Geological Survey of Canada
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CRUISE REPORT 94138

MARINE GEOLOGICAL SURVEYS IN CHEDABUCTO AND ST. GEORGE'S BAYS, NOVA SCOTIA, AND BAY OF ISLANDS, NEWFOUNDLAND

Geological Survey of Canada Open File 3230

J. Shaw, D.L. Forbes, J. A Ceman, K.A. Asprey, D.E. Beaver, B. Wile, D. Frobel, and F. Jodrey

Natural Resources Canada
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Canada

Nova Scotia

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Open File 3230

Geological Survey of Canada (Atlantic)
Bedford Institute of Oceanography
Box 1006, Dartmouth, Nova Scotia
B2Y 4A2

1995

Cover: Penguin Head, Bay of Islands, Newfoundland

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GENERAL INFORMATION

Cruise:	J.L. Hart 94138	
Dates:	15 September to 6 October, 1994	
Areas of operation:	Chedabucto and St. George's Bays, Nova Scotia; Bay of Islands, Newfoundland.	
Agency:	Geological Survey of Canada (Atlantic)	
Funding:	GSC projects 90-0031, 82-0046, 87-0052. Canada Nova Scotia Cooperation Agreement on Mineral Development	
Master:	P. Antle	
Senior scientists:	J. Shaw	GSC Atlantic
	D. L. Forbes	GSC Atlantic
Technical Staff:	B. Wile	GSC Atlantic
	K. A. Asprey	GSC Atlantic
	D. E. Beaver	GSC Atlantic
	D. Frobel	GSC Atlantic
	F. Jodrey	GSC Atlantic

OBJECTIVES

The main objective of the Nova Scotia component of cruise 94138 was to collect digital sidescan sonar data and construct a mosaic of the sea bed in Chedabucto Bay. This was in pursuit of the objectives of project 90-0031, sea-level change and its impacts. This work was also supported by the Canada-Nova Scotia Cooperation Agreement on Mineral Development, Marine Aggregates project, supervised by G.B.J. Fader of the Geological Survey of Canada (Atlantic). A secondary objective, related to the Marine Aggregates Project, was to collect surficial sediment data in adjacent St.George's Bay.

In Newfoundland the objectives were to collect marine geological data from parts of Bay of Islands, in particular Humber Arm, a fjord-like body of water potentially impacted by industrial activities, and Goose Arm, a fjord with little apparent human impact. Here we also intended to look for evidence of low postglacial sea levels. These objectives fall within the aegis of projects 90-0031 (sea level change and its impacts) and 82-0046.

ORGANISATION

The vessel was mobilised at the Bedford Institute of Oceanography (BIO), Dartmouth, N.S., and travelled to Canso. Geological Survey of Canada (GSC) staff drove to their hotel accommodation in Guysborough in a government vehicle. For several days the vessel operated from Canso, then moved to Port Hawkesbury which was the base for operations in both Chedabucto Bay and St. George's Bay. GSC staff also moved to Port Hawkesbury.

Upon completion of work in St. George's Bay, Captain Antle took advantage of good weather to sail the ship to Corner Brook, Newfoundland. GSC staff drove to North Sydney, took the ferry to Port aux Basques, then drove to Corner Brook, which was the base for operations in Bay of Islands. They were joined by several other staff who would conduct shore and small boat surveys. When the work was completed, the Bubble Pulser system was unloaded at Cornerbrook to be used for a lake survey on behalf of the Newfoundland Department of Natural Resources. The vessel sailed to Halifax, via Cape North and the Strait of Canso. The ship was demobilised at BIO.

SUMMARY OF OPERATIONS

(Times in Nova Scotia are Atlantic Daylight Time (UT -3 hours). Those in Newfoundland are Newfoundland Daylight Saving Time, UT -2.5 hours).

Wednesday 14 September (day 257)
CSS J.L. Hart leaves BIO wharf at approximately 14:30.

Thursday 15 September (day 258)
CSS J.L. Hart docks at Canso at 09:00. GSC staff leave BIO at approximately 09:00 and arrive at Canso at 14:30. After discussions with the captain and crew, GSC staff drive to their hotel in Guysborough, arriving there at 16:10. Weather is sunny with light winds at Dartmouth, partly sunny en route, with scattered showers. At Canso it is sunny with strong west-northwest winds.

Friday 16 September (day 259)
GSC staff leave Guysborough at 07:20 and drive to Canso where they have breakfast. They reach J.L. Hart at 08:45 and the ship departs at 09:10. Survey gear is deployed in Chedabucto Bay at 10:10. The weather is cool, sunny, with scattered cumulus and a light WNW breeze. The sea is slightly choppy. The survey continues in good weather. Cirrus clouds appears in mid-afternoon. The survey is stopped (due to overtime restrictions) at 16:26, and the vessel was en route to Canso at 16:40.

Saturday 17 September (day 260)
GSC personnel leave Guysborough at 07:30 and arrive at Canso at 08:15. J.L. Hart leaves at 08:20. The sky is overcast with altocumulus, stratocumulus, and stratus fractus. There are occasional very light rain showers. The wind is very strong from the SSW, producing very choppy conditions in the bay. We proceed up the bay towards the survey area. Gear is deployed 9:33 and we commence line 6. The records are poor owing to the very choppy conditions. The decision is made to finish the line, then run southwest to do lines off the south coast at the head of the bay. The survey is finished at 14:25 and we recover the gear. The vessel leaves the study area at 14:38 and ties up in Canso at 16:22. Strong southwesterly winds occur at the end of the survey. GSC staff arrive at Guysborough at 17:16.

Sunday 18 September (day 261)
The day is overcast with intermittent rain and light winds from the northwest to northeast. GSC staff depart Guysborough at 07:30. CSS J.L Hart leaves the wharf at 08:20. K. Asprey remains onshore, to bring the vehicle to Port Hawkesbury. Gear is deployed just before 12:40 and lines 11 to 13 are surveyed. During the survey it is realised that the 100 kHz channel of the sidescan that is being digitally recorded is saturated. Line 13 is finished at 14:53 and the vessel departs for Port Hawkesbury where it arrives at 17:14. Staff arrive at their hotel at 17:35.

Monday 19 September (day 262)
Staff leave the Port Hawkesbury Motel at 08:00 and drive the short distance to the vessel, which departs at 08:10. There is a stiff westerly breeze. It is sunny. The vessel stops near Port Hawkesbury for a fire drill and proceeds to the study area. Gear is deployed at 10:16 and lines 14 to 20 are surveyed. There is a slight to moderate chop, but sea conditions improve during the day. The survey is finished at 15:11 and the vessel departs for Port Hawkesbury.

Tuesday 20 September (day 263)
GSC personnel leave motel at 07:50 and CSS J.L. Hart is underway from Port Hawkesbury public wharf by 08:10. The sky is clear, with a light westerly breeze. Gear is deployed in Chedabucto Bay at 09:50 and lines 21 to 28 are surveyed. Lines 21 to 23 are run at 100 m sidescan sonar range in order to obtain profiles across a submerged-foreland deposit. A momentary power failure at the end of line 23 disables most systems except Bubble Pulser. The annotator clock is reset and the survey continues, with the sidescan sonar on 200 m range. By 14:00 the sea is calm at the head of the bay. Line 28 is finished by 15:03 and the ship departs at 15:10.

Wednesday 21 September (day 264)
Staff leave the motel at about 08:00 and J.L. Hart is underway by 08:10. The morning is sunny, with scattered clouds and a calm sea. The ship proceeds to the study area. Sidescan fish depth reading on deck at 08:15 is 10.7 m. T = 12.9 degrees C. Gear is deployed in Chedabucto Bay at 10:05 and lines 29 to 32 are run. Gear is recovered at 12:25. By this time the sea is choppy and a brisk northerly wind is blowing. The sea becomes choppier throughout the afternoon as grab samples 1 to 13 and bottom photographs 2 to 14 are collected. At each site the grab is collected first, the photograph second. The last photograph is taken at 15:05 and the vessel departs for Port

Hawkesbury at 15:10. J.L. Hart docks at 17:10 and GSC staff return to their hotel at 17:35.

Thursday 22 September (day 265)
As usual, GSC staff leave their motel at 08:00 and drive to the causeway where the ship is moored on the south side. After the captain has collected some charts from Port Hawkesbury, J.L. Hart leaves at 08:50 and is through the canal by 09:00. The weather is sunny, with light northerly winds and a moderate swell. Gear is deployed near the Pomquet Bank at 10:25 and lines 33 to 37 are run. The swell moderates slightly during the day and winds remain light. Gear is recovered by 15:04 and the vessel heads for the causeway. J.L. Hart is tied up at the Gulf entrance to the Canso locks at 16:50. After docking at the Port Hawkesbury side of the lock the differential for the GPS receiver is removed by the ship's crew and taken ashore. GSC staff return to their hotel at 17:20. Sonny Auld arrives from Dartmouth in the evening.

Friday 23 September (day 266)
Shaw drives to Dartmouth at 08:40 to participate in a fieldtrip for the Coastal Zone '94 conference. The ship proceeds through the Canso locks at this time, and surveys resume in the Pomquet Bank area. She docks about 17:00 and GSC staff reach their hotel at 17:30.

Saturday 24 September (day 267)
The ship leaves earlier than usual (07:00) and lines are surveyed off the east coast of St. George's Bay, ending with line 43. Samples are collected and the work is finished in mid-afternoon in order that the vessel can take advantage of the calm conditions to leave for Newfoundland. The vessel proceeds along the northern route, along the west coast of Cape Breton Island and then directly from Cape North to Cape St. George.

Sunday 25 September (day 268)
Shaw rejoins the staff at Port Hawkesbury at 07:30 and after breakfast, GSC staff drive to North Sydney and take the 11:30 ferry to Port aux Basques. They arrive at Port aux Basques at 18:15 and continue to Corner Brook. They arrive at 21:30 at the same time as the J.L Hart.

Monday 26 September (day 269)
Excepting J. Shaw, GSC staff leave the hotel at 08:15 and drive to the vessel at the public wharf in Corner Brook. Shaw remains to sort out some administrative problems. All staff are at the vessel at 09:50 but departure is delayed by a problems with the water pump. At 10:34 the ship departs and a few minutes later gear is deployed. Lines 44 to 54 are surveyed. The lines extend seaward along the axis of Humber Arm to the channel between Pearl Island and Woods Island. It is overcast and calm in the morning, with stratus clouds on the hilltops. The sky clears by mid-morning. The winds remain light, and the day is sunny, with scattered clouds. Surveying ends at 15:35, and at 15:42 the ship gets underway for Cornerbrook. D.L. Forbes, D. Frobel, and F. Jodrey leave BIO in the afternoon, drive to North Sydney, and take the late night sailing on the Port aux Basques ferry.

Tuesday 27 September (day 270)
The Forbes party leave Port aux Basques and drive to Codroy Beach where they survey beach profiles. GSC staff drive to J.L. Hart which departs at 08:30. The weather is calm. Gear is deployed and a series of cross profiles is run from the wharf at Corner Brook to just south of Woods Island, and back. The survey lines run along the harbour front and the delta of the Humber River. These are lines 55 to 92. Equipment is turned off at 16:49 and the ship is tied up at 17:15, and staff arrive at the hotel at 17:26. Forbes, Frobel and Jodrey also arrive at about this time.

Wednesday 28 September (day 271)
After a delay during which a pattern of survey lines is determined, and coordinates are plotted, the ship leaves at 10:04. Lines 93 to 103 are run. These are part of a pattern of lines spaced 150 m apart, located at the head of the harbour. Bruce Wile inspects Seistec on arrival at the wharf. The staff arrive back at approximately 18:20. The day is overcast with light northeast winds. Asprey collects a package from Deer lake Airport, and meets Jodrey and Frobel at Codroy for a day of beach surveys.

Thursday 29 September (day 272)
The ship is delayed at the wharf because parts were required for the stove and a water pump. Departure was at 11:10. It is sunny with light winds. Gear is deployed at 11:15 but Seistec does not work. After repairs, line running commences at 13:50, and lines 104 to 116 are run. Gear is recovered at 17:30 and staff return to their hotel at 18:30.

Friday 30 September (day 273)
The ship departs at 08:40 with four GSC staff aboard. It is overcast with strong easterly winds. A series of samples is collected at 11 sites. At each location a grab sample and a bottom photograph are collected, and a CTD cast is made. These are samples 94138-131 to -063. At 15:12 the vessel moves to a coring location, and the Murphy Corer is deployed. However, because the ship is drifting rapidly in the strong wind, it is decided not to attempt a core. The vessel returns to the wharf at Cornerbrook and staff are back at their hotel by 16:00.

Saturday 1 October (274)
Staff leave the hotel at about 08:00. At the wharf the Zodiac inflatable is put into the water and taken to a nearby slip where equipment for sounding is placed aboard. At 09:15 J.L. Hart casts off and cores 64 to 73 are collected. At the same time Forbes, Asprey, Frobel and Wile survey profiles at the mouth of Humber River, and collect CTDs and grab samples. The inflatable, with Forbes and Asprey aboard, returns to the ship at 15:10 and CTD casts are made (74 to 82). The ship docks at approximately 17:00 and staff are at the hotel by 17:10. The day is overcast with light to moderate easterly winds and occasional light drizzle.

Sunday 2 October (275)
Staff board the vessel shortly after 08:00. J.L. Hart sails north and in Goose Arm a beach survey party (Forbes, Frobel, Jodrey and Asprey) boards the Zodiac at 11:00. Gear is deployed soon after and lines 117 to 124 are surveyed. The day is sunny with light winds. However, in the afternoon rain showers occur although winds remain light or calm. The vessel sails southwest to Goose Arm and sampling begins, beginning with grab sample 083. After beach and nearshore surveys have been completed, the Zodiac party returns to the ship at 16:30. Sampling continues as the vessel moves westward. Sampling ends at 17:32 and the ship returns to Cornerbrook in calm weather, arriving at the wharf at 19:20. GSC staff reach their hotel at 17:30.

Monday 3 October (day 276)
The day dawns fine - broken cloud with no wind. Forbes, Beaver, Wile, Asprey leave on J.L. Hart shortly after 08:30. Shaw and Frobel drive north to Lark Harbour, Little Harbour, Bottle Harbour. They install two GSC survey bench marks (GSC-197; GSC- 198) on the beach at York Harbour. Profile lines are surveyed and one grab sample is collected. They drive to Wild Cove and collect three samples (A-26, 27, 28). Lines 125 to 136 are surveyed in the area of York Harbour. Samples 95 to 103 are collected (3 grab samples, 3 bottom photographs, and 3 CTD casts). The wind increases to a stiff north breeze at 11:00. Frobel and Shaw return at 16:00, the others at 17:20

Tuesday 4 October (day 277)
GSC staff reach the boat just after 07:00. The vessel is under way by 07:20 and samples are collected - core 104, CTD 105, grab and camera samples 106 to 111. Sampling finishes at 10:00. Gear is stowed at the wharf and the Bubble Pulser system is taken ashore and loaned to a Newfoundland Department of Natural Resources representative. The vessel departs at approximately 11:00. Forbes, Frobel and Jodrey leave for Stephenville at about 11:30. Shaw, Wile, Asprey and Beaver leave Cornerbrook about noon. At Port aux Basques they board the Marine Atlantic ferry Caribou just after 10:30. The vessel departs at about 11:30

Wednesday 5 October (day 278)
The ferry arrives in North Sydney at 07:30 ADT and GSC staff drive to Dartmouth, arriving at 13:30. Forbes, Frobel and Jodrey continue with beach surveys in the Stephenville area. They take the 11:30 sailing on the Port aux Basques to North Sydney ferry.

Thursday 6 October (day 279)
Forbes, Frobel and Jodrey arrive in Dartmouth about lunchtime. The J.L. Hart arrives at 14:00

TECHNICAL SUMMARY

Navigation
For navigation the vessel was equipped with a Magnavox 4200 GPS six-channel GPS receiver linked to AGC Nav which was running on a 486 PC. During the first phase of the survey (Nova Scotia) differential corrections were applied in real time. The raw GPS signal was received on an antenna mounted on top of the mast, fed into a Starfix receiver and then into the Magnavox. This system was rented on a daily basis from Seaforth Engineering, Dartmouth. The navigation is believed to be accurate to within 5 m. In the Bay of Islands, however, survey differential corrections were not applied, and positions are believed to be accurate to within 100 m.

The planned survey tracks for each day were drawn on a chart, and way points were picked off by D. Beaver and inserted into AGC Nav. The waypoints were used to steer the vessel on course. The ship's positions relative to the lines, plus other information (e.g., time to end of line) were displayed on a laptop PC in the laboratory. Daytimes for chosen sample locations were given to D. Beaver, who used AGC Nav to calculate and display positions. The availability of this information made navigational communication between the bridge and the geophysical laboratory largely unnecessary. During small-boat surveys, a reflector on top of a short mast was mounted on the Zodiac and tracked from shore using a Geodimeter. The Geodimeter data were logged on a Geodat and downloaded each evening onto a Macintosh notebook computer.

Bathymetry
Depths were recorded on an Elac sounder mounted on the bridge, using a hull-mounted transducer. Depths obtained using this sounder (e.g., sample depths noted in the sample list) need to be corrected by adding 3.4 m. Depths noted in the log were read from the Seistec record - there was no sounder in the geophysical laboratory. Nearshore profiles were collected using a Knudsen sounder mounted on the zodiac.

