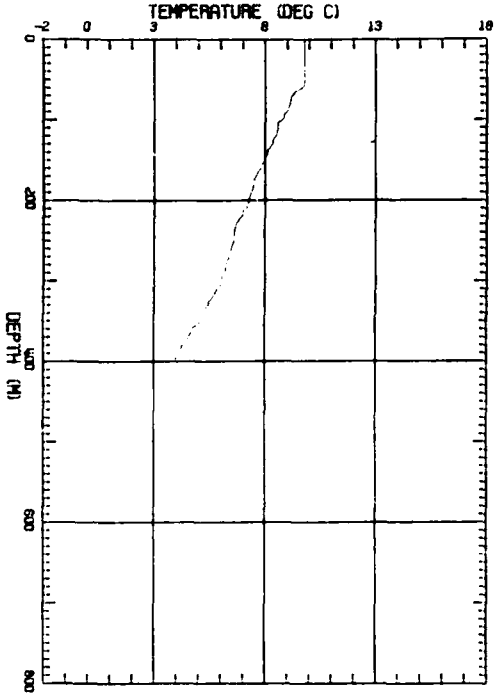

PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 512 CHANNEL: 4 LATITUDE: 64 44.7
DATE: 10/19/87 TIME: 12:35:58 LONGITUDE: 1 18.7
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)


PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 514 CHANNEL: 2 LATITUDE: 64 6.1
DATE: 10/19/87 TIME: 12:45:27 LONGITUDE: 1 46.1
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)

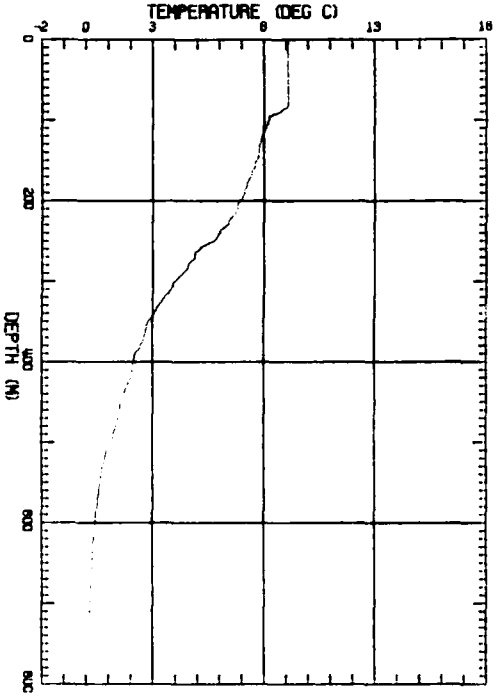

PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 515 CHANNEL: 4 LATITUDE: 63 45.9
DATE: 10/19/87 TIME: 12:50:24 LONGITUDE: 1 55.0
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)


PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 516 CHANNEL: 6 LATITUDE: 63 23.2
DATE: 10/19/87 TIME: 12:58:20 LONGITUDE: 2 2.3
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)

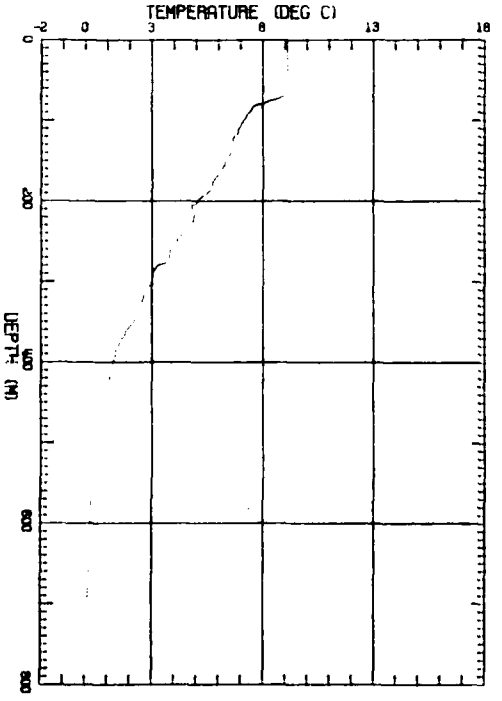
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 518 CHANNEL: 4 LATITUDE: 63 11.2
DATE: 10/19/87 TIME: 13: 5:27 LONGITUDE: 1 50.0



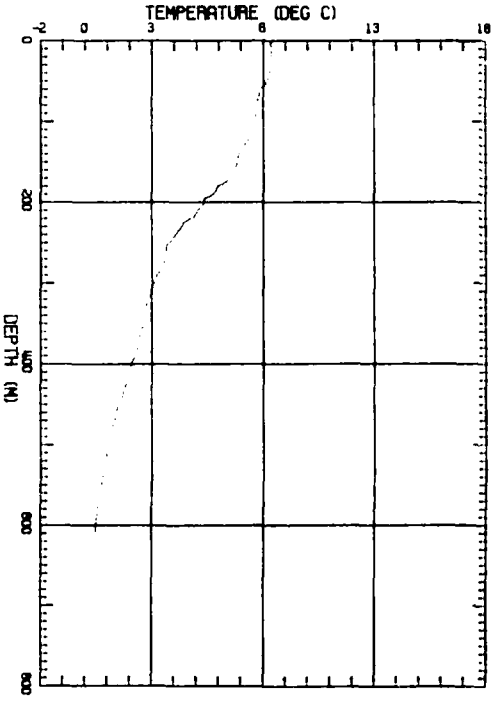
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 520 CHANNEL: 2 LATITUDE: 63 33.9
DATE: 10/19/87 TIME: 13:11:58 LONGITUDE: 1 6.6



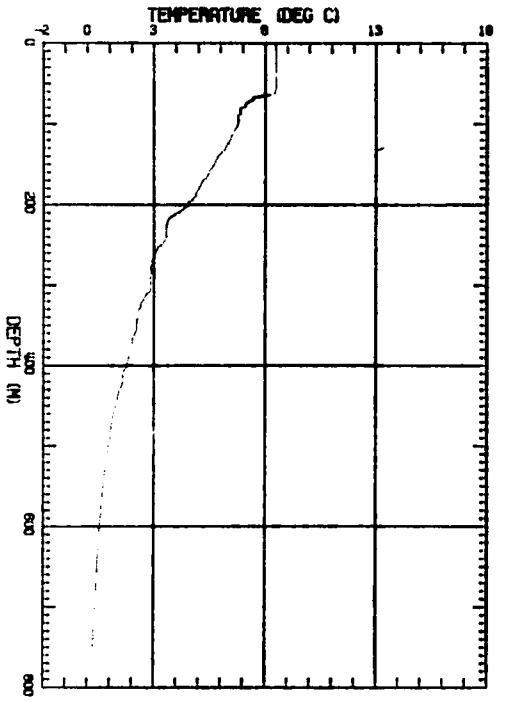
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 522 CHANNEL: 6 LATITUDE: 63 54.5
DATE: 10/19/87 TIME: 13:18:36 LONGITUDE: 0 20.3



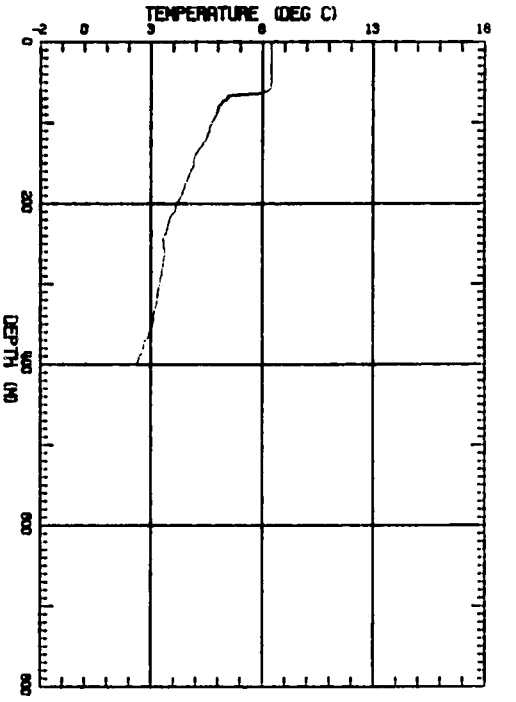
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 525 CHANNEL: 6 LATITUDE: 64 32.5
DATE: 10/19/87 TIME: 13:30:40 LONGITUDE: -1 -3.9



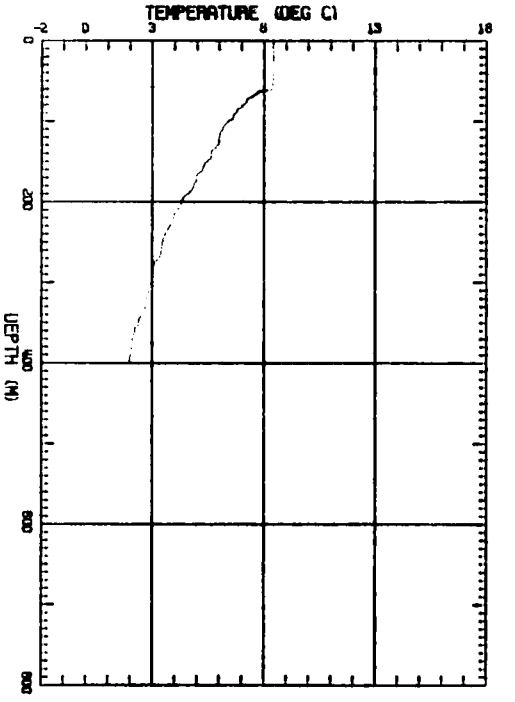
PROJECT: ARCTICAL OCEANOGRAPHY
DROP NO: 527 CHANNEL: 14 LATITUDE: 64 56.8
DATE: 10/19/87 TIME: 13:36:38 LONGITUDE: -1 -39.0



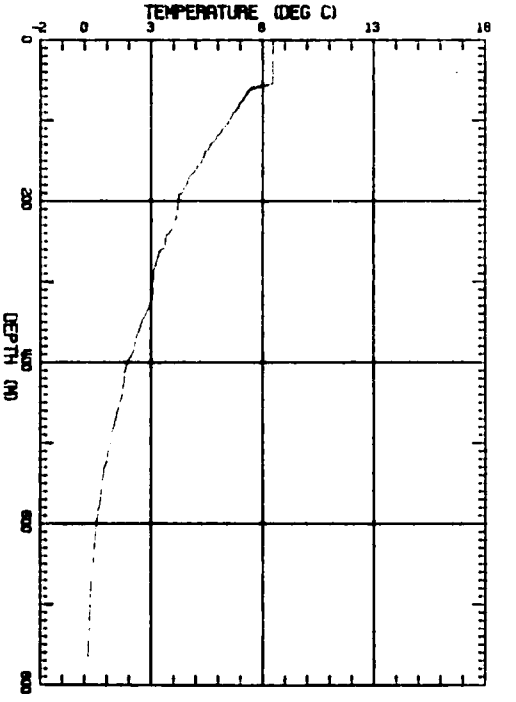
PROJECT: ARCTICAL OCEANOGRAPHY
DROP NO: 528 CHANNEL: 16 LATITUDE: 65 14.6
DATE: 10/19/87 TIME: 13:41: 6 LONGITUDE: -2 -4.4



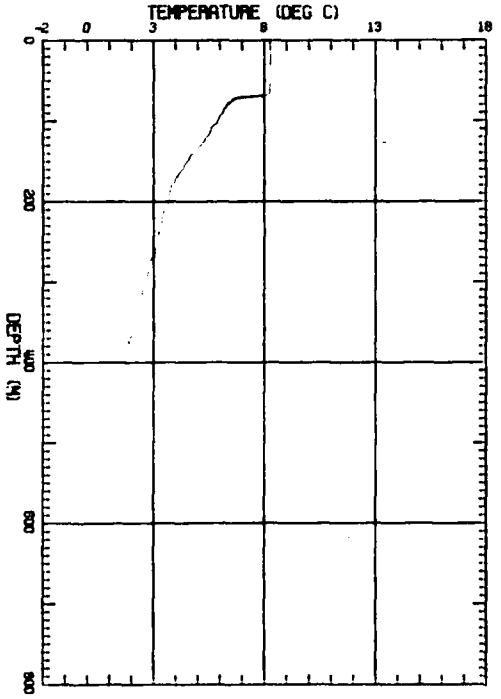
PROJECT: ARCTICAL OCEANOGRAPHY
DROP NO: 529 CHANNEL: 12 LATITUDE: 65 22.0
DATE: 10/19/87 TIME: 13:43: 2 LONGITUDE: -2 -15.6



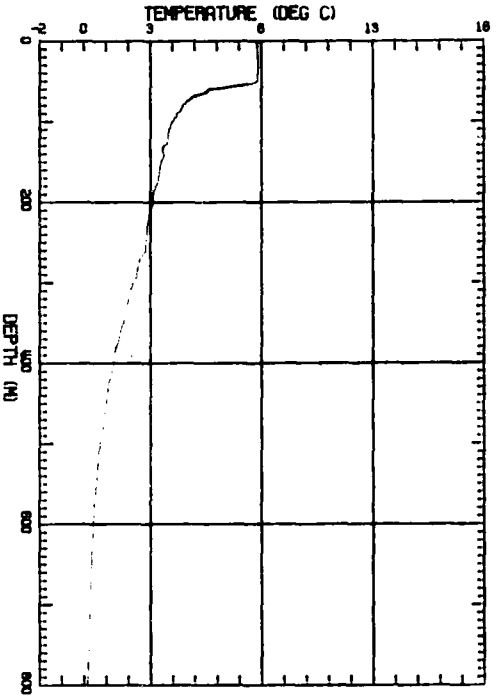
PROJECT: ARCTICAL OCEANOGRAPHY
DROP NO: 530 CHANNEL: 14 LATITUDE: 65 37.0
DATE: 10/19/87 TIME: 13:46:58 LONGITUDE: -2 -42.0



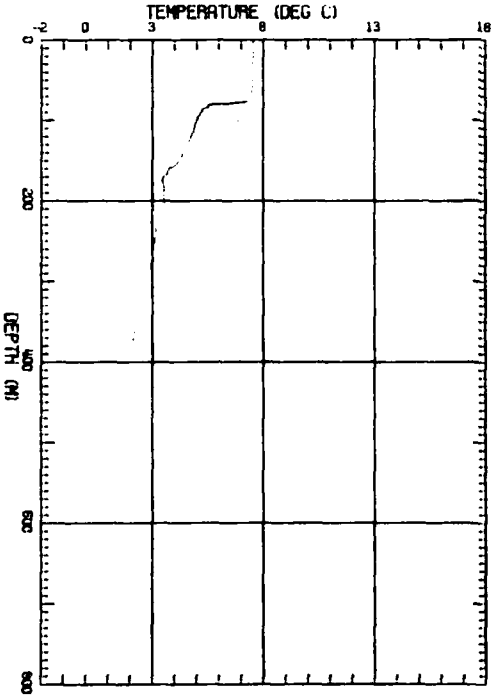
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 531 CHANNEL: 16 LATITUDE: 65 47.0
DATE: 10/19/87 TIME: 13:49:58 LONGITUDE: -3 -1.0



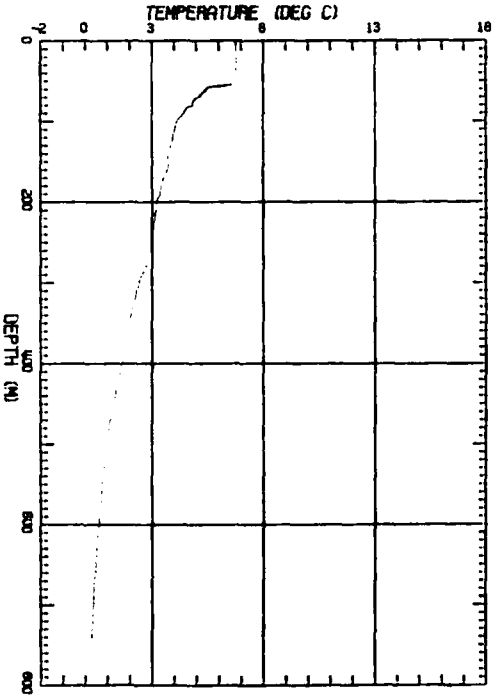
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 532 CHANNEL: 12 LATITUDE: 65 58.6
DATE: 10/19/87 TIME: 19:53:44 LONGITUDE: -3 -20.6



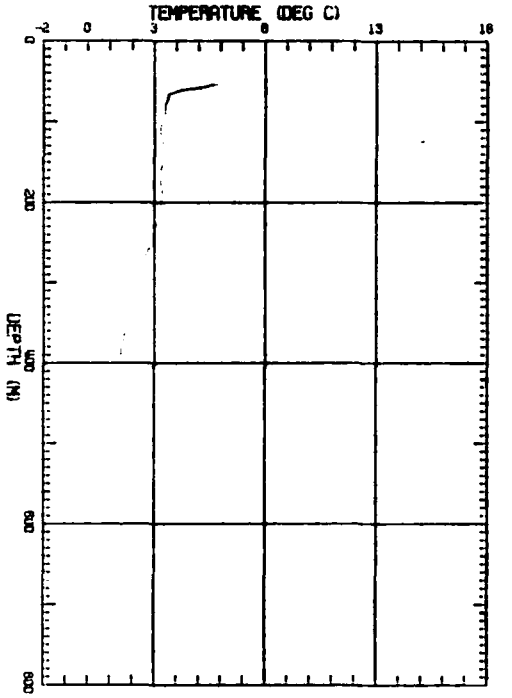
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 535 CHANNEL: 16 LATITUDE: 66 28.6
DATE: 10/19/87 TIME: 14: 1:11 LONGITUDE: -4 -6.1



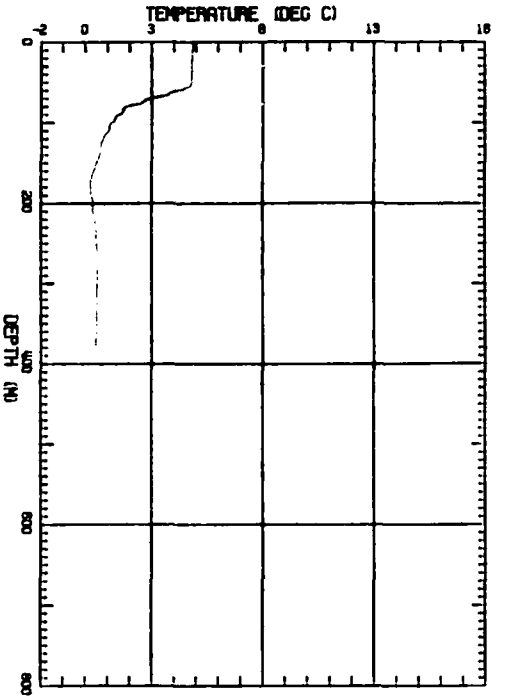
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 536 CHANNEL: 12 LATITUDE: 66 32.0
DATE: 10/19/87 TIME: 14: 4: 6 LONGITUDE: -4 -33.0



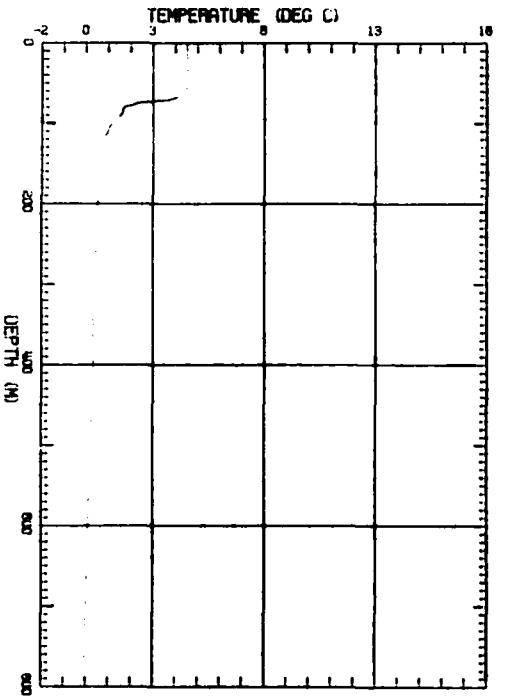
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 540 CHANNEL: 14 LATITUDE: 06 33.6
DATE: 10/19/87 TIME: 14:17:15 LONGITUDE: -8 -58.5



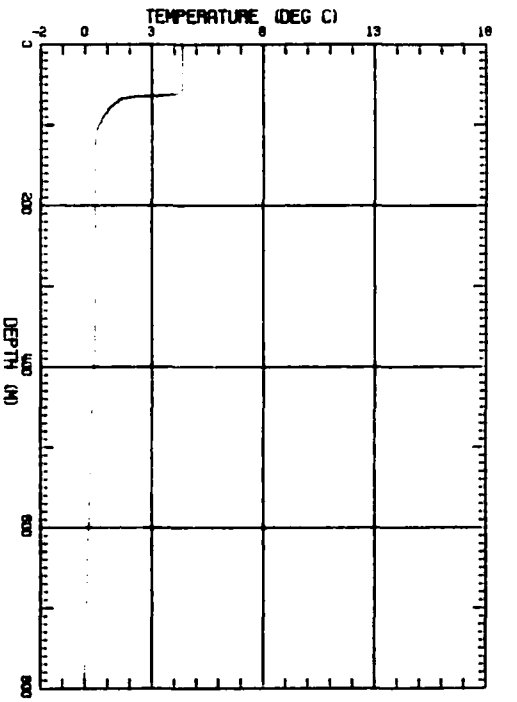
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 542 CHANNEL: 12 LATITUDE: 06 33.4
DATE: 10/19/87 TIME: 14:23:27 LONGITUDE: -8 -5.5



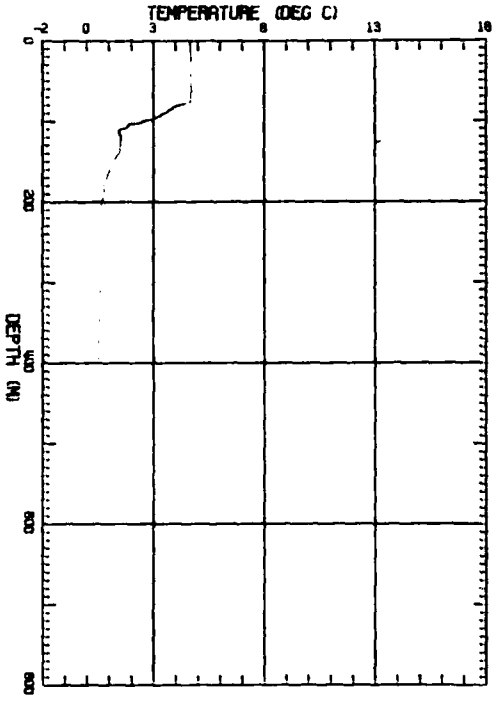
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 544 CHANNEL: 14 LATITUDE: 06 32.9
DATE: 10/19/87 TIME: 14:28:52 LONGITUDE: -9 -6.7



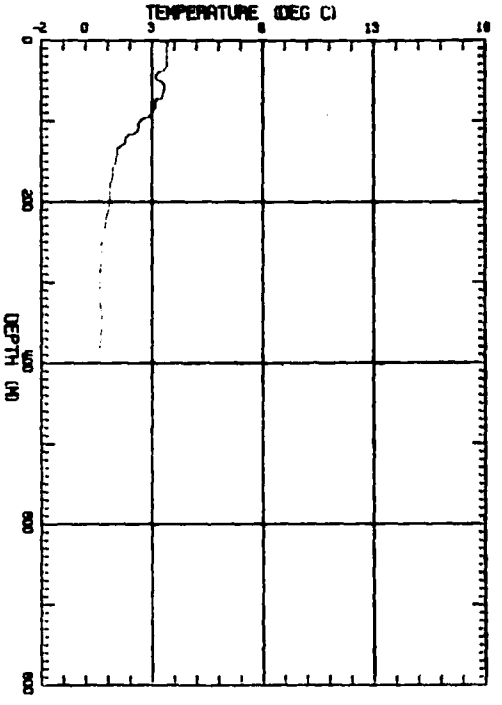
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 547 CHANNEL: 14 LATITUDE: 06 32.0
DATE: 10/19/87 TIME: 14:36:12 LONGITUDE: -10 -26.0



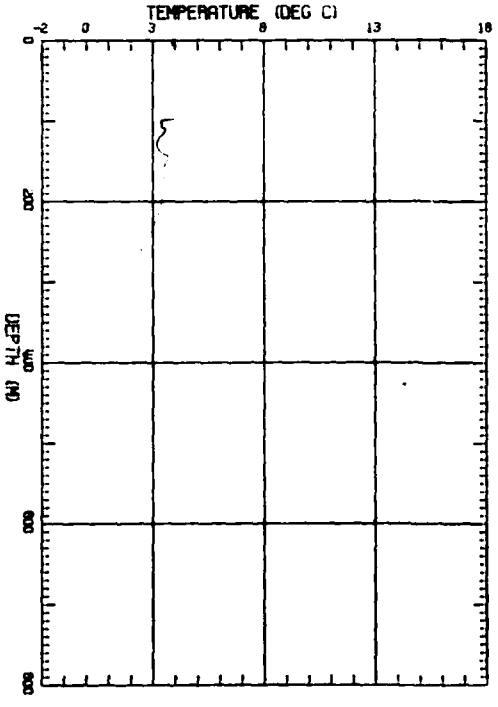
PROJECT: ARCTICAL OCEANOGRAPHY
DROP NO: 548 CHANNEL: 16 LATITUDE: 66 31.3
DATE: 10/19/87 TIME: 14:39:30 LONGITUDE: -11 -2.0



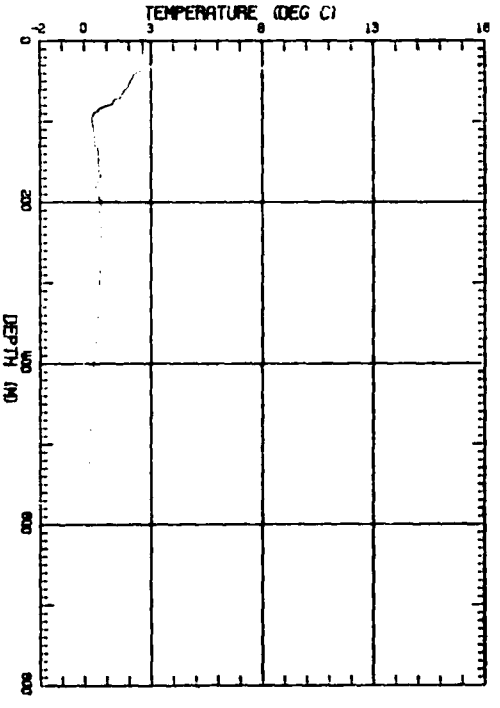
PROJECT: ARCTICAL OCEANOGRAPHY
DROP NO: 550 CHANNEL: 16 LATITUDE: 66 30.0
DATE: 10/19/87 TIME: 14:48:45 LONGITUDE: -12 -17.0

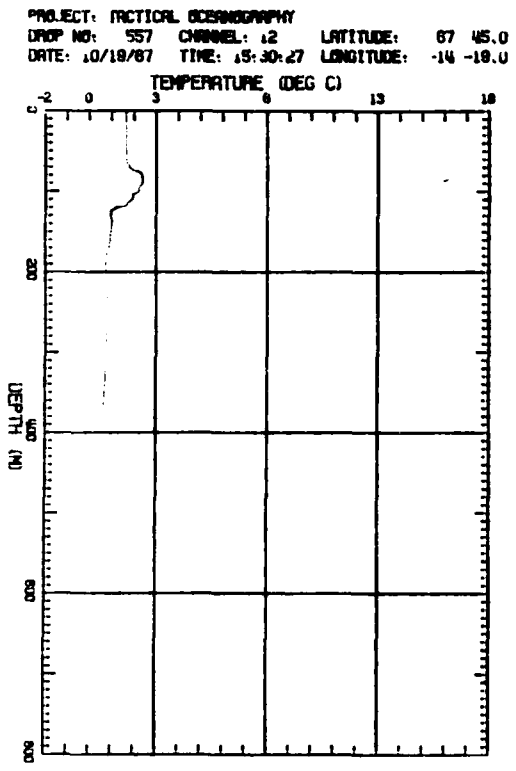


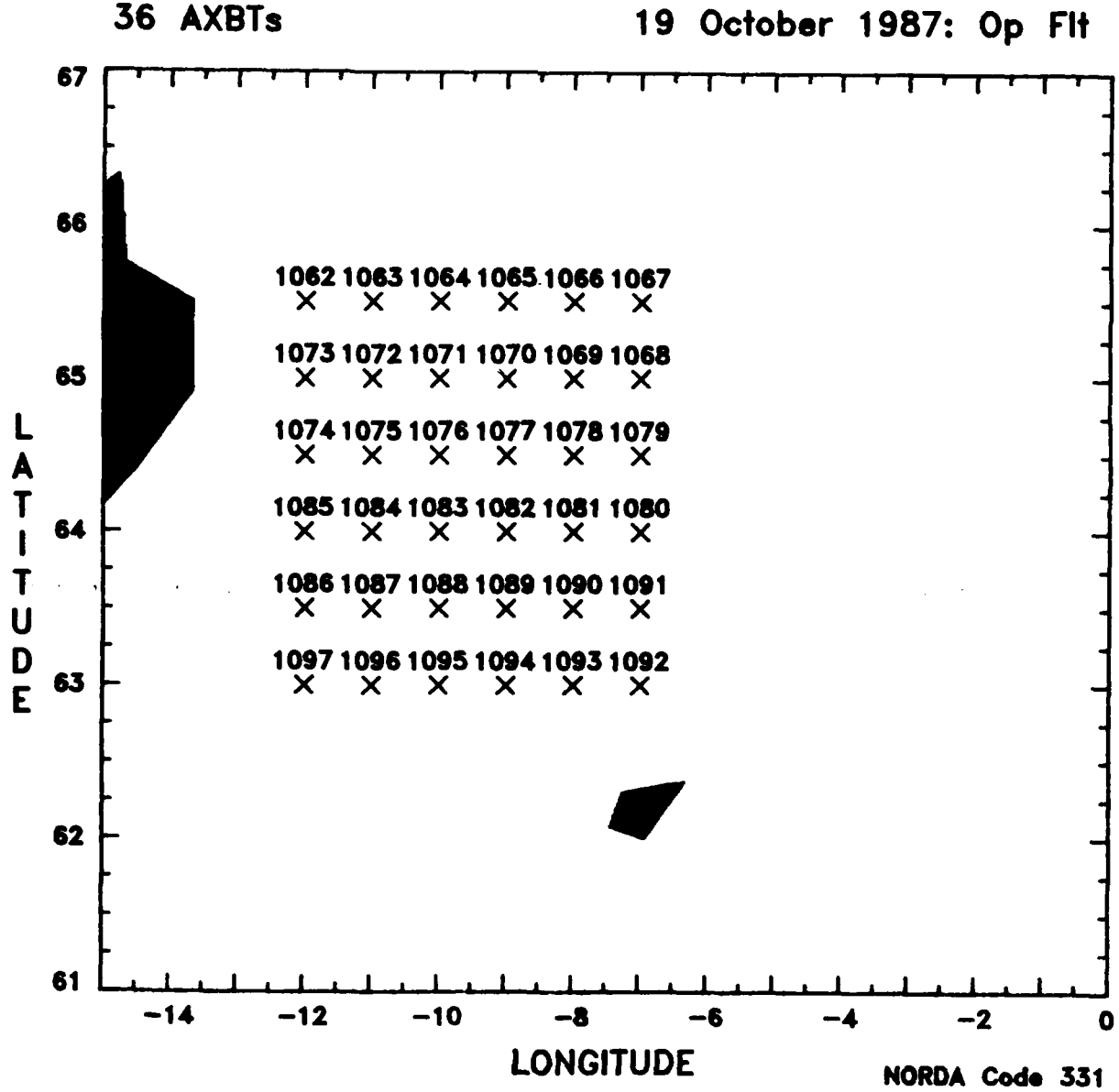
PROJECT: ARCTICAL OCEANOGRAPHY
DROP NO: 551 CHANNEL: 16 LATITUDE: 66 30.1
DATE: 10/19/87 TIME: 14:50:22 LONGITUDE: -12 -57.2