Inventory System
The inventory package SHIP was used to log all sample information and record inventory.

Automated graphic annotation
The hard copy of the sidescan sonar data and the paper output from Seistec and Bubble Pulser

were automatically annotated with day times.

Cassette Recorder
Data were recorded on an R61 D (Teac) cassette recorder using audio tapes, 45 minutes per side - only one side was used. The channels were as follows:

Channel 1 FM (frequency modulated) trigger signal (both seismic systems).
Channel 2 DR (direct recording) Bubble Pulser signal.
Channel 3 DR Seistec signal.

Sidescan Sonar System
A Simrad sidescan-sonar system was used. It comprised a tow fish, cable, winch, and deck unit. The tow fish was dual frequency, 120 and 330 kHz. Both signals were acquired and saved to an SE 880 digital data logger. The channels were as follows:

Channel 1 120 kHz port side
Channel 2 120 kHz starboard side
Channel 3 330 kHz port side
Channel 4 330 kHz starboard side

The desk unit was a video display, a processor, and an Alden printer which produced a hard copy of the data. Data were stored on Exabyte tapes. The 100 kHz channel was viewed on the Simrad monitor and the 330 kHz on the monitor of the SE 88 system. Unfortunately this meant that the 330 kHz signal was being monitored, with the result that until day 261 the 100 kHz channel, intended for use in a digital mosaic, was saturated.

Range was set at 200 m in Chedabucto Bay. The fish was deployed at a constant indicated depth each day, about 21 m. However, on the first day, as the fish was being brought aboard but was still on the water surface, the depth on the monitor was 12 m. Later, when the fish had rested on the deck for a while, the reading was 10.5 m (this was probably a hysteris effect). On the morning of day 262, while en route to the study area, the reading while the fish was on deck was 11.7 m. There may be a temperature effect also - it was very cool at that time (9 degrees C on deck). Fish depths in the log have to be corrected by 12 m.

Sub-bottom profiling systems: (1) Seistec
This system comprised a horizontally mounted boomer plate (signal source) mounted on a surface towed catamaran which also supported a vertically mounted line-in-cone hydrophone array (sound receiver. On day 260 there was difficulty obtaining an acceptable Seistec record. The bubble Pulser was switched off to no avail. The towed vehicle was set farther back from the ship but the record was wavy due to increased motion. The Seistec record was overprinting the Bubble Pulser. The Seistec was badly impaired by choppy waves. Excellent records were obtained in calm conditions, for example on days 263 and 264. On day 264 the Seistec system was obtaining better penetration than the Bubble Pulser system. The hard copy of the Seistec record was recorded on extremely thin paper. This paper was considered to be of too poor quality for this purpose. The record is less crisp than on film (Bubble Pulser) and the paper is fragile, i.e., easily crumpled.

On the first two days of surveying in the relatively deep water of Humber Arm, the Seistec record was obscured by noise which appeared to vary with direction of travel and ship's speed. On day 271 Bruce Wile opened up the towed system and discovered a hydrophone eel coiled in the cone. He disconnected it and inserted a plug. On the following day a Seistec record could not be obtained, so the towed body was opened and it was discovered that the channel connected to the

vertical hydrophone was inoperative. The Seistec signal which we had been receiving before day 271 had come via the eel coiled up in the catamaran. To remedy the problem the vertical line-in-cone array was connected to the working channel and Seistec gave an excellent record free of noise.

Sub-bottom profiling systems: (2) Bubble Pulser
This low frequency system was to be used in order to obtain deeper penetration of sediments than obtainable using the Seistec system. It consisted of an 85 joules sound source mounted vertically on the keel fin of a surfboard, and an eel hydrophone. Hard copy of the Bubble Pulser record was printed on film.

Records were considered of poor quality in the Chedabucto Bay phase of the survey, e.g., on day 264. It was thought that the better records obtained during previous surveys, e.g., Navicula 92024, could be attributed to the fact that the Bubble Pulser hydrophone eel was towed off one side of the vessel. In Humber arm the Bubble Pulser records were useless below 100 ms. They were almost completely obscured in noise. Various attempts were made to alter the configuration of the towed system to no avail.

CTD system
A Sunbird CTD device with an added transmissometer was deployed using the hydrographic winch mounted on the starboard side of the quarterdeck. Each day, at the end of operations, the data were downloaded and stored on a 486 laptop. The data were viewed in graphical format and the files were renamed - they were allocated sample number identities and stored on a disk. Of 29 CTD profiles collected from the survey vessel, 4 were lost when their files could not be retrieved from the disk. The profiles were converted to print files and printed on return to BIO.

On 11 profiles there is a marked peak in salinity - up to 35 $^{0}/_{00}$ in some cases - on the down cast but not on the up cast. However, at depths of 8-14 m the salinity invariably reverts to levels of ~31.5 $^{0}/_{00}$. This effect may be due to contamination by salt. On the first two profiles collected in Goose Arm (085 and 086) it is believed that the transmissometer was contaminated.

Coring
Cores were collected using a "Murphy" corer - a gravity corer with a 10 cm diameter plastic liner. The core barrel was aluminium. It was fitted with a cutter and catcher. At the head of of the corer was a Lehigh one-way valve. The corer was deployed over the port side using a Hyab crane mounted amidships, and lowered using a winch mounted on the starboard side of the quarterdeck. The liners were 190 cm long. For the first 2 cores four 23 kg (50 lb) weights were used, giving a total weight of 109 kg. Later, a heavier head was used and six weights were added, giving a total weight of 205 kg. No problems were encountered during coring operations. Cores were removed from the barrel following recovery and were immediately labelled and placed upright. They were capped and secured upright for the return voyage to BIO.

Grab sampling
Grab samples were obtained with a medium-sized van Veen grab sampler. This has an area of approximately 97 cm^2 when the jaws are open. It was lowered over the port side using the Hyab crane and starboard winch. The only problems encountered were in the vicinity of the paper mill. Here the van Veen failed to trip on numerous occasions, perhaps due to the nature of the bottom - a thick cover of bark and wood fragments. At the last sample site we abandoned our attempts - there was no time to try using the smaller grab sampler.

SUMMARY OF ACCOMPLISHMENTS

Data for a sidescan-sonar mosaic were collected in parts of Chedabucto Bay, N.S., together with high- and low-resolution seismic reflection data, grab samples, and bottom photographs. Sidescan sonar data, high- and low-resolution seismic reflection data, grab samples, and bottom photographs were also collected from the east and west sides of St. George's Bay, N.S. In Bay of Islands, Nfld., most survey time was spent in Humber Arm, in the vicinity of Corner Brook; surveys also took place in Goose Arm and York Harbour. CTD profile data were collected in all three areas, and beaches were surveyed at Goose Arm and York Harbour. The cruise resulted in 29 CTD profiles collected from the survey vessel - four of which were lost because their files were damaged - 6 CTD profiles collected from a Zodiac in the Humber River, 12 Ponar grab samples collected from the Zodiac, 35 van Veen grab samples, 12 Lehigh gravity cores, 35 bottom photographs, and 10 samples collected on beaches and from on land.

PRELIMINARY SCIENTIFIC RESULTS

Chedabucto Bay, Nova Scotia

A large amount of data had been collected in Chedabucto Bay prior to the present cruise (cf., King and MacLean, 1976; MacLean et al., 1977). More detailed mapping by Shaw et al. (1992) resulted in the map shown in figure 1. Most of the sea bed is muddy but extensive areas of boulder gravel, mobile fine gravel, and sand occur off the north coast. One interpretation of these data is that the bay contains elements of a submerged coastline that formed during an early post-glacial sea-level stand at ~-38 m.

Figure 2 shows a sediment wedge with steeply-dipping internal reflections located in the outer bay. It is believed to consist of sand or gravelly sand, and is provisionally interpreted as a beach-ridge foreland that formed at the entrance to the bay during the lowstand. Grab samples (stations 1, 3, 5, 7, 9) and bottom photographs (stations 2, 4, 6, 8, 10) show that the sediment body is composed of gravel, and is overlain by patches of muddy sand. The locations of sampling targets are shown on figures 3 and 4. Figure 5 shows rectified sidescan-sonar data collected on this submerged 'foreland' during cruise 94138. The surface is predominantly dark-toned, indicating a strongly-reflective, hard bottom, but there are patches of light-toned bottom (sandy mud).

It is hypothesised that this deposit could be a point source for aggregates, and that sand and gravel extraction would disturb only a small area of the sea bed. However, the composition of the deposit remains uncertain. Hopefully, it will be determined by vibracoring at a future date. The sidescan-sonar and seismic-reflection data collected in Chedabucto Bay during cruise 94138 needs to be analysed fully and integrated with data from a core collected in 1993 at the head of the bay by G.B. Fader before firm conclusions are reached regarding the depth of the post-glacial sea-level lowstand and the morphology of the former coastline, and in particular the nature of the sediment wedge described above.

St. George's Bay, Nova Scotia

St. George's Bay was mapped by Kranck (1971). The objective of the present survey was to collect data using modern techniques unavailable to earlier workers. Kranck (1971) indicated that Pomquet Banks have a cover of Buctouche sand and gravel, and the sea bed between the banks and the south coast of the bay consists of Pugwash mud (that contains up to 50 % sand). The present survey shows that Pomquet Banks consist of bedrock with a thin veneer of bouldery gravel and gravel. Narrow bedrock ridges are seen on the sidescan-sonar record in places. In some areas there appears to be a cover of till which has a veneer of bouldery gravel. On the banks

there are extensive areas of poorly-sorted rippled gravel.

Several kilometres north of Pomquet, in water depths of ~23 m, stratified sediments - possibly Henry Island Sediment (Kranck, 1971) - underlying the sand are incised by channels about 8 m deep that extend to a depth of 34 m below sea level. The channels are infilled by muddy sand (Fig. 6). Grab samples and bottom photographs 15-24 record the sea-bed sediments on and near the Pomquet Banks. The locations of sampling targets are shown on figures 7-11.

Grab sample 015 (photo 016) was targeted on an area of gravel ripples, but it is believed that these samples were actually collected on a nearby area of bedrock with discontinuous gravel veneer. Grab sample 017 (photo 018) was collected in an area of smooth sea bed with a light tone on the sidescan-sonar record. It consisted of brown, muddy fine sand. Grab sample 019 was obtained in an area of extensive gravel with scattered small boulders (according to the sidescan sonar record) in a depression close to a bedrock high. It was composed of cobble gravel with traces of mud (see photo 020). Grab sample 021 was collected in an area in which the sidescan-sonar record showed fine gravel with ribbons of gravel ripples. It comprised sub-rounded to rounded sand and gravel (see photo 022). Finally, grab sample 023 was from a small patch of light-toned sea bed between gravel areas; it consisted of well-sorted sand with small amount of fine gravel, and numerous sand dollars - the latter are seen in photo 024.

These samples show that a range of sediment types occurs on and near the banks. Muddy sand occurs in deeper water around the banks, and poorly-sorted mixtures of gravel and sand organised into ripples occur on the banks. The thickness of the gravel in the rippled areas is uncertain, because the seismic systems employed do not penetrate this material, but it may be only a metre or so. Elsewhere on the banks, a veneer of boulder-cobble-gravel with traces of sand and mud mantles bedrock.

Several lines were surveyed on the east side of St. George's Bay. Kranck's map (1971) shows seaward-extending ridges of Buctouche sand and gravel, fringed by a 'mixed bottom', and with Pugwash mud (with up to 50 % sand) in deeper water. The present survey showed that stratified sediments extend north from the entrance to the strait. They are up to 50 ms (~38 m) thick, and have been deposited in an onlapping, basin-fill style. Possibly these represent Kranck's 'Henry Island Sediment', which may be "lake sediments transported by melt waters from surrounding glaciers" (Kranck, 1971, p. 7). Near the entrance to the strait the upper surface of this unit has positive relief of about 5 m. Slightly farther north, however, it is overlain by a wedge of sand, with faint internal stratification, that is about 5 km long and up to 8 m thick. There is a strong, horizontal internal reflection at a depth of 34 m (arrowed in figure 12). It is not clear whether this reflection is in the sand or whether it truncates a unit deposited on top of the basin-fill, stratified unit. However, one possible hypothesis is that it was formed during a postglacial sea-level lowstand; Kranck (1972) described evidence of former sea levels at depths of 18-23 m and 25-30 m in this region.

Several short (0.5 km) wedges of sediment, 7 and 15 m thick respectively, occur southwest of Long Point in depths of 19-22 m, extending above the surrounding sand. The more northerly of the two deposits (shown in figure 13) is part of a prominent ridge on the sea bed that extends in a southwesterly direction. They contain internal reflections that appear to be truncated at the sea bed. The bottom is dark-toned (reflective) on the sidescan record, with no individual boulders evident. Grab sample 029 (photo 030) was from one of these features and consisted of a mixture of sand and angular gravel. The origin of these sediment wedges is unknown. They could be outliers of the stratified unit noted above, and perhaps have been modified during the Holocene transgression. Equally, they might be stratified, ice-proximal glacial deposits, perhaps the ice-contact stratified drift (including kames, kame moraines, eskers) mapped onshore by Grant

(1994). Alternatively, they might be remnants of coastal barriers that formed during the transgression. Potentially, these deposits could be small aggregate sources. However, their composition is unknown. It is probable that the gravel on their surface is a lag formed due to erosion, and that they consist of sand with small amounts of gravel.

From a location just west of Long Point to the end of the line off the east coast (line 43), the sea bed is bedrock with a thin veneer of gravel. Grab sample 025 (photo 026), from an area of dark-toned sea bed consisting of cobble-gravel with some coarse sand. Similarly, grab sample 027 (photo 028), from an area of bedrock with extensive, thin boulder-cobble gravel, comprised cobble-gravel with traces of sand. The locations of sampling targets are shown on figures 13-15.

Bay of Islands, Newfoundland

In common with other Newfoundland fjords, Bay of Islands contains ponded stratified sediments that probably comprise Holocene mud that overlies glacio-marine gravelly sandy mud. In the basins between Woods Island and Cornerbrook, the ponded Holocene mud contains pockets of gas. To the southeast of these basins, acoustic internal reflections slope upwards towards the deltas of Humber River and Wild Cove. The cross-lines showed that the maximum sediment thickness ranged from almost 200 ms to 100 ms, and averaged 120 ms (90 m). An unusual feature is the erosion of stratified sediments resulting in formation of a horizontal platform at a depth of 100 m, just offshore from McIver's Cove (where Humber Arm bifurcates).

Core 94138-104 was collected from a location in the outer part of Humber Arm where the post-glacial mud was believed to be thin (see seismic section in appendix). The core contained 0.50 m of bioturbated silty clay over a 0.07 m layer of muddy gravelly sand. Underlying this unit, to the base of the core at 1.63 m, was reddish brown clay with no gravel or sand. A bivalve contained in the gravel layer, at 0.52 m downcore, was radiocarbon dated The results were as follows:

Beta-81980; CAMS-20267

Measured radiocarbon age	5350±60 BP
$\delta^{13}C$	0.8 ‰
Conventional radiocarbon age (i.e., $\delta^{13}C=25$‰)	5770±60 BP
Age corrected for a 410 yr reservoir effect	5360±60 BP

This date is tentatively linked with the postglacial sea-level lowstand - possibly the gravel indicates the maximum depth of reworking of glacial and late-glacial marine sediments at this location.

Human impacts on the sea bed can be observed in the Humber Arm. Much of the inner harbour contains wood chips in the upper 15 cm of sediment. Most grab samples contained material described as 'muck' that contained pieces of bark. Off the paper plant the sea bed is covered by an extensive (1-2 km^2) veneer of wood chips and other organic material, 0.4 m thick in core 94138-065. The organic detritus contains gas that masks the underlying acoustic stratification.

A slumped deposit of mud with an area of approximately 7.5×10^5 m^2 extends to the middle of the bay offshore from the public wharf at Corner Brook. The mud is at least 8 m thick and has slumped from soft sediment deposits close to shore. The slump scar is located immediately offshore from the coast and is 250 m wide and 25 m deep. Core 94138-069 was collected from the slump deposits and was found to contain 0.9 m of soft, buttery clay with scattered gravel overlain by a 0.05 cm layer of gravelly sandy silt, and capped by 0.45 m of silty mud. This slump was investigated in October 1995 using a Pisces submersible deployed from HMCS Cormorant.

A submerged vessel with a length of 70 m was discovered in a depth of 75 m, mid-way across Humber Arm, about 1 km off the bar of Humber River. On the sidescan sonogram (Fig. 16) it has the appearance of a barge. The presence of this vessel was confirmed during submersible investigations in October 1995.

Middle Arm and Goose arm contain relatively thin deposits of stratified sediments, including an upper layer of Holocene mud with little acoustic stratification. Within York Harbour, in the shallow (<30 m) area between Governor's Island and the mainland, an acoustically stratified unit about 5 m thick is exposed on the sea bed and appears to have been eroded. Grab samples 095 and 098 were from this 'scoured' area and contained silty fine sand with pebbles (photos 096 and 099). In deeper water the 'scoured unit' is overlain by acoustically transparent unit (mud or sandy mud). Sample 100 (photo 103) from this area consisted of sandy mud. In the basin just south of Governor's Island, the overlying acoustically transparent unit contains gas that masks the underlying stratigraphy; total sediment thickness exceeds 25 m.

CTD data collected in the bay show that in Humber Arm, the fresh water plume from Humber River was restricted to the north side of the bay, where a thin (<2 m), low salinity layer with poor light transmission occurred on the surface. The most interesting aspect of Bay of Islands is the occurrence of very cold, saline water at depth. In Humber Arm the surface water had temperatures ranging from 3-5 ^{0}C, but the temperatures dropped to -0.5 ^{0}C at depths ranging from 10-20 m. Salinity at depth was usually 31.5 $^{0}/_{00}$, and light transmission gradually declined with depth.

In inner Goose Arm, below freezing temperatures were encountered at depths of ~4 m, and the deep-water had temperatures of -1 ^{0}C. The thickness of the surface warm layer increased towards the outer bay, however, and at station 094 the freezing level was at a depth of 22 m. The warmest surface water in the bay, 10.5 ^{0}C, was in York Harbour (profile 102). In profile 103, between Woods Island and the mainland, the freezing layer was at a depth of 45 m, and in profile 105 it was at 50 m depth.

SCIENTIFIC CONCLUSIONS AND RECOMMENDATIONS

Some small steps have taken towards the goal of determining the depth of the postglacial sea-level lowstand in Chedabucto Bay, and towards explaining the origin of coarse-grained sediment bodies in coastal waters. Integration of the 1994 data with data collected in 1992, and with core data subsequently collected by G.B. Fader, may provide an answer to these questions. It is vital, however, that vibracores be obtained from the sediment prism (submerged foreland?) in the bay. It is likely that a multibeam bathymetric survey of this feature will enable its origin to be determined on the basis of morphology.

It is evident that much of the sea bed of St. George's Bay remains unknown, and surveys with new acoustic systems unavailable to earlier workers will continue to provide 'surprises'. Multibeam bathymetric images of the small sediment bodies located southwest of Long Point may provide insights into their origins.

The survey in Bay of Islands has been exploratory in scope, and our findings require follow up. The human impacts on the harbour need more investigation, in particular the potential presence of chemical contaminants in sediments, and the potential hazard posed by slumping offshore from the coast at Corner Brook. Hopefully, the sunken ship will be identified.

TECHNICAL RECOMMENDATIONS

(1) The light-weight paper used to record Seistec data is unsuitable for this purpose: the data is not recorded with great clarity and the paper tears and wrinkles easily.

(2) Seismic equipment should be more thoroughly tested before cruises. In particular, the Datasonics Bubbler Pulser needs attention.

(3) Alterations made to seismic equipment during cruises should be recorded: during much of the cruise, and unknown to the operators, the Seistec system was receiving data via an experimental external hydrophone eel, and not the receiver in the cone.

(4) Once again, the difficulty of surveying with severe overtime restrictions has become clear. This is a great waste of the investment in equipment and ship time.

CHARTS

4335 Strait of Canso and Approaches. Scale 1: 75, 000.
4462 St. George's Bay. Scale 1: 75, 200.
4652 Humber Arm, Meadows Point to Humber River. Scale 1:14, 600.
4653 Bay of Islands. Scale 1: 50,000.
4654 Lark and York Harbours. Scale 1: 12,000.

ACKNOWLEDGEMENTS

We thank Captain P. Antle and the crew of CSS J.L. Hart for their cooperation during the cruise. We also acknowledge G. B. Fader who provided funding (Canada-Nova Scotia Cooperation Agreement on Mineral Development) for the Nova Scotia part of the surveys.

REFERENCES

Grant, D.R. 1994. Quaternary Geology, Cape Breton Island, Nova Scotia. Geological Survey of Canada Bulletin 482; 159 p. and 2 maps.
King, L.H., and MacLean, B. 1976 Geology of the Scotian Shelf. Geological Survey of Canada Paper 74-31, 31 p. & maps.
Kranck, K. 1971. Surficial geology of Northumberland Strait. Marine Sciences Paper 5; Geological Survey of Canada Paper 71-53, 10 p. and map.
Kranck, K. 1972. Geomorphological development and post-Pleistocene sea level changes, Northumberland Strait, Maritime Provinces. Canadian Journal of Earth Sciences, 9, 835-844.
MacLean, B., Fader, G. B., and King, L. H. 1977. Surficial Geology of Canso Bank and adjacent areas. Marine Sciences paper 20; Geological Survey of Canada Paper 76-15, 11 p. & map.
Shaw, J., Beaver, D.E., Wile, B. and Asprey, K.A. 1992 A marine geological survey of Chedabucto Bay, Nova Scotia; Cruise Report 92-024. Unpublished Report, Geological Survey of Canada, Bedford Institute of Oceanography, Dartmouth, N.S. 7 p. plus tables and maps.

Appendix 1: Figures

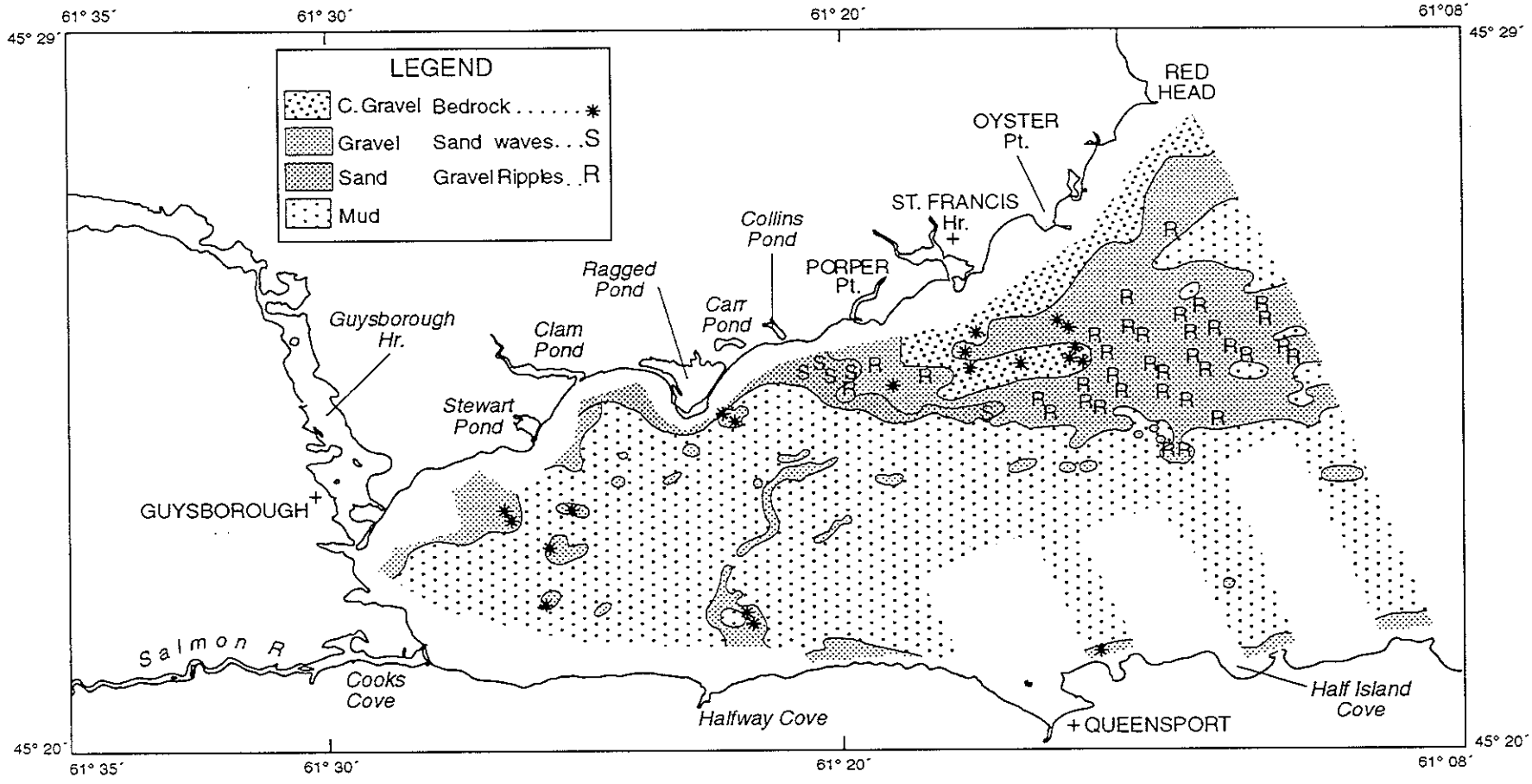

Fig. 1: Surficial sediments, Chedabucto Bay, N.S., based on data from cruise 92-0024 (Shaw et al., 1992).

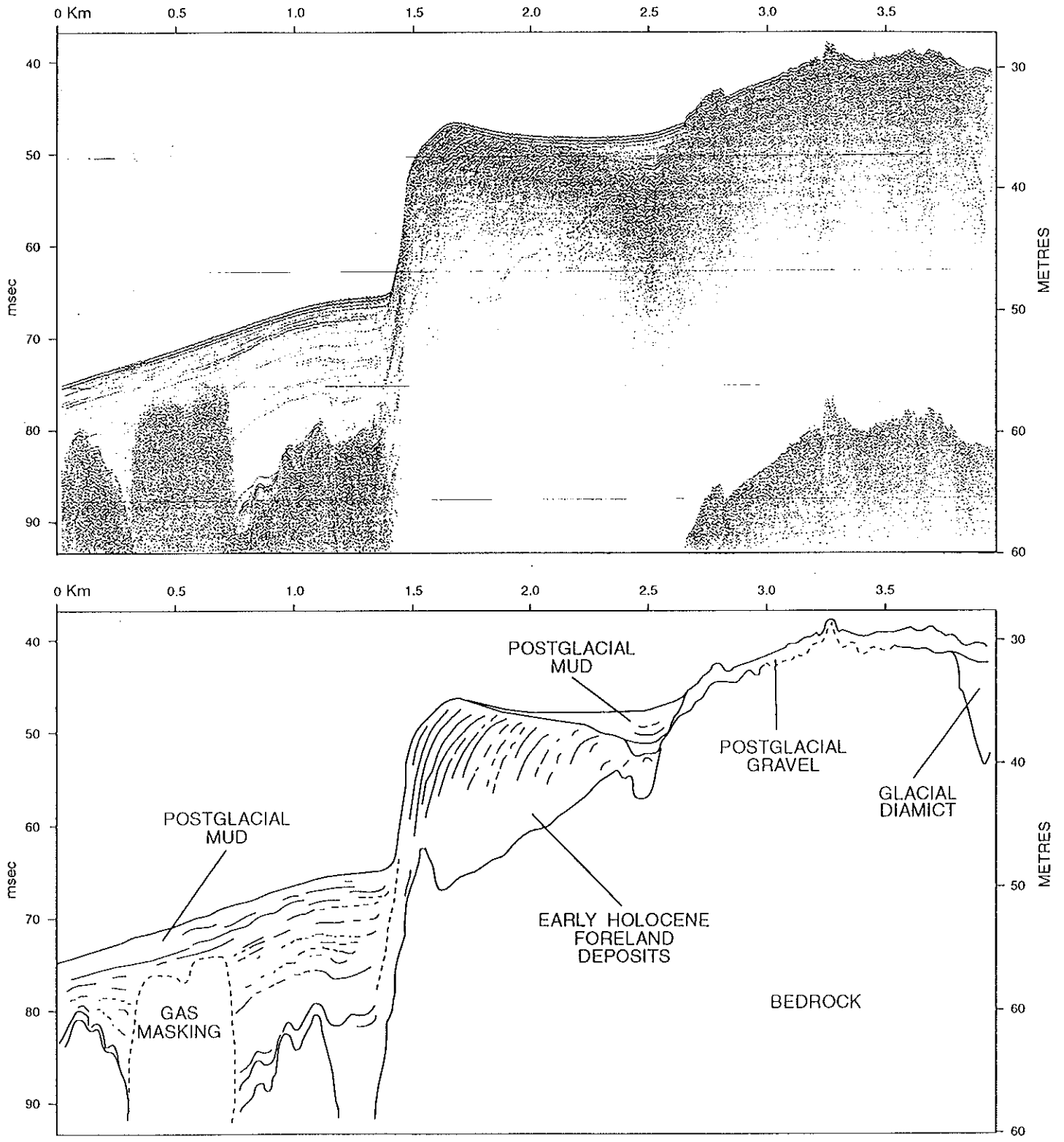

Fig. 2: Wedge-shaped deposit of surficial sediments in Chedabucto Bay, provisionally interpreted as a submerged foreland.

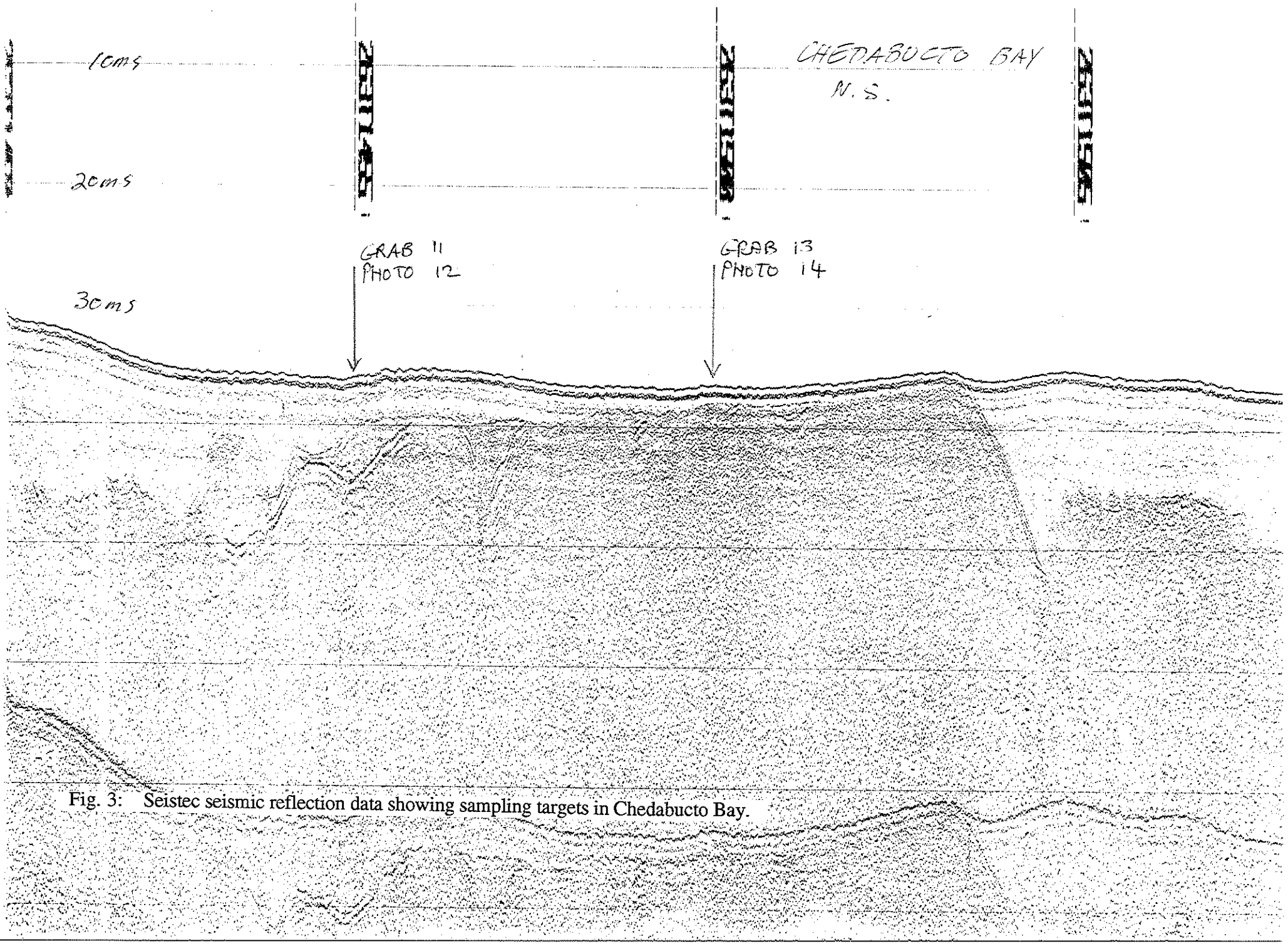

Fig. 3: Seistec seismic reflection data showing sampling targets in Chedabucto Bay.