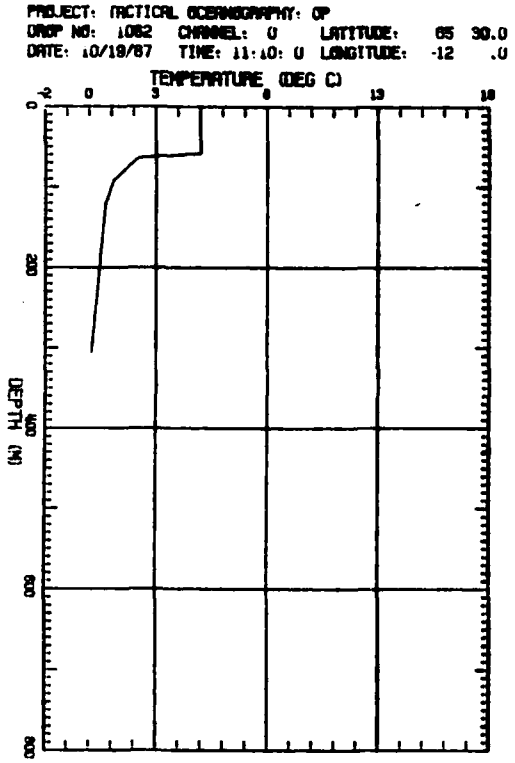


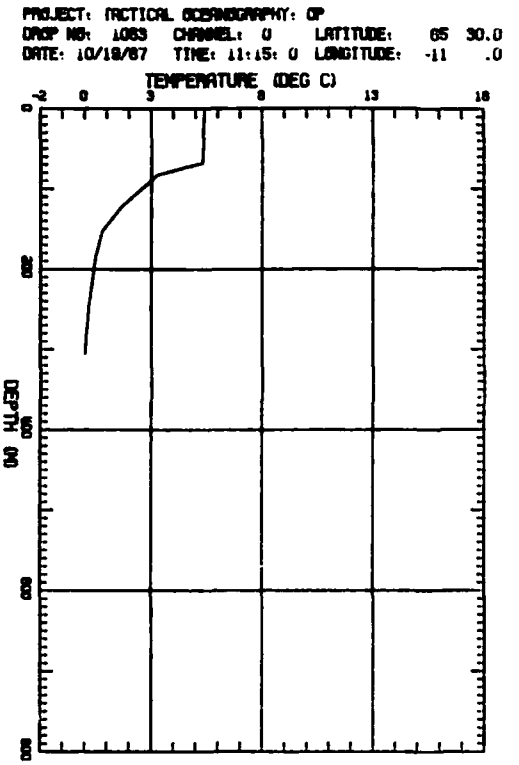
PROJECT: ARCTICAL OCEANOGRAPHY
DROP NO: 554 CHANNEL: 16 LATITUDE: 67 11.6
DATE: 10/19/87 TIME: 15: 0:17 LONGITUDE: -13 -1.1

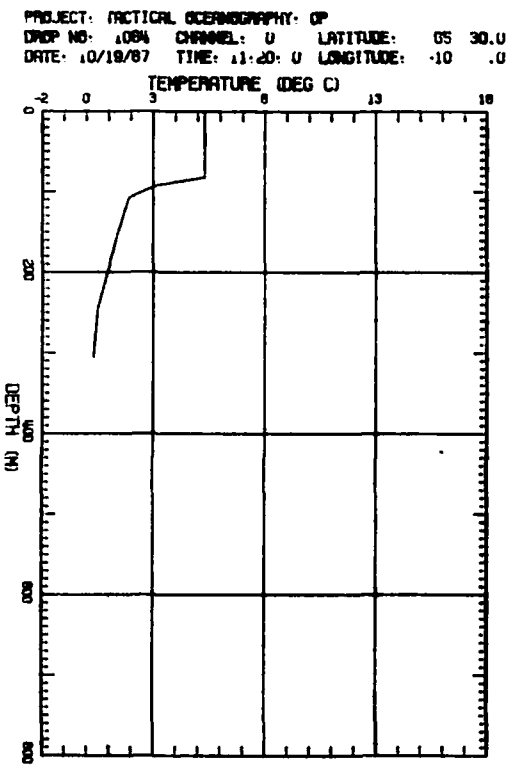


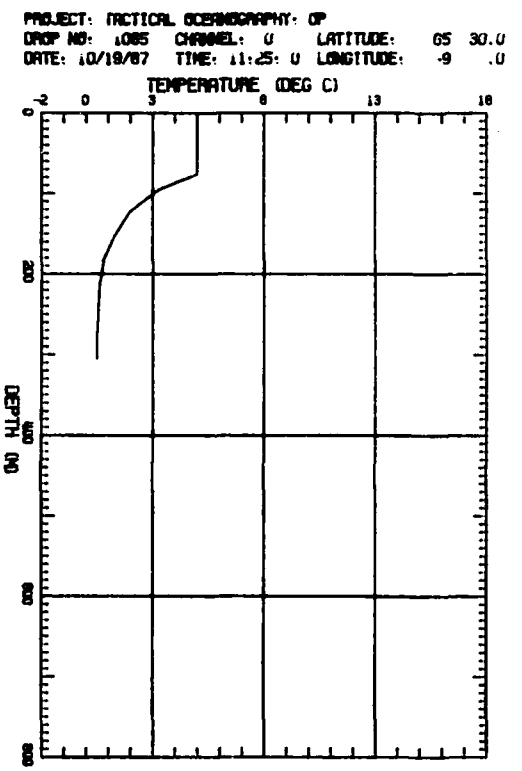

PROJECT: ARCTICAL OCEANOGRAPHY
DROP NO: 557 CHANNEL: 12 LATITUDE: 67 45.0
DATE: 10/19/87 TIME: 15:30:27 LONGITUDE: -14 -18.0
TEMPERATURE (DEG C)
-2
0
3
8
13
18
DEPTH (M)
200
400
600

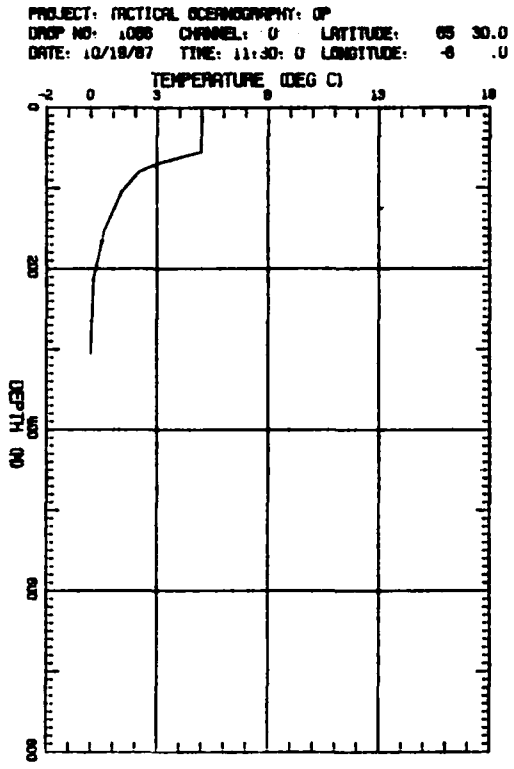

36 AXBTs
19 October 1987: Op Flt
67
66
65
64
63
62
61
LATITUDE
1062 1063 1064 1065 1066 1067
1073 1072 1071 1070 1069 1068
1074 1075 1076 1077 1078 1079
1085 1084 1083 1082 1081 1080
1086 1087 1088 1089 1090 1091
1097 1096 1095 1094 1093 1092
−14 −12 −10 −8 −6 −4 −2 0
LONGITUDE
NORDA Code 331

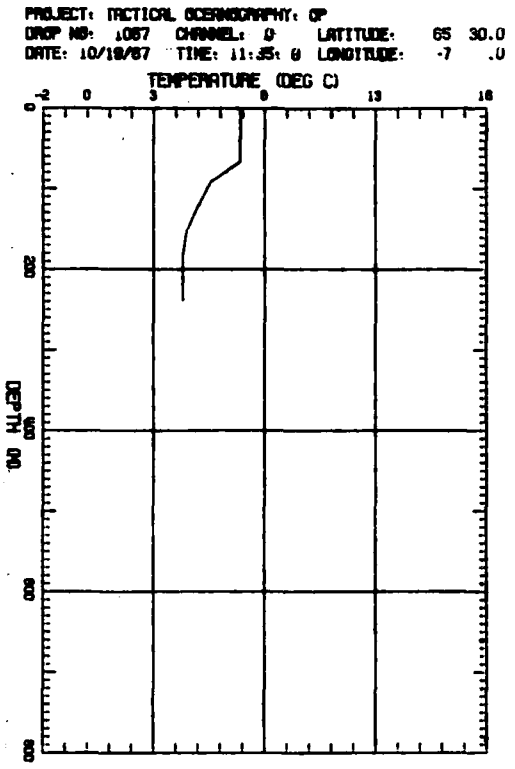

PROJECT: ARCTICAL OCEANOGRAPHY: OP
DROP NO: 1082 CHANNEL: 0 LATITUDE: 65 30.0
DATE: 10/19/87 TIME: 11:10: 0 LONGITUDE: -12 .0
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)

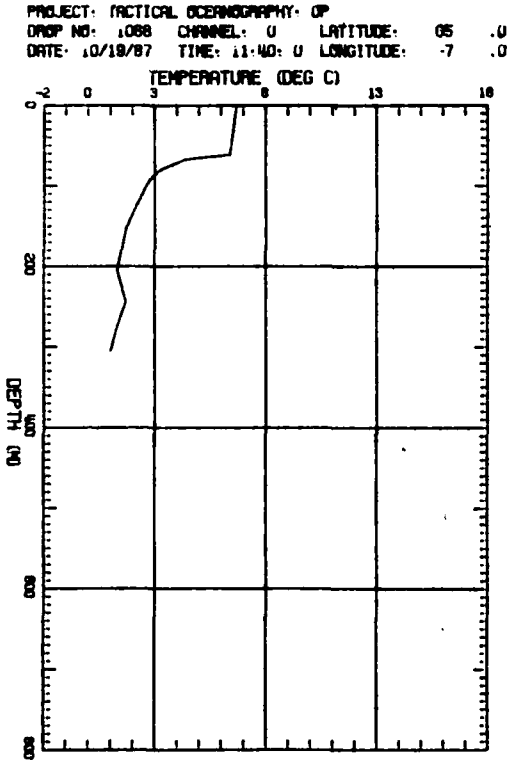

PROJECT: ARCTICAL OCEANOGRAPHY: OP
DROP NO: 1083 CHANNEL: 0 LATITUDE: 65 30.0
DATE: 10/19/87 TIME: 11:15: 0 LONGITUDE: -11 .0
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)

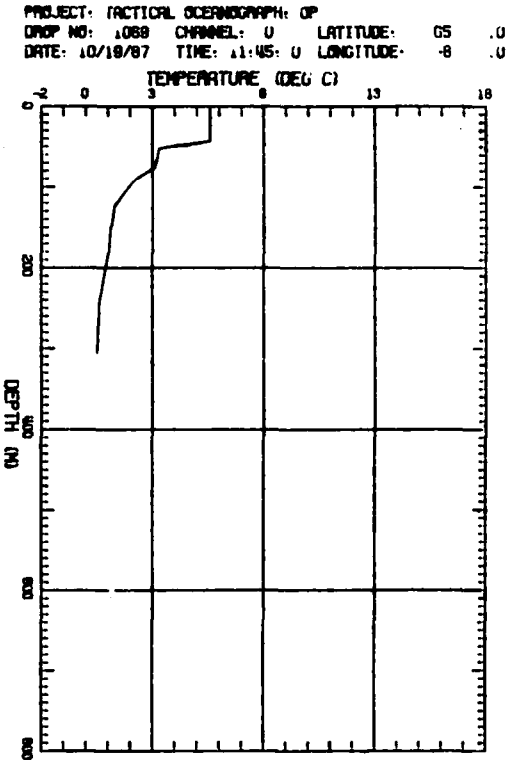

PROJECT: ARCTICAL OCEANOGRAPHY: OP
DROP NO: 1084 CHANNEL: 0 LATITUDE: 65 30.0
DATE: 10/19/87 TIME: 11:20: 0 LONGITUDE: -10 .0
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)

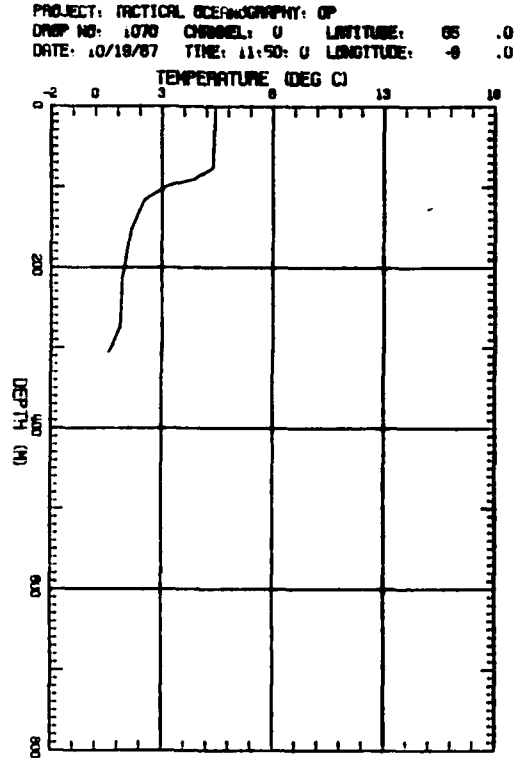

PROJECT: ARCTICAL OCEANOGRAPHY: OP
DROP NO: 1085 CHANNEL: 0 LATITUDE: 65 30.0
DATE: 10/19/87 TIME: 11:25: 0 LONGITUDE: -9 .0
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)

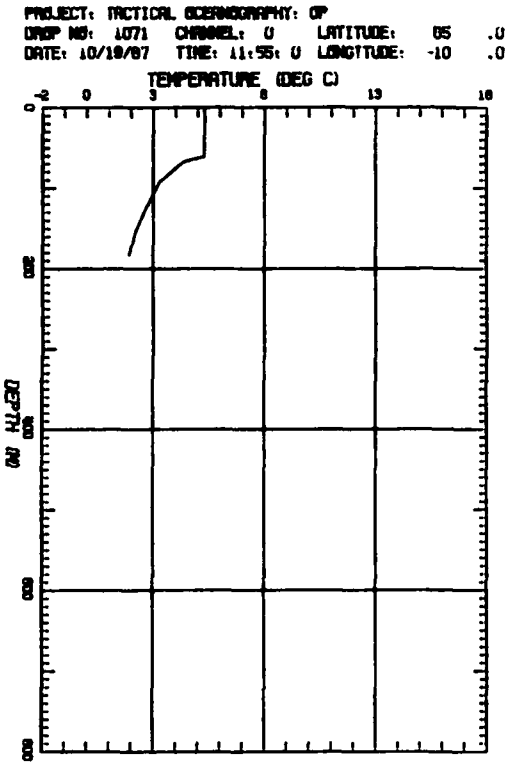

PROJECT: ARCTICAL OCEANOGRAPHY: OP
DROP NO: 1068 CHANNEL: 0 LATITUDE: 65 30.0
DATE: 10/19/87 TIME: 11:30: 0 LONGITUDE: -8 .0
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)

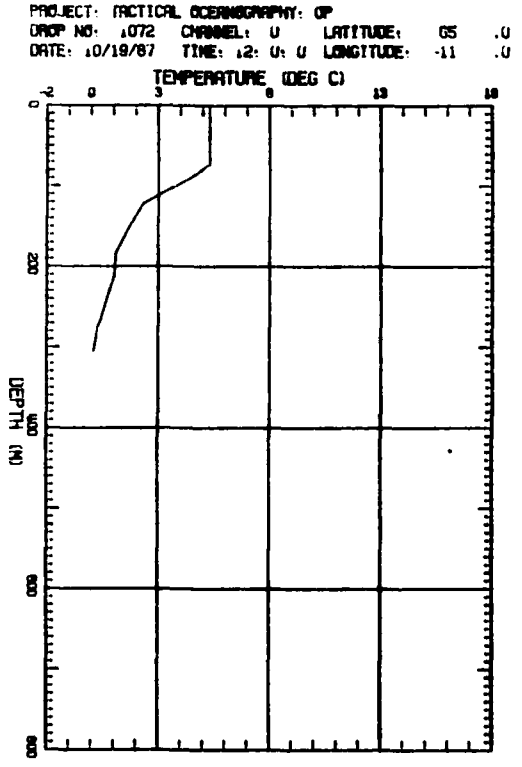

PROJECT: ARCTICAL OCEANOGRAPHY: OP
DROP NO: 1067 CHANNEL: 0 LATITUDE: 65 30.0
DATE: 10/19/87 TIME: 11:35: 0 LONGITUDE: -7 .0
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)

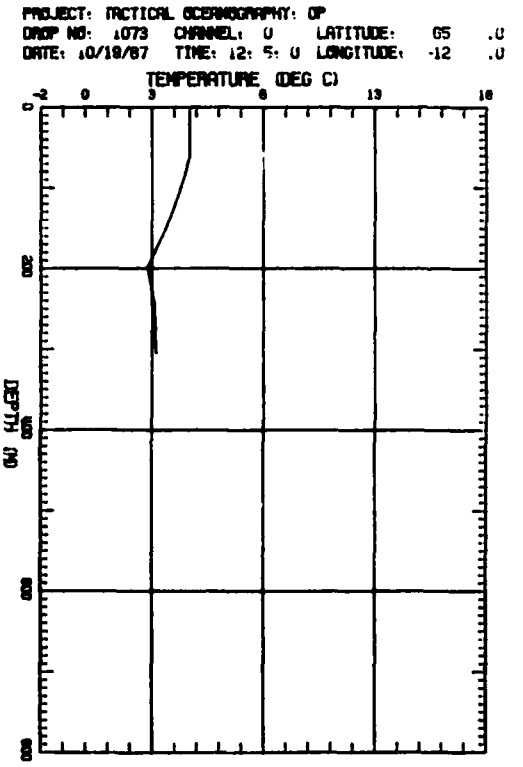

PROJECT: ARCTICAL OCEANOGRAPHY: OP
DROP NO: 1068 CHANNEL: 0 LATITUDE: 65 .0
DATE: 10/19/87 TIME: 11:40: 0 LONGITUDE: -7 .0
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)

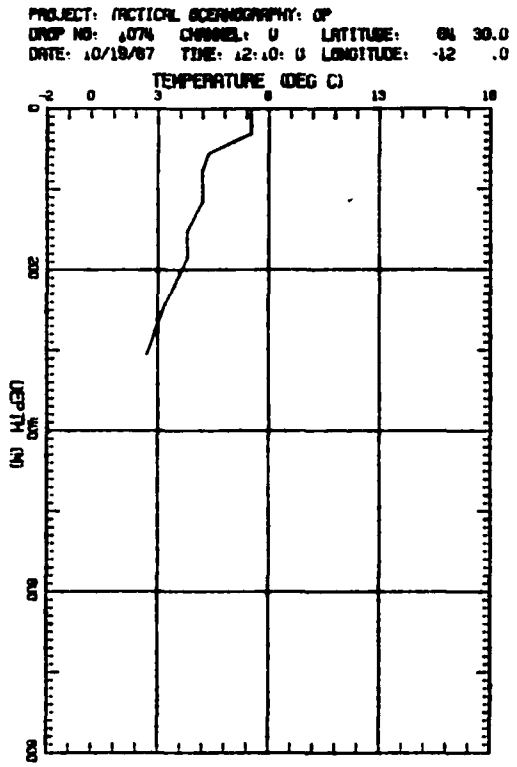

PROJECT: ARCTICAL OCEANOGRAPH: OP
DROP NO: 1069 CHANNEL: 0 LATITUDE: 65 .0
DATE: 10/19/87 TIME: 11:45: 0 LONGITUDE: -8 .0
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)

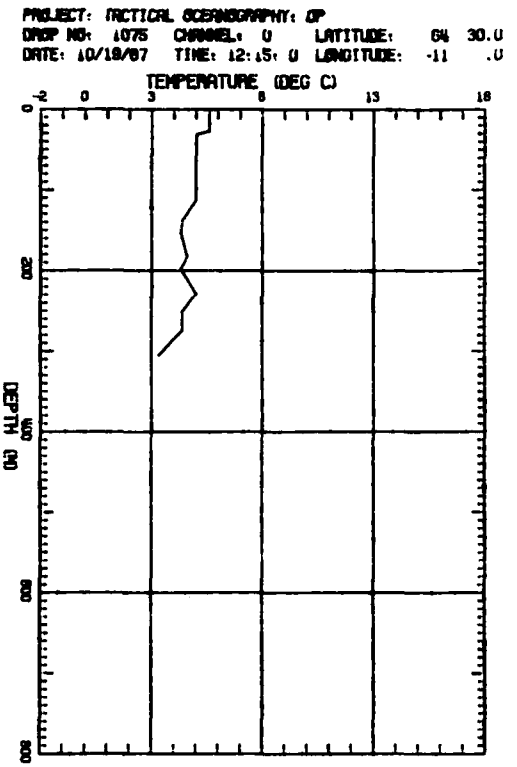

PROJECT: ARCTICAL OCEANOGRAPHY: OP
DROP NO: 070 CHANNEL: 0 LATITUDE: 65 .0
DATE: 10/19/87 TIME: 11:50: 0 LONGITUDE: -9 .0
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)

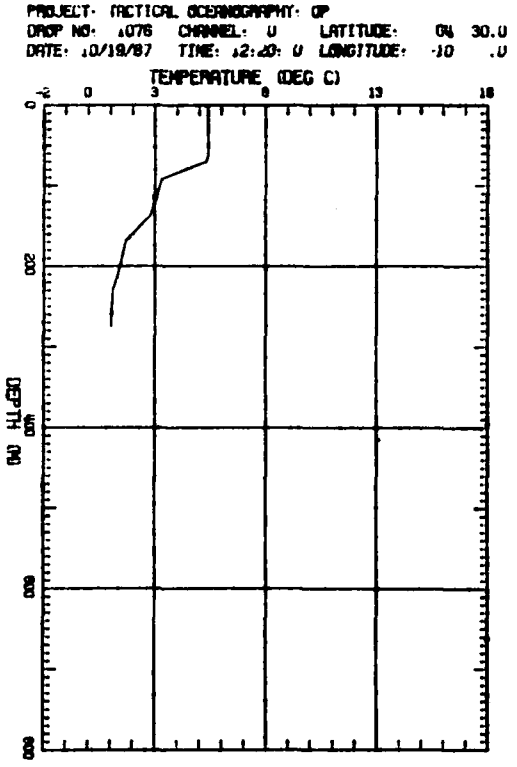

PROJECT: ARCTICAL OCEANOGRAPHY: OP
DROP NO: 071 CHANNEL: 0 LATITUDE: 65 .0
DATE: 10/19/87 TIME: 11:55: 0 LONGITUDE: -10 .0
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)

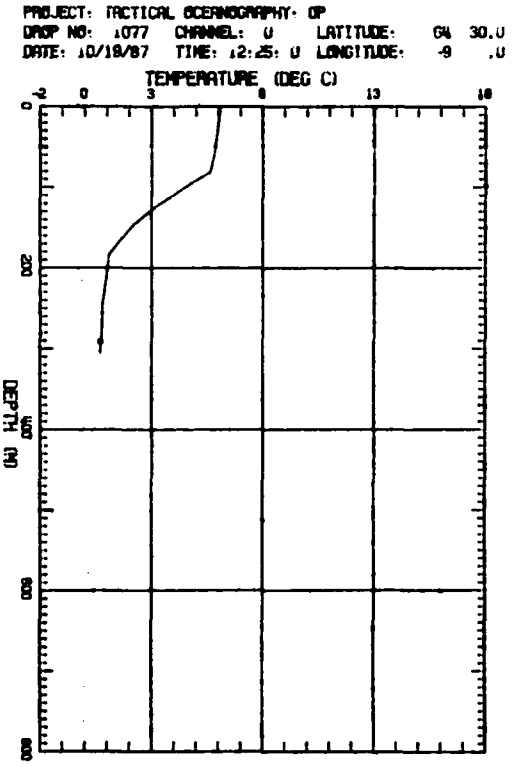

PROJECT: ARCTICAL OCEANOGRAPHY: OP
DROP NO: 072 CHANNEL: 0 LATITUDE: 65 .0
DATE: 10/19/87 TIME: 12: 0: 0 LONGITUDE: -11 .0
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)

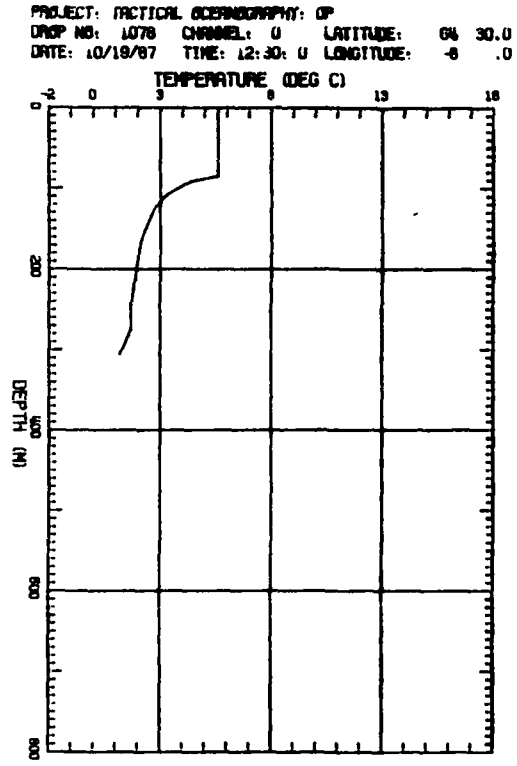

PROJECT: ARCTICAL OCEANOGRAPHY: OP
DROP NO: 073 CHANNEL: 0 LATITUDE: 65 .0
DATE: 10/19/87 TIME: 12: 5: 0 LONGITUDE: -12 .0
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)

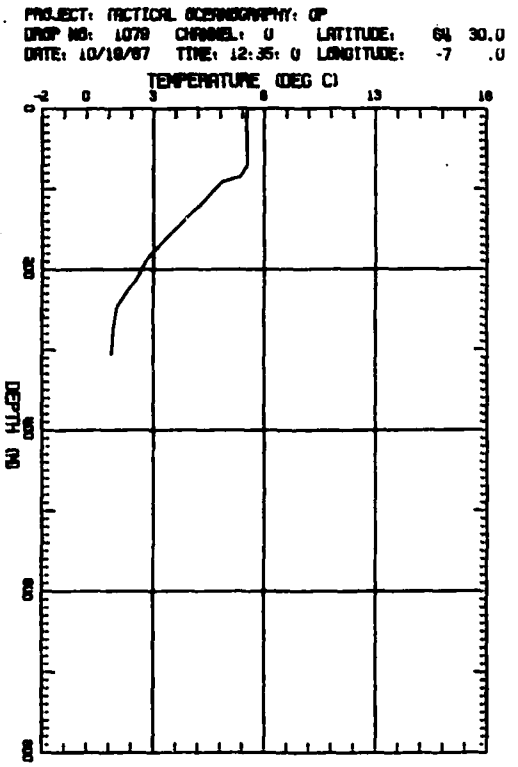

PROJECT: ARCTICAL OCEANOGRAPHY: OP
DROP NO: 074 CHANNEL: 0 LATITUDE: 64 30.0
DATE: 10/19/87 TIME: 12:10: 0 LONGITUDE: -12 .0
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
DEPTH (M)

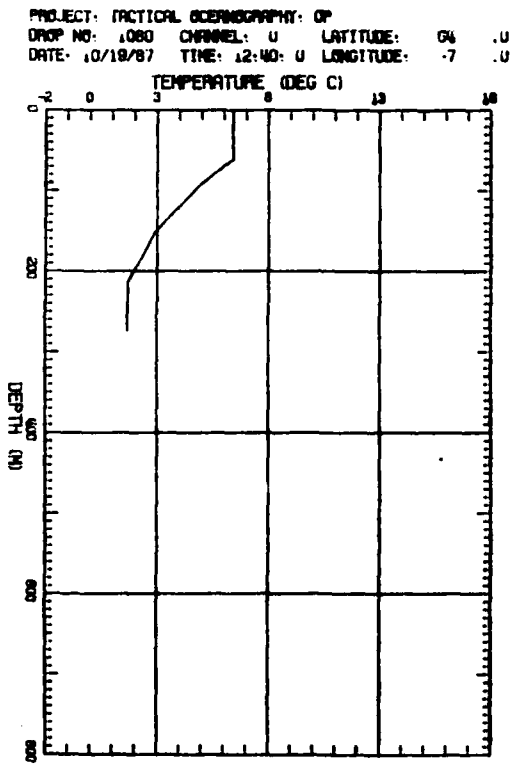

PROJECT: ARCTICAL OCEANOGRAPHY: OP
DROP NO: 075 CHANNEL: 0 LATITUDE: 64 30.0
DATE: 10/19/87 TIME: 12:15: 0 LONGITUDE: -11 .0
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
DEPTH (M)

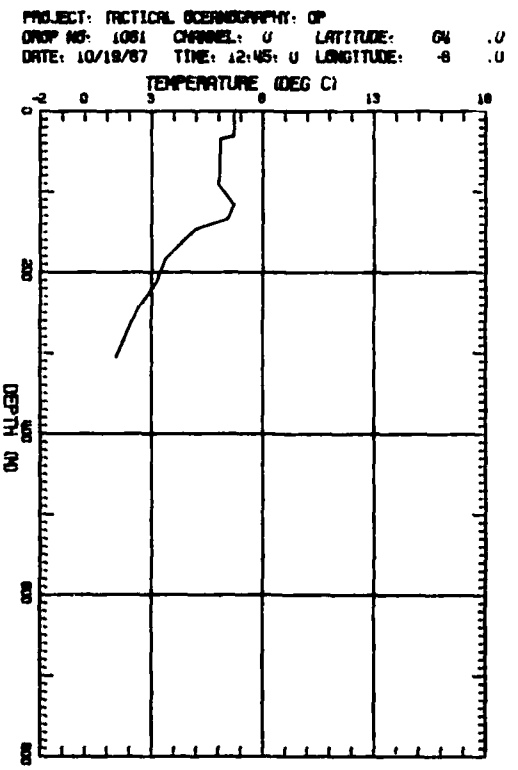

PROJECT: ARCTICAL OCEANOGRAPHY: OP
DROP NO: 076 CHANNEL: 0 LATITUDE: 64 30.0
DATE: 10/19/87 TIME: 12:20: 0 LONGITUDE: -10 .0
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
DEPTH (M)