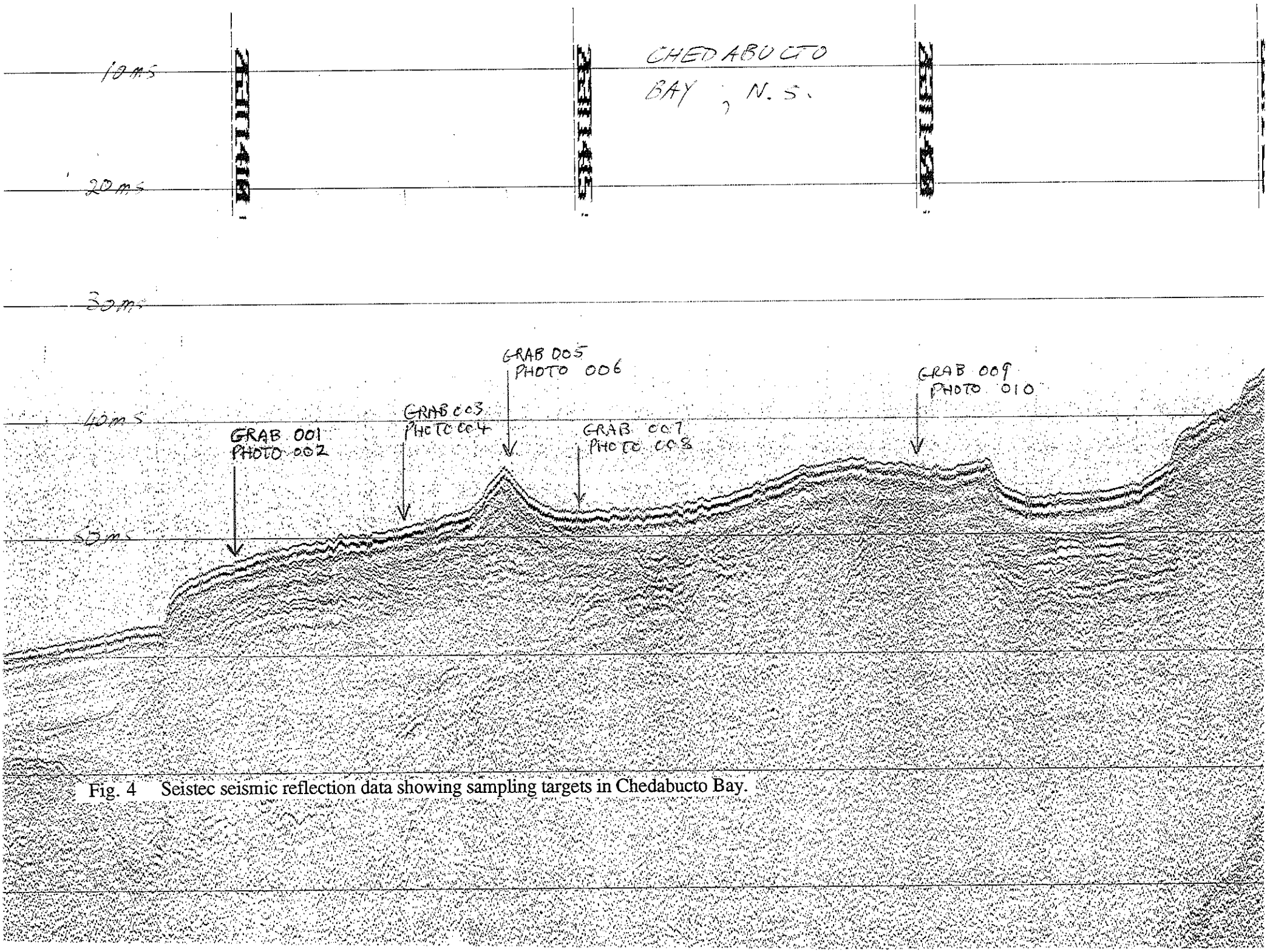

Fig. 4 Seistec seismic reflection data showing sampling targets in Chedabucto Bay.

Fig. 5: Rectified sidescan-sonar mosaic of the 'submerged foreland' in Chedabucto Bay.

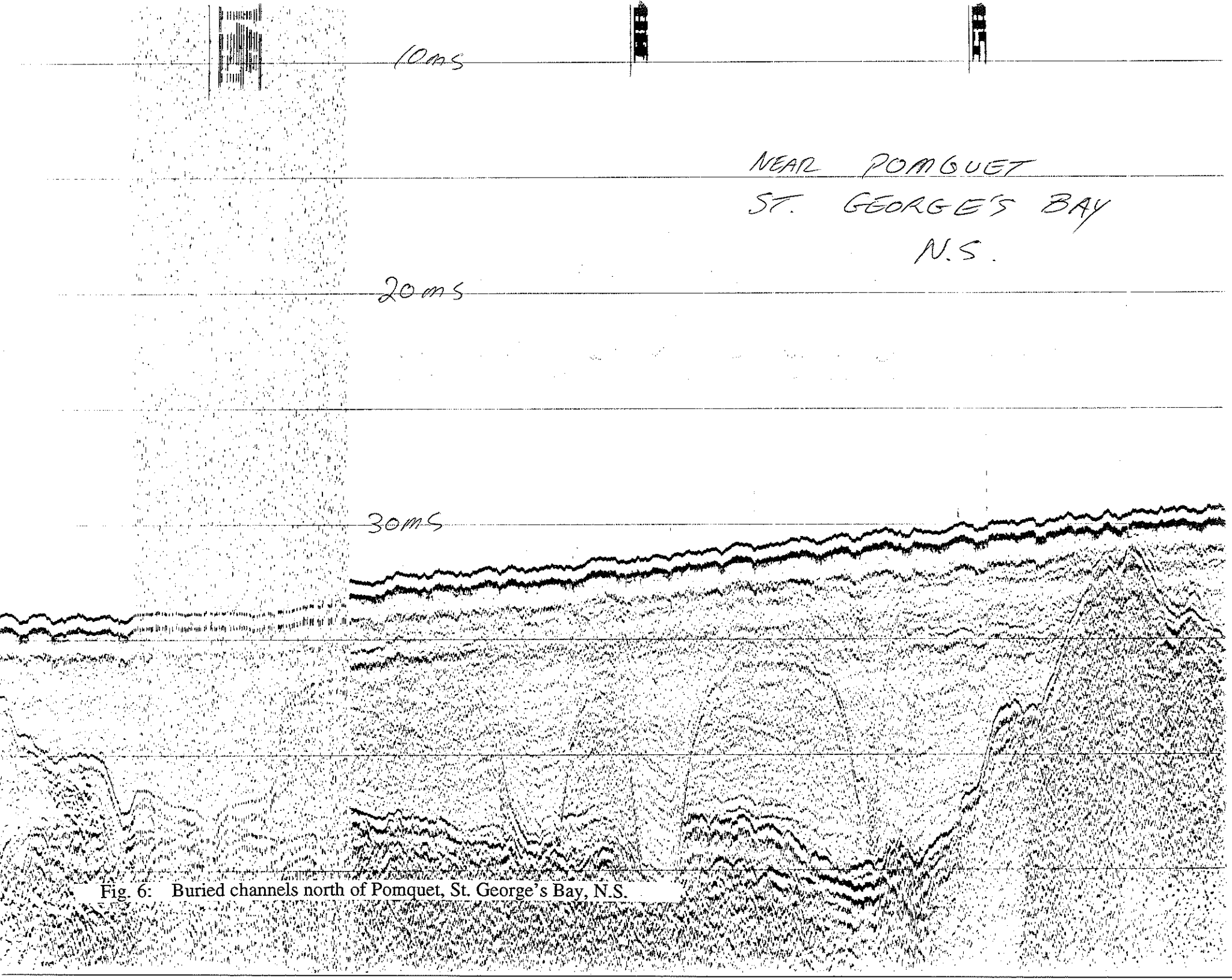

Fig. 6: Buried channels north of Pomquet, St. George's Bay, N.S.

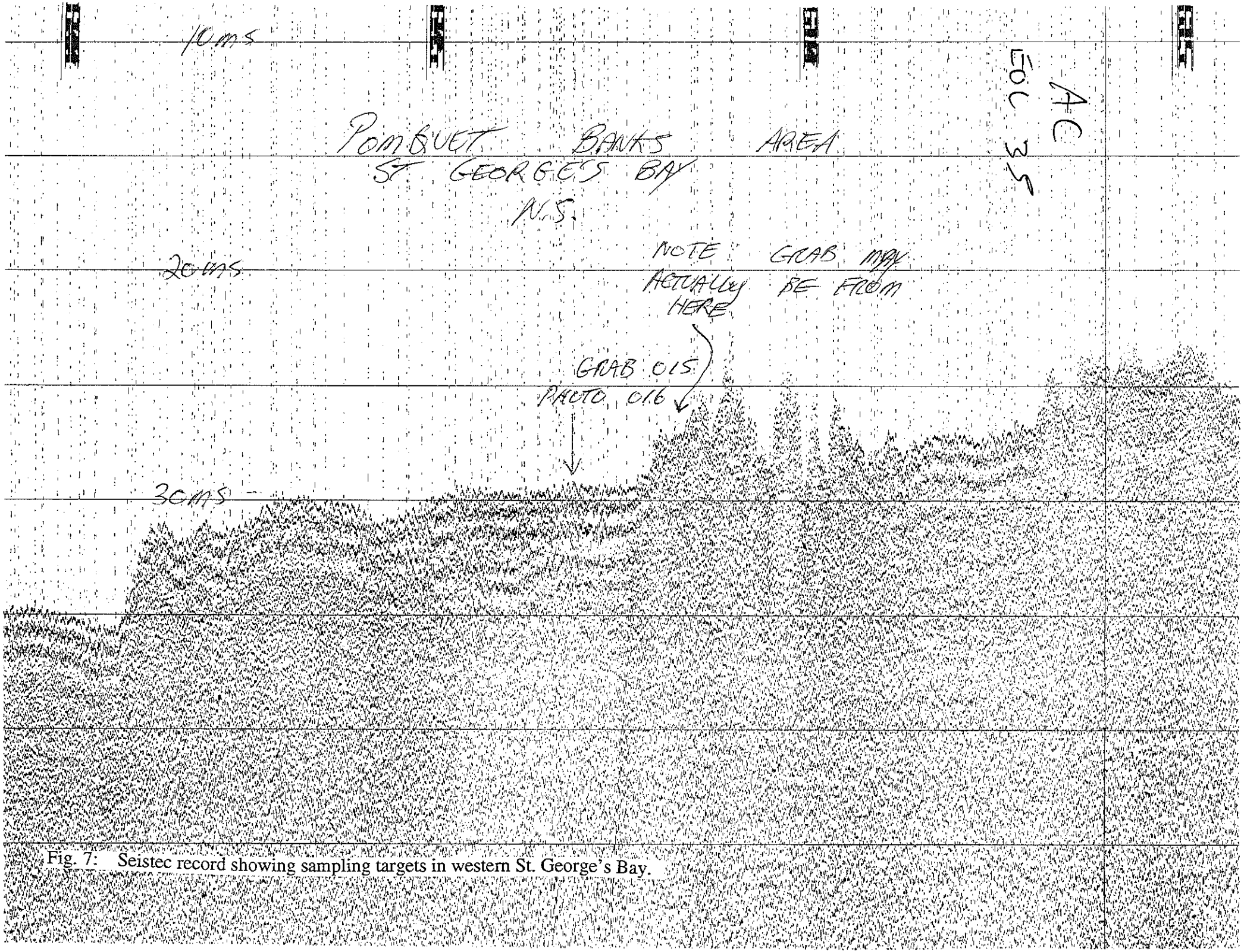

Fig. 7: Seistec record showing sampling targets in western St. George's Bay.

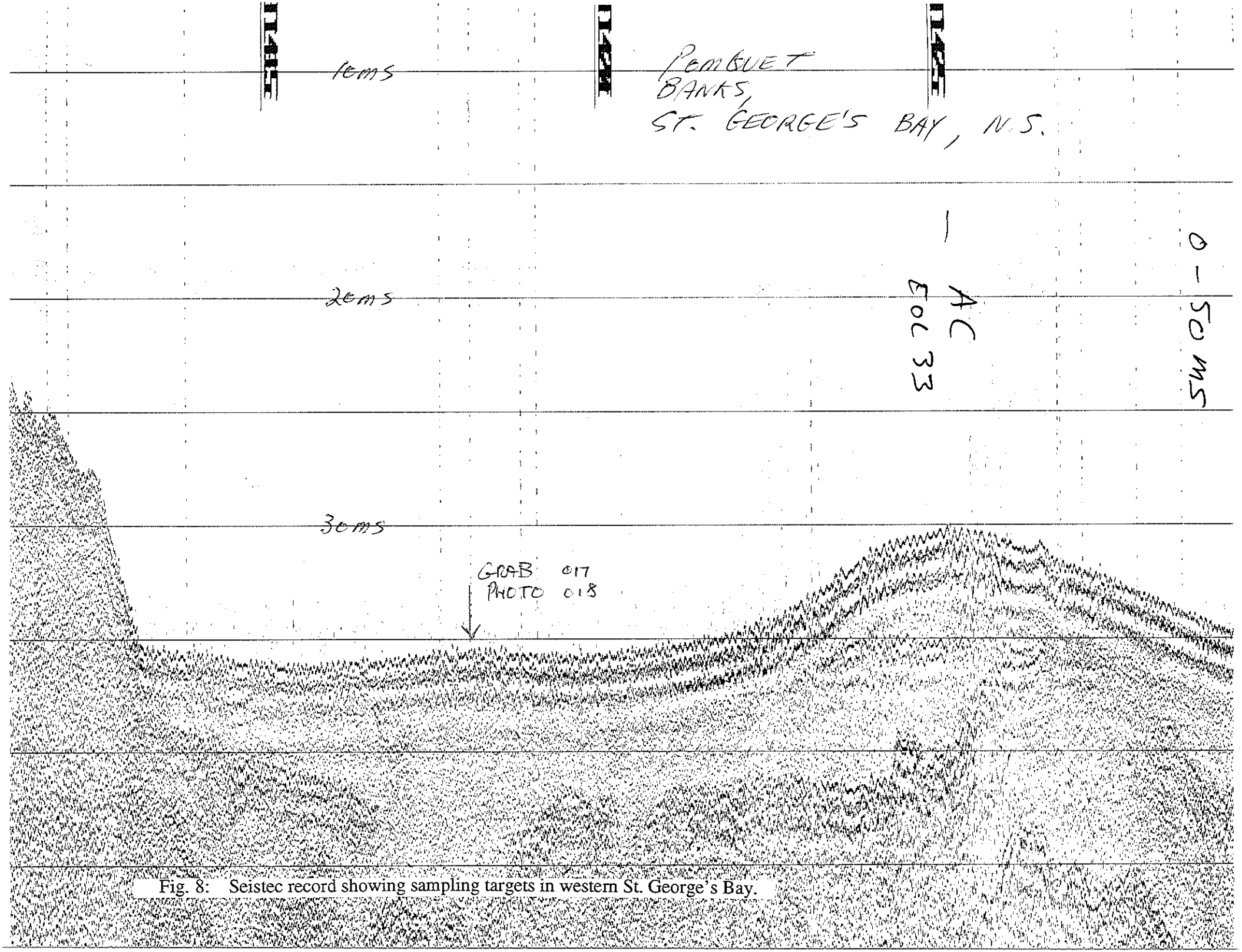

Fig. 8: Seistec record showing sampling targets in western St. George's Bay.

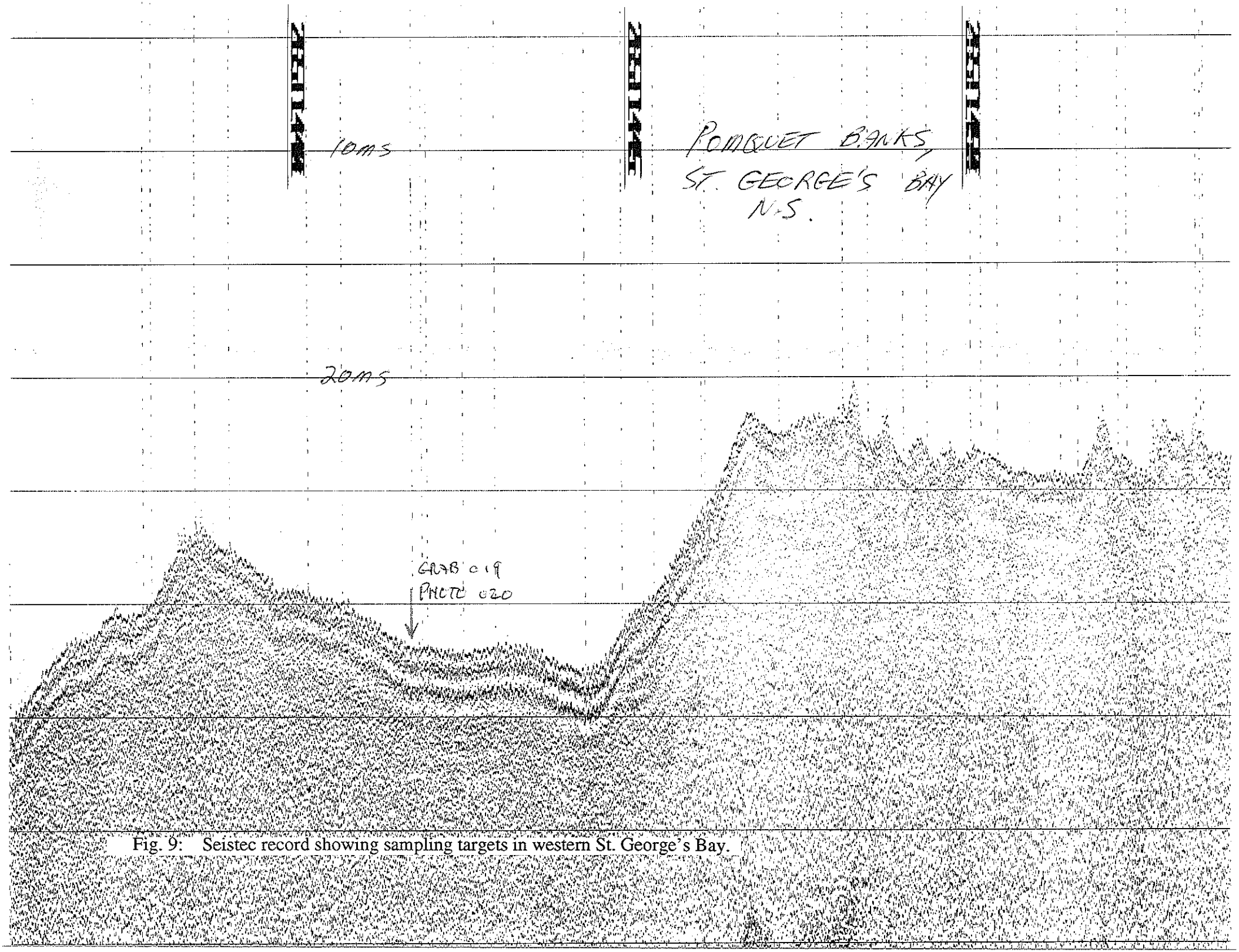

Fig. 9: Seistec record showing sampling targets in western St. George's Bay.