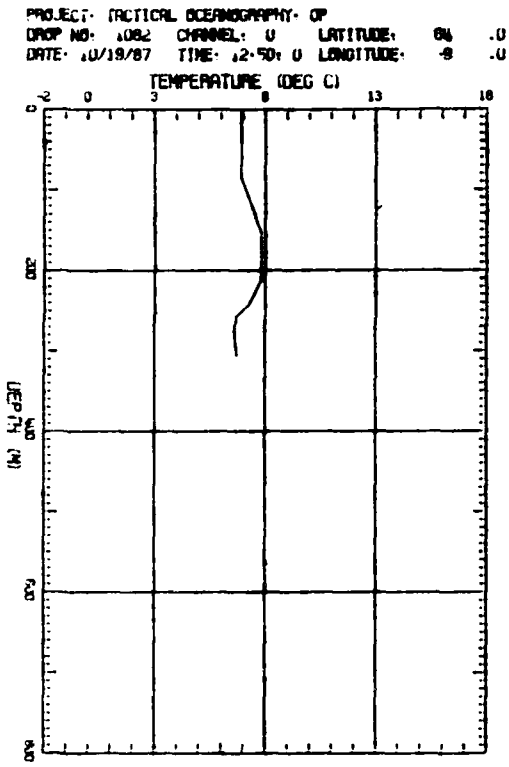

PROJECT: ARCTICAL OCEANOGRAPHY: OP
DROP NO: 077 CHANNEL: 0 LATITUDE: 64 30.0
DATE: 10/19/87 TIME: 12:25: 0 LONGITUDE: -9 .0
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
DEPTH (M)

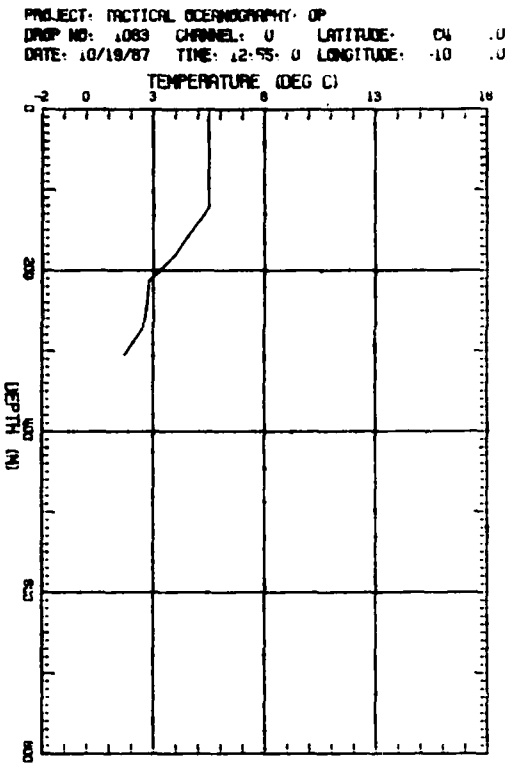

PROJECT: TACTICAL OCEANOGRAPHY: OP
DROP NO: 078 CHANNEL: 0 LATITUDE: 64 30.0
DATE: 10/19/87 TIME: 12:30: 0 LONGITUDE: -8 .0
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)

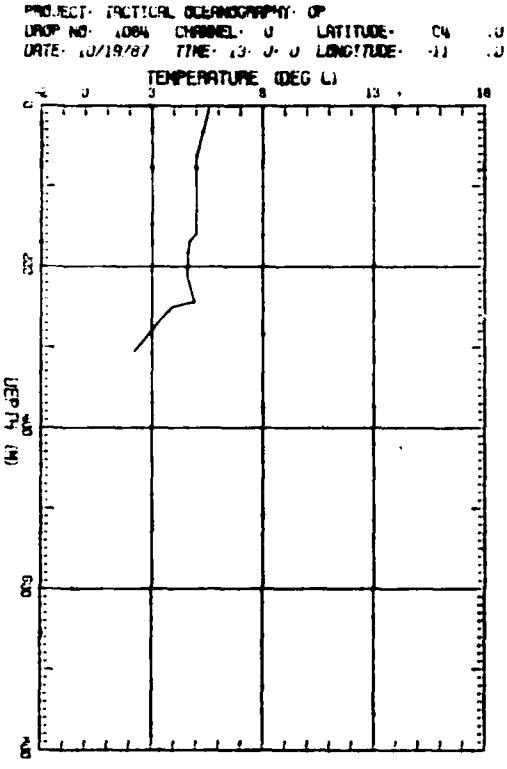

PROJECT: TACTICAL OCEANOGRAPHY: OP
DROP NO: 079 CHANNEL: 0 LATITUDE: 64 30.0
DATE: 10/19/87 TIME: 12:35: 0 LONGITUDE: -7 .0
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)

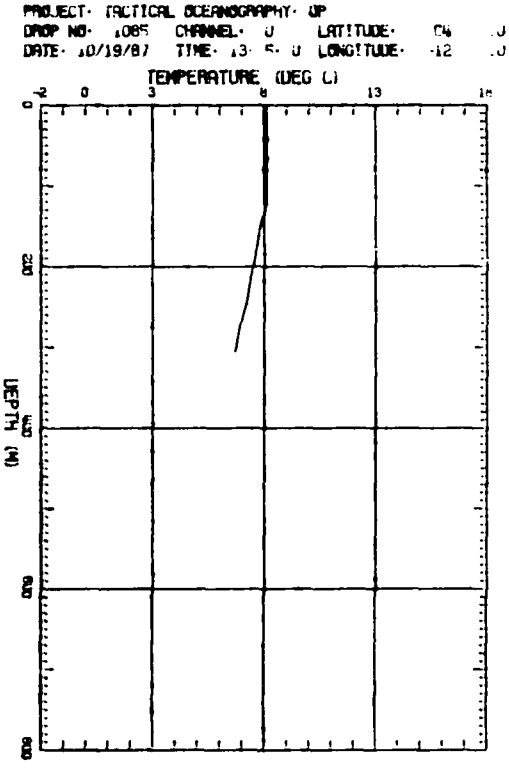

PROJECT: TACTICAL OCEANOGRAPHY: OP
DROP NO: 080 CHANNEL: 0 LATITUDE: 64 .0
DATE: 10/19/87 TIME: 12:40: 0 LONGITUDE: -7 .0
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)

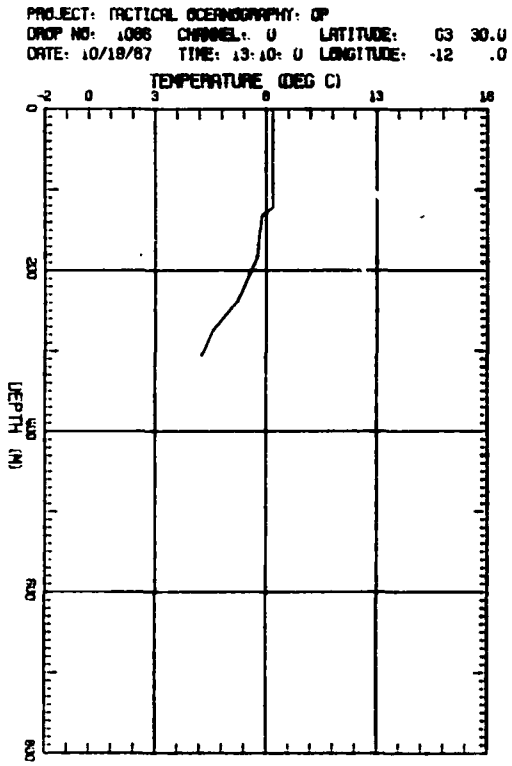

PROJECT: TACTICAL OCEANOGRAPHY: OP
DROP NO: 081 CHANNEL: 0 LATITUDE: 64 .0
DATE: 10/19/87 TIME: 12:45: 0 LONGITUDE: -8 .0
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)

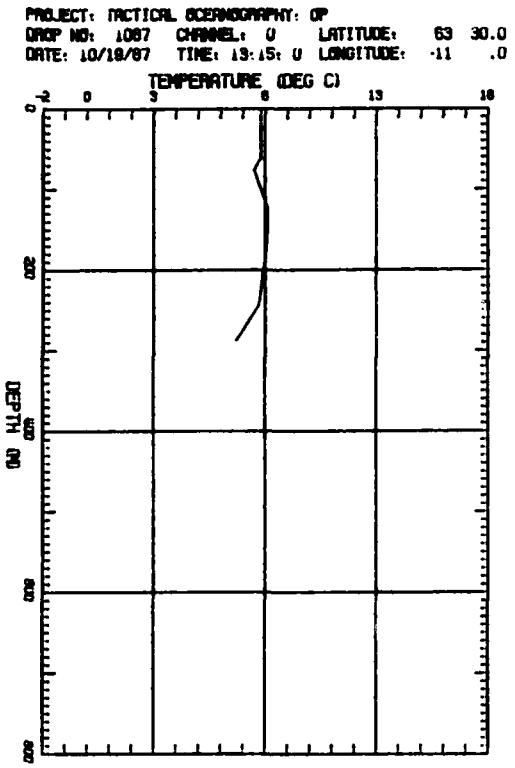

PROJECT: TACTICAL OCEANOGRAPHY OP
DROP NO: 082 CHANNEL: 0 LATITUDE: 04 .0
DATE: 10/19/87 TIME: 12:50: 0 LONGITUDE: -8 .0
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
DEPTH (M)

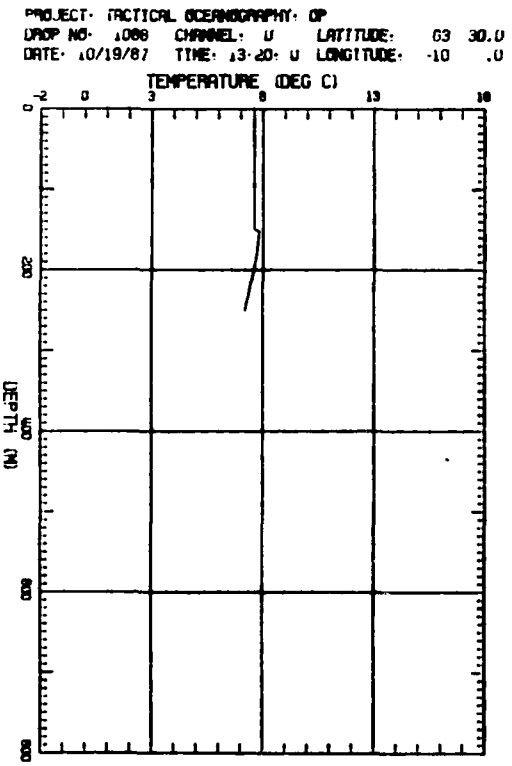

PROJECT: TACTICAL OCEANOGRAPHY OP
DROP NO: 083 CHANNEL: 0 LATITUDE: 04 .0
DATE: 10/19/87 TIME: 12:55: 0 LONGITUDE: -10 .0
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
DEPTH (M)

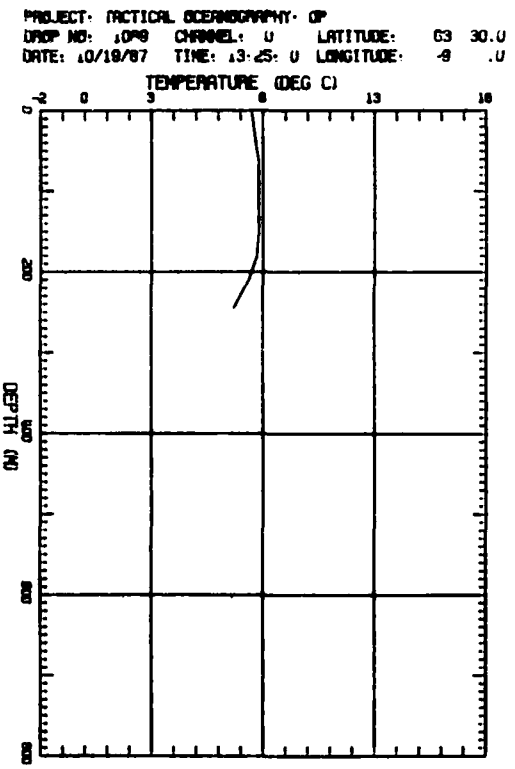

PROJECT: TACTICAL OCEANOGRAPHY OP
DROP NO: 084 CHANNEL: 0 LATITUDE: 04 .0
DATE: 10/19/87 TIME: 13: 0: 0 LONGITUDE: -11 .0
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
DEPTH (M)


PROJECT: TACTICAL OCEANOGRAPHY OP
DROP NO: 085 CHANNEL: 0 LATITUDE: 04 .0
DATE: 10/19/87 TIME: 13: 5: 0 LONGITUDE: -12 .0
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
DEPTH (M)

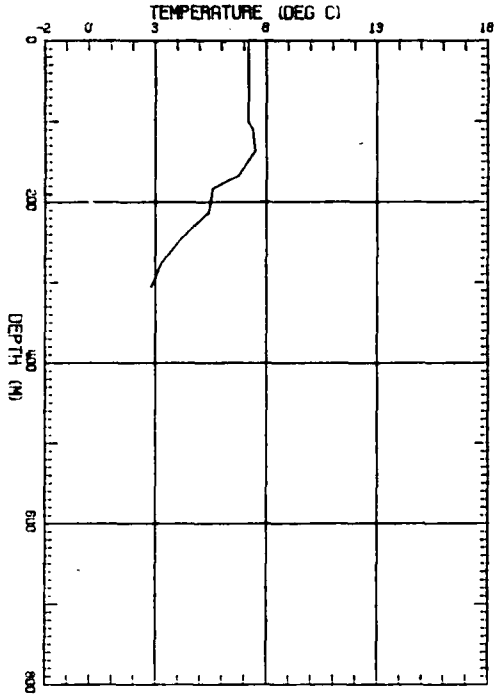

PROJECT: TACTICAL OCEANOGRAPHY: OP
DROP NO: 1086 CHANNEL: 0 LATITUDE: 63 30.0
DATE: 10/19/87 TIME: 13:10: 0 LONGITUDE: -12 .0
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
DEPTH (M)


PROJECT: TACTICAL OCEANOGRAPHY: OP
DROP NO: 1087 CHANNEL: 0 LATITUDE: 63 30.0
DATE: 10/19/87 TIME: 13:15: 0 LONGITUDE: -11 .0
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
DEPTH (M)

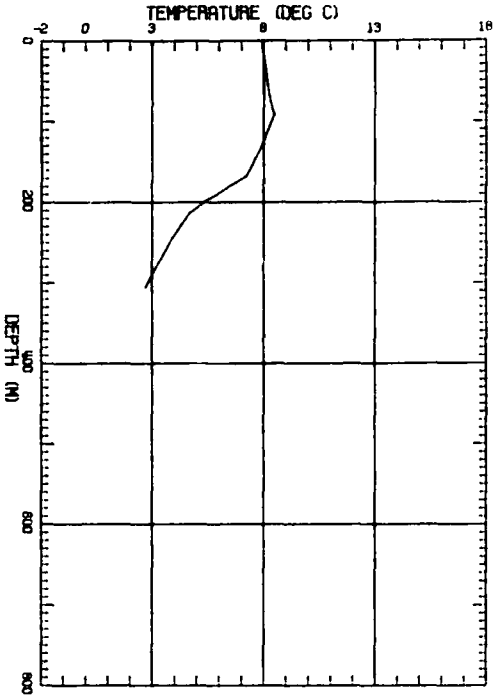

PROJECT: TACTICAL OCEANOGRAPHY: OP
DROP NO: 1088 CHANNEL: 0 LATITUDE: 63 30.0
DATE: 10/19/87 TIME: 13:20: 0 LONGITUDE: -10 .0
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
DEPTH (M)


PROJECT: TACTICAL OCEANOGRAPHY: OP
DROP NO: 1089 CHANNEL: 0 LATITUDE: 63 30.0
DATE: 10/19/87 TIME: 13:25: 0 LONGITUDE: -9 .0
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
DEPTH (M)

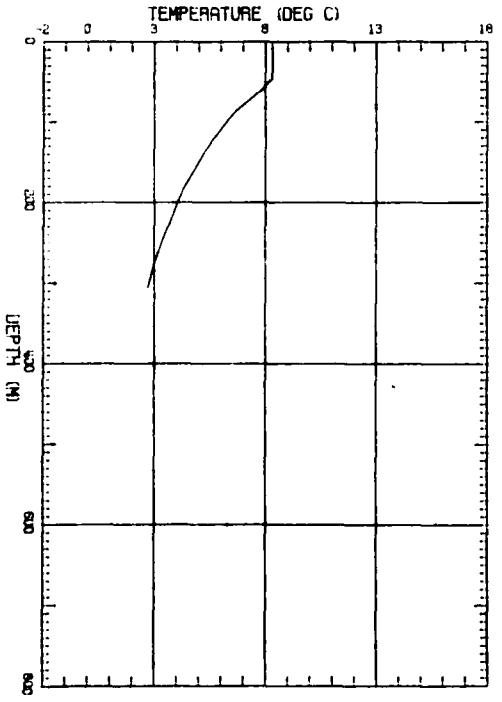
PROJECT: TACTICAL OCEANOGRAPHY: OP
DROP NO: 1090 CHANNEL: 0 LATITUDE: 03 30.0
DATE: 10/19/87 TIME: 13:30: 0 LONGITUDE: -8 .0



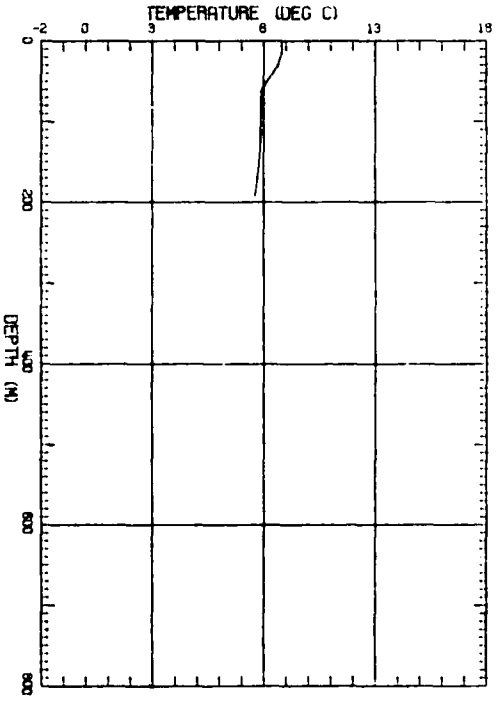
PROJECT: TACTICAL OCEANOGRAPHY: OP
DROP NO: 1091 CHANNEL: 0 LATITUDE: 03 30.0
DATE: 10/19/87 TIME: 13:35: 0 LONGITUDE: -7 .0

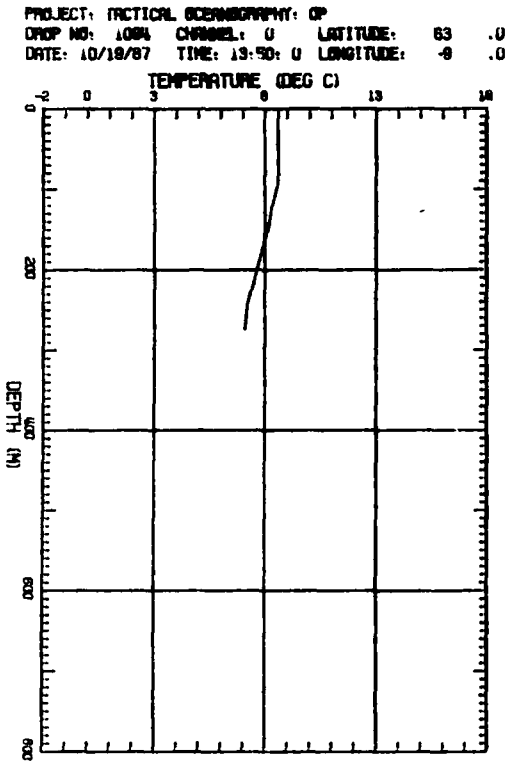


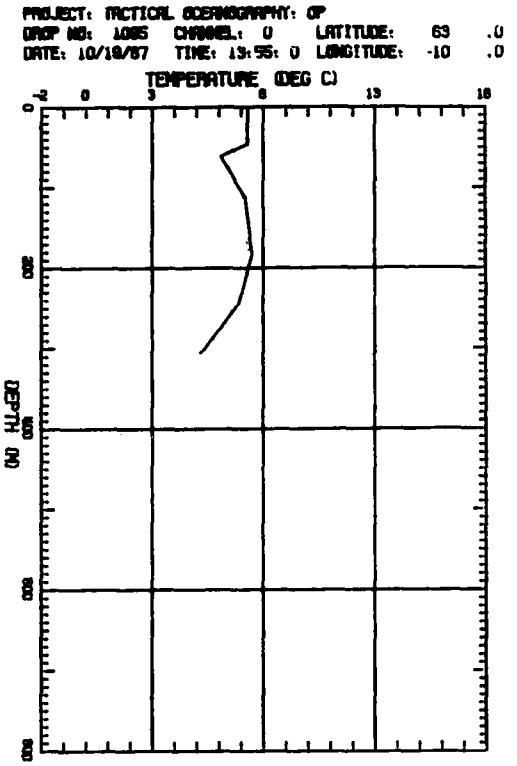
PROJECT: TACTICAL OCEANOGRAPHY: OP
DROP NO: 1092 CHANNEL: 0 LATITUDE: 03 .0
DATE: 10/19/87 TIME: 13:40: 0 LONGITUDE: -7 .0

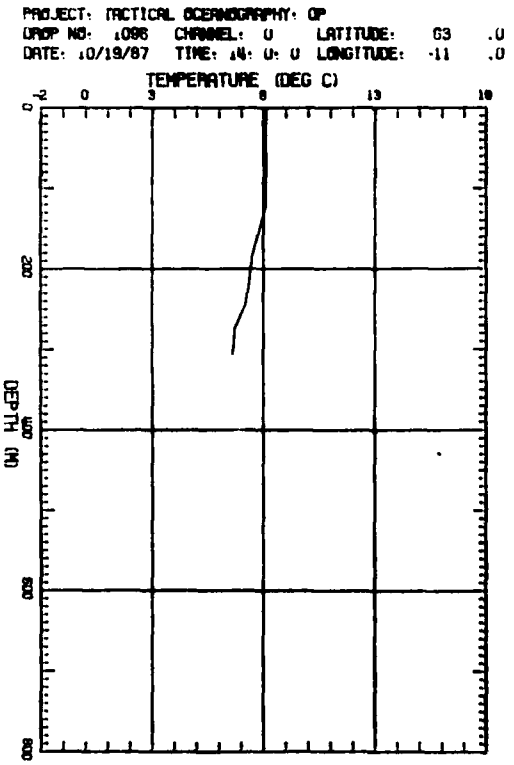


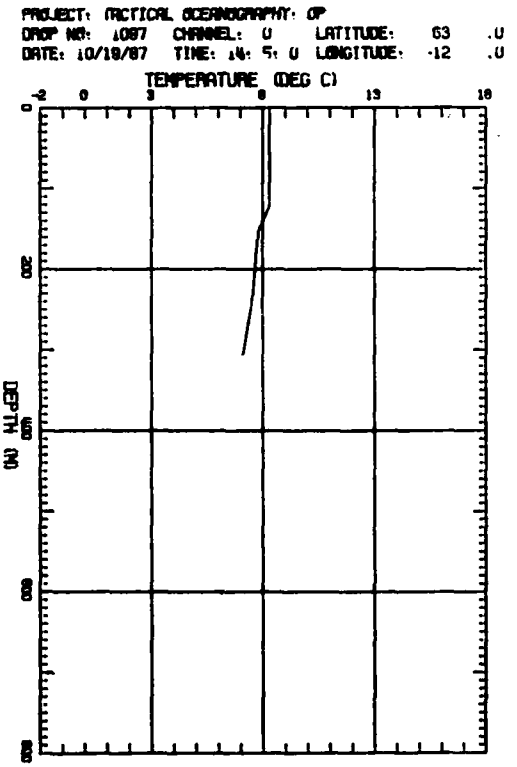
PROJECT: TACTICAL OCEANOGRAPHY: OP
DROP NO: 1093 CHANNEL: 0 LATITUDE: 03 .0
DATE: 10/19/87 TIME: 13:45: 0 LONGITUDE: -8 .0



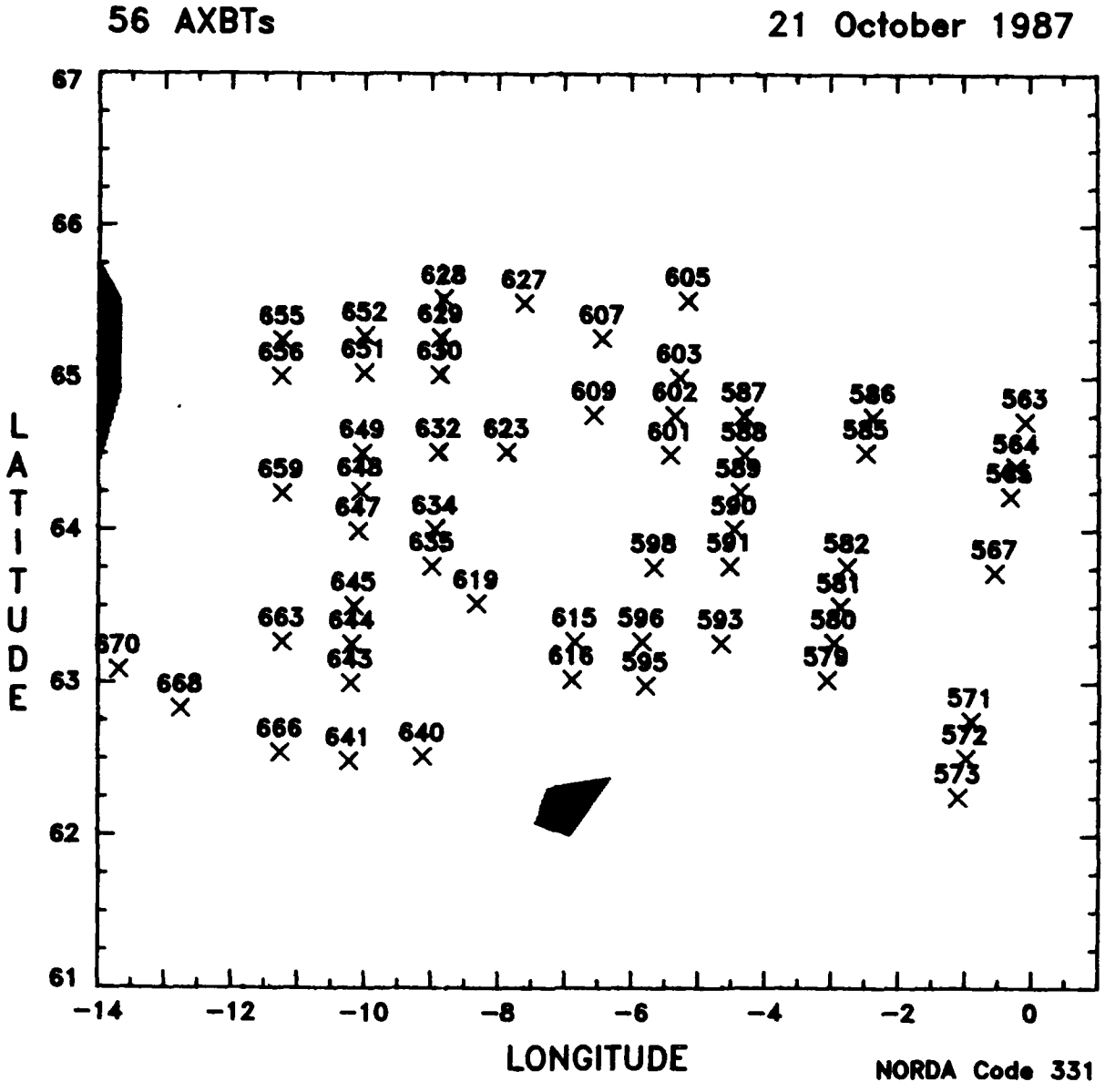

PROJECT: TACTICAL OCEANOGRAPHY: OP
DROP NO: 094 CHANNEL: 0 LATITUDE: 63 .0
DATE: 10/19/87 TIME: 13:50: 0 LONGITUDE: -9 .0
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
DEPTH (M)


PROJECT: TACTICAL OCEANOGRAPHY: OP
DROP NO: 095 CHANNEL: 0 LATITUDE: 63 .0
DATE: 10/19/87 TIME: 13:55: 0 LONGITUDE: -10 .0
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
DEPTH (M)

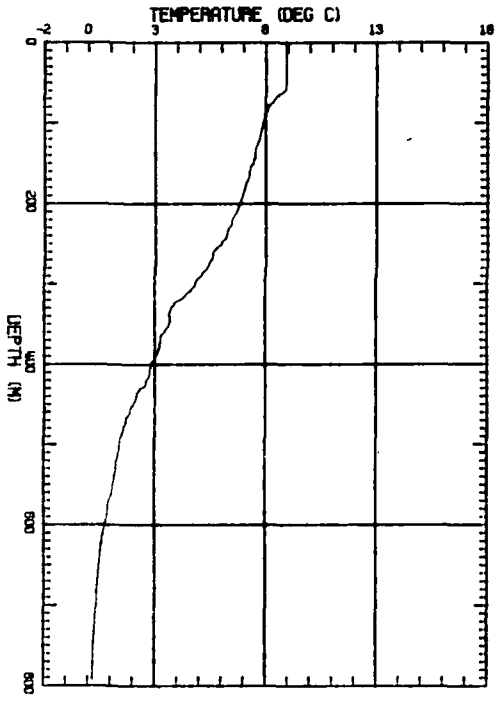

PROJECT: TACTICAL OCEANOGRAPHY: OP
DROP NO: 096 CHANNEL: 0 LATITUDE: 63 .0
DATE: 10/19/87 TIME: 14: 0: 0 LONGITUDE: -11 .0
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
DEPTH (M)


PROJECT: TACTICAL OCEANOGRAPHY: OP
DROP NO: 097 CHANNEL: 0 LATITUDE: 63 .0
DATE: 10/19/87 TIME: 14: 5: 0 LONGITUDE: -12 .0
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
DEPTH (M)

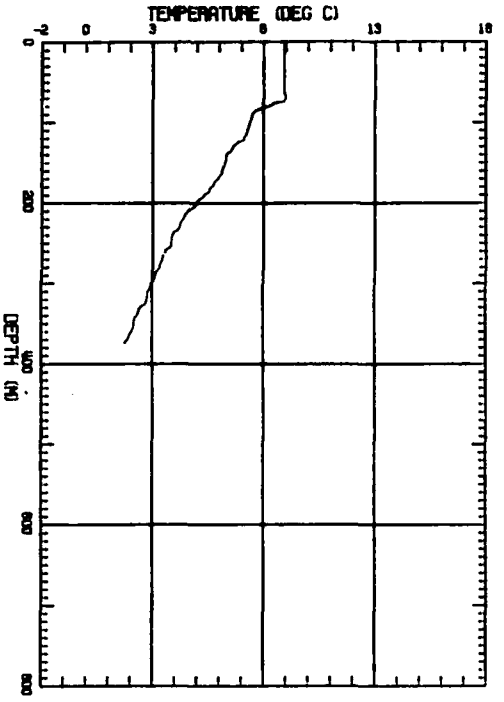
Appendix H.
Drop Positions and Data Profiles, Flight 7, 21 October 1987, Iceland-Faeroe Front Region.