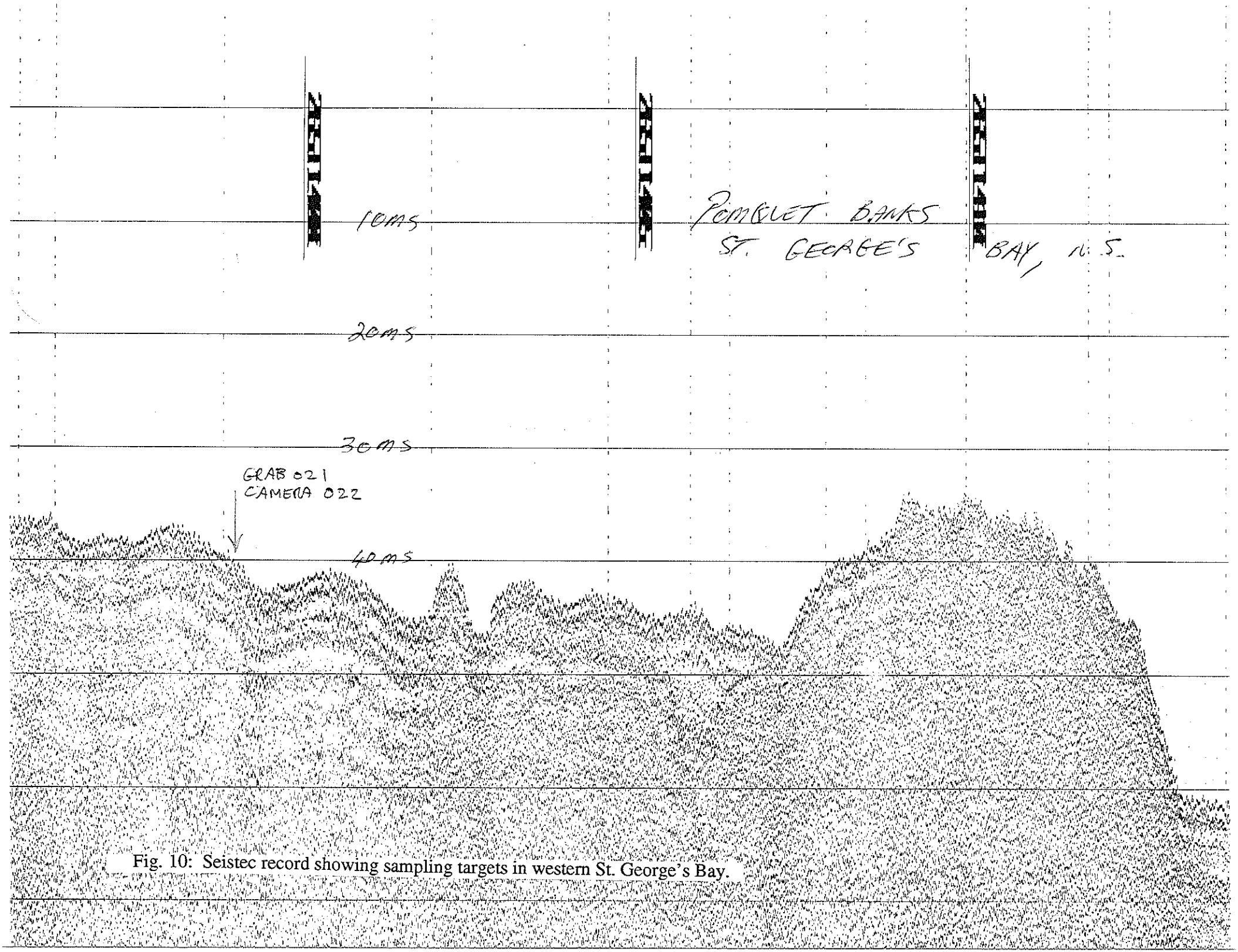

Fig. 10: Seistec record showing sampling targets in western St. George's Bay.

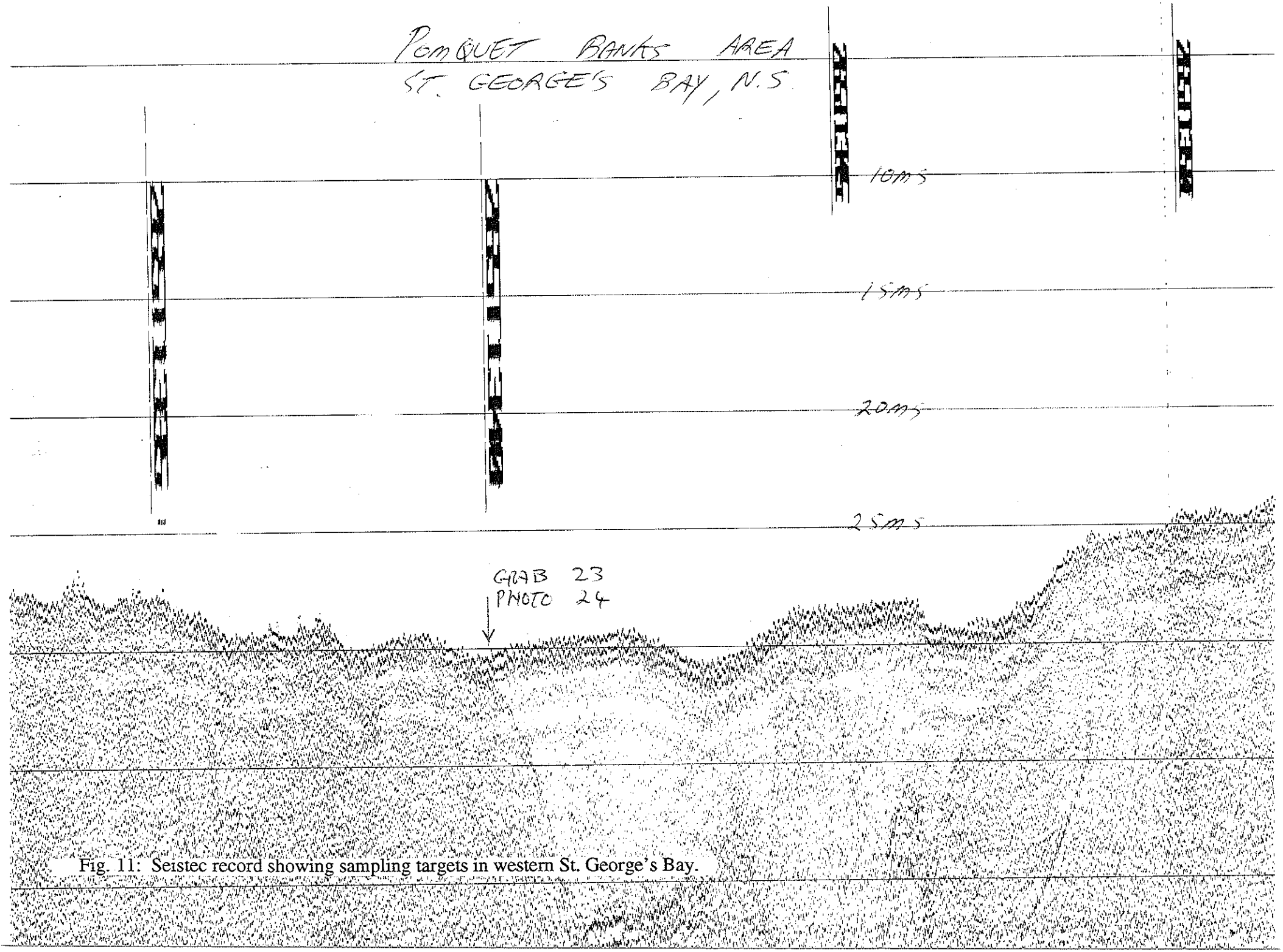

Fig. 11: Seistec record showing sampling targets in western St. George's Bay.

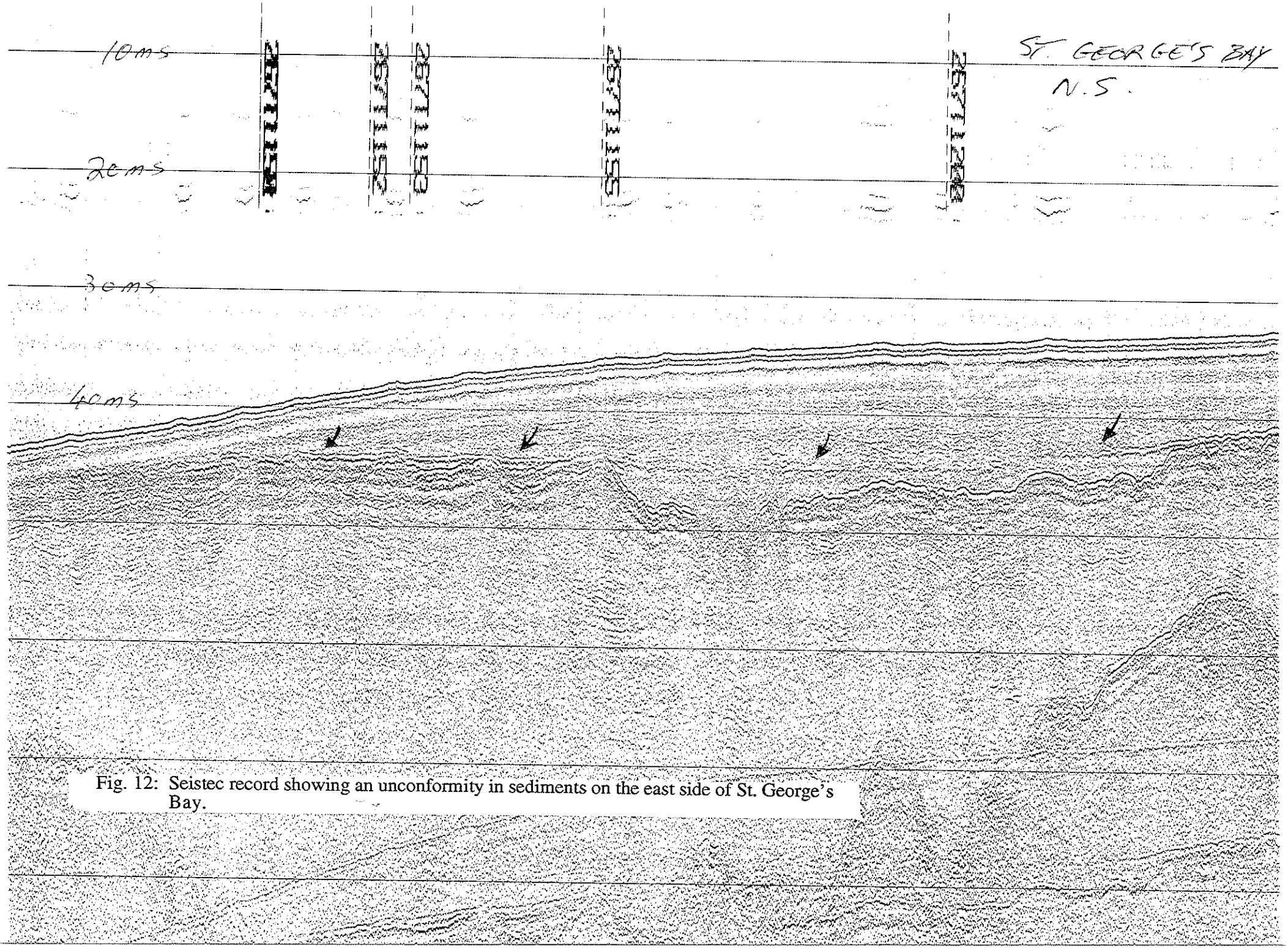

Fig. 12: Seistec record showing an unconformity in sediments on the east side of St. George's Bay.

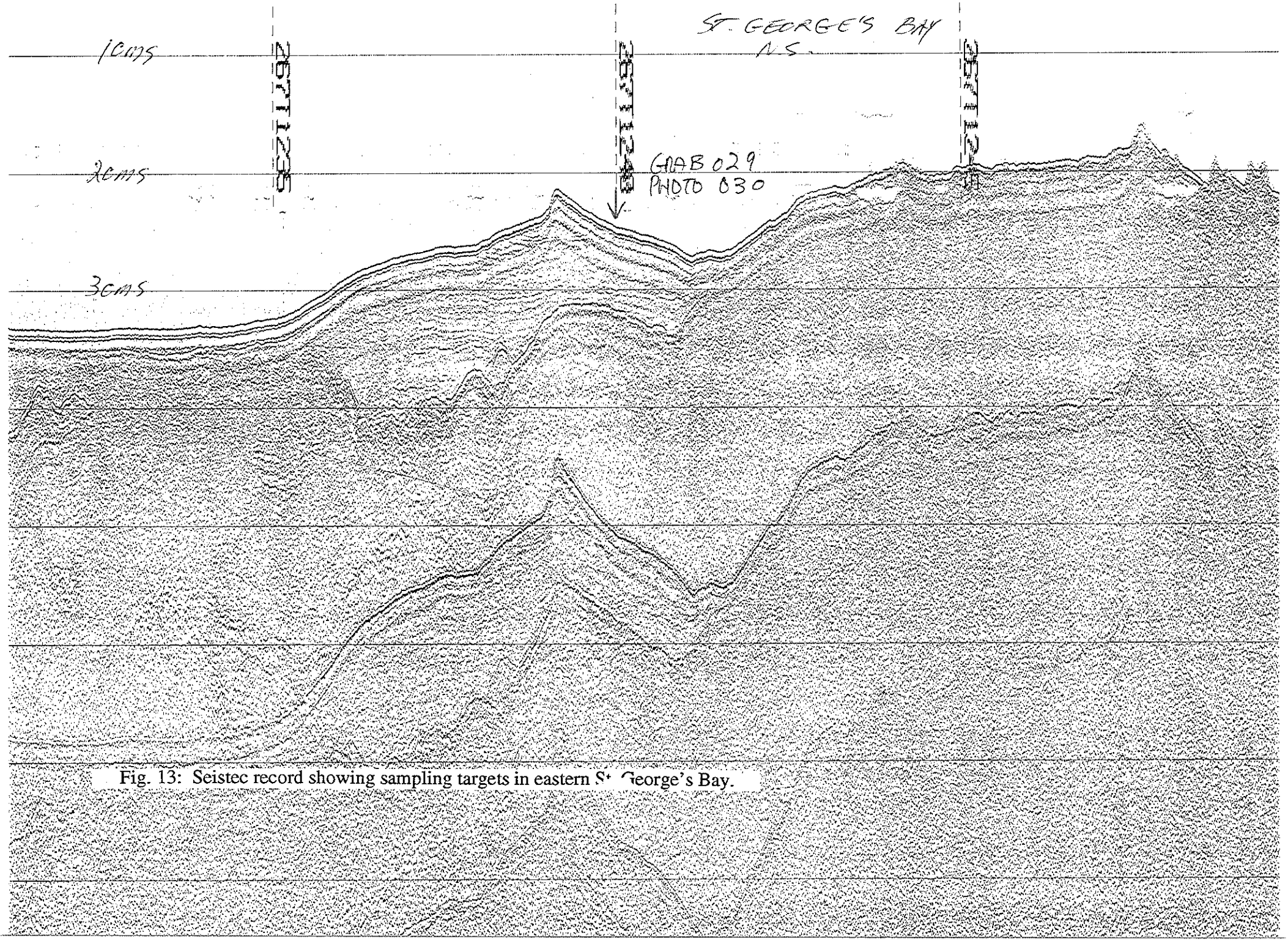

Fig. 13: Seistec record showing sampling targets in eastern St. George's Bay.

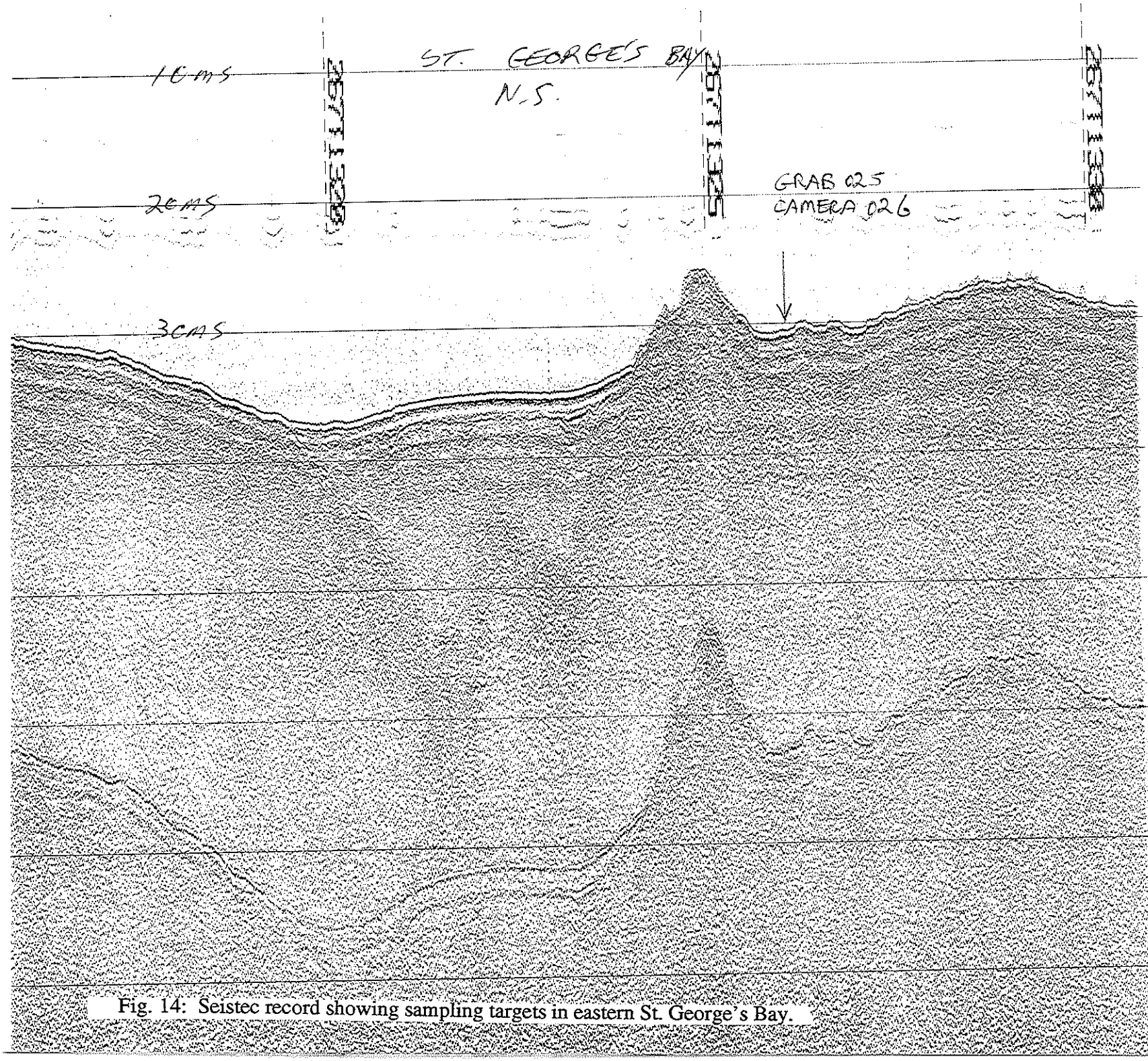

Fig. 14: Seistec record showing sampling targets in eastern St. George's Bay.

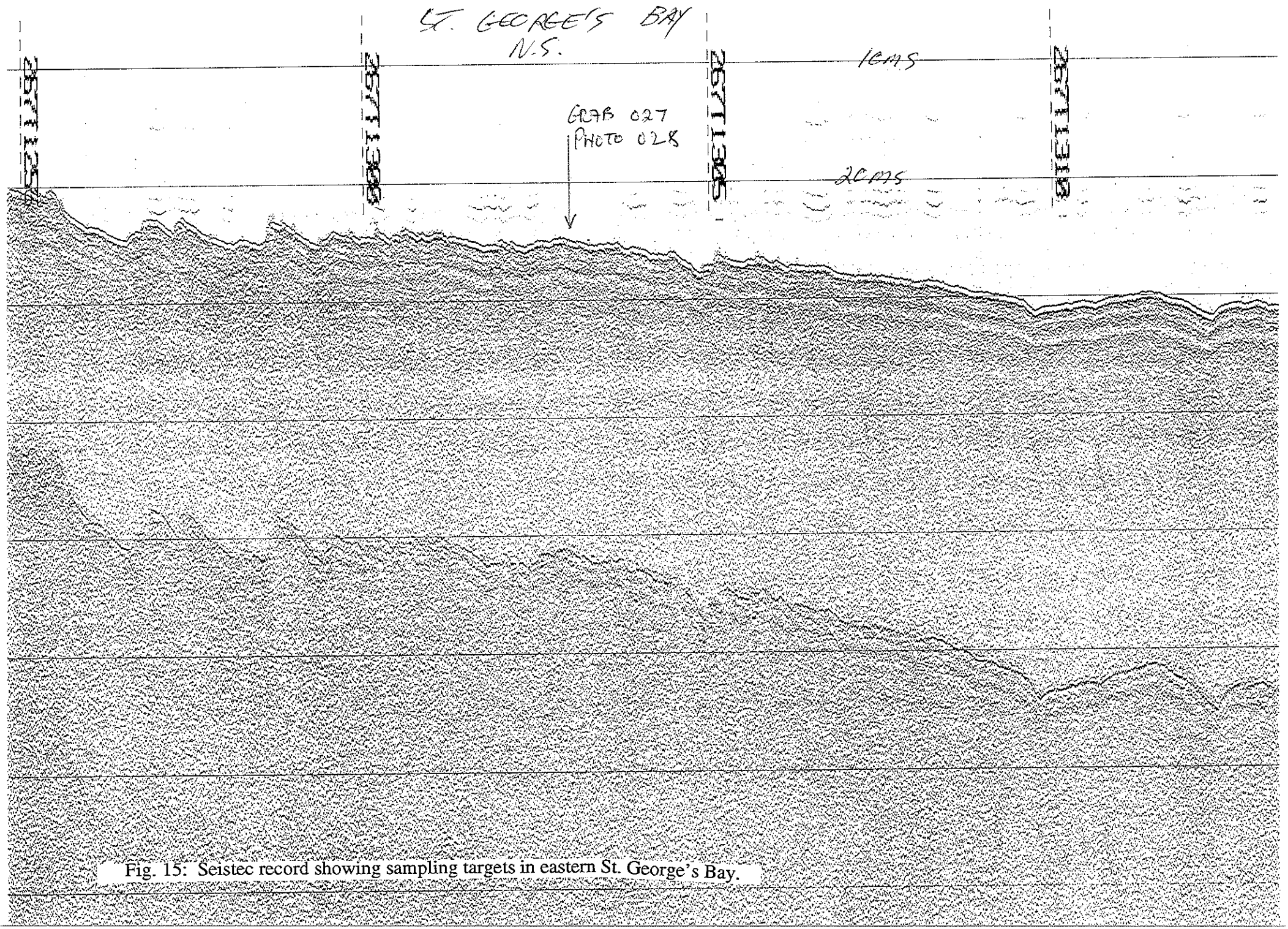

Fig. 15: Seistec record showing sampling targets in eastern St. George's Bay.

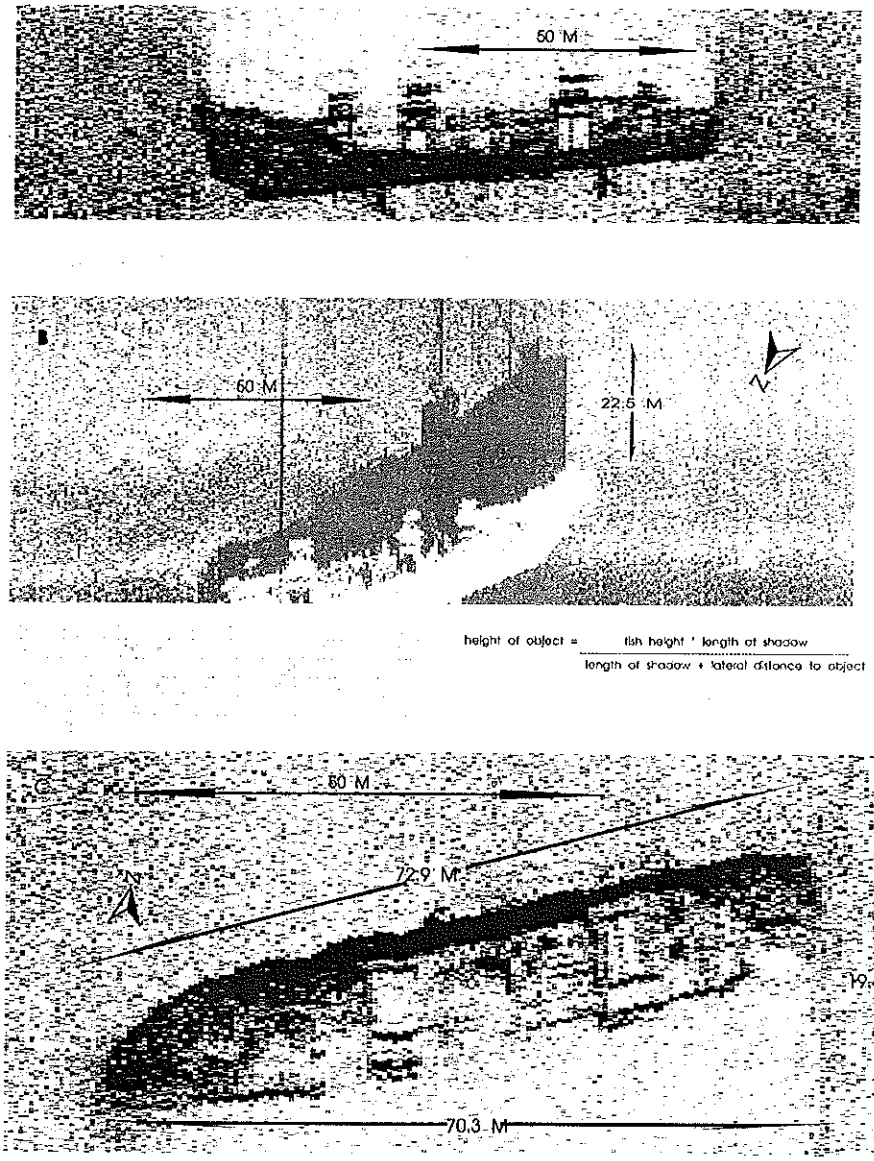

Fig. 16: Rectified sidescan-sonar images of a submerged vessel located in a water depth of 70 m off the mouth of the Humber River.

Appendix 2: Data Tables

ATLANTIC GEOSCIENCE CENTRE
DATA SECTION
-SHIP- REPORTING PACKAGE

TABLE 1

TOTAL SAMPLE INVENTORY

CRUISE NUMBER = 94138
CHIEF SCIENTIST = J. SHAW
PROJECT NUMBER = 900031

SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DAY/TIME	SEISMIC DAY/TIME	LATITUDE	LONGITUDE	DEPTH (M)	GEOGRAPHIC LOCATION
A001	LAND	273		49 10.6545	57 51.2473	-2.3	HEAD OF GOOSE ARM, NFLD
A002	LAND	273		49 10.6545	57 51.2473	-2.5	HEAD OF GOOSE ARM, NFLD
A003	LAND	273		49 10.6545	57 51.2473	-3.1	HEAD OF GOOSE ARM, NFLD
A004	LAND	273		49 10.6545	57 51.2473	-2.9	HEAD OF GOOSE ARM, NFLD
A005	LAND	273		49 10.6511	57 51.2959	.2	HEAD OF GOOSE ARM, NFLD
A006	LAND	273		49 10.7611	57 51.3506	-.8	HEAD OF GOOSE ARM, NFLD
A007	GRAB	274		48 58.3142	57 55.0551		HUMBER RIVER DELTA, NFLD
A008	GRAB	274		48 58.1560	57 54.8522	1.4	HUMBER RIVER DELTA, NFLD
A009	GRAB	274		48 58.2264	57 54.9609	1.9	HUMBER RIVER DELTA, NFLD
A010	GRAB	274		48 58.2802	57 55.0528	2.9	HUMBER RIVER DELTA, NFLD
A011	GRAB	274		48 58.2883	57 55.0530	2.1	HUMBER RIVER DELTA, NFLD
A012	GRAB	274		48 58.3006	57 55.0598	3.5	HUMBER RIVER DELTA, NFLD
A013	GRAB	274		48 58.2947	57 55.0564	7.0	HUMBER RIVER DELTA, NFLD
A014	GRAB	274		48 58.3071	57 55.0583	14.5	HUMBER RIVER DELTA, NFLD
A015	CTD	274		48 58.0894	57 54.5353	2.0	HUMBER RIVER DELTA, NFLD
A016	CTD	274		48 58.1399	57 54.6978	2.2	HUMBER RIVER DELTA, NFLD
A017	CTD	274		48 58.1713	57 54.8926	1.8	HUMBER RIVER DELTA, NFLD

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SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DAY/TIME	SEISMIC DAY/TIME	LATITUDE	LONGITUDE	DEPTH (M)	GEOGRAPHIC LOCATION
A018	CTD	274		48 58.2423	57 55.0628	2.2	HUMBER RIVER DELTA, NFLD
A019	CTD	274		48 58.2409	57 55.1021	7.0	HUMBER RIVER DELTA, NFLD
A020	CTD	274		48 58.2501	57 55.0998	14.0	HUMBER RIVER DELTA, NFLD
A021	GRAB	275		49 07.5484	57 56.0392	19.0	GOOSE ARM, NFLD
A022	GRAB	275		49 07.5360	57 55.9682	5.0	GOOSE ARM, NFLD
A023	GRAB	275		49 07.5339	57 55.9314	3.0	GOOSE ARM, NFLD
A024	GRAB	275		49 07.5152	57 55.8877	1.4	GOOSE ARM, NFLD
A025	LAND	276		49 03.4955	58 22.3288	.1	YORK HARBOUR, NFLD
A026	LAND	276		48 58.3083	57 53.2503	0	WILD COVE, NFLD
A028	LAND	276		48 58.2379	57 53.2964	0	WILD COVE, NFLD
A029	LAND	276		48 58.3485	57 53.2867	0	WILD COVE, NFLD
001	GRAB	2641558	2631410	45 24.2907	61 13.2145	33	CHEDABUCTO BAY, NS
002	CAMERA	2641608	2631410	45 24.2052	61 13.1636	35	CHEDABUCTO BAY, NS
003	GRAB	2641618	2631412	45 24.3393	61 13.4160	32	CHEDABUCTO BAY, NS
004	CAMERA	2641624	2631412	45 24.2869	61 13.3814	32	CHEDABUCTO BAY, NS
005	GRAB	2641633	2631414	45 24.4130	61 13.5515	28	CHEDABUCTO BAY, NS
006	CAMERA	2641645	2631414	45 24.2843	61 13.4882	31	CHEDABUCTO BAY, NS
007	GRAB	2641654	2631415	45 24.4562	61 13.6789	31	CHEDABUCTO BAY, NS
008	CAMERA	2641701	2631415	45 24.3683	61 13.6426	31	CHEDABUCTO BAY, NS

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SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DAY/TIME	SEISMIC DAY/TIME	LATITUDE	LONGITUDE	DEPTH (M)	GEOGRAPHIC LOCATION
009	GRAB	2641711	2631420	45 24.6429	61 14.0708	27	CHEDABUCTO BAY, NS
010	CAMERA	2641717	2631420	45 24.5725	61 14.0305	28	CHEDABUCTO BAY, NS
011	GRAB	2641744	2631455	45 24.6621	61 17.3659	22	CHEDABUCTO BAY, NS
012	CAMERA	2641750	2631455	45 24.6048	61 17.2945	24	CHEDABUCTO BAY, NS
013	GRAB	2641800	2631500	45 24.7049	61 17.7692	21	CHEDABUCTO BAY, NS
014	CAMERA	2641806	2631500	45 24.6718	61 17.6825	22	CHEDABUCTO BAY, NS
015	GRAB	2661652	2651340	45 45.5936	61 47.8063	18	ST. GEORGE'S BAY, NS
016	CAMERA	2661655	2651340	45 45.5640	61 47.7998	18	ST. GEORGE'S BAY, NS
017	GRAB	2661720	2651418	45 43.2832	61 45.7908	23	ST. GEORGE'S BAY, NS
018	CAMERA	2661723	2651418	45 43.2988	61 45.8269	23	ST. GEORGE'S BAY, NS
019	GRAB	2661738	2651442	45 43.8024	61 45.1142	20	ST. GEORGE'S BAY, NS
020	CAMERA	2661743	2651442	45 43.8043	61 45.1609	21	ST. GEORGE'S BAY, NS
021	GRAB	2661800	2651359	45 42.9605	61 43.8476	15	ST. GEORGE'S BAY, NS
022	CAMERA	2661804	2651359	45 42.9754	61 43.8830	15	ST. GEORGE'S BAY, NS
023	GRAB	2661820	2651340	45 42.6642	61 41.9926	19	ST. GEORGE'S BAY, NS
024	CAMERA	2661824	2651340	45 42.6873	61 42.0310	19	ST. GEORGE'S BAY, NS
025	GRAB	2671348	2671326	45 51.1232	61 34.5862	18	ST. GEORGE'S BAY, NS