56 AXBTs
21 October 1987
67
66
65
64
63
62
61
LATITUDE
-14
-12
-10
-8
-6
-4
-2
0
LONGITUDE
NORDA Code 331
628
627
605
655
652
629
607
656
651
630
603
609
602
587
586
563
649
632
623
601
588
585
564
659
648
589
634
647
590
635
598
591
582
567
645
619
581
663
644
615
596
593
580
570
643
616
595
579
668
571
666
641
640
572
573

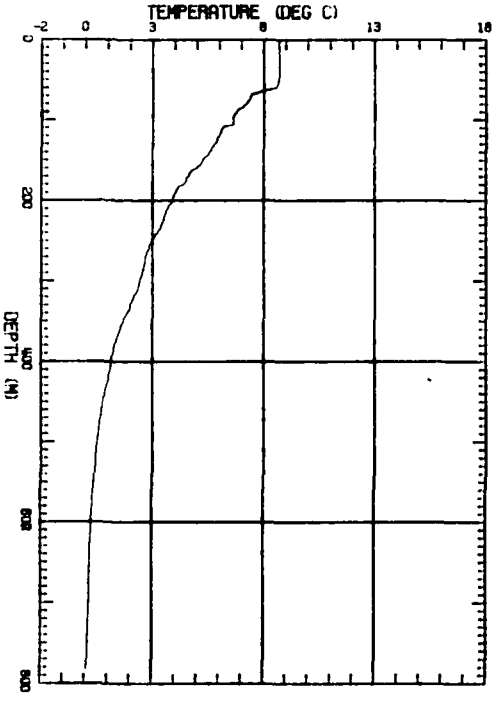
PROJECT: ARCTICAL OCEANOGRAPHY
DROP NO: 563 CHANNEL: 16 LATITUDE: 64 42.9
DATE: 10/21/87 TIME: 10:25:16 LONGITUDE: 0 -5.6



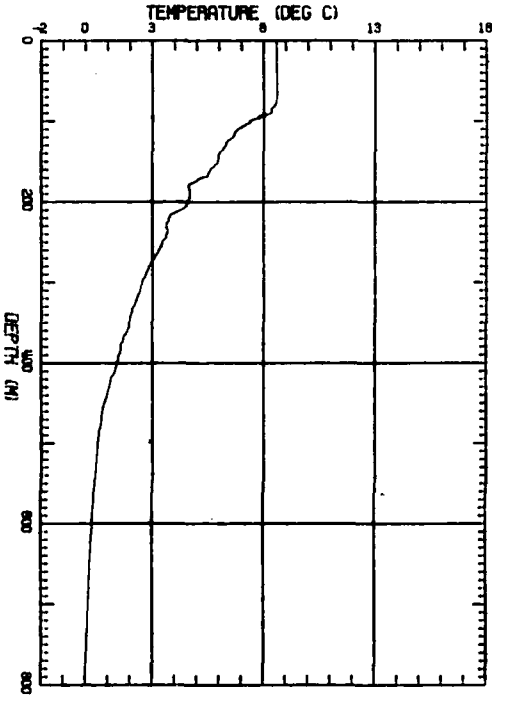
PROJECT: ARCTICAL OCEANOGRAPHY
DROP NO: 564 CHANNEL: 12 LATITUDE: 64 25.0
DATE: 10/21/87 TIME: 10:28:21 LONGITUDE: 0 -13.7

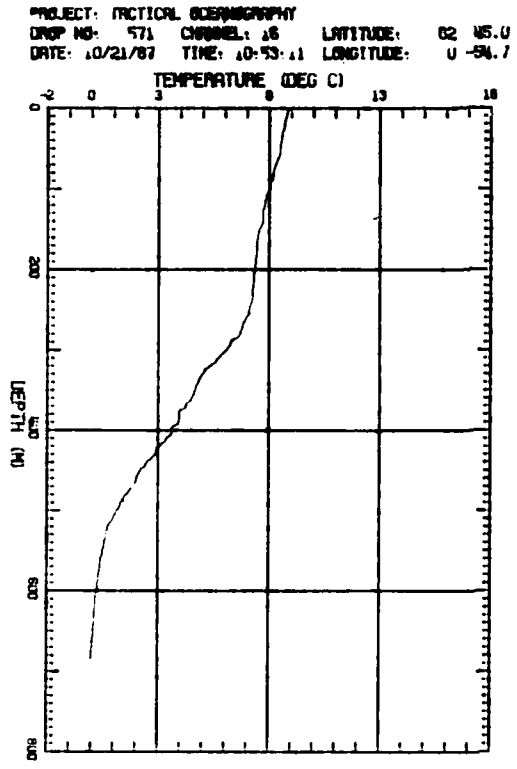


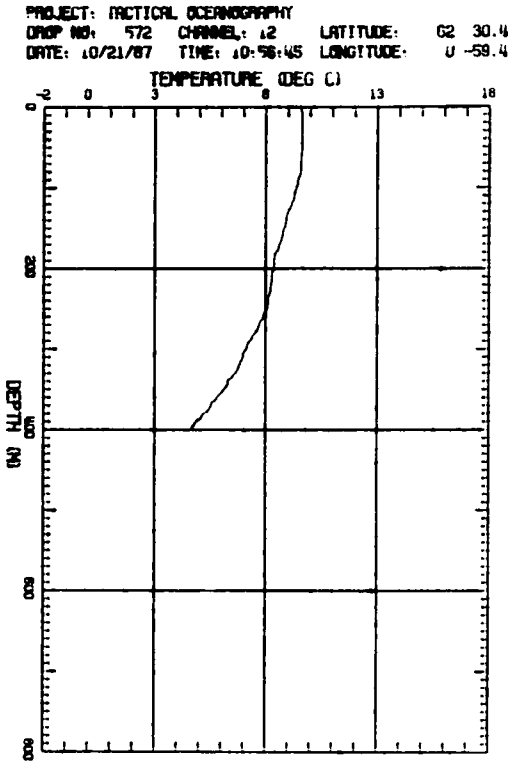
PROJECT: ARCTICAL OCEANOGRAPHY
DROP NO: 565 CHANNEL: 14 LATITUDE: 64 13.3
DATE: 10/21/87 TIME: 10:32:10 LONGITUDE: 0 -19.3

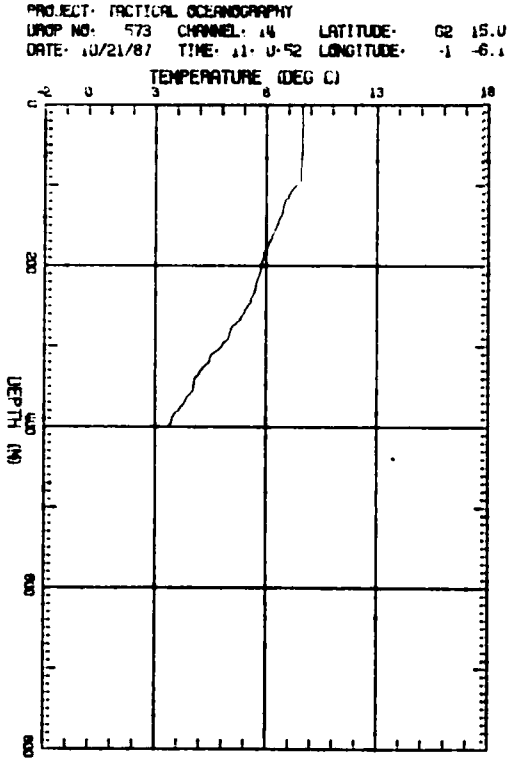


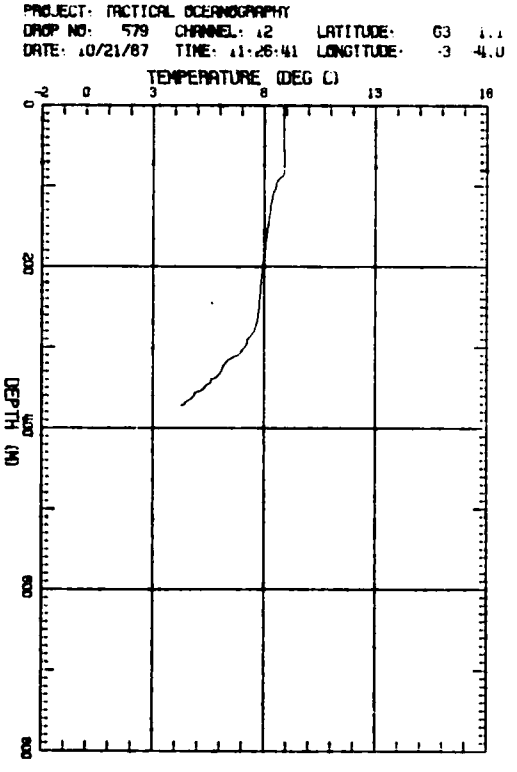
PROJECT: ARCTICAL OCEANOGRAPHY
DROP NO: 567 CHANNEL: 18 LATITUDE: 63 43.3
DATE: 10/21/87 TIME: 10:39:19 LONGITUDE: 0 -33.1



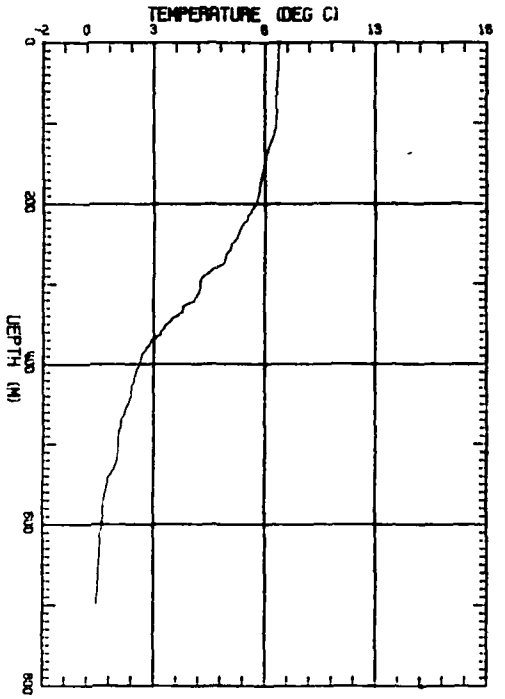

PROJECT: ARCTICAL OCEANOGRAPHY
DROP NO: 571 CHANNEL: 6 LATITUDE: 82 45.0
DATE: 10/21/87 TIME: 0:53:1 LONGITUDE: 0 -54.7
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)


PROJECT: ARCTICAL OCEANOGRAPHY
DROP NO: 572 CHANNEL: 2 LATITUDE: 82 30.4
DATE: 10/21/87 TIME: 0:56:45 LONGITUDE: 0 -59.4
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)

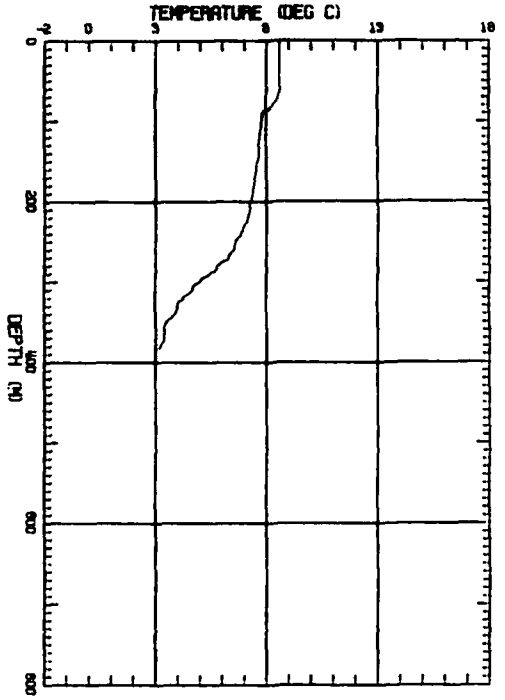

PROJECT: ARCTICAL OCEANOGRAPHY
DROP NO: 573 CHANNEL: 4 LATITUDE: 82 15.0
DATE: 10/21/87 TIME: 1: 0:52 LONGITUDE: -1 -6.1
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)


PROJECT: ARCTICAL OCEANOGRAPHY
DROP NO: 579 CHANNEL: 2 LATITUDE: 83 1.1
DATE: 10/21/87 TIME: 1:26:41 LONGITUDE: -3 -4.0
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)

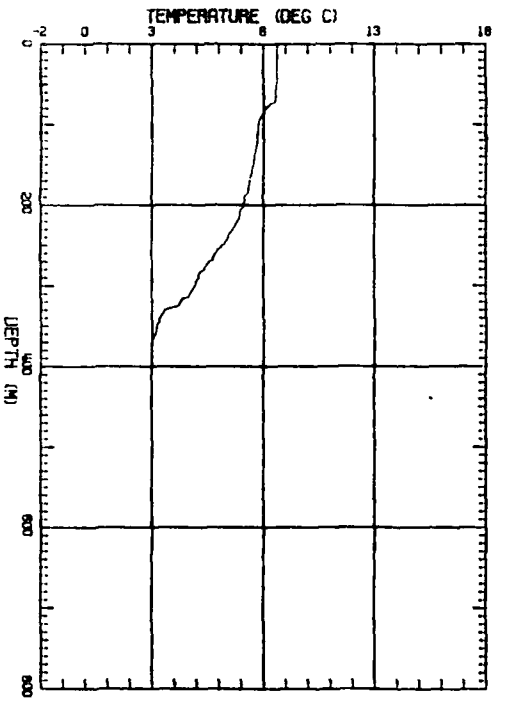
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 580 CHANNEL: 14 LATITUDE: 63 15.7
DATE: 10/21/87 TIME: 11:30: 0 LONGITUDE: -2 -57.3



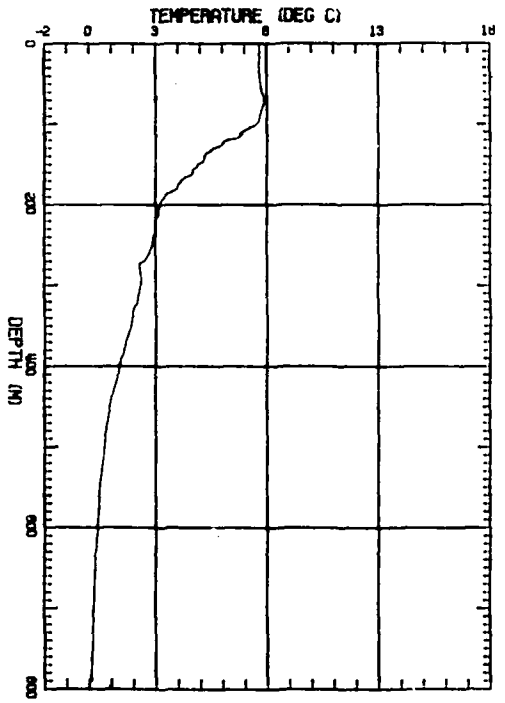
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 581 CHANNEL: 12 LATITUDE: 63 30.0
DATE: 10/21/87 TIME: 11:33:17 LONGITUDE: -2 -52.0



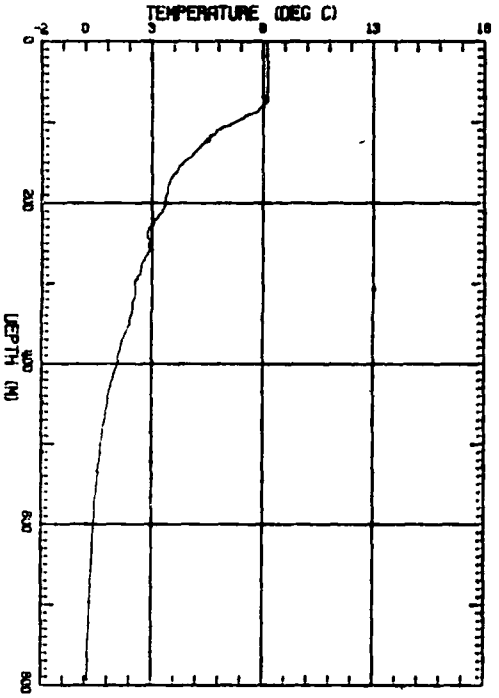
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 582 CHANNEL: 16 LATITUDE: 63 45.6
DATE: 10/21/87 TIME: 11:36:46 LONGITUDE: -2 -45.9



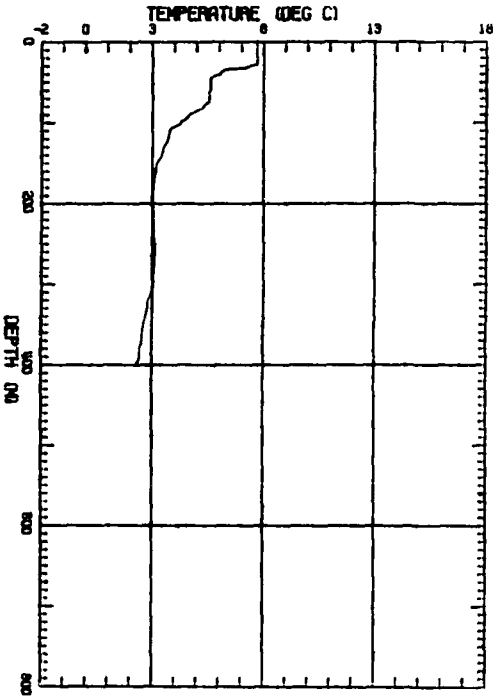
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 585 CHANNEL: 12 LATITUDE: 64 30.5
DATE: 10/21/87 TIME: 11:48:52 LONGITUDE: -2 -28.6



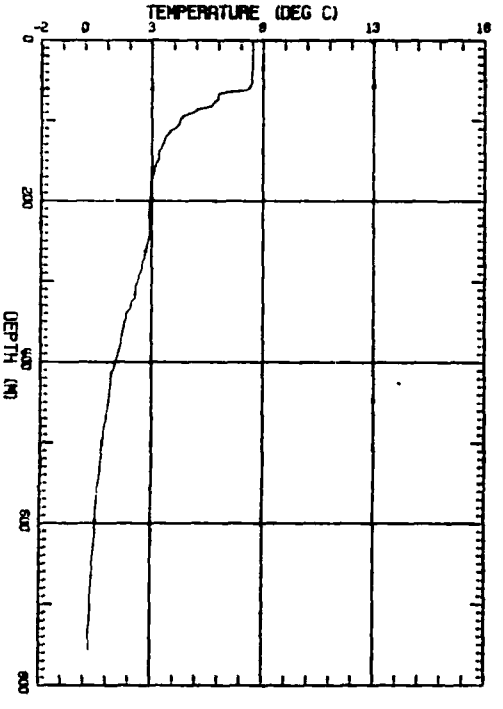
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 586 CHANNEL: 16 LATITUDE: 64 44.6
DATE: 10/21/87 TIME: 11:48:58 LONGITUDE: -2 -22.5



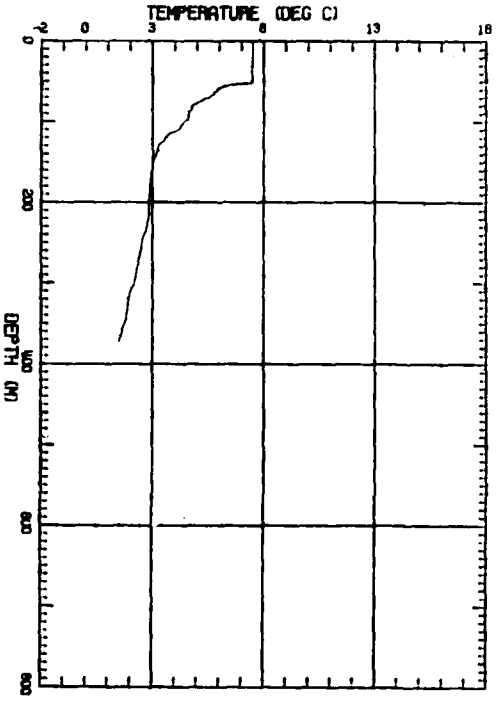
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 587 CHANNEL: 12 LATITUDE: 64 45.0
DATE: 10/21/87 TIME: 12: 2:15 LONGITUDE: -4 -18.6



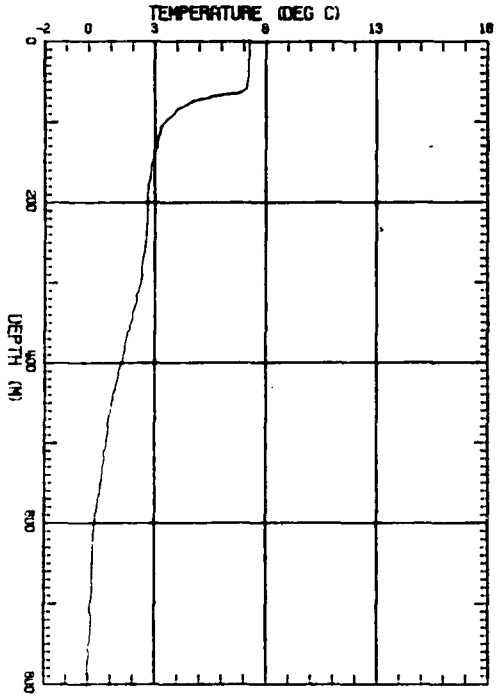
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 588 CHANNEL: 14 LATITUDE: 64 29.4
DATE: 10/21/87 TIME: 12: 5:53 LONGITUDE: -4 -18.4



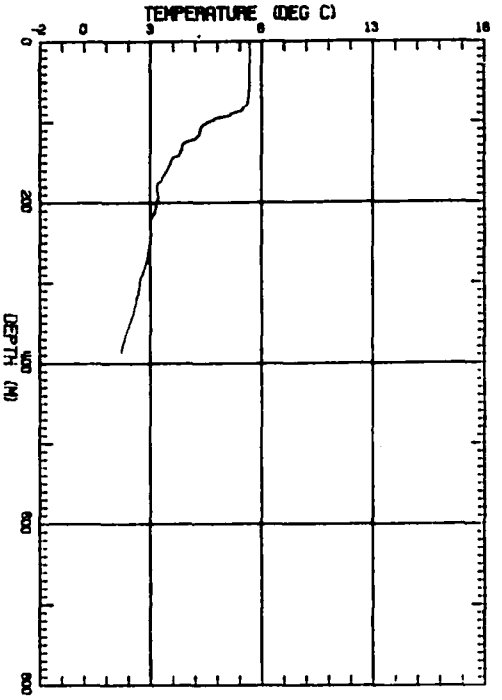
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 589 CHANNEL: 12 LATITUDE: 64 15.0
DATE: 10/21/87 TIME: 12: 9:15 LONGITUDE: -4 -23.0



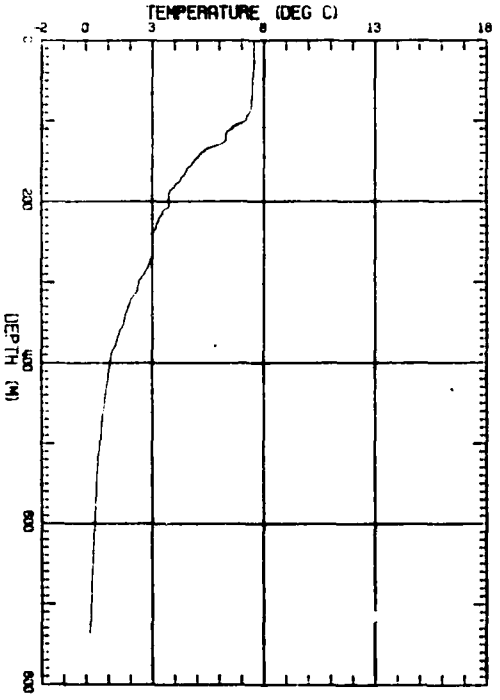
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 590 CHANNEL: 16 LATITUDE: 64 .3
DATE: 10/21/87 TIME: 12:12:37 LONGITUDE: 4 -27.9



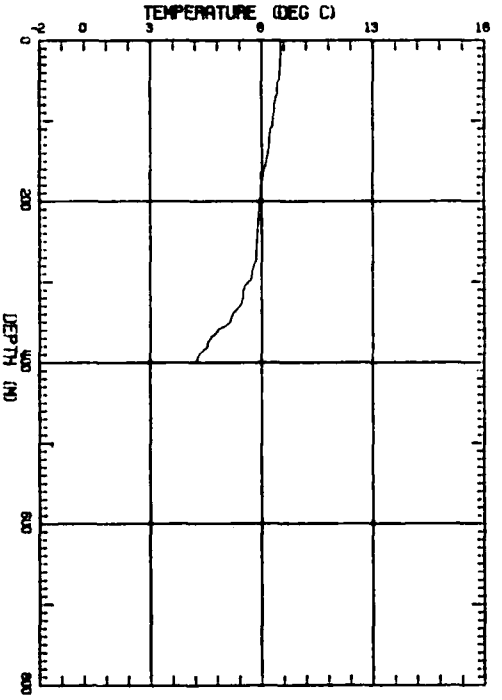
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 591 CHANNEL: 12 LATITUDE: 63 45.7
DATE: 10/21/87 TIME: 12:16:20 LONGITUDE: 4 -31.7

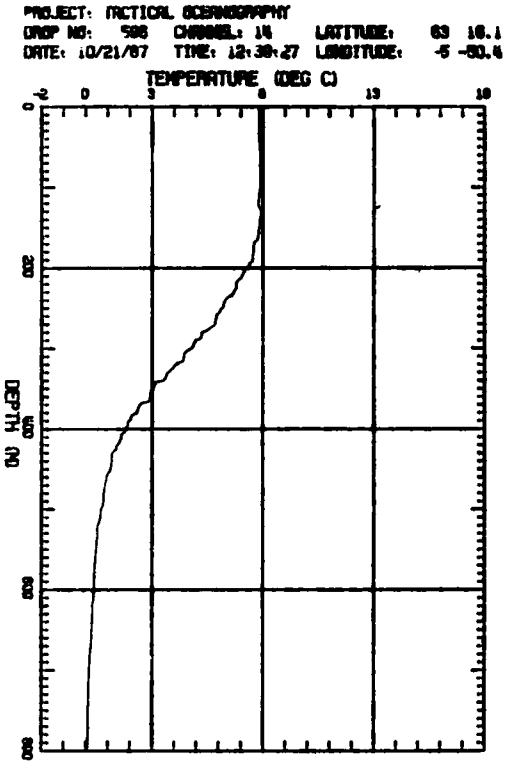


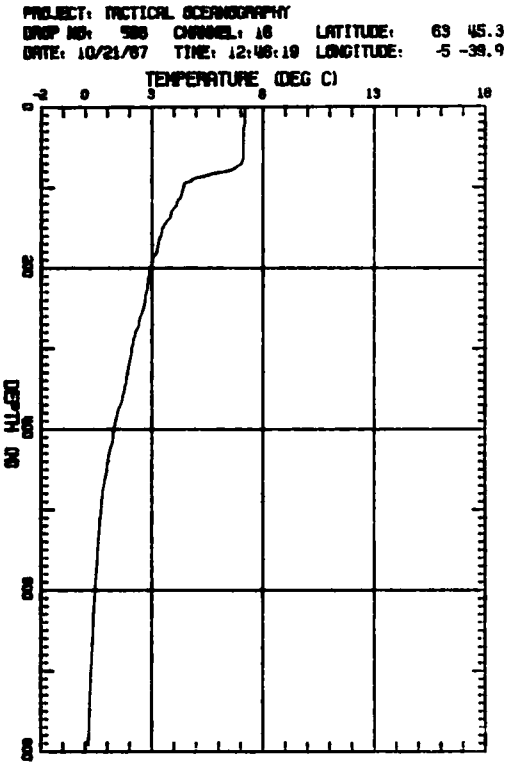
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 593 CHANNEL: 16 LATITUDE: 63 15.5
DATE: 10/21/87 TIME: 12:24: 5 LONGITUDE: 4 -39.3

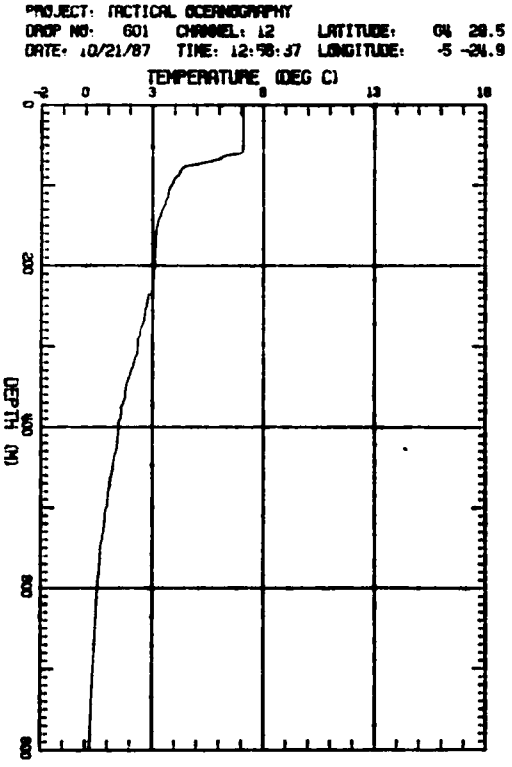


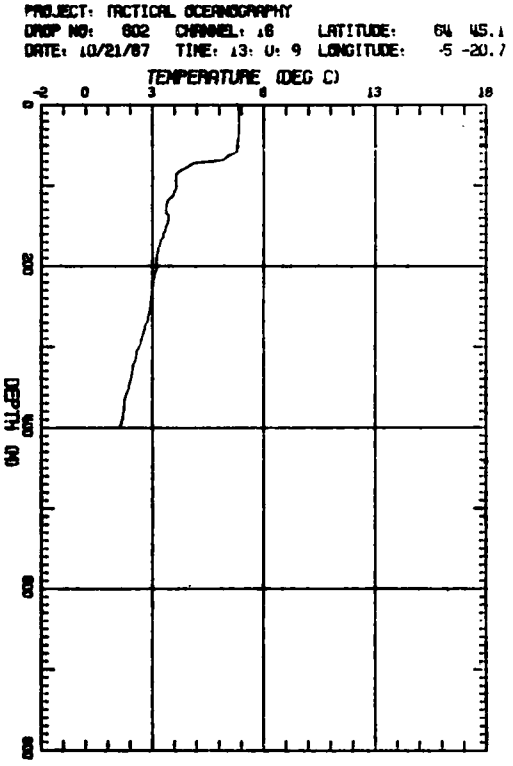
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 595 CHANNEL: 16 LATITUDE: 62 58.6
DATE: 10/21/87 TIME: 12:34:56 LONGITUDE: 5 -47.3



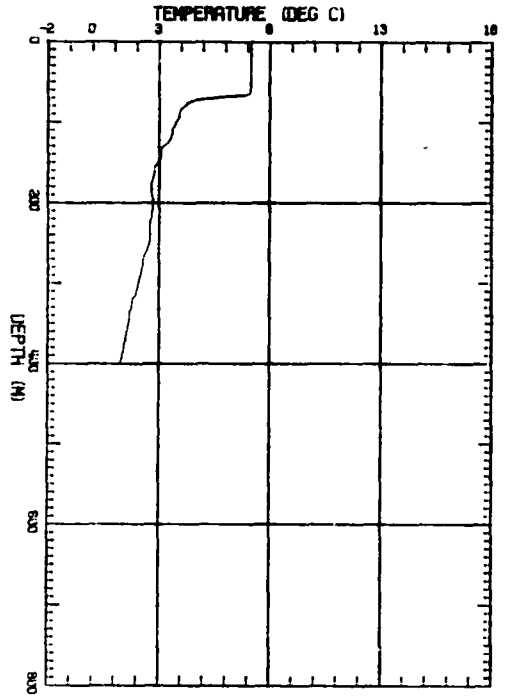

PROJECT: ARCTICAL OCEANOGRAPHY
DROP NO: 598 CHANNEL: 14 LATITUDE: 69 16.1
DATE: 10/21/87 TIME: 12:38:27 LONGITUDE: -5 -30.6
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)


PROJECT: ARCTICAL OCEANOGRAPHY
DROP NO: 599 CHANNEL: 16 LATITUDE: 69 45.3
DATE: 10/21/87 TIME: 12:48:19 LONGITUDE: -5 -39.9
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)

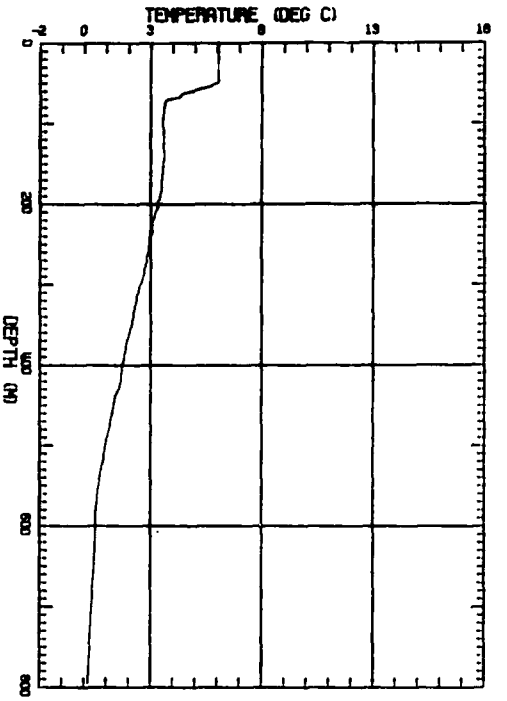

PROJECT: ARCTICAL OCEANOGRAPHY
DROP NO: 601 CHANNEL: 12 LATITUDE: 70 28.5
DATE: 10/21/87 TIME: 12:58:37 LONGITUDE: -5 -24.9
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)


PROJECT: ARCTICAL OCEANOGRAPHY
DROP NO: 602 CHANNEL: 16 LATITUDE: 70 45.1
DATE: 10/21/87 TIME: 13: 0: 9 LONGITUDE: -5 -20.7
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)

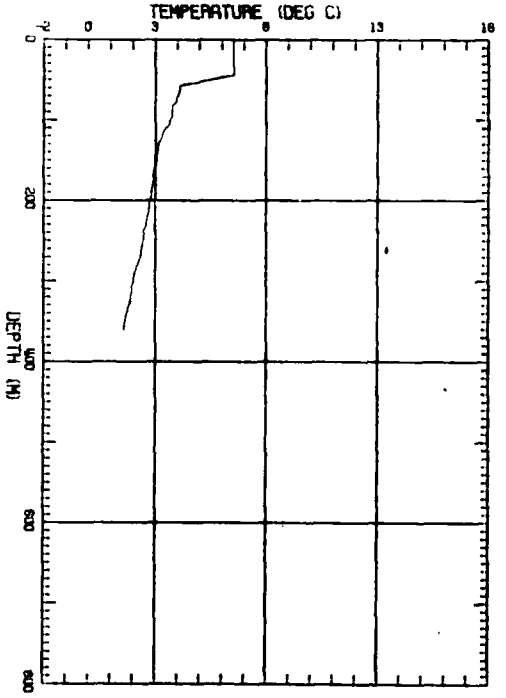
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 609 CHANNEL: 14 LATITUDE: 65 .1
DATE: 10/21/87 TIME: 13: 3:29 LONGITUDE: -5 -18.9



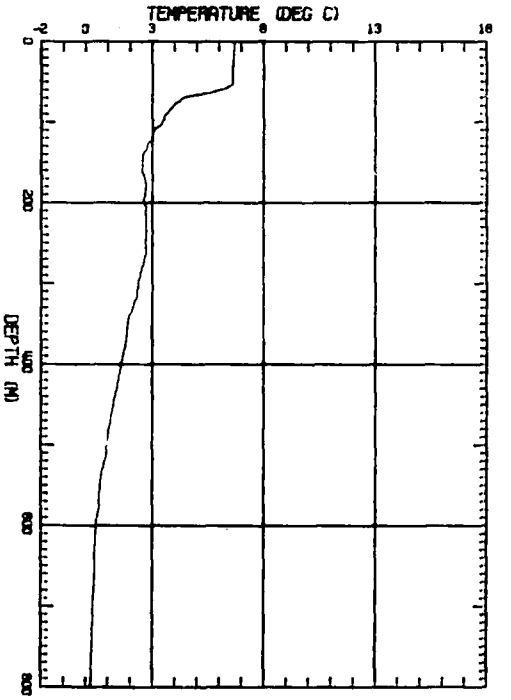
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 605 CHANNEL: 18 LATITUDE: 65 30.4
DATE: 10/21/87 TIME: 13:10:12 LONGITUDE: -5 -9.0

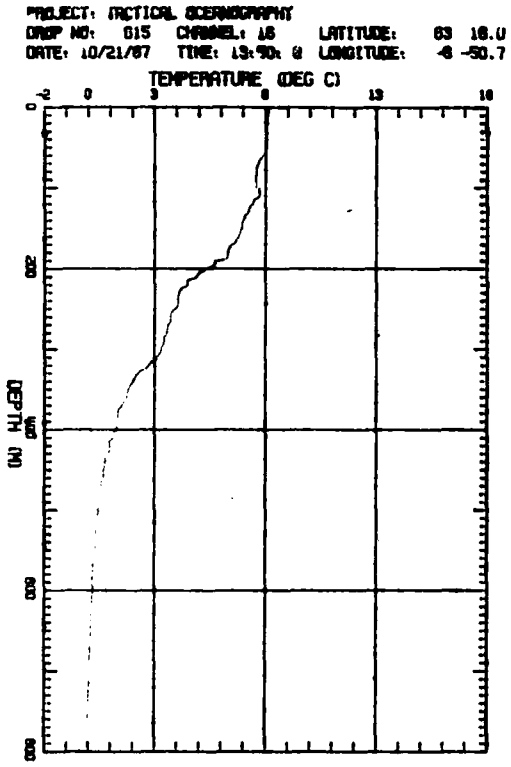


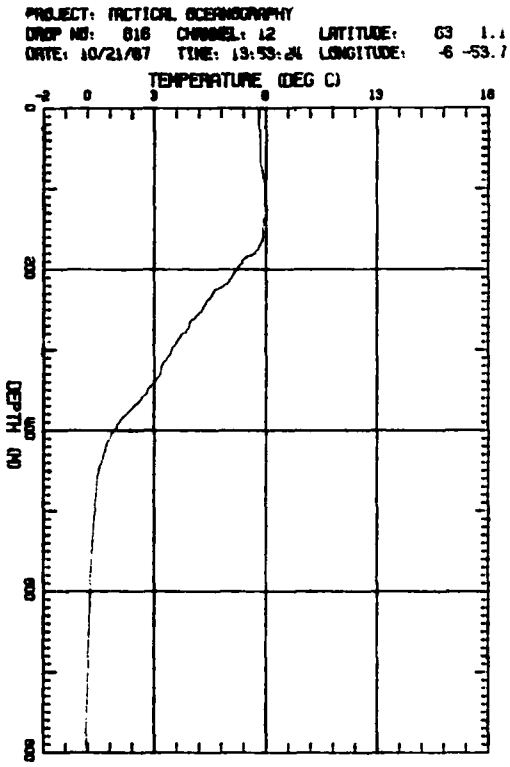
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 607 CHANNEL: 18 LATITUDE: 65 15.3
DATE: 10/21/87 TIME: 13:21:55 LONGITUDE: -6 -26.6

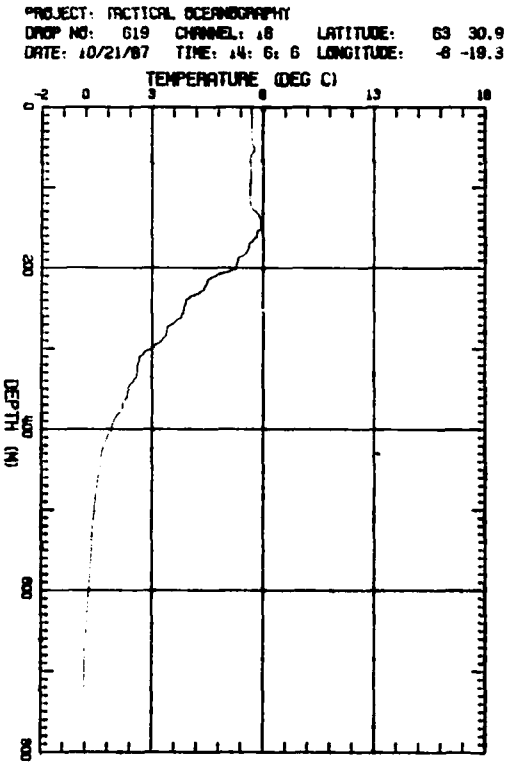


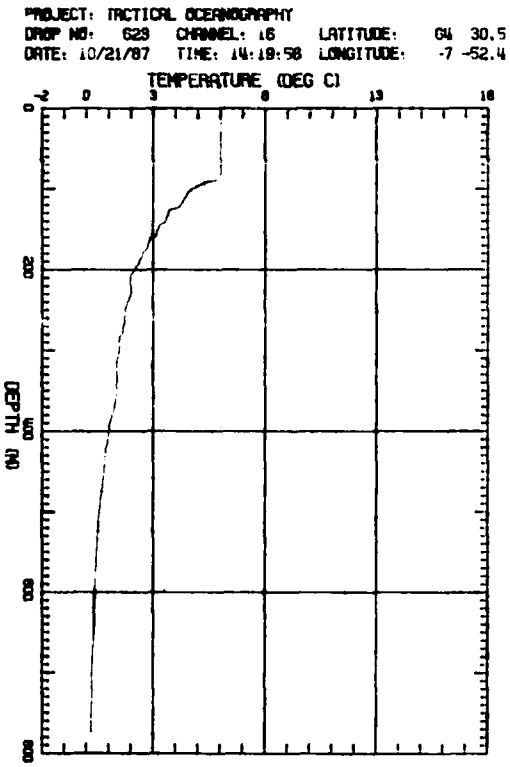
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 608 CHANNEL: 14 LATITUDE: 64 45.2
DATE: 10/21/87 TIME: 13:28:55 LONGITUDE: -6 -33.7

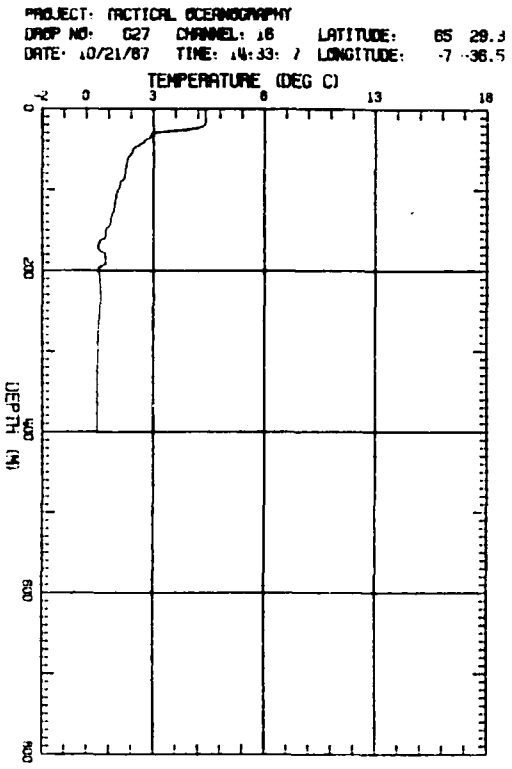


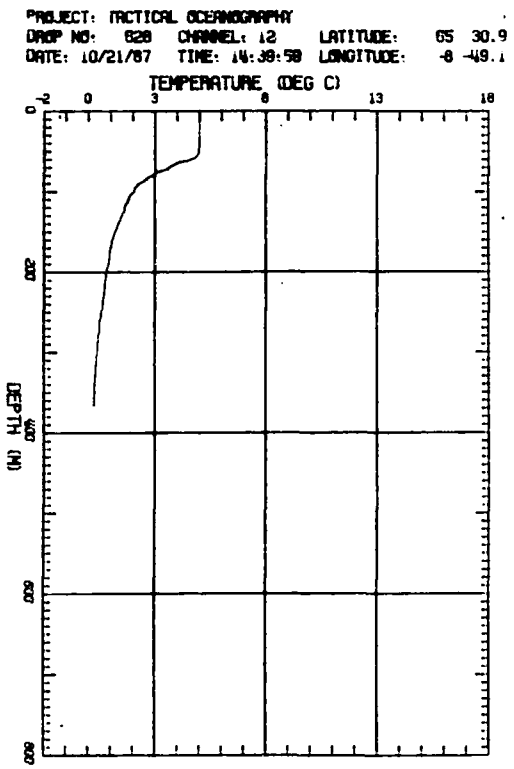

PROJECT: ARCTICAL OCEANOGRAPHY
DROP NO: 615 CHANNEL: 18 LATITUDE: 63 18.0
DATE: 10/21/87 TIME: 13:90: 0 LONGITUDE: -8 -50.7
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)

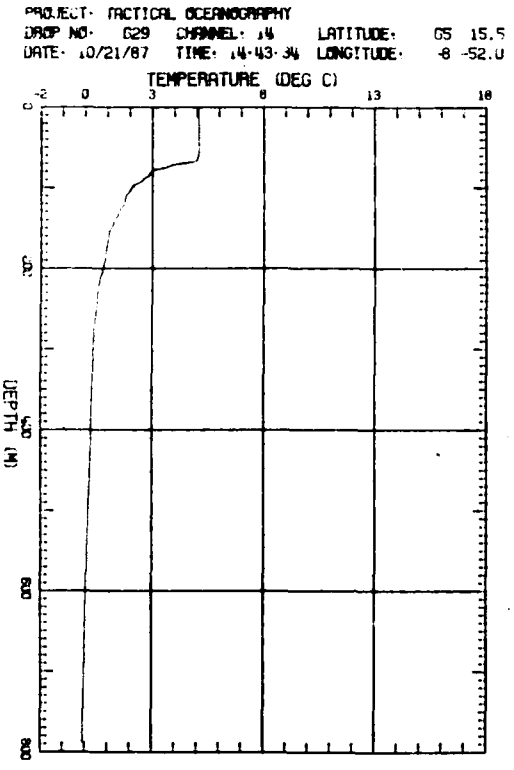

PROJECT: ARCTICAL OCEANOGRAPHY
DROP NO: 616 CHANNEL: 12 LATITUDE: 63 1.1
DATE: 10/21/87 TIME: 13:53:24 LONGITUDE: -6 -53.7
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)

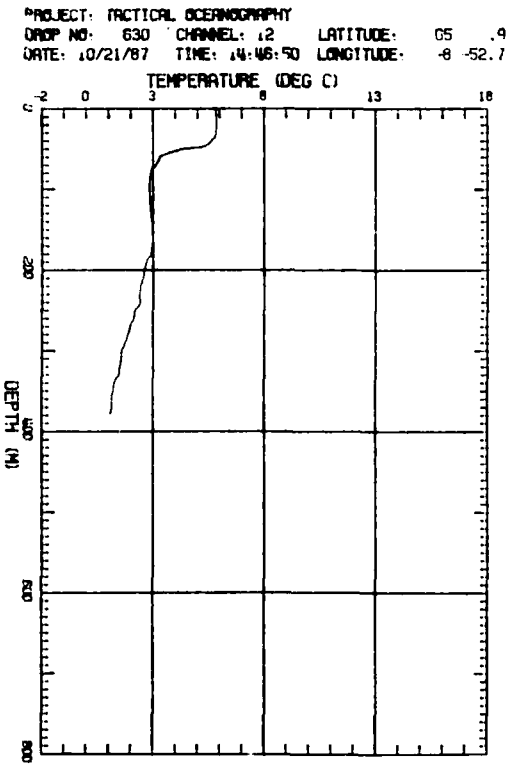

PROJECT: ARCTICAL OCEANOGRAPHY
DROP NO: 619 CHANNEL: 18 LATITUDE: 63 30.9
DATE: 10/21/87 TIME: 14: 6: 6 LONGITUDE: -8 -19.3
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)

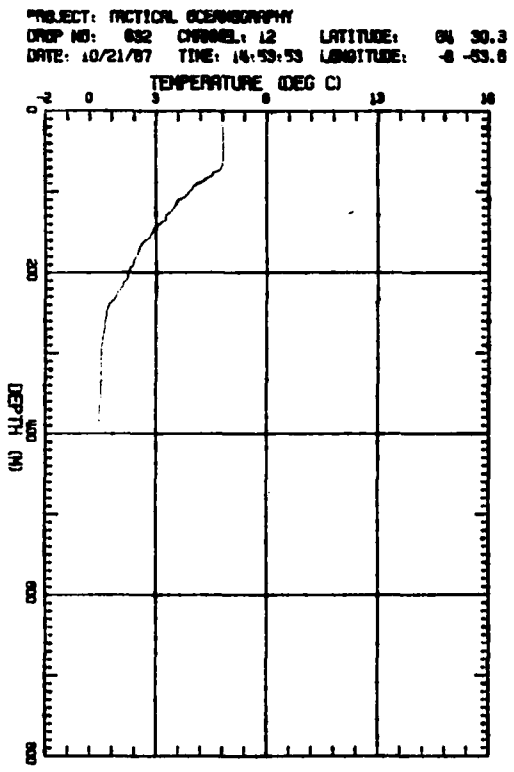

PROJECT: ARCTICAL OCEANOGRAPHY
DROP NO: 623 CHANNEL: 16 LATITUDE: 64 30.5
DATE: 10/21/87 TIME: 14:19:58 LONGITUDE: -7 -52.4
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)

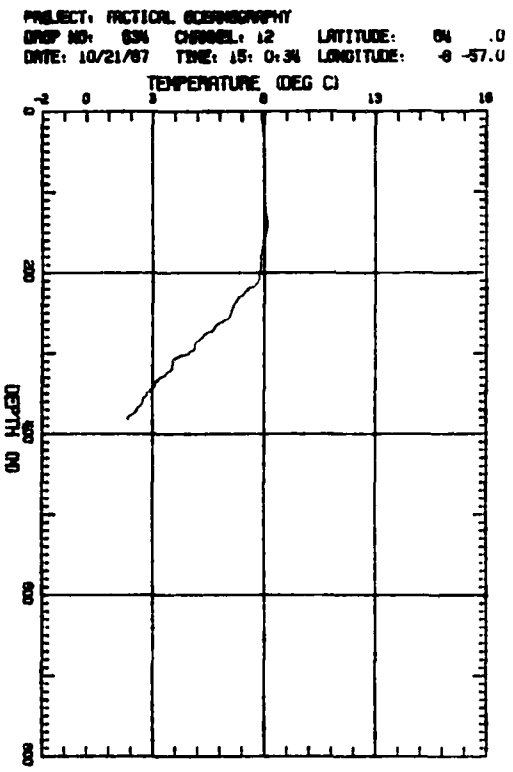

PROJECT: ARCTICAL OCEANOGRAPHY
DROP NO: 627 CHANNEL: 16 LATITUDE: 65 29.3
DATE: 10/21/87 TIME: 14:33: 7 LONGITUDE: -7 -36.5
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)

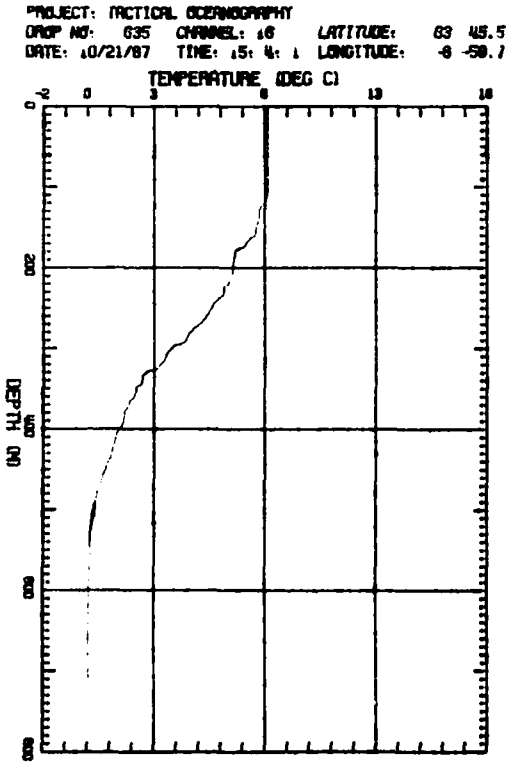

PROJECT: ARCTICAL OCEANOGRAPHY
DROP NO: 628 CHANNEL: 12 LATITUDE: 65 30.9
DATE: 10/21/87 TIME: 14:38:58 LONGITUDE: -8 -49.1
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)

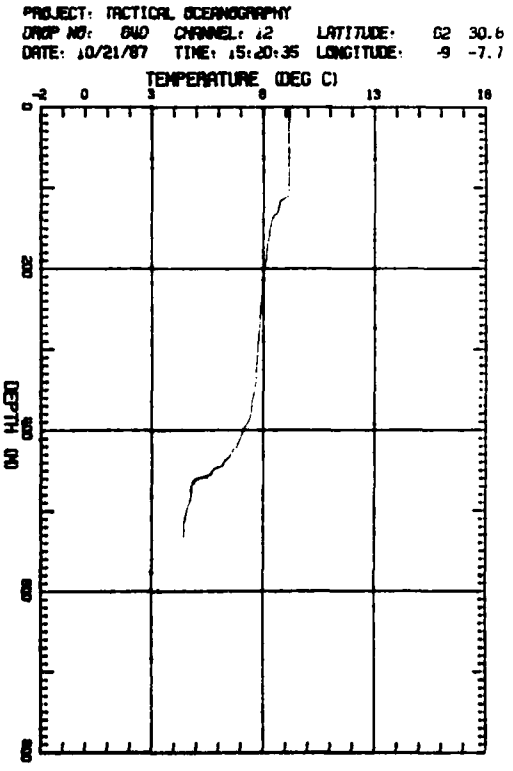

PROJECT: ARCTICAL OCEANOGRAPHY
DROP NO: 629 CHANNEL: 14 LATITUDE: 65 15.5
DATE: 10/21/87 TIME: 14:43:34 LONGITUDE: -8 -52.0
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)


PROJECT: ARCTICAL OCEANOGRAPHY
DROP NO: 630 CHANNEL: 12 LATITUDE: 65 .9
DATE: 10/21/87 TIME: 14:46:50 LONGITUDE: -8 -52.7
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)

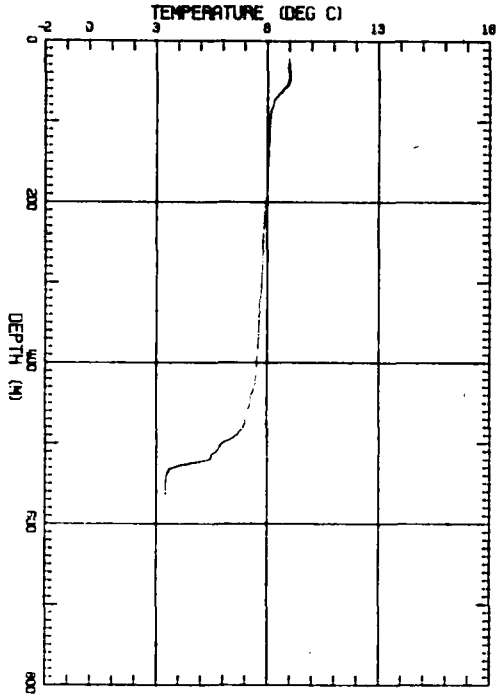

PROJECT: ARCTICAL OCEANOGRAPHY
DROP NO: 632 CHANNEL: 12 LATITUDE: 64 30.3
DATE: 10/21/87 TIME: 14:59:53 LONGITUDE: -8 -53.8
TEMPERATURE (DEG C)
DEPTH (M)


PROJECT: ARCTICAL OCEANOGRAPHY
DROP NO: 634 CHANNEL: 12 LATITUDE: 64 .0
DATE: 10/21/87 TIME: 15: 0:34 LONGITUDE: -8 -57.0
TEMPERATURE (DEG C)
DEPTH (M)

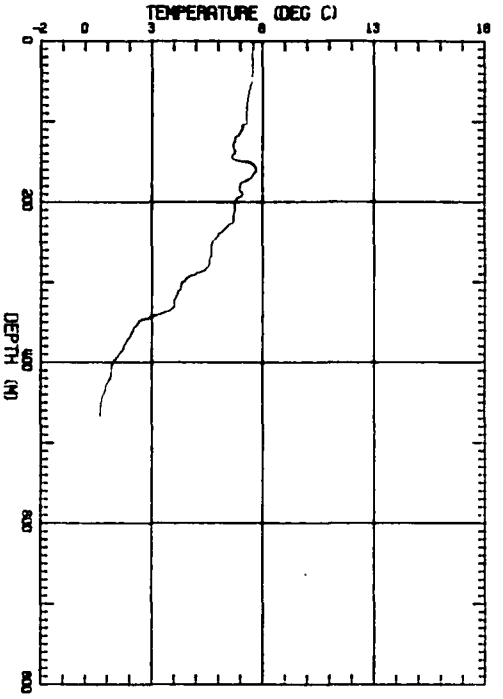

PROJECT: ARCTICAL OCEANOGRAPHY
DROP NO: 635 CHANNEL: 16 LATITUDE: 63 45.5
DATE: 10/21/87 TIME: 15: 4: 1 LONGITUDE: -8 -58.7
TEMPERATURE (DEG C)
DEPTH (M)


PROJECT: ARCTICAL OCEANOGRAPHY
DROP NO: 640 CHANNEL: 12 LATITUDE: 62 30.6
DATE: 10/21/87 TIME: 15:20:35 LONGITUDE: -9 -7.7
TEMPERATURE (DEG C)
DEPTH (M)

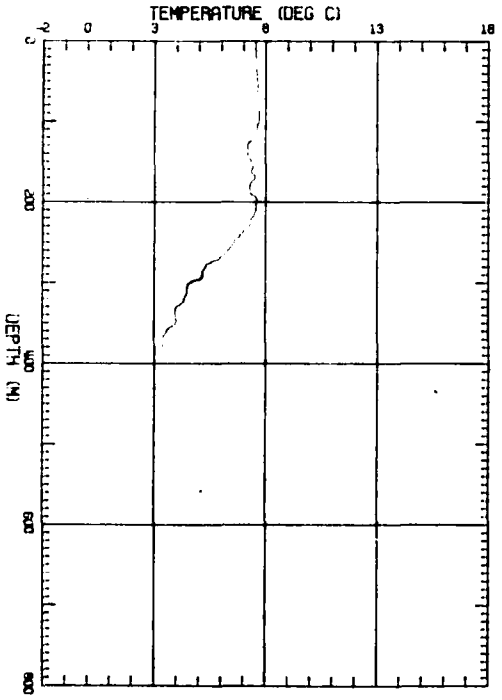
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 641 CHANNEL: 14 LATITUDE: 62 28.0
DATE: 10/21/87 TIME: 15:28:36 LONGITUDE: -10 -14.0



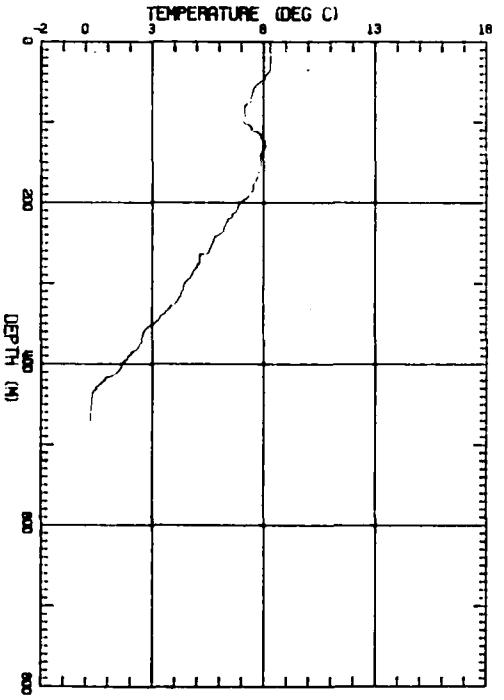
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 643 CHANNEL: 16 LATITUDE: 62 59.7
DATE: 10/21/87 TIME: 15:35:19 LONGITUDE: -10 -12.5

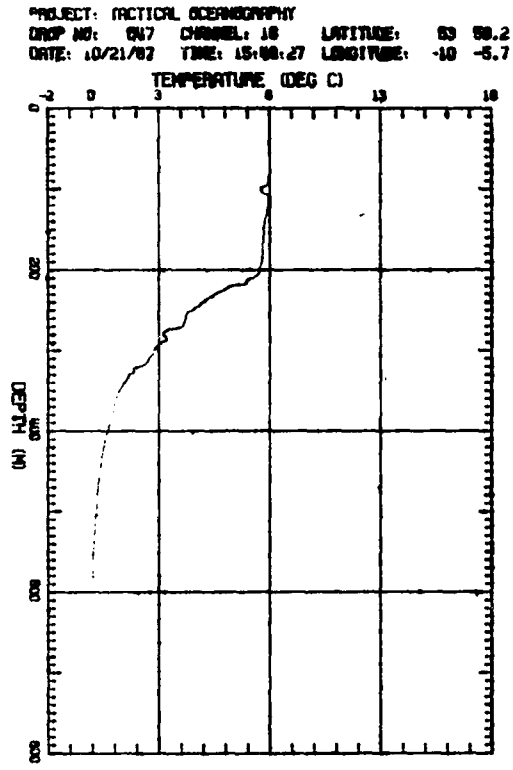


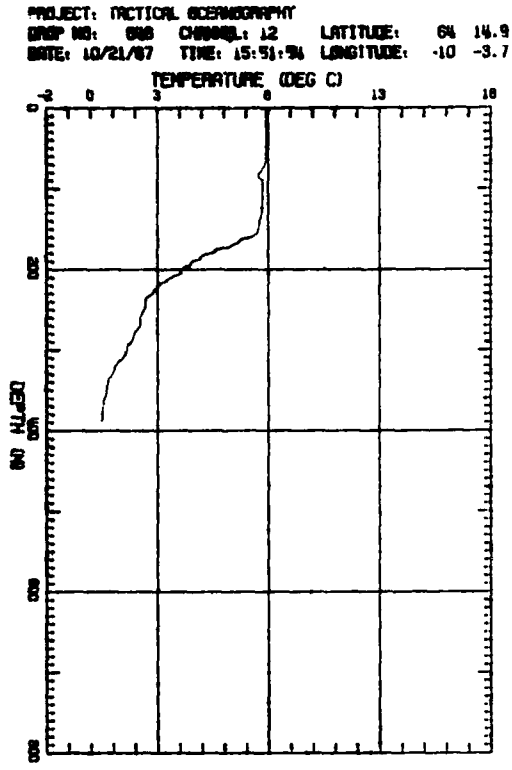
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 644 CHANNEL: 12 LATITUDE: 63 14.9
DATE: 10/21/87 TIME: 15:36:41 LONGITUDE: -10 -11.1