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PROJECT NUMBER = 900031

SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DAY/TIME	SEISMIC DAY/TIME	LATITUDE	LONGITUDE	DEPTH (M)	GEOGRAPHIC LOCATION
026	CAMERA	2671355	2671326	45 51.1529	61 34.6636	21	ST. GEORGE'S BAY, NS
027	GRAB	2671411	2671303	45 49.4328	61 34.2308	17	ST. GEORGE'S BAY, NS
028	CAMERA	2671414	2671303	45 49.4325	61 34.2787	17	ST. GEORGE'S BAY, NS
029	GRAB	2671430	2671240	45 47.8187	61 33.7240	15	ST. GEORGE'S BAY, NS
030	CAMERA	2671435	2671240	45 47.8352	61 33.6602	14	ST. GEORGE'S BAY, NS
031	GRAB	2731127	2711750	48 57.6708	57 57.9901	92	HUMBER ARM, NFLD
032	CAMERA	2731149	2711750	48 57.6964	57 57.9899	93	HUMBER ARM, NFLD
033	CTD	2731157	2711750	48 57.6768	57 57.9368	94	HUMBER ARM, NFLD
034	GRAB	2731211	2711755	48 57.7895	57 57.5726	91	HUMBER ARM, NFLD
035	CAMERA	2731240	2711755	48 57.7040	57 57.6532	90	HUMBER ARM, NFLD
036	CTD	2731249	2711755	48 57.8012	57 57.5724	92	HUMBER ARM, NFLD
037	GRAB	2731310	2711811	48 58.0178	57 56.3996	86	HUMBER ARM, NFLD
038	CAMERA	2731321	2711811	48 58.1009	57 56.3743	81	HUMBER ARM, NFLD
039	CTD	2731325	2711811	48 58.0940	57 56.4431	83	HUMBER ARM, NFLD
040	GRAB	2731340	2711823	48 58.2828	57 55.5687	63	HUMBER ARM, NFLD
041	CAMERA	2731349	2711823	48 58.3538	57 55.4741	62	HUMBER ARM, NFLD
042	CTD	2731354	2711823	48 58.3454	57 55.5616	63	HUMBER ARM, NFLD

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TABLE 1

TOTAL SAMPLE INVENTORY

CRUISE NUMBER = 94138
CHIEF SCIENTIST = J. SHAW
PROJECT NUMBER = 900031

SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DAY/TIME	SEISMIC DAY/TIME	LATITUDE	LONGITUDE	DEPTH (M)	GEOGRAPHIC LOCATION
043	GRAB	2731406	2711650	48 58.6643	57 55.6263	61	HUMBER ARM, NFLD
044	CAMERA	2731413	2711650	48 58.5986	57 55.7617	65	HUMBER ARM, NFLD
045	CTD	2731418	2711650	48 58.6016	57 55.8059	69	HUMBER ARM, NFLD
046	GRAB	2731430	2711415	48 58.7327	57 55.6683	58	HUMBER ARM, NFLD
047	CAMERA	2731439	2711415	48 58.7963	57 55.5684	50	HUMBER ARM, NFLD
048	CTD	2731445	2711415	48 58.7823	57 55.6579	56	HUMBER ARM, NFLD
049	GRAB	2731528	2711400	48 58.6677	57 56.3406	71	HUMBER ARM, NFLD
050	CAMERA	2731535	2711400	48 58.5810	57 56.4747	74	HUMBER ARM, NFLD
051	CTD	2731540	2711400	48 58.5747	57 56.5809	75	HUMBER ARM, NFLD
052	GRAB	2731553	2711347	48 58.3611	57 57.4700	79	HUMBER ARM, NFLD
053	CAMERA	2731602	2711347	48 58.3704	57 57.4443	79	HUMBER ARM, NFLD
054	CTD	2731607	2711347	48 58.3160	57 57.5317	81	HUMBER ARM, NFLD
055	GRAB	2731618	2711430	48 58.2644	57 57.2819	88	HUMBER ARM, NFLD
056	CAMERA	2731626	2711430	48 58.2078	57 57.4788	90	HUMBER ARM, NFLD
057	CTD	2731632	2711430	48 58.1456	57 57.6071	91	HUMBER ARM, NFLD
058	GRAB	2731646	2711630	48 58.1764	57 57.1709	89	HUMBER ARM, NFLD
059	CAMERA	2731655	2711630	48 58.1801	57 57.3567	90	HUMBER ARM, NFLD

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060	CTD	2731701	2711630	48 58.1626	57 57.5116	91	HUMBER ARM, NFLD
061	GRAB	2731712	2711620	48 57.9613	57 58.0487	96	HUMBER ARM, NFLD
062	CAMERA	2731727	2711620	48 57.9513	57 57.9630	95	HUMBER ARM, NFLD
063	CTD	2731732	2711620	48 57.9180	57 58.1184	96	HUMBER ARM, NFLD
064	CORE	2741210	2721915	48 57.8317	57 58.3613	98	HUMBER ARM, NFLD
065	CORE	2741243	2721905	48 57.7626	57 57.4052	88	HUMBER ARM, NFLD
066	CORE	2741341	2721952	48 58.7486	58 02.4966	91	HUMBER ARM, NFLD
067	CORE	2741404	2721957	48 58.9223	58 02.9844	91	HUMBER ARM, NFLD
068	CORE	2741440	2722000	48 58.9604	58 03.5051	97	HUMBER ARM, NFLD
069	CORE	2741539	2711942	48 57.9937	57 56.4645	83	HUMBER ARM, NFLD
070	CORE	2741608	2711705	48 58.3628	57 55.9232	75	HUMBER ARM, NFLD
071	CORE	2741634	2711530	48 58.6983	57 55.7432	62	HUMBER ARM, NFLD
072	CORE	2741652	2711415	48 58.7616	57 55.5231	49	HUMBER ARM, NFLD
073	CORE	2741716	2712000	48 58.5093	57 55.2163	55	HUMBER ARM, NFLD
074	CTD	2741809		48 58.2663	57 55.5116	63	HUMBER ARM, NFLD
075	CTD	2741819		48 58.4273	57 55.1433	48	HUMBER ARM, NFLD
076	CTD	2741825		48 58.5184	57 55.3939	60	HUMBER ARM, NFLD

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PROJECT NUMBER = 900031

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077	CTD	2741832		48 58.6586	57 55.6372	61	HUMBER ARM, NFLD
078	CTD	2741844		48 58.6405	57 57.0389	51	HUMBER ARM, NFLD
079	CTD	2741851		48 58.4352	57 56.9515	84	HUMBER ARM, NFLD
080	CTD	2741900		48 58.1894	57 56.8492	89	HUMBER ARM, NFLD
081	CTD	2741908		48 57.9291	57 56.6411	84	HUMBER ARM, NFLD
082	CTD	2741915		48 57.7233	57 56.5719	37	HUMBER ARM, NFLD
083	GRAB	2751723	2751353	49 07.5512	57 56.1360	47	GOOSE ARM, NFLD
084	CAMERA	2751733	2751353	49 07.6620	57 56.3353	68	GOOSE ARM, NFLD
085	CTD	2751738	2751353	49 07.6959	57 56.3718	69	GOOSE ARM, NFLD
086	GRAB	2751750	2751401	49 07.7743	57 57.4100	91	GOOSE ARM, NFLD
087	CAMERA	2751757	2751401	49 07.8143	57 57.3031	89	GOOSE ARM, NFLD
088	CTD	2751802	2751401	49 07.8562	57 57.3523	89	GOOSE ARM, NFLD
089	CORE	2751826	2751417	49 08.4945	57 59.3236	108	GOOSE ARM, NFLD
090	CTD	2751847	2751441	49 08.3141	58 02.0874	177	MIDDLE ARM, NFLD
091	CTD	2751918	2751530	49 08.4471	58 05.9857	191	MIDDLE ARM, NFLD
092	GRAB	2751945	2751550	49 08.6956	58 08.2419	86	MIDDLE ARM, NFLD
093	CAMERA	2751952	2751550	49 08.7429	58 08.1871	80	MIDDLE ARM, NFLD
094	CTD	2751956	2751550	49 08.7718	58 08.1204	82	MIDDLE ARM, NFLD
095	GRAB	2761630	2761428	49 03.5967	58 21.7951	12	YORK HARBOUR, NFLD

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TABLE 1

TOTAL SAMPLE INVENTORY

CRUISE NUMBER = 94138
CHIEF SCIENTIST = J. SHAW
PROJECT NUMBER = 900031

SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DAY/TIME	SEISMIC DAY/TIME	LATITUDE	LONGITUDE	DEPTH (M)	GEOGRAPHIC LOCATION
096	CAMERA	2761637	2761428	49 03.5487	58 21.7665	12	YORK HARBOUR, NFLD
097	CTD	2761640	2761428	49 03.5235	58 21.7606	12	YORK HARBOUR, NFLD
098	GRAB	2761648	2761432	49 03.7618	58 22.0328	14	YORK HARBOUR, NFLD
099	CAMERA	2761653	2761432	49 03.6946	58 22.0558	12	YORK HARBOUR, NFLD
100	GRAB	2761705	2761442	49 04.5082	58 21.2588	27	YORK HARBOUR, NFLD
101	CAMERA	2761710	2761442	49 04.5014	58 21.3958	30	YORK HARBOUR, NFLD
102	CTD	2761713	2761442	49 04.4637	58 21.4128	29	YORK HARBOUR, NFLD
103	CTD	2761747	2761535	49 06.1486	58 15.5570	127	BAY OF ISLANDS, NFLD
104	CORE	2771028	2721956	48 58.9017	58 03.0593	92	HUMBER ARM, NFLD
105	CTD	2771040	2721956	48 58.9182	58 03.1256	92	HUMBER ARM, NFLD
106	GRAB	2771119	2711715	48 58.0933	57 56.7839	91	HUMBER ARM, NFLD
107	CAMERA	2771132	2711715	48 58.0741	57 56.8217	91	HUMBER ARM, NFLD
108	GRAB	2771144	2721741	48 57.6997	57 56.8985	71	HUMBER ARM, NFLD
109	CAMERA	2771158	2721741	48 57.6876	57 56.8996	71	HUMBER ARM, NFLD
110	GRAB	2771209	2721747	48 57.5967	57 57.5092	78	HUMBER ARM, NFLD
111	CAMERA	2771228	2721747	48 57.5625	57 57.5103	69	HUMBER ARM, NFLD

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TABLE 2

GRAB SAMPLES

CRUISE NUMBER = 94138
CHIEF SCIENTIST = J. SHAW
PROJECT NUMBER = 900031

SAMPLE NUMBER	TYPE OF SAMPLER	DAY/TIME (GMT)	LATITUDE LONGITUDE	DEPTH (M)	NO.OF TRIES	NO. OF SUBSAMPLES	GEOGRAPHIC LOCATION	GRAB SAMPLE NOTES
A007	PONAR	274	48 58.3142 57 55.0551				HUMBER RIVER DELTA, NFLD	FORESET. NOT RETAINED.
A008	PONAR	274	48 58.1560 57 54.8522	1.4			HUMBER RIVER DELTA, NFLD	TOPSET. NOT RETAINED.
A009	PONAR	274	48 58.2264 57 54.9609	1.9			HUMBER RIVER DELTA, NFLD	TOPSET. SILTY MEDIUM SAND WITH ZOSTERA.
A010	PONAR	274	48 58.2802 57 55.0528	2.9			HUMBER RIVER DELTA, NFLD	TOPSET. POORLY-SORTED SANDY MUD.
A011	PONAR	274	48 58.2883 57 55.0530	2.1			HUMBER RIVER DELTA, NFLD	TOPSET. MEDIUM SAND WITH SHELLS.
A012	PONAR	274	48 58.3006 57 55.0598	3.5			HUMBER RIVER DELTA, NFLD	TOPSET. ORGANIC-RICH SANDY MUD.
A013	PONAR	274	48 58.2947 57 55.0564	7.0			HUMBER RIVER DELTA, NFLD	FORESET. BLACK ORGANIC MUCK WITH MUSSEL.
A014	PONAR	274	48 58.3071 57 55.0583	14.5			HUMBER RIVER DELTA, NFLD	FORESET. MUDDY ORGANIC DEBRIS.
A021	PONAR	275	49 07.5484 57 56.0392	19.0			GOOSE ARM, NFLD	SHOREFACE. PEBBLY SAND.
A022	PONAR	275	49 07.5360 57 55.9682	5.0			GOOSE ARM, NFLD	SHOREFACE. PEBBLY SAND WITH LITHOTHAMNION.
A023	PONAR	275	49 07.5339 57 55.9314	3.0			GOOSE ARM, NFLD	NEARSHORE. PEBBLE GRAVEL (NOT RETAINED).
A024	PONAR	275	49 07.5152 57 55.8877	1.4			GOOSE ARM, NFLD	NEARSHORE. FINE-MEDIUM SAND WITH GRANULES AND SHELL FRAGMENTS.
001	VAN VEEN	2641558	45 24.2907 61 13.2145	33	1	1	CHEDABUCTO BAY, NS	REDDISH BROWN MUDDY, SANDY GRAVEL. ANGULAR AND ROUNDED CLASTS, ALL BELOW 5CM. 1 BRITTLESTAR. 1 BAG.
003	VAN VEEN	2641618	45 24.3393 61 13.4160	32	1	1	CHEDABUCTO BAY, NS	REDDISH BROWN MUDDY FINE SAND WITH SCATTERED GRIT AND A FEW SMALL PEBBLES. 1 BRITTLESTAR. 1 BAG.
005	VAN VEEN	2641633	45 24.4130 61 13.5515	28	3	3	CHEDABUCTO BAY, NS	1ST ATTEMPT: 1 COBBLE. 2ND ATTEMPT: 1635 45 24.3961N 61 13.5265W, 29M, 2 COBBLES. 3RD ATTEMPT:1637 45 24.3754N 61 13.5152W 30M, MUDDY, SANDY GRAVEL. SURFACE LAYER OF LITHOTHAMNION-COATED (1 SIDE) GRAVEL, SUBROUNDED TO SUBANGULAR, UP TO 10CM, OVERLYING REDDISH BROWN MUDDY SANDY FINE GRAVEL. 1 BAG FOR EACH ATTEMPT.

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TABLE 2

GRAB SAMPLES

CRUISE NUMBER = 94138
CHIEF SCIENTIST = J. SHAW
PROJECT NUMBER = 900031

SAMPLE NUMBER	TYPE OF SAMPLER	DAY/TIME (GMT)	LATITUDE LONGITUDE	DEPTH (M)	NO.OF TRIES	NO. OF SUBSAMPLES	GEOGRAPHIC LOCATION	GRAB SAMPLE NOTES
007	VAN VEEN	2641654	45 24.4562 61 13.6789	31	1	1	CHEDABUCTO BAY, NS	REDDISH BROWN MUDDY FINE SAND. 1 BRITTLESTAR. 1 BAG.
009	VAN VEEN	2641711	45 24.6429 61 14.0708	27	2	2	CHEDABUCTO BAY, NS	1ST ATTEMPT: 6 SUBANGULAR PEBBLES WITH LITHOTHAMNION ALL OVER. 2ND ATTEMPT: 1713 45 24.6215N 61 14.0393W, 27M, 6 SUBANGULAR TO SUBROUNDED GRAVEL CLASTS UP TO 10CM MAXIMUM LENGTH. SOME SANDY MUD ON 1 CLASTS. 2 BAGS.
011	VAN VEEN	2641744	45 24.6621 61 17.3659	22	1	1	CHEDABUCTO BAY, NS	WELL SORTED MEDIUM TO FINE SAND, REDDISH BROWN, SOME SHELL FRAGMENTS. 1 BAG.
013	VAN VEEN	2641800	45 24.7049 61 17.7692	21	1	1	CHEDABUCTO BAY, NS	REDDISH BROWN FINE SAND, TRACE OF MUD. A FEW SHELL FRAGMENTS, A FEW SMALL PEBBLES, SEVERAL WORM TUBES. 1 BAG.
015	VAN VEEN	2661652	45 45.5936 61 47.8063	18	1	1	ST. GEORGE'S BAY, NS	MEDIUM GRAVEL WITH FINE SAND AND LITTLE MUD. GRAVEL ROUNDED TO SUBROUNDED AND FAIRLY WELL SORTED. NO SIGNS OF SHELL MATERIAL.
017	VAN VEEN	2661720	45 43.2832 61 45.7908	23	1	1	ST. GEORGE'S BAY, NS	BROWN FINE MUDDY SAND, SEMI COHESIVE IN NATURE (FSM). THERE WAS NO SIGN OF GRAVEL, SHELL MATERIAL OR MARINE FAUNA.
019	VAN VEEN	2661738	45 43.8024 61 45.1142	20	2	1	ST. GEORGE'S BAY, NS	1ST ATTEMPT: COBBLES WITH MUDDY SAND. 2ND ATTEMPT: 1700 45 43.805N 61 45.1359W 21M, COBBLES AND GRAVEL WITH MUDDY SAND, BI-VALVES. GRAVEL-ANGULAR TO SUBANGULAR.
021	VAN VEEN	2661800	45 42.9605 61 43.8476	15	2	2	ST. GEORGE'S BAY, NS	1ST ATTEMPT: JAWS OPEN. COBBLES, SAND, ROUNDED, WELL SORTED. 2ND ATTEMPT: 1802 45 42.9741N 61 43.8555W, 15M. JAWS OPEN, COBBLES, SAND AND GRAVEL, WELL SORTED, ROUNDED TO SUBROUNDED. SOME SHELL DEBRIS.
023	VAN VEEN	2661820	45 42.6642 61 41.9926	19	1	1	ST. GEORGE'S BAY, NS	WELL SORTED SAND WITH SOME GRANULES AND GRAVEL, ALSO CONTAINS SAND DOLLARS.
025	VAN VEEN	2671348	45 51.1232 61 34.5862	18	3	3	ST. GEORGE'S BAY, NS	2ND ATTEMPT:1349 45 51.1448N 61 34.5938W 19M. 3RD ATTEMPT: 1351 45 51.1558N 61 34.6246W, 19M. ALL ATTEMPTS HAD COBBLES, 2 HAD COARSE GRAVEL AND SAND. LAST ATTEMPT JUST HAD COBBLE. 2ND ATTEMPT ALSO HAD LIVE SCALLOP, ROUNDED, WELL SORTED.