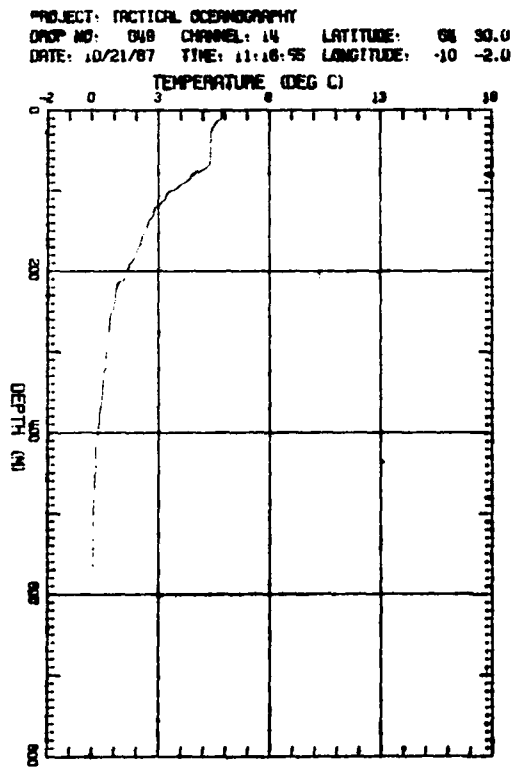


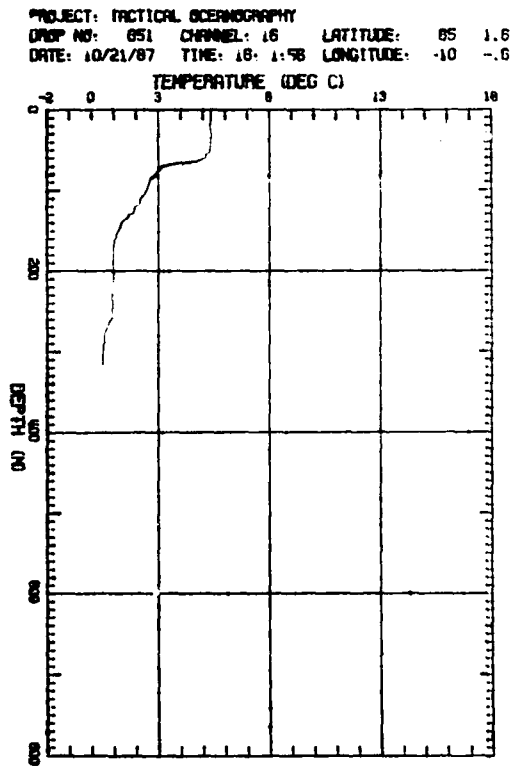
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 645 CHANNEL: 14 LATITUDE: 63 29.9
DATE: 10/21/87 TIME: 15:41:58 LONGITUDE: -10 -9.5



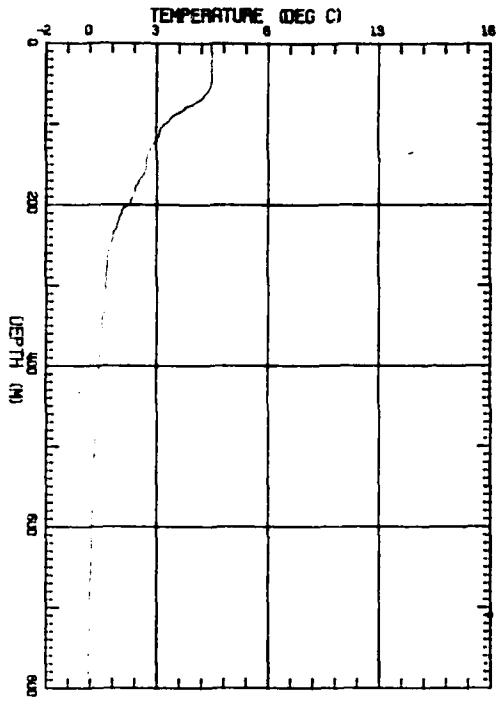

PROJECT: ARCTICAL OCEANOGRAPHY
DROP NO: 047 CHANNEL: 16 LATITUDE: 69 58.2
DATE: 10/21/87 TIME: 15:08:27 LONGITUDE: -10 -5.7
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)


PROJECT: ARCTICAL OCEANOGRAPHY
DROP NO: 048 CHANNEL: 12 LATITUDE: 64 14.9
DATE: 10/21/87 TIME: 15:51:54 LONGITUDE: -10 -3.7
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)

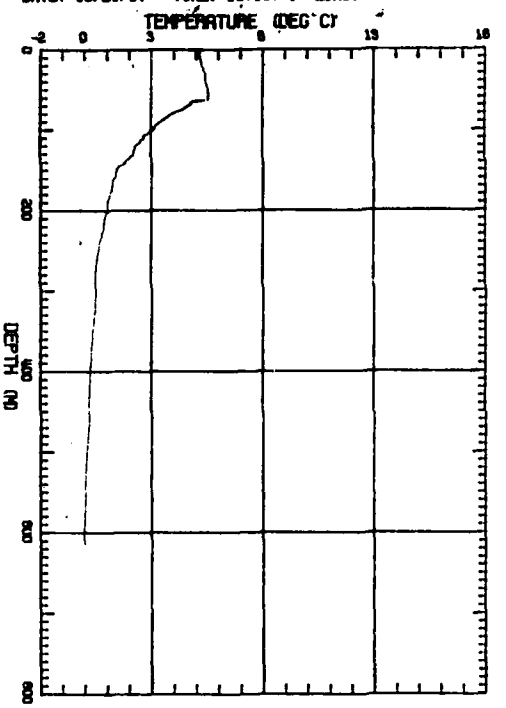

PROJECT: ARCTICAL OCEANOGRAPHY
DROP NO: 049 CHANNEL: 14 LATITUDE: 64 30.0
DATE: 10/21/87 TIME: 11:16:55 LONGITUDE: -10 -2.0
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)


PROJECT: ARCTICAL OCEANOGRAPHY
DROP NO: 051 CHANNEL: 16 LATITUDE: 65 1.6
DATE: 10/21/87 TIME: 18: 1:58 LONGITUDE: -10 -.6
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)

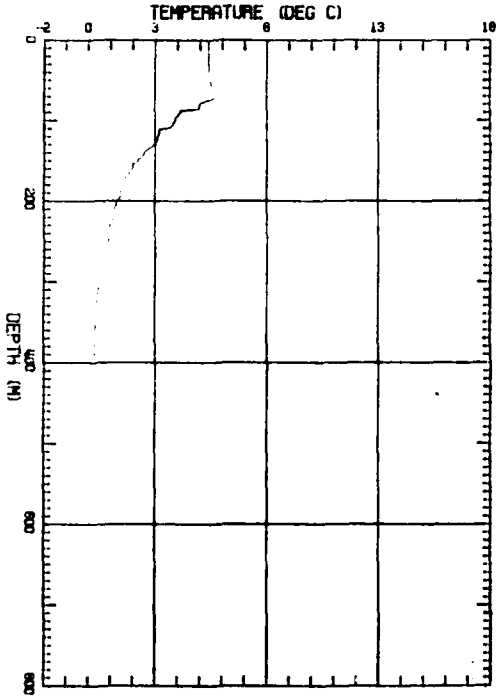
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 652 CHANNEL: 12 LATITUDE: 65 16.2
DATE: 10/21/87 TIME: 16: 5: 3 LONGITUDE: -10 -.4



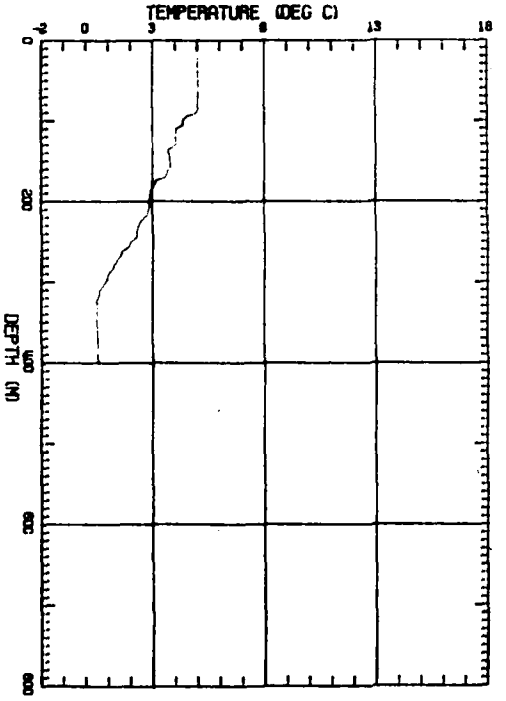
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 655 CHANNEL: 16 LATITUDE: 65 14.5
DATE: 10/21/87 TIME: 16:18: 1 LONGITUDE: -11.-14.9

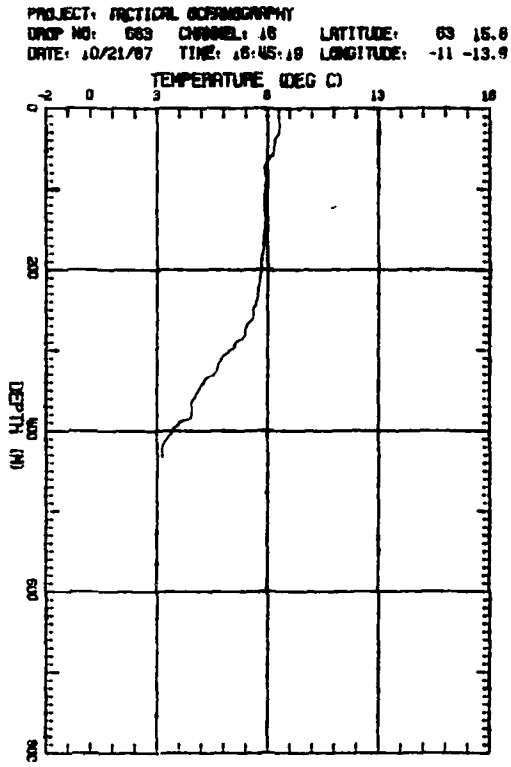


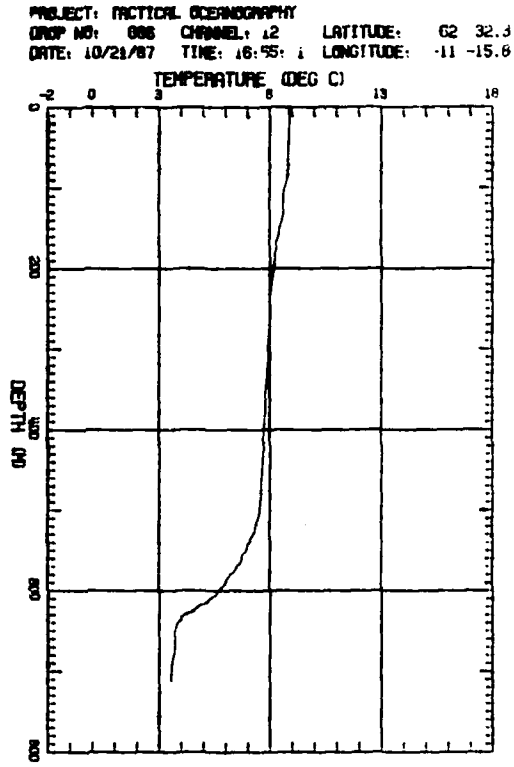
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 656 CHANNEL: 12 LATITUDE: 65 .2
DATE: 10/21/87 TIME: 16:21:21 LONGITUDE: -11 -15.3

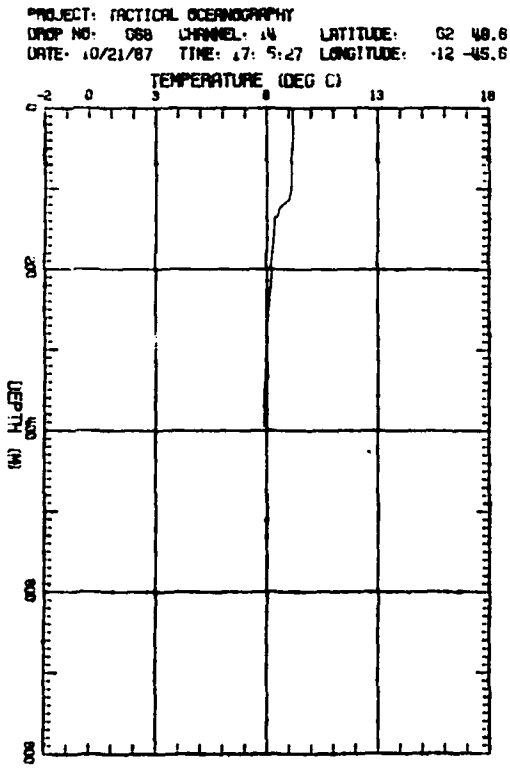


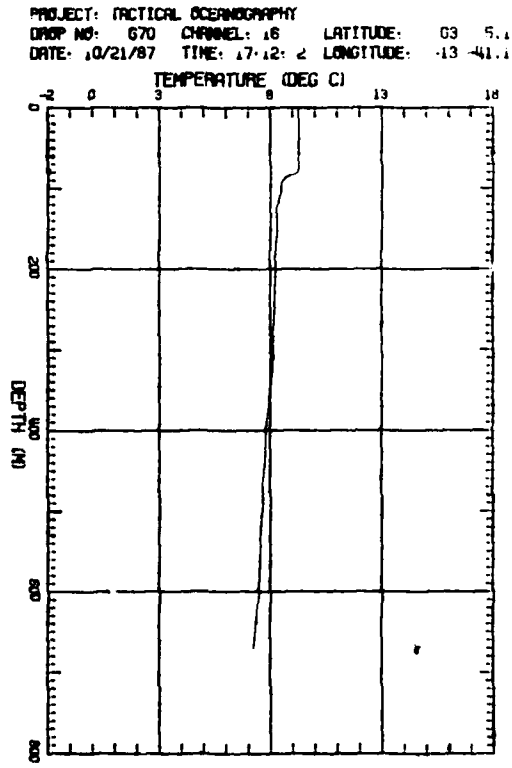
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 659 CHANNEL: 16 LATITUDE: 64 14.2
DATE: 10/21/87 TIME: 16:32: 5 LONGITUDE: -11 -14.6



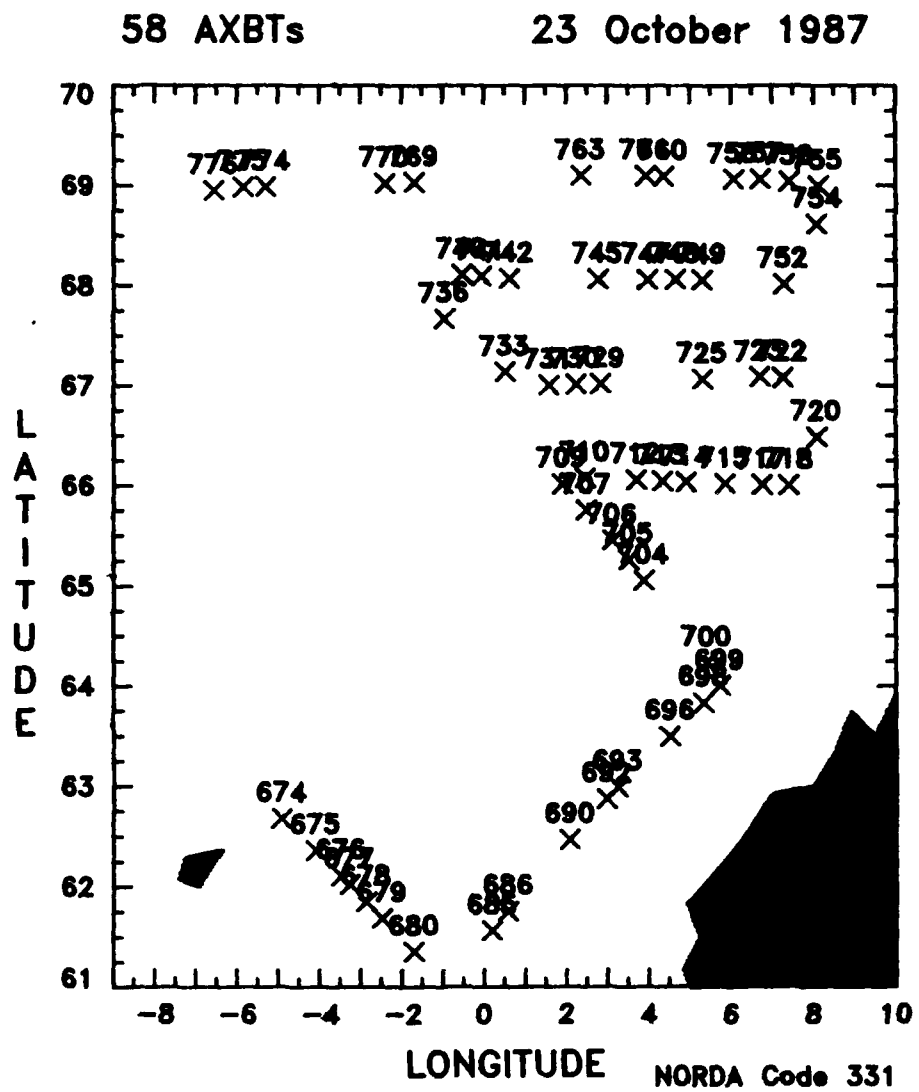

PROJECT: ARCTICAL OCEANOGRAPHY
DROP NO: 669 CHANNEL: 16 LATITUDE: 69 15.8
DATE: 10/21/87 TIME: 16:45:19 LONGITUDE: -11 -13.9
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)


PROJECT: ARCTICAL OCEANOGRAPHY
DROP NO: 666 CHANNEL: 12 LATITUDE: 62 32.3
DATE: 10/21/87 TIME: 16:55: 1 LONGITUDE: -11 -15.6
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)

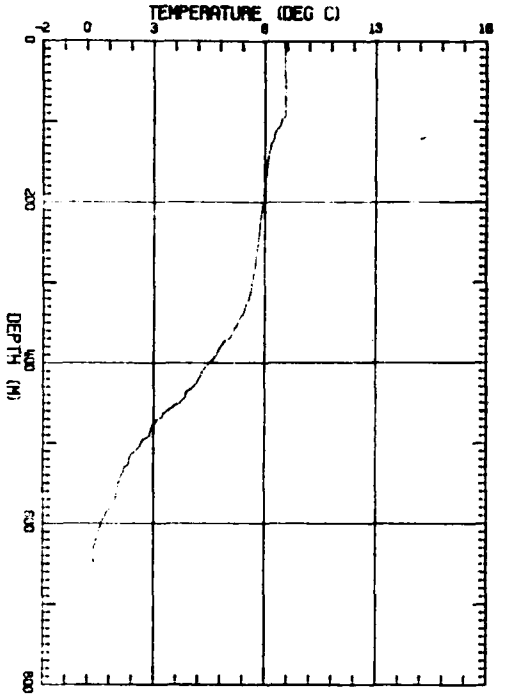

PROJECT: ARCTICAL OCEANOGRAPHY
DROP NO: 668 CHANNEL: 14 LATITUDE: 62 48.6
DATE: 10/21/87 TIME: 17: 5:27 LONGITUDE: -12 -45.6
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)


PROJECT: ARCTICAL OCEANOGRAPHY
DROP NO: 670 CHANNEL: 16 LATITUDE: 63 5.1
DATE: 10/21/87 TIME: 17:12: 2 LONGITUDE: -13 -41.1
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)

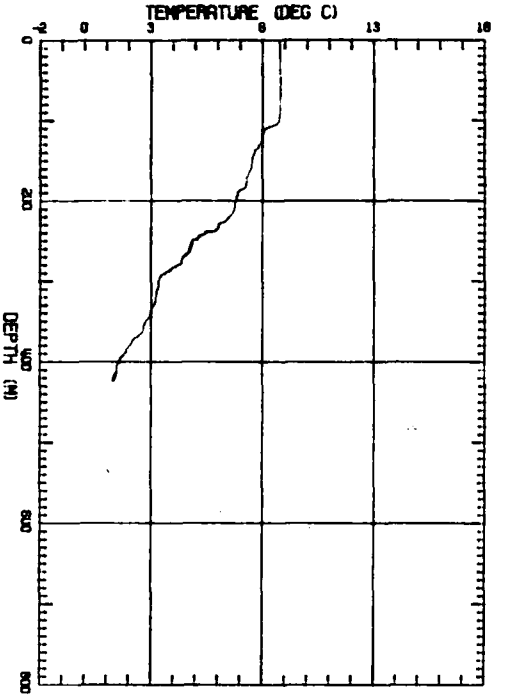
Appendix I.
Drop Positions and Data Profiles, Flight 8, 23 October 1987, Northern Norwegian Sea.


58 AXBTs
23 October 1987
LATITUDE
LONGITUDE
NORDA Code 331
70
69
68
67
66
65
64
63
62
61
-8
-6
-4
-2
0
2
4
6
8
10
754
752
736
733
725
720
700
696
693
690
674
675
686
680

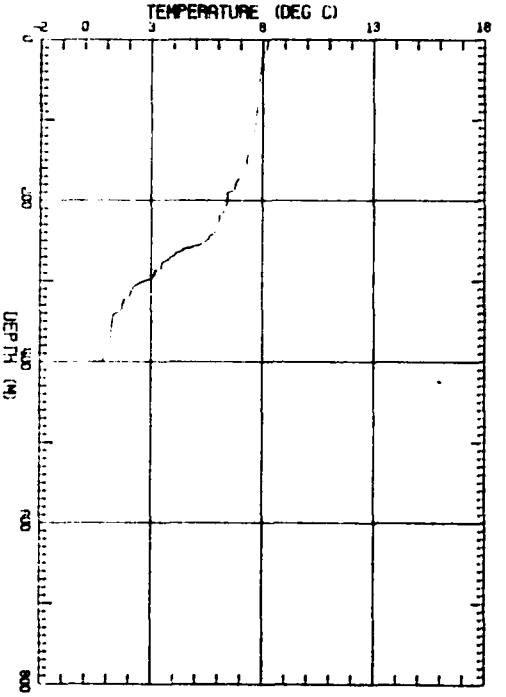
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 674 CHANNEL: 16 LATITUDE: 62 41.0
DATE: 10/23/87 TIME: 13:29:27 LONGITUDE: -4 -55.0



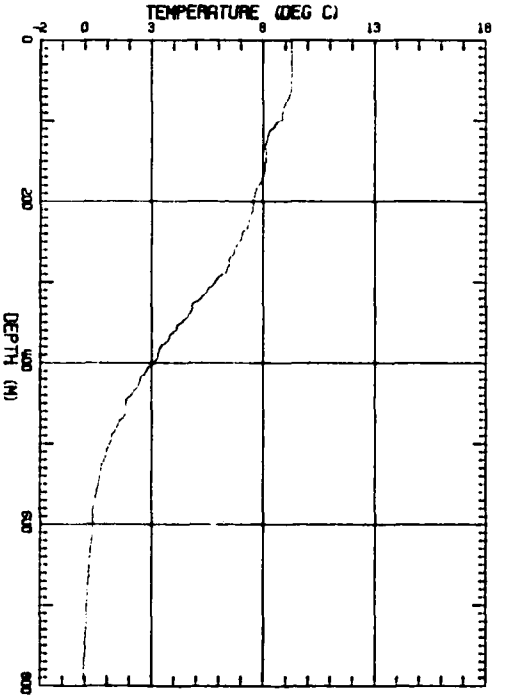
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 675 CHANNEL: 12 LATITUDE: 62 22.0
DATE: 10/23/87 TIME: 10:15: 0 LONGITUDE: -4 -5.0



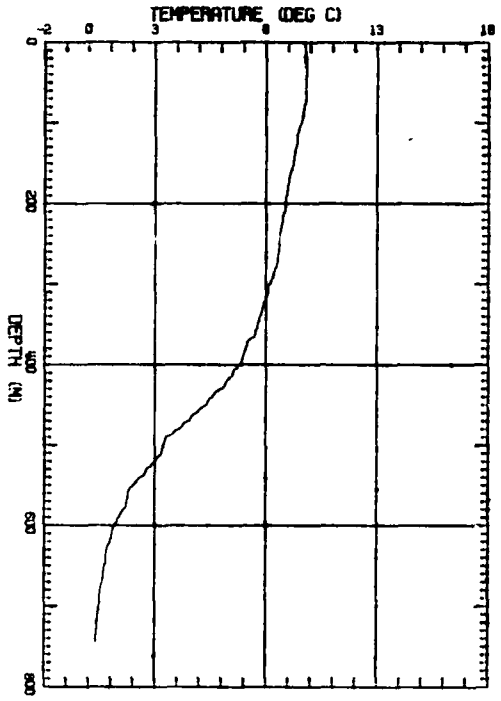
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 676 CHANNEL: 16 LATITUDE: 62 6.6
DATE: 10/23/87 TIME: 10:20:32 LONGITUDE: -3 -28.1



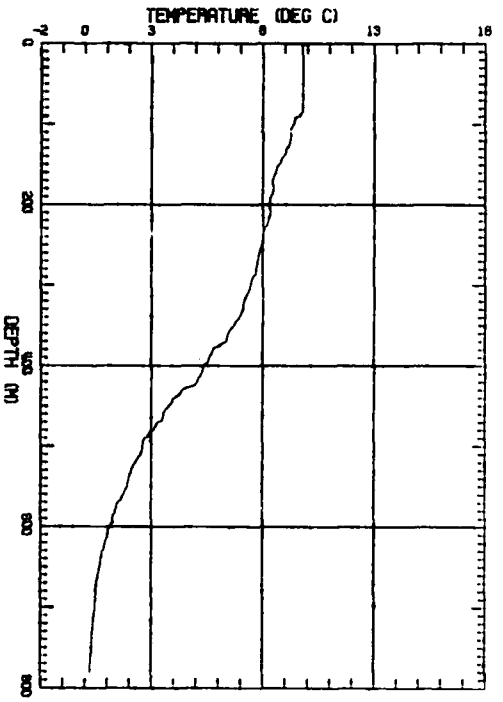
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 677 CHANNEL: 14 LATITUDE: 62 1.6
DATE: 10/23/87 TIME: 10:22:17 LONGITUDE: -3 -15.9



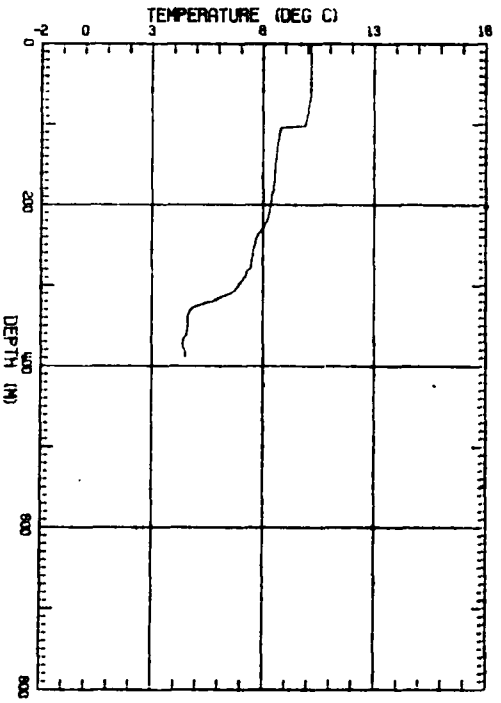
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 678 CHANNEL: 16 LATITUDE: 61 51.3
DATE: 10/23/87 TIME: 10:25:47 LONGITUDE: -2 -51.7



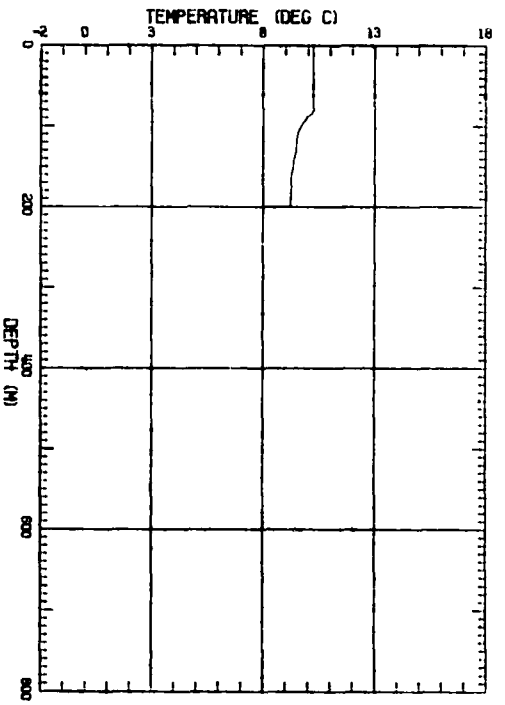
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 679 CHANNEL: 12 LATITUDE: 61 41.4
DATE: 10/23/87 TIME: 10:29:20 LONGITUDE: -2 -28.7



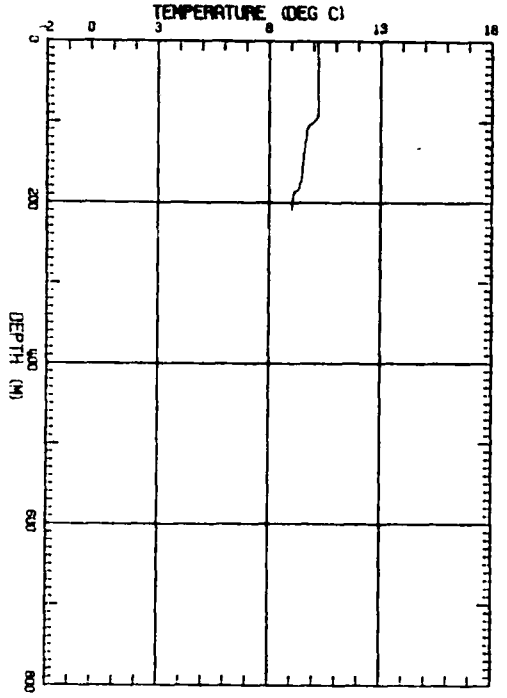
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 680 CHANNEL: 14 LATITUDE: 61 21.4
DATE: 10/23/87 TIME: 10:36:46 LONGITUDE: -1 -41.6



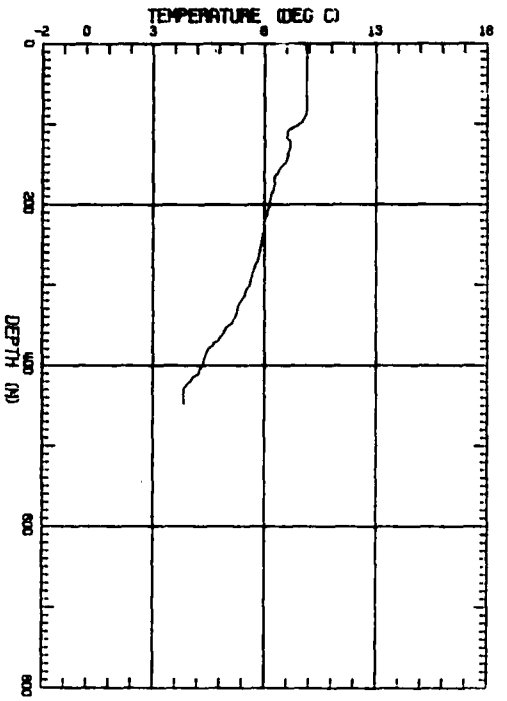
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 685 CHANNEL: 16 LATITUDE: 61 33.9
DATE: 10/23/87 TIME: 10:54:50 LONGITUDE: 0 11.9



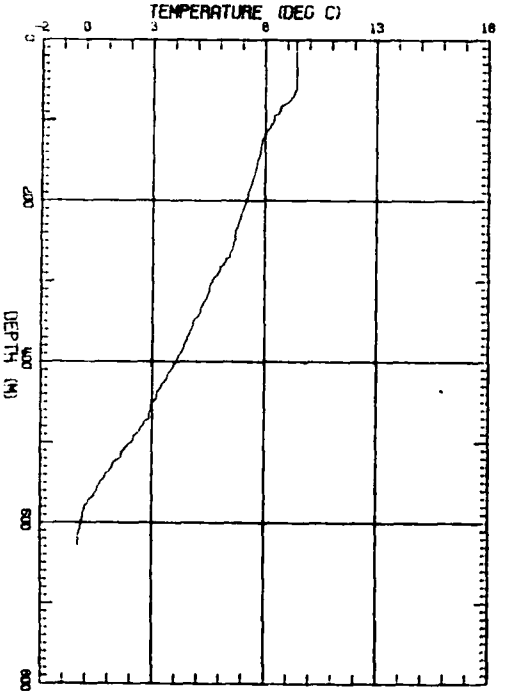
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 686 CHANNEL: 12 LATITUDE: 61 45.6
DATE: 10/23/87 TIME: 10:58:23 LONGITUDE: 0 35.2



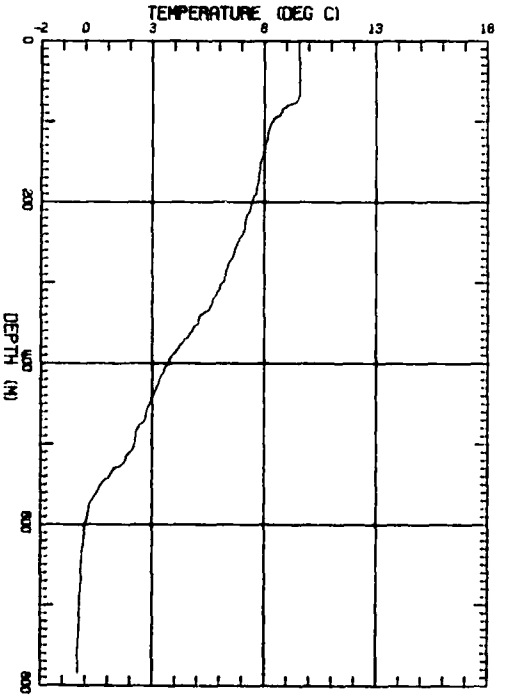
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 690 CHANNEL: 12 LATITUDE: 62 28.2
DATE: 10/23/87 TIME: 11:13: 9 LONGITUDE: 2 4.9



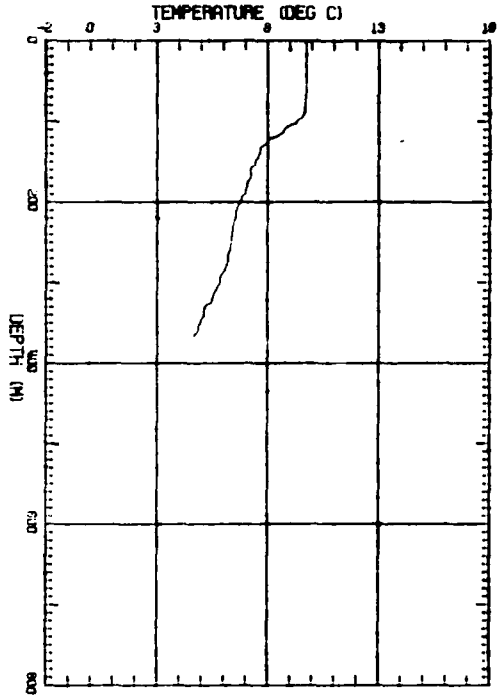
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 692 CHANNEL: 14 LATITUDE: 62 52.5
DATE: 10/23/87 TIME: 11:21:39 LONGITUDE: 2 58.5



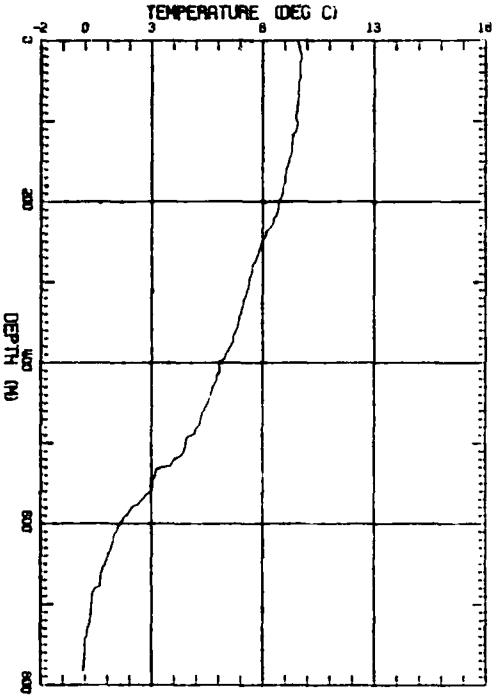
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 693 CHANNEL: 16 LATITUDE: 62 59.7
DATE: 10/23/87 TIME: 11:24:18 LONGITUDE: 3 14.7



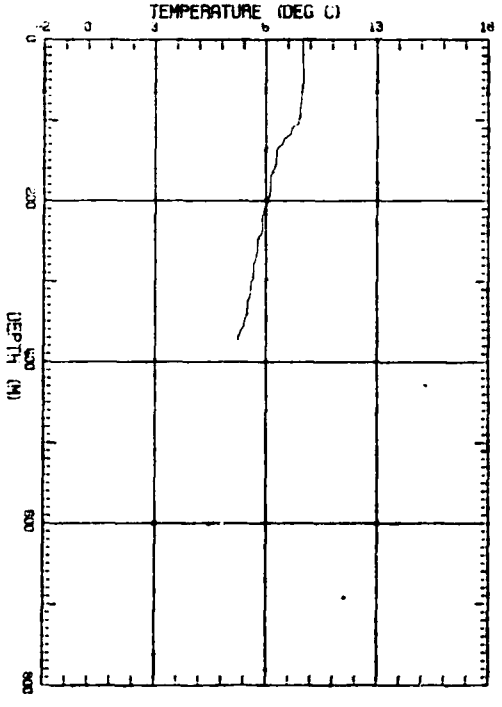
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 696 CHANNEL: 6 LATITUDE: 63 28.9
DATE: 10/23/87 TIME: 11:35:23 LONGITUDE: 4 30.9



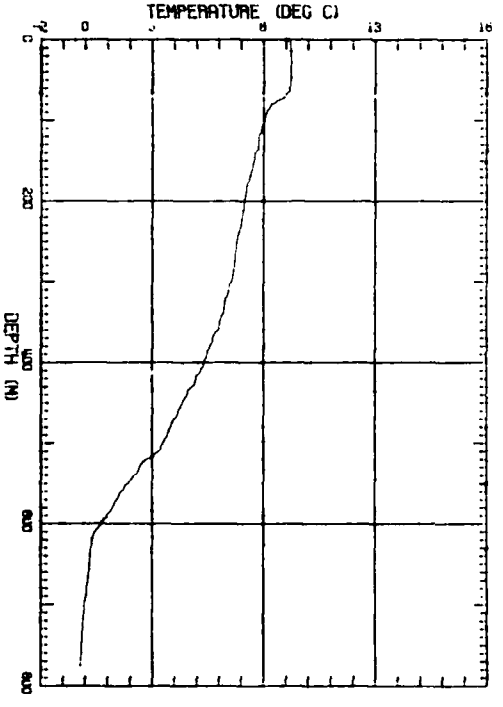
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 698 CHANNEL: 2 LATITUDE: 63 50.2
DATE: 10/23/87 TIME: 11:42:21 LONGITUDE: 5 19.6



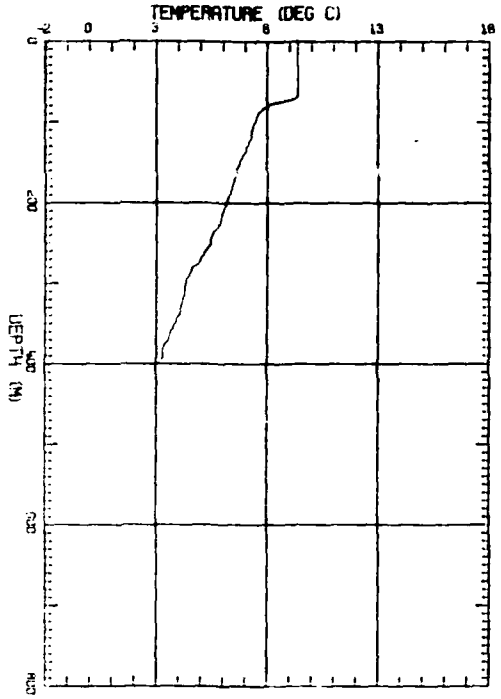
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 699 CHANNEL: 6 LATITUDE: 64 .5
DATE: 10/23/87 TIME: 11:46: LONGITUDE: 5 44.0



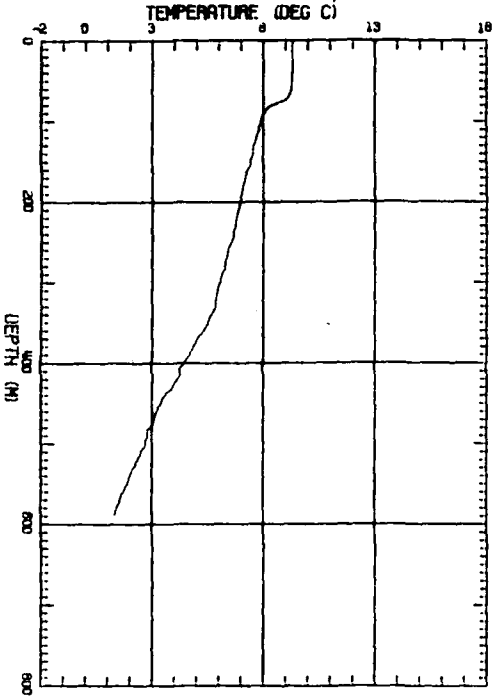
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 700 CHANNEL: 4 LATITUDE: 64 14.3
DATE: 10/23/87 TIME: 11:50: LONGITUDE: 5 24.9



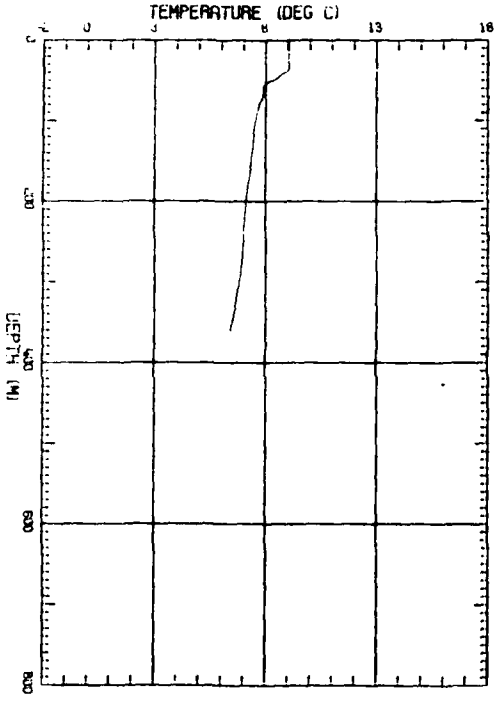
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 704 CHANNEL: 4 LATITUDE: 65 3.5
DATE: 10/23/87 TIME: 12: 5: 2 LONGITUDE: 3 52.1



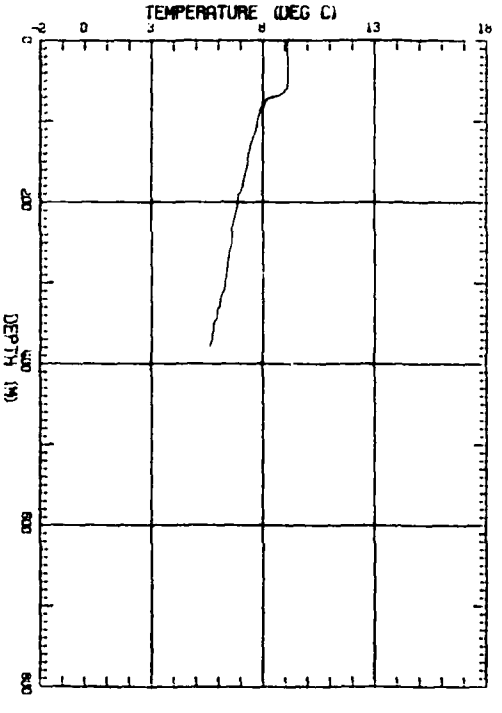
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 705 CHANNEL: 8 LATITUDE: 65 15.7
DATE: 10/23/87 TIME: 12: 6:36 LONGITUDE: 3 30.1

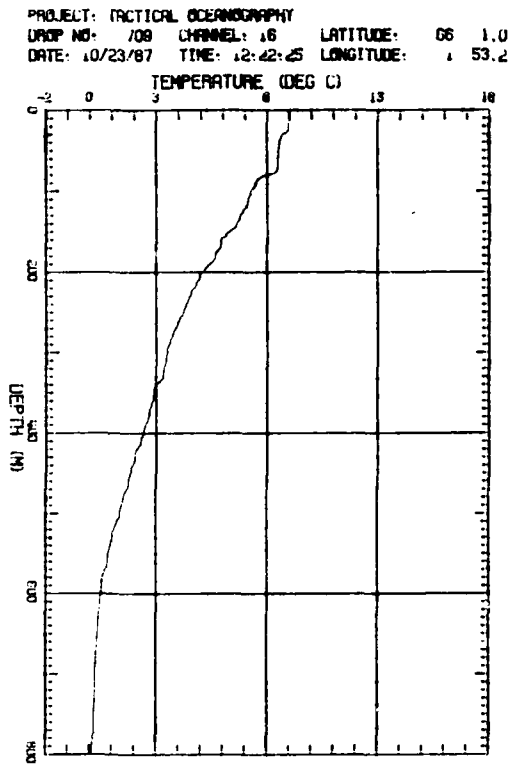


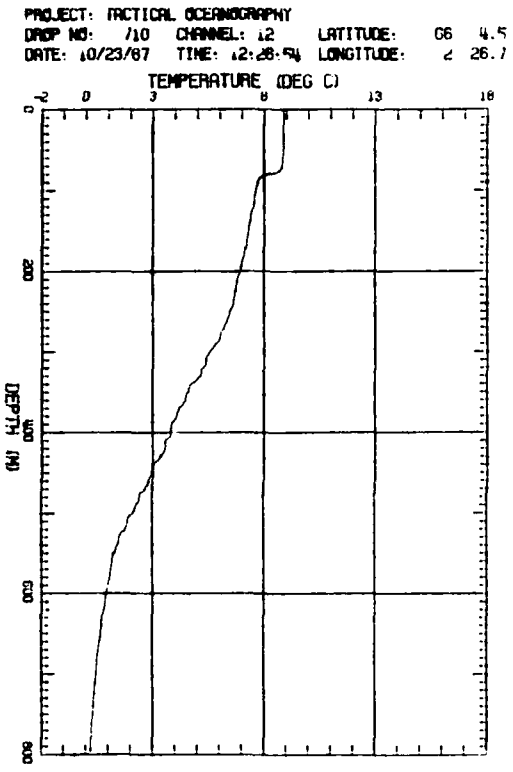
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 706 CHANNEL: 12 LATITUDE: 65 27.3
DATE: 10/23/87 TIME: 12:12: 0 LONGITUDE: 3 0.7

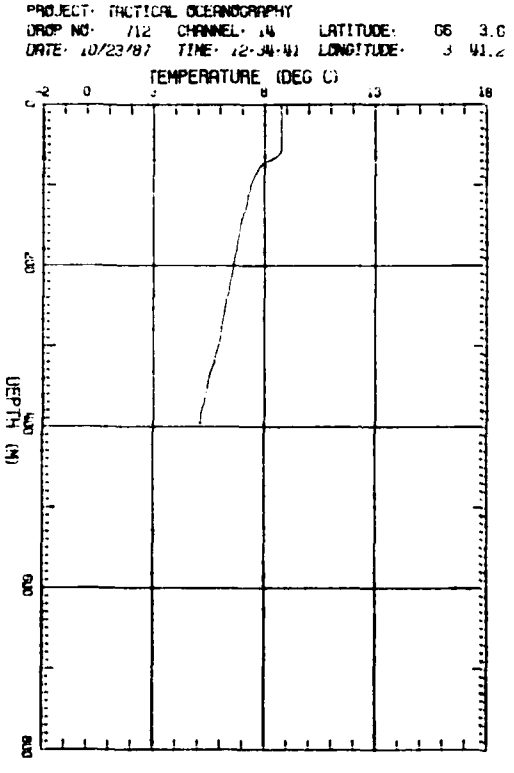


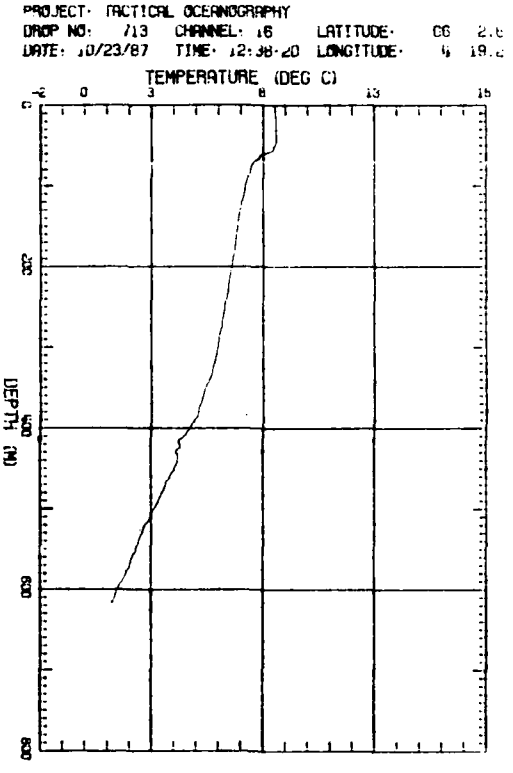
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 707 CHANNEL: 16 LATITUDE: 65 45.1
DATE: 10/23/87 TIME: 12:17:27 LONGITUDE: 2 26.4



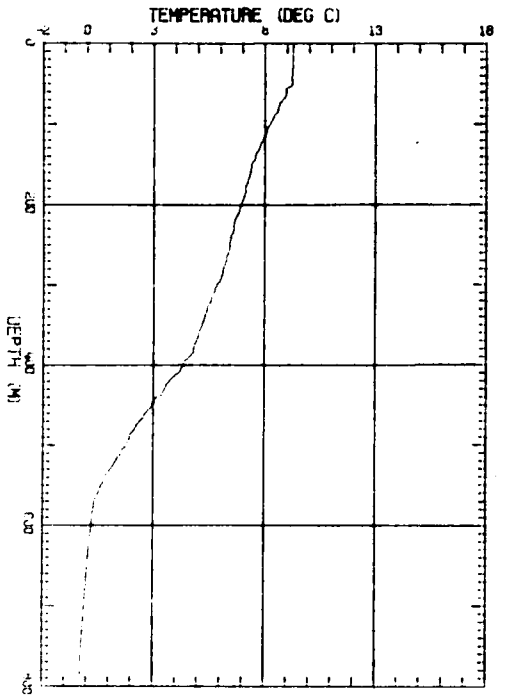

PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: /09 CHANNEL: 16 LATITUDE: 06 1.0
DATE: 10/23/87 TIME: 12:22:25 LONGITUDE: 4 53.2
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)


PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: /10 CHANNEL: 12 LATITUDE: 06 4.5
DATE: 10/23/87 TIME: 12:26:54 LONGITUDE: 4 26.7
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)

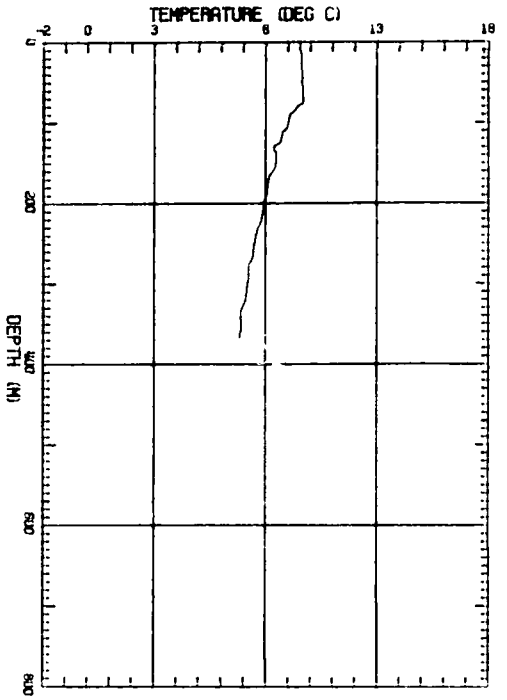

PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: /12 CHANNEL: 14 LATITUDE: 06 3.6
DATE: 10/23/87 TIME: 12:34:41 LONGITUDE: 3 41.2
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)


PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: /13 CHANNEL: 16 LATITUDE: 06 2.6
DATE: 10/23/87 TIME: 12:38:20 LONGITUDE: 4 19.2
TEMPERATURE (DEG C)
-2 0 3 8 13 18
0
200
400
600
800
DEPTH (M)

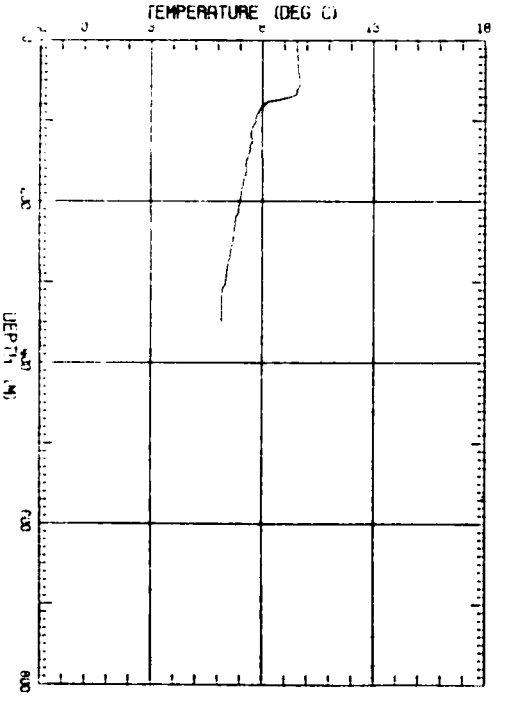
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 714 CHANNEL: 2 LATITUDE: 66 2.3
DATE: 10/23/87 TIME: 12:41:45 LONGITUDE: 4 53.6



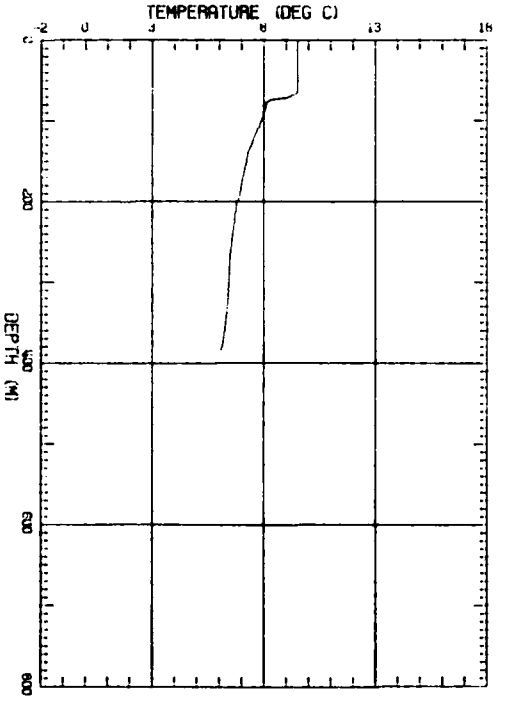
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 715 CHANNEL: 6 LATITUDE: 66 1.4
DATE: 10/23/87 TIME: 12:47:36 LONGITUDE: 5 50.6



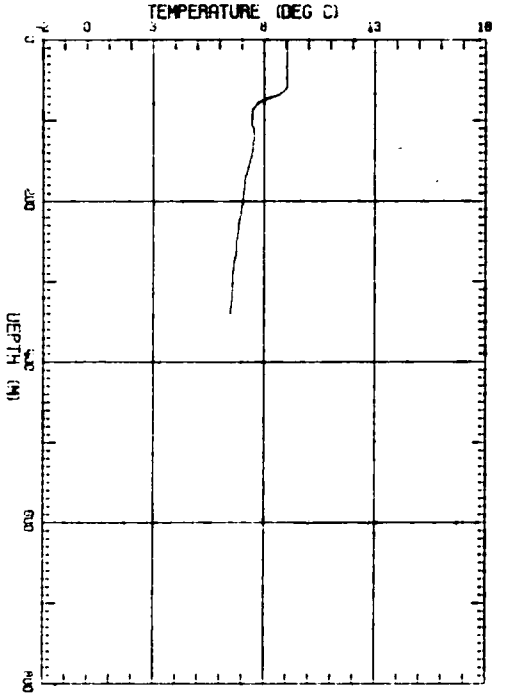
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 717 CHANNEL: 6 LATITUDE: 66 .5
DATE: 10/23/87 TIME: 12:53: 9 LONGITUDE: 6 44.9



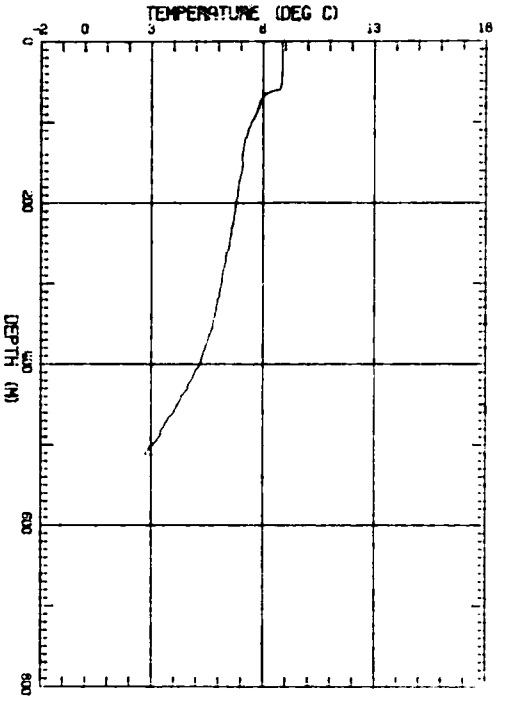
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 718 CHANNEL: 2 LATITUDE: 66 .4
DATE: 10/23/87 TIME: 12:57: 7 LONGITUDE: 7 23.4



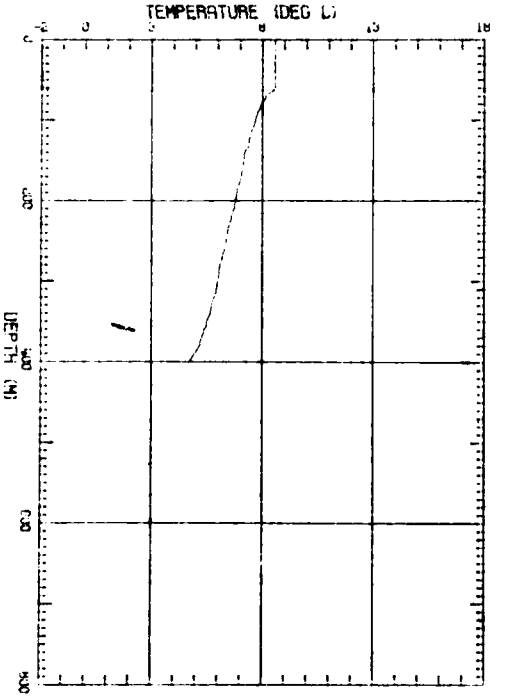
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 720 CHANNEL: 12 LATITUDE: 66 29.2
DATE: 10/23/87 TIME: 13: 7:13 LONGITUDE: 6 5.2



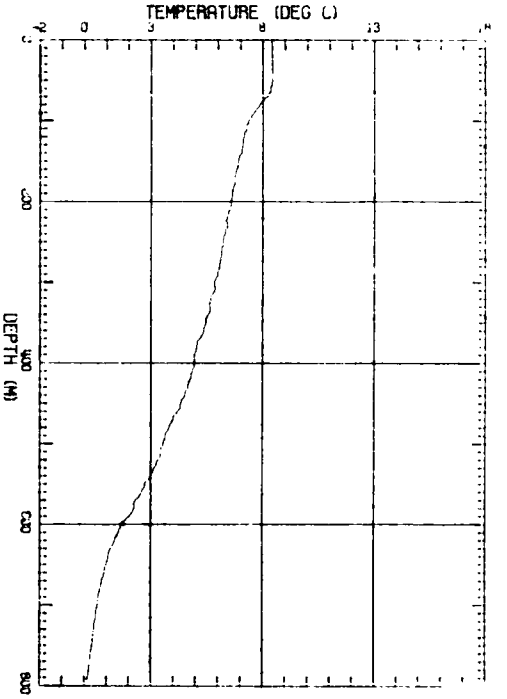
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 722 CHANNEL: 16 LATITUDE: 67 4.6
DATE: 10/23/87 TIME: 13:18:52 LONGITUDE: 7 16.1



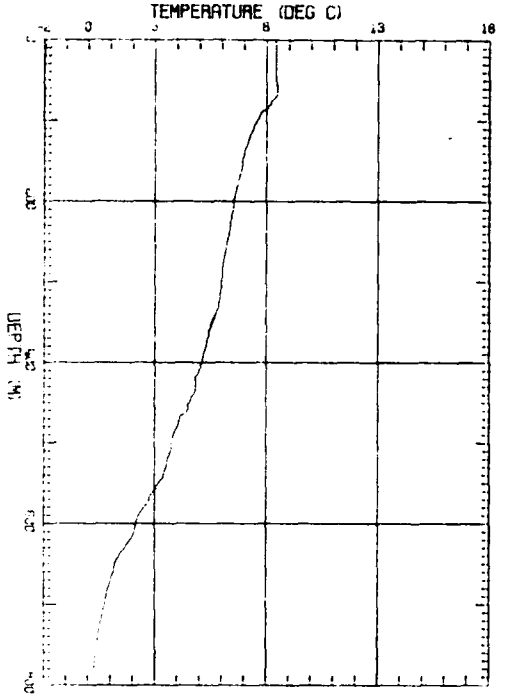
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 723 CHANNEL: 12 LATITUDE: 67 5.2
DATE: 10/23/87 TIME: 13:21:54 LONGITUDE: 6 42.6



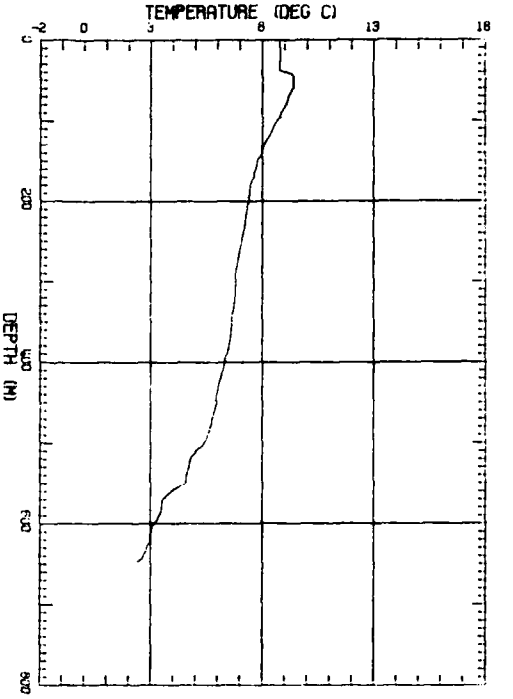
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 725 CHANNEL: 14 LATITUDE: 67 4.1
DATE: 10/23/87 TIME: 13:29:23 LONGITUDE: 7 16.2



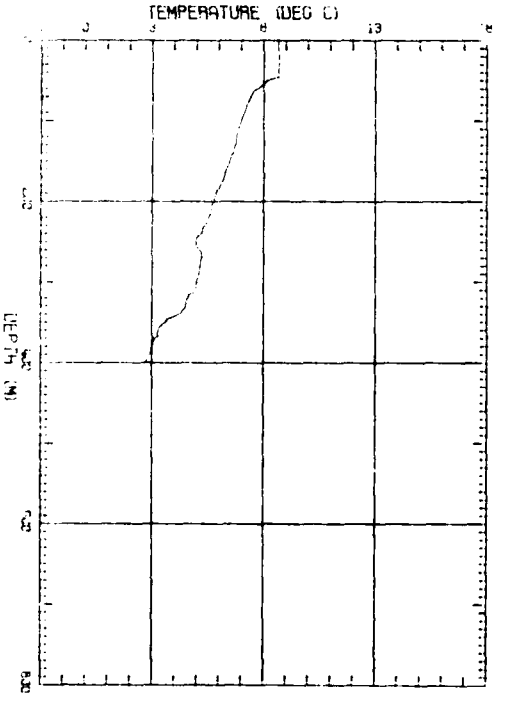
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 729 CHANNEL: 14 LATITUDE: 07 1.1
DATE: 10/23/87 TIME: 13:42:51 LONGITUDE: 2 50.0



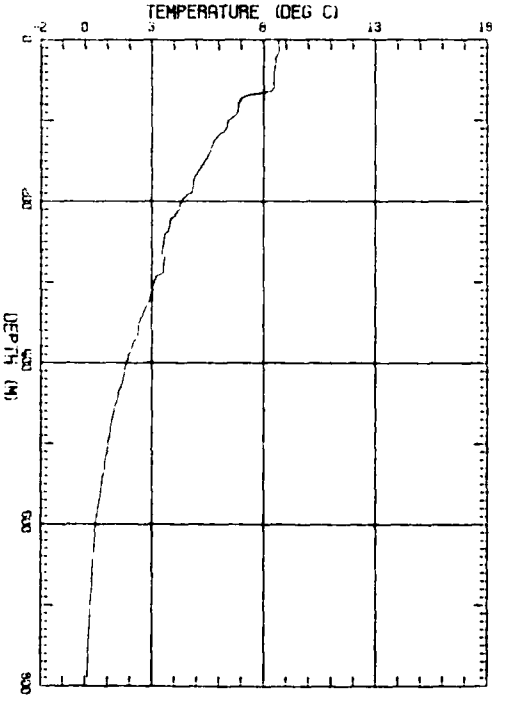
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 730 CHANNEL: 16 LATITUDE: 07 .7
DATE: 10/23/87 TIME: 13:46: 9 LONGITUDE: 2 14.2



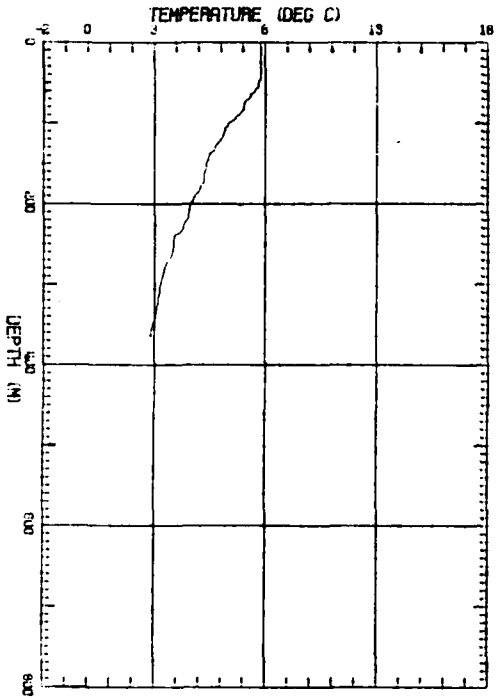
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 731 CHANNEL: 12 LATITUDE: 07 .2
DATE: 10/23/87 TIME: 13:49:48 LONGITUDE: 1 36.6



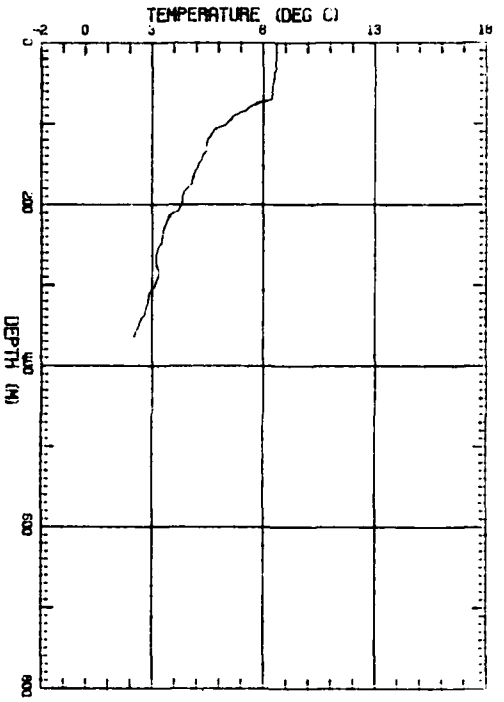
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 733 CHANNEL: 14 LATITUDE: 07 6.2
DATE: 10/23/87 TIME: 13:56:10 LONGITUDE: 0 31.1



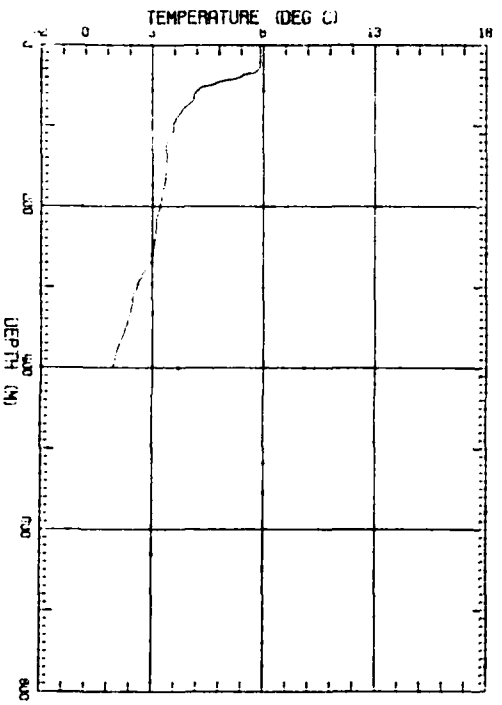
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 736 CHANNEL: 6 LATITUDE: 67 40.1
DATE: 10/23/87 TIME: 14: 6:41 LONGITUDE: 0 -57.3



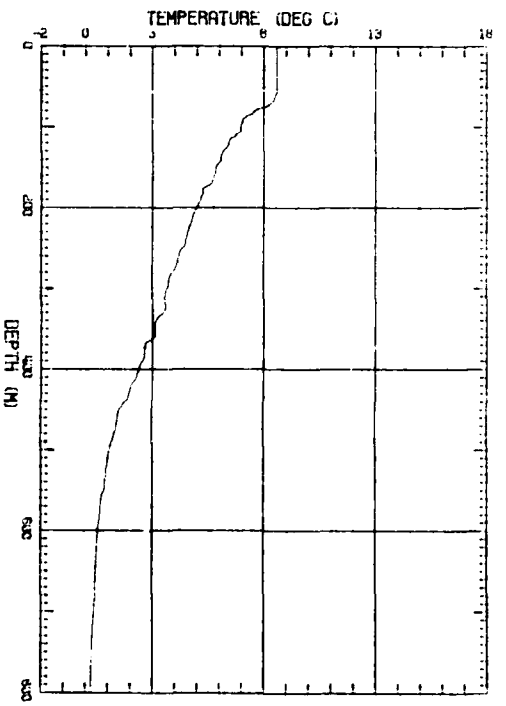
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 740 CHANNEL: 6 LATITUDE: 68 0.0
DATE: 10/23/87 TIME: 14:22:27 LONGITUDE: 0 -31.9



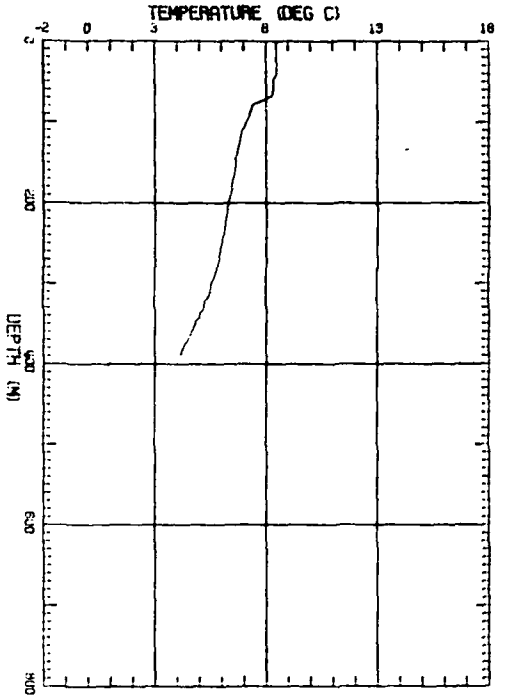
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 741 CHANNEL: 2 LATITUDE: 68 5.7
DATE: 10/23/87 TIME: 14:25: 0 LONGITUDE: 0 -3.6



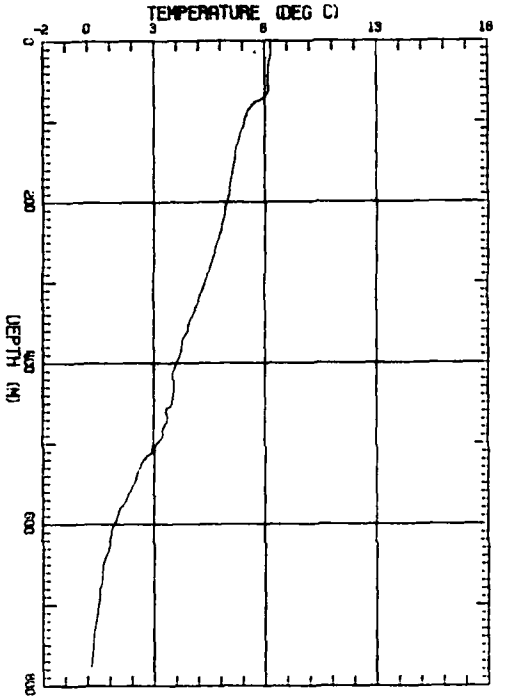
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 742 CHANNEL: 6 LATITUDE: 68 4.2
DATE: 10/23/87 TIME: 14:28:41 LONGITUDE: 0 37.5



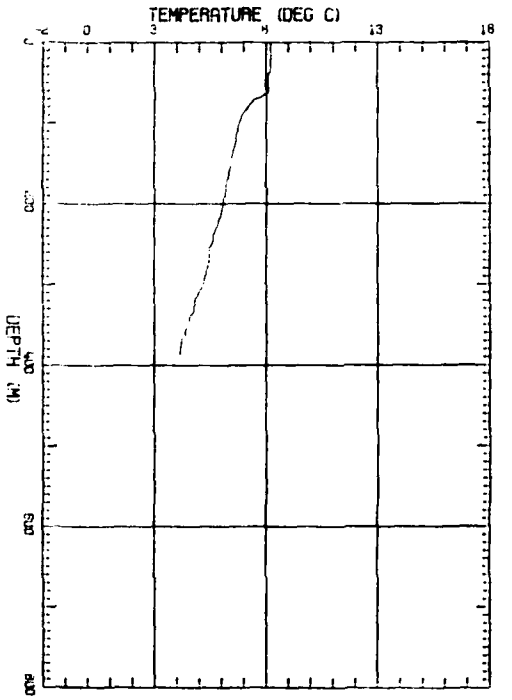
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 745 CHANNEL: 16 LATITUDE: 68 3.6
DATE: 10/23/87 TIME: 14:40:17 LONGITUDE: 2 46.9



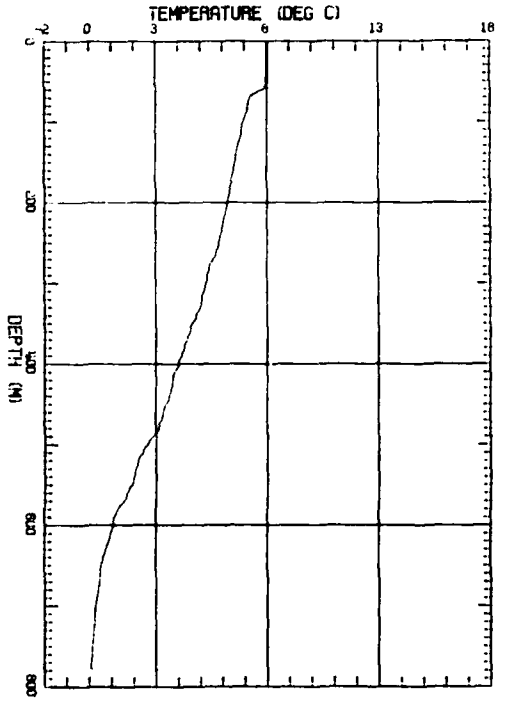
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 747 CHANNEL: 16 LATITUDE: 68 3.7
DATE: 10/23/87 TIME: 14:48:49 LONGITUDE: 3 58.7



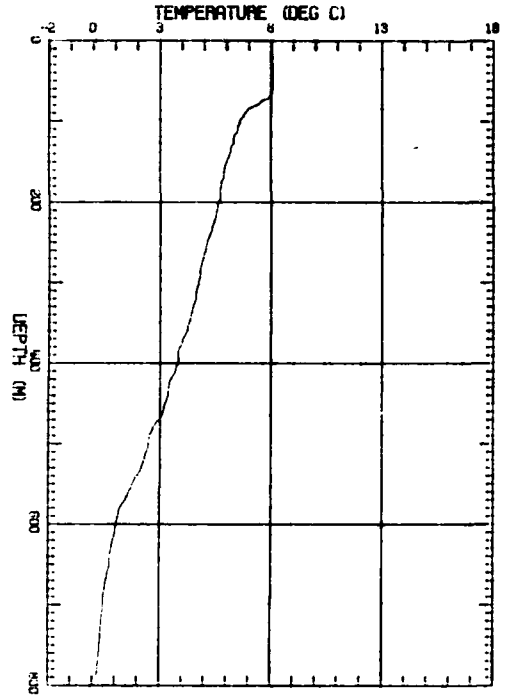
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 748 CHANNEL: 14 LATITUDE: 68 3.9
DATE: 10/23/87 TIME: 14:50:27 LONGITUDE: 4 39.3



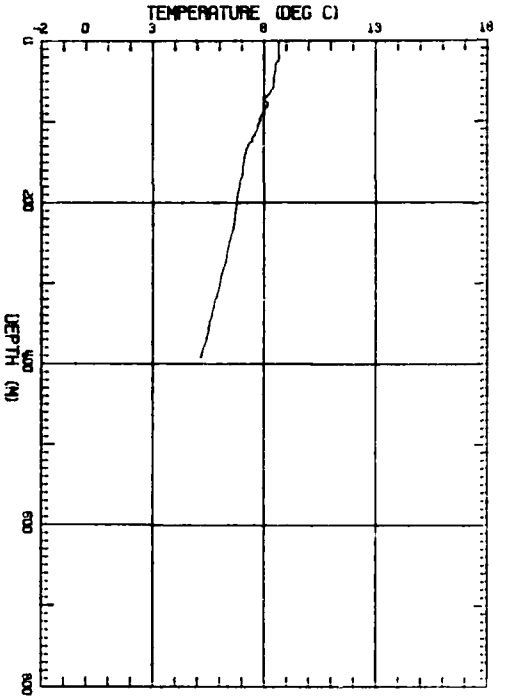
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 749 CHANNEL: 12 LATITUDE: 68 3.7
DATE: 10/23/87 TIME: 14:53:58 LONGITUDE: 5 18.2



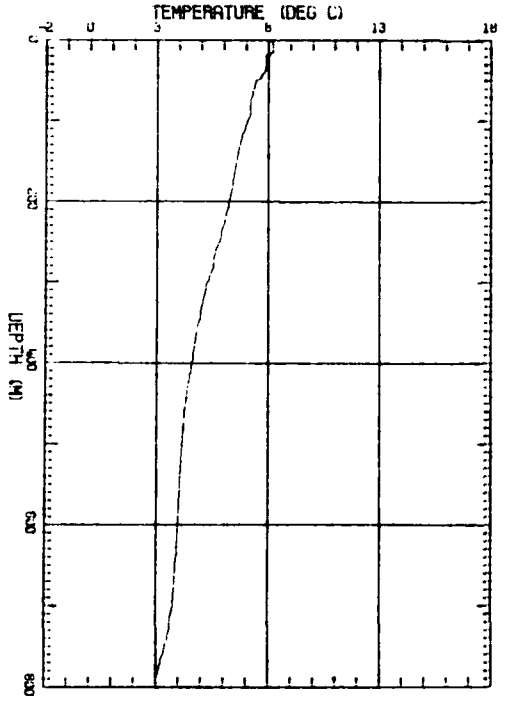
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 752 CHANNEL: 18 LATITUDE: 68 .9
DATE: 10/23/87 TIME: 15: 4:31 LONGITUDE: 7 17.4



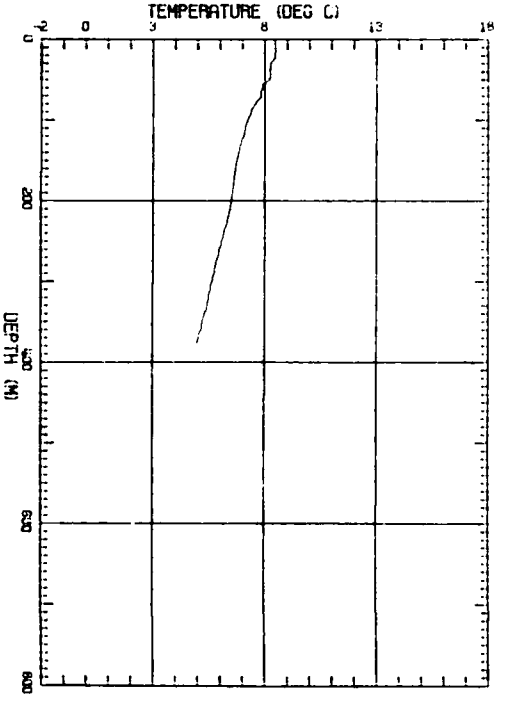
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 754 CHANNEL: 16 LATITUDE: 68 30.9
DATE: 10/23/87 TIME: 15:16: 3 LONGITUDE: 6 5.4



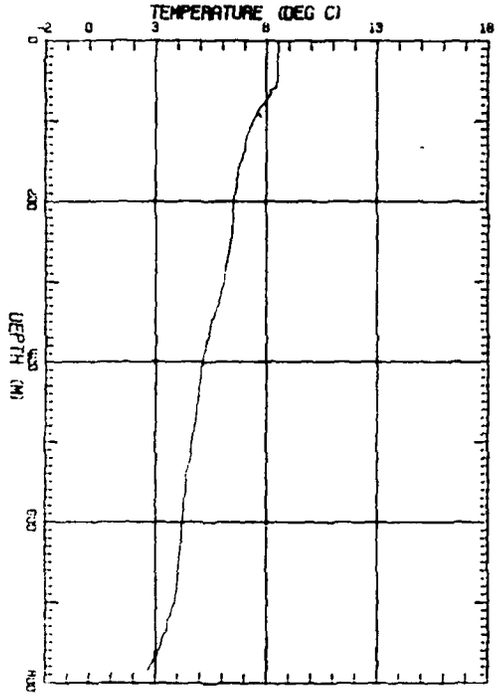
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 755 CHANNEL: 12 LATITUDE: 68 58.9
DATE: 10/23/87 TIME: 15:20:54 LONGITUDE: 6 7.3



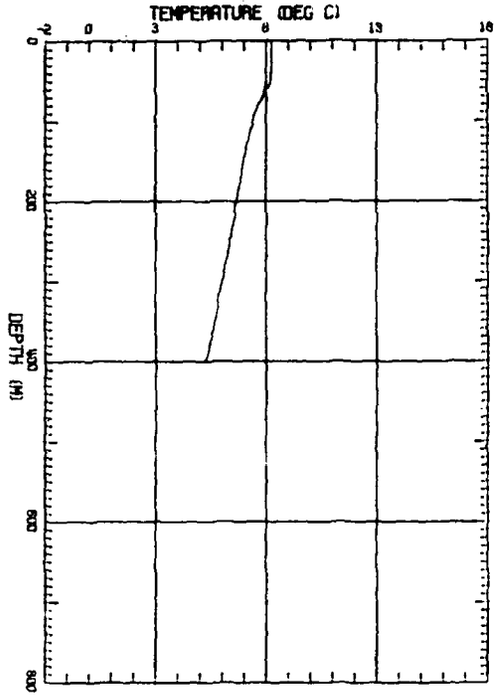
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 756 CHANNEL: 14 LATITUDE: 69 2.7
DATE: 10/23/87 TIME: 15:24:33 LONGITUDE: 7 24.7



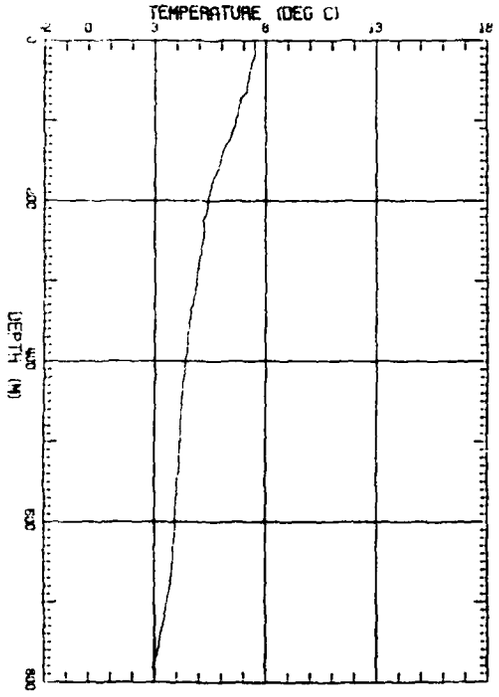
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 757 CHANNEL: 6 LATITUDE: 09 3.9
DATE: 10/23/87 TIME: 15:28: 3 LONGITUDE: 6 42.6



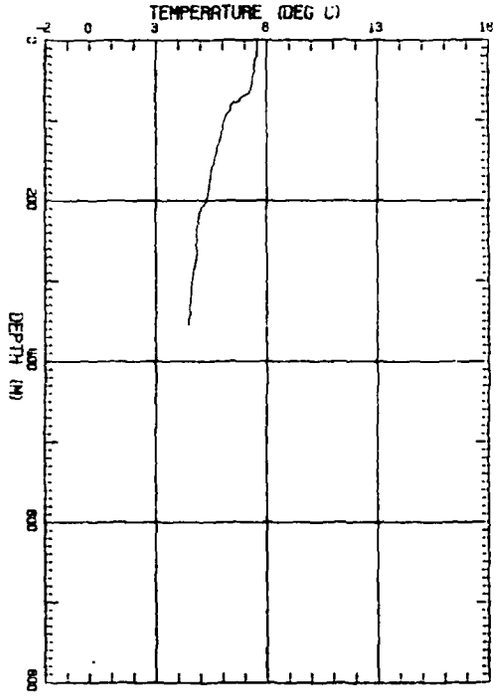
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 758 CHANNEL: 12 LATITUDE: 09 4.0
DATE: 10/23/87 TIME: 15:31:17 LONGITUDE: 6 4.0



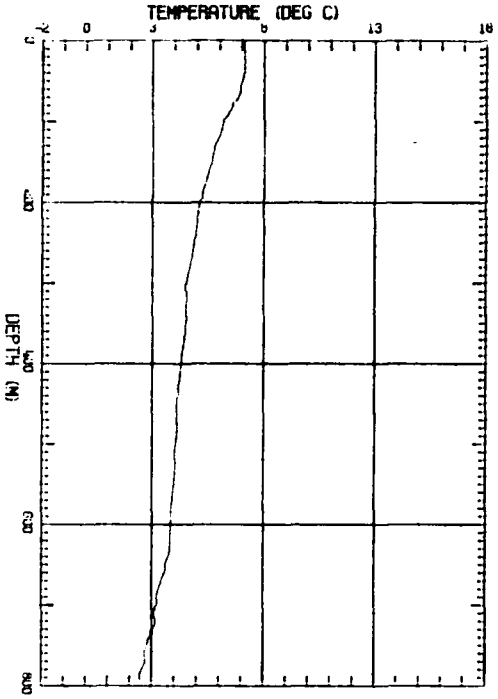
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 760 CHANNEL: 6 LATITUDE: 09 5.7
DATE: 10/23/87 TIME: 15:39:41 LONGITUDE: 6 21.9



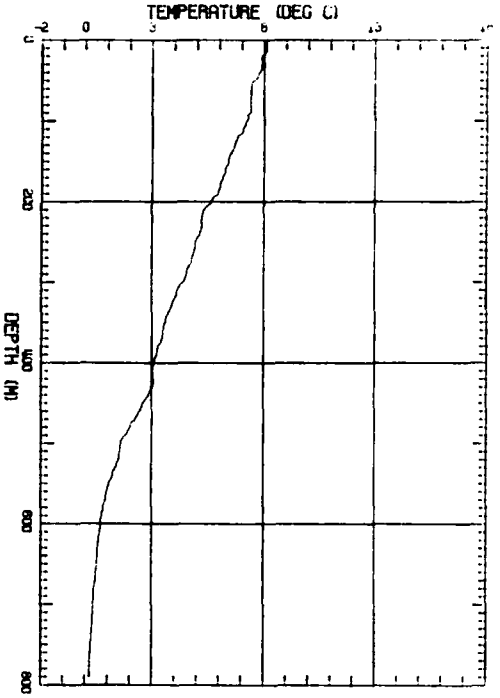
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 761 CHANNEL: 12 LATITUDE: 09 6.1
DATE: 10/23/87 TIME: 15:41:52 LONGITUDE: 6 56.1



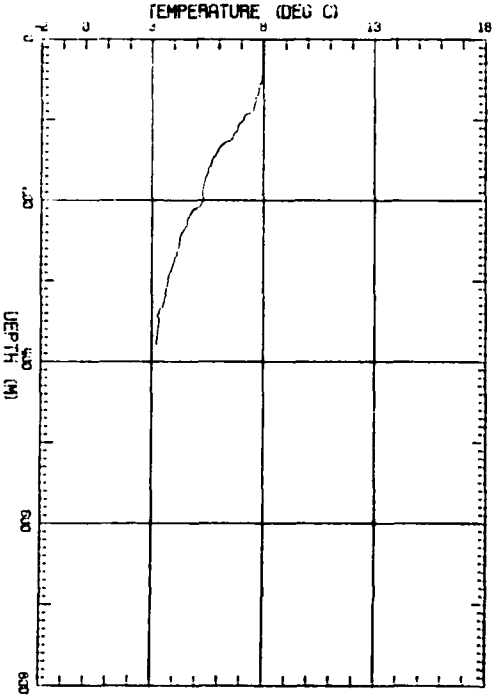
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 763 CHANNEL: 16 LATITUDE: 69 5.9
DATE: 10/23/87 TIME: 15:49:48 LONGITUDE: 2 21.6



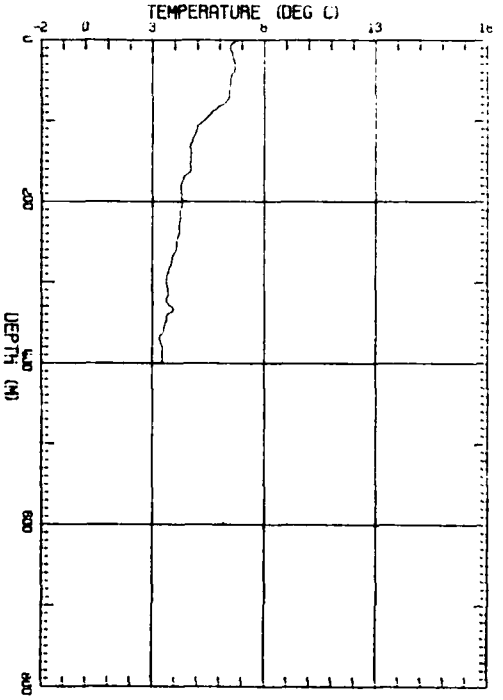
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 769 CHANNEL: 16 LATITUDE: 69 1.9
DATE: 10/23/87 TIME: 16: 9:31 LONGITUDE: -1 -41.



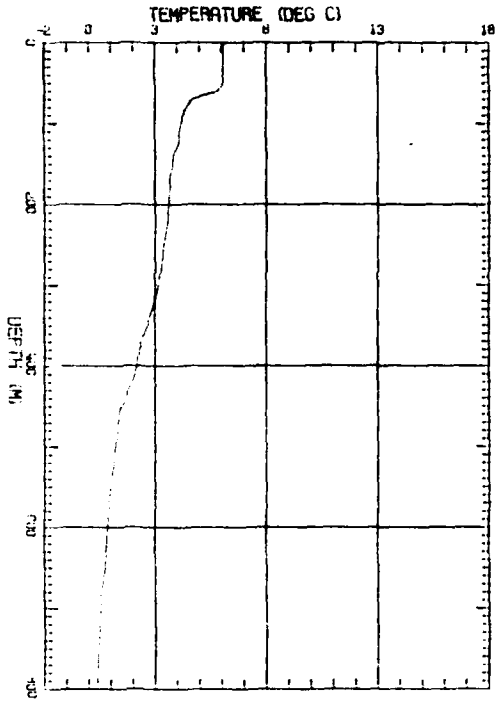
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 770 CHANNEL: 12 LATITUDE: 69 1.4
DATE: 10/23/87 TIME: 16:12:52 LONGITUDE: -2 -24.0



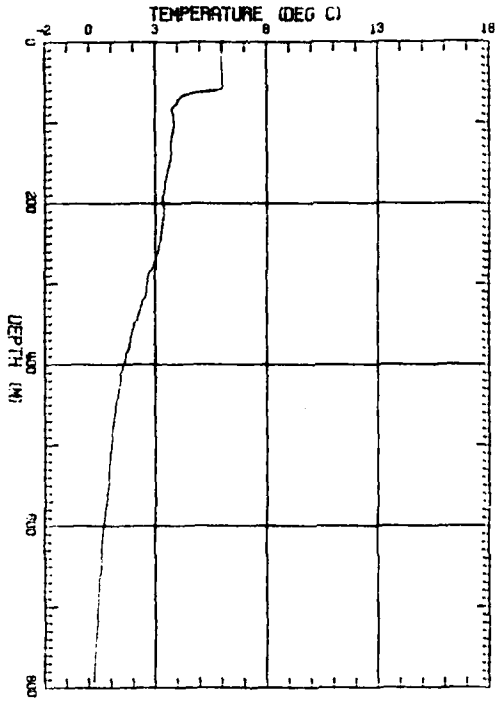
PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 774 CHANNEL: 14 LATITUDE: 68 59.6
DATE: 10/23/87 TIME: 16:26:36 LONGITUDE: -5 -15.7



PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 775 CHANNEL: 16 LATITUDE: 68 59.0
DATE: 10/23/87 TIME: 16:28:31 LONGITUDE: -5 -51.0



PROJECT: TACTICAL OCEANOGRAPHY
DROP NO: 776 CHANNEL: 12 LATITUDE: 68 57.0
DATE: 10/23/87 TIME: 16:32: 0 LONGITUDE: -6 -34.0



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Aircraft Measurements in the Norwegian and Iceland Seas during "Chair Helix," October 1987

12. PERSONAL AUTHOR(S)
Janice D. Boyd

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16. SUPPLEMENTARY NOTATION

17. COSATI CODES			18. SUBJECT TERMS (Continue on reverse if necessary and identify by block number)
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19. ABSTRACT (Continue on reverse if necessary and identify by block number)

Operational components of the United States Navy are becoming increasingly interested in the potential of coupled ocean-acoustic forecast systems for improving weapons effectiveness predictions. Such systems would combine in situ and remotely sensed data, historical databases, ocean hydrodynamic and thermodynamic numerical models and acoustic performance prediction models to give an improved picture of the ocean environment both in a "nowcast" and in a forecast mode. The Tactical Oceanography Program is a major focal point in NORDA's development, testing and delivery of such systems.

This Note discusses the experimental design, data collection and processing, and some preliminary results from "Chair Helix," the Second Tactical Oceanography Project Prediction Experiment in the Norwegian and Iceland Seas during October 1987. Detailed charts of the survey positions are presented, as well as plots of all of the profiles. A more complete presentation of the descriptive findings from the experiment is given in the companion NORDA Technical Note "Environmental Conditions in the Norwegian and Iceland Seas during 'Chair Helix,' October 1987" by J. Boyd.

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