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TABLE 2

GRAB SAMPLES

CRUISE NUMBER = 94138
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PROJECT NUMBER = 900031

SAMPLE NUMBER	TYPE OF SAMPLER	DAY/TIME (GMT)	LATITUDE LONGITUDE	DEPTH (M)	NO.OF TRIES	NO. OF SUBSAMPLES	GEOGRAPHIC LOCATION	GRAB SAMPLE NOTES
027	VAN VEEN	2671411	45 49.4328 61 34.2308	17	1	1	ST. GEORGE'S BAY, NS	ONE ATTEMPT. JAWS CLOSED. CONTAINED GRAVEL. COBBLES, GRAVEL AND GRANULES. ROUNDED AND WELL SORTED. ALSO TRACE AMOUNT OF SAND AND SOME SEAWEED.
029	VAN VEEN	2671430	45 47.8187 61 33.7240	15	2	2	ST. GEORGE'S BAY, NS	2ND ATTEMPT:1432 45 47.8209N 61 33.6874W GRAVEL AND SAND WITH A FEW COBBLES. JAWS OPEN. GRAVEL SUBANGULAR, SAMPLES INCLUDED BIVALVES.
031	VAN VEEN	2731127	48 57.6708 57 57.9901	92	2	1	HUMBER ARM, NFLD	1ST ATTEMPT: DID NOT TRIP. 2ND ATTEMPT: 1137 48 57.6792N 57 57.098W, 92M. SOFT, BLACK, ORGANIC MUCK WITH SCATTERED PIECES OF BARK. LIGHT BROWN SURFACE. 1 BAG.
034	VAN VEEN	2731211	48 57.7895 57 57.5726	91	4		HUMBER ARM, NFLD	1ST ATTEMPT: DID NOT TRIP. 2ND ATTEMPT: 1215 48 57.7644N 57 57.67W, 92M. DID NOT TRIP. 3RD ATTEMPT: 1223 48 57.7095N 57 57.605W, 90M. DID NOT TRIP. 4TH ATTEMPT: 1228 48 57.736N 57 57.7093W, 91M. PUNGENT, SOFT, BLACK ORGANIC MUCK WITH MANY SMALL STRIPS OF WOOD AND BARK. OILY MARKS APPEAR WHEN SMOOTHED. BROWN SURFACE.
037	VAN VEEN	2731310	48 58.0178 57 56.3996	86	1	1	HUMBER ARM, NFLD	PUNGENT, SOFT BLACK ORGANIC MUCK, FRAGMENTS OF WOOD AND BARK THROUGHOUT. SIMILAR TO SAMPLES 31 AND 34. LIGHT BROWN SURFACE. 1 BAG.
040	VAN VEEN	2731340	48 58.2828 57 55.5687	63	1	1	HUMBER ARM, NFLD	SOFT, BLACK ORGANIC MUCK WITH SCATTERED BITS OF WOOD AND BARK. SEVERAL WOOD BRANCHES 30CM LONG. LIGHT BROWN ON SURFACE. 1 BAG.
043	VAN VEEN	2731406	48 58.6643 57 55.6263	61	1	1	HUMBER ARM, NFLD	BLACK ORGANIC MUCK WITH CLUMPS OF WOOD CHIPS AND FIBRES. PIECES OF WOOD UP TO 20CM. LIGHT BROWN SURFACE. 1 BAG.
046	VAN VEEN	2731430	48 58.7327 57 55.6683	58	1	1	HUMBER ARM, NFLD	BLACK ORGANIC MUD, STIFFER THAN PREVIOUS SAMPLES. WOOD AND BARK CHIPS THROUGHOUT. LIGHT BROWN SURFACE. 1 BAG.
049	VAN VEEN	2731528	48 58.6677 57 56.3406	71	1		HUMBER ARM, NFLD	SOFT BLACK ORGANIC MUD, A FEW WOOD FRAGMENTS, SOME WORM TUBES. LIGHT BROWN ON SURFACE. 1 BAG.

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TABLE 2

GRAB SAMPLES

CRUISE NUMBER = 94138
CHIEF SCIENTIST = J. SHAW
PROJECT NUMBER = 900031

SAMPLE NUMBER	TYPE OF SAMPLER	DAY/TIME (GMT)	LATITUDE LONGITUDE	DEPTH (M)	NO.OF TRIES	NO. OF SUBSAMPLES	GEOGRAPHIC LOCATION	GRAB SAMPLE NOTES
052	VAN VEEN	2731553	48 58.3611 57 57.4700	79	1	1	HUMBER ARM, NFLD	SOFT BLACK ORGANIC-RICH MUD, A FEW TWIGS. 1 PEBBLE (8X5X3CM), SUBROUNDED. 1 BAG.
055	VAN VEEN	2731618	48 58.2644 57 57.2819	88	1	1	HUMBER ARM, NFLD	BLACK ORGANIC MUD, VERY SOFT, SCATTERED PIECES OF WOOD AND BARK. LIGHT BROWN ON SURFACE. 1 BAG.
058	VAN VEEN	2731646	48 58.1764 57 57.1709	89	1	1	HUMBER ARM, NFLD	A MIXTURE OF OLIVE BROWN MUD WITH BLACK MOTTLES AND A LAYER OF POORLY-SORTED COARSE SAND AND FINE GRAVEL, INCLUDING QUARTZ PEBBLES.
061	VAN VEEN	2731712	48 57.9613 57 58.0487	96	1	1	HUMBER ARM, NFLD	BLACK ORGANIC-RICH MUD WITH LARGE AMOUNTS OF WOOD STRIPS, BARK. LIGHT BROWN ON SURFACE. 1 BAG.
083	VAN VEEN	2751723	49 07.5512 57 56.1360	47	1	1	GOOSE ARM, NFLD	DARK OLIVE GRAY SANDY MUD WITH SOME SUBROUNDED PEBBLES, A FEW WORMS, BRITTLESTAR, SHELL FRAGMENTS. 1 BAG.
086	VAN VEEN	2751750	49 07.7743 57 57.4100	91	1	1	GOOSE ARM, NFLD	DARK OLIVE GRAY SILTY MUD, WORM TUBES, LIGHT BROWN ON SURFACE, 1 TREE ROOT (50CM LONG).
092	VAN VEEN	2751945	49 08.6956 58 08.2419	86	1	1	MIDDLE ARM, NFLD	DARK OLIVE GRAY GRAVELLY SANDY MUD. BLACK MOTTLES. GRAVEL SUBROUNDED TO ANGULAR, UP TO 20CM 'A' AXIS. WORMS, SHELL FRAGMENTS.
095	VAN VEEN	2761630	49 03.5967 58 21.7951	12	1	1	YORK HARBOUR, NFLD	BROWN/BLACK SILTY FINE SAND WITH WELL-ROUNDED PEBBLES.
098	VAN VEEN	2761648	49 03.7618 58 22.0328	14	1	1	YORK HARBOUR, NFLD	OLIVE-GREY SILTY FINE SAND WITH GRANULES AND PEBBLES, RED WORMS, FILAMENTOUS ORANGE-BROWN ORGANICS AND A THIN (APPROX. 1CM) BROWN SOUPY MUD ON SURFACE.
100	VAN VEEN	2761705	49 04.5082 58 21.2588	27	1	1	YORK HARBOUR, NFLD	BROWN/BLACK GRITTY SANDY MUD WITH FEW SMALL ANGULAR PEBBLES, PIECES OF BLACK EEL GRASS AND OTHER FILAMENTOUS ORGANICS, WORM TUBES, PINK POLYCHAETE WORM.
106	VAN VEEN	2771119	48 58.0933 57 56.7839	91	1	2	HUMBER ARM, NFLD	15CM OF BLACK ORGANIC MUCK OVERLYING DARK GRAY MUDDY FINE GRAVEL, WITH LIGHT GRAY POCKETS. 1 BAG OF ORGANIC SEDIMENT, 1 BAG GRAVEL.

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TABLE 2

GRAB SAMPLES

CRUISE NUMBER = 94138
CHIEF SCIENTIST = J. SHAW
PROJECT NUMBER = 900031

SAMPLE NUMBER	TYPE OF SAMPLER	DAY/TIME (GMT)	LATITUDE LONGITUDE	DEPTH (M)	NO.OF TRIES	NO. OF SUBSAMPLES	GEOGRAPHIC LOCATION	GRAB SAMPLE NOTES
108	VAN VEEN	2771144	48 57.6997 57 56.8985	71	4	0	HUMBER ARM, NFLD	NO SAMPLE RECOVERED, SAMPLE DID NOT TRIP ALL 4 ATTEMPTS.
110	VAN VEEN	2771209	48 57.5967 57 57.5092	78	4	1	HUMBER ARM, NFLD	SAMPLER DID NOT TRIP 3 ATTEMPTS. 4TH ATTEMPT: 1224 48 57.5649N 57 57.533W, 75M. SOFT, FROTHY BLACK ORGANIC MUCK WITH LIGHT GRAY, FIBROUS CLUMPS. 1 BAG.

ATLANTIC GEOSCIENCE CENTRE
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TABLE 3

CORE SAMPLES

CRUISE NUMBER = 94138
CHIEF SCIENTIST = J. SHAW
PROJECT NUMBER = 900031

SAMPLE NUMBER	SAMPLE TYPE	DAY/TIME (GMT)	LATITUDE LONGITUDE	DEPTH (MTRS)	CORER LENGTH (CM)	APP. PENN (CM)	CORE LENGTH (CM)	NO OF SECT	GEOGRAPHIC LOCATION	NOTES
064	LEHIGH	2741210	48 57.8317 57 58.3613	98	181	130	90	1	HUMBER ARM, NFLD	BLACK MUD ON BARREL. CUTTER AND CATCHER HAVE MODERATELY STIFF, VERY DARK, OLIVE BROWN MUD. 1 BAG WITH CATCHER SAMPLE.
065	LEHIGH	2741243	48 57.7626 57 57.4052	88	181		110	1	HUMBER ARM, NFLD	BARREL CLEAN ON OUTSIDE. CUTTER/CATCHER HAD VERY DARK OLIVE BROWN STIFF CLAYEY MUD. A LOT OF GAS BUBBLES. CORE EXPANDED TO 117CM - THEN WATER WAS LET OUT.
066	LEHIGH	2741341	48 58.7486 58 02.4966	91	181	180	85	1	HUMBER ARM, NFLD	DARK MUD ALONG BARREL. CATCHER HAD DARK GRAY CLAYEY MUD.
067	LEHIGH	2741404	48 58.9223 58 02.9844	91	181	180	141	1	HUMBER ARM, NFLD	CATCHER HAS PALE REDDISH GRAY BUTTERY CLAY WITH SOME FINE SAND. GRITTY CLAY ON OUTSIDE OF CUTTER.
068	LEHIGH	2741440	48 58.9604 58 03.5051	97	181	160	107	1	HUMBER ARM, NFLD	DARK GRAY CLAYEY MUD AT BASE OF CORE.
069	LEHIGH	2741539	48 57.9937 57 56.4645	83	181	165	70	1	HUMBER ARM, NFLD	DARK GRAY SANDY MUD AT BASE. CLEAR WATER ABOVE CORE IN BARREL.
070	LEHIGH	2741608	48 58.3628 57 55.9232	75	181	140	95	1	HUMBER ARM, NFLD	STIFF GRAY SILTY MUD AT BASE OF CORE. CUTTER/CATCHER EMPTY.
071	LEHIGH	2741634	48 58.6983 57 55.7432	62	181	0	0	0	HUMBER ARM, NFLD	EMPTY, NO CORE RECOVERED.
072	LEHIGH	2741652	48 58.7616 57 55.5231	49	181	120	59	1	HUMBER ARM, NFLD	CUTTER AND CATCHER HAD DARK GRAY SILTY MUD. 1 BAG WITH CATCHER/CUTTER SAMPLE.
073	LEHIGH	2741716	48 58.5093 57 55.2163	55	181	115	85	1	HUMBER ARM, NFLD	STIFF SANDY SILT IN CATCHER. 1 BAG WITH CATCHER/CUTTER SAMPLE.
089	LEHIGH	2751826	49 08.4945 57 59.3236	108	181	218	190	2	GOOSE ARM, NFLD	DARK GREY MUD OUTSIDE BARREL. CUTTER/ CATCHER HAD PINKISH GREY BUTTERY CLAY WITH SOME GRIT.
104	LEHIGH	2771028	48 58.9017 58 03.0593	92	190	235	160	1	HUMBER ARM, NFLD	RED BUTTERY CLAY IN CATCHER/CUTTER. CORE IS RED AT BASE, OLIVE AT TOP. 1 BAG WITH CUTTER/CATCHER.

ATLANTIC GEOSCIENCE CENTRE
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TABLE 4

CAMERA STATIONS

CRUISE NUMBER = 94138
CHIEF SCIENTIST = J. SHAW
PROJECT NUMBER = 900031

SAMPLE NUMBER	TYPE OF CAMERA	DAY/TIME (GMT)	LATITUDE LONGITUDE	DEPTH (MTRS)	FRAMES SHOT	DIST OFF. BOTT	STEREO	COLOR1 COLOR2	ASA1 ASA2	FSTOP1 FSTOP2	FOCUS1 FOCUS2	FILM1 FILM2	GEOGRAPHIC LOCATION
002	ICE HOLE	2641608	45 24.2052 61 13.1636	35	3	152	N	COLOR	400	5.6	152	EKTACHROME	CHEDABUCTO BAY, NS
004	ICE HOLE	2641624	45 24.2869 61 13.3814	32	3	152	N	COLOR	400	5.6	152	EKTACHROME	CHEDABUCTO BAY, NS
006	ICE HOLE	2641645	45 24.2843 61 13.4882	31	3	152	N	COLOR	400	5.6	152	EKTACHROME	CHEDABUCTO BAY, NS
008	ICE HOLE	2641701	45 24.3683 61 13.6426	31	3	152	N	COLOR	400	5.6	152	EKTACHROME	CHEDABUCTO BAY, NS
010	ICE HOLE	2641717	45 24.5725 61 14.0305	28	2	152	N	COLOR	400	5.6	152	EKTACHROME	CHEDABUCTO BAY, NS
012	ICE HOLE	2641750	45 24.6048 61 17.2945	24	3	152	N	COLOR	400	5.6	152	EKTACHROME	CHEDABUCTO BAY, NS
014	ICE HOLE	2641806	45 24.6718 61 17.6825	22	3	152	N	COLOR	400	5.6	152	EKTACHROME	CHEDABUCTO BAY, NS
016	ICE HOLE	2661655	45 45.5640 61 47.7998	18	3	152	N	COLOR	400	5.6	152	EKTACHROME	ST. GEORGE'S BAY, NS
018	ICE HOLE	2661723	45 43.2988 61 45.8269	23	3	152	N	COLOR	400	5.6	152	EKTACHROME	ST. GEORGE'S BAY, NS
020	ICE HOLE	2661743	45 43.8043 61 45.1609	21	3	152	N	COLOR	400	5.6	152	EKTACHROME	ST. GEORGE'S BAY, NS
022	ICE HOLE	2661804	45 42.9754 61 43.8830	15	3	152	N	COLOR	400	5.6	152	EKTACHROME	ST. GEORGE'S BAY, NS
024	ICE HOLE	2661824	45 42.6873 61 42.0310	19	3	152	N	COLOR	400	5.6	152	EKTACHROME	ST. GEORGE'S BAY, NS
026	ICE HOLE	2671355	45 51.1529 61 34.6636	21	3	152	N	COLOR	400	5.6	152	EKTACHROME	ST. GEORGE'S BAY, NS
028	ICE HOLE	2671414	45 49.4325 61 34.2787	17	3	152	N	COLOR	400	5.6	152	EKTACHROME	ST. GEORGE'S BAY, NS
030	ICE HOLE	2671435	45 47.8352 61 33.6602	14	3	152	N	COLOR	400	5.6	152	EKTACHROME	ST. GEORGE'S BAY, NS
032	ICE HOLE	2731149	48 57.6964 57 57.9899	93	3	152	N	COLOR	400	5.6	152	EKTACHROME	HUMBER ARM, NFLD
035	ICE HOLE	2731240	48 57.7040 57 57.6532	90	3	152	N	COLOR	400	5.6	152	EKTACHROME	HUMBER ARM, NFLD

ATLANTIC GEOSCIENCE CENTRE
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TABLE 4

CAMERA STATIONS

CRUISE NUMBER = 94138
CHIEF SCIENTIST = J. SHAW
PROJECT NUMBER = 900031

SAMPLE NUMBER	TYPE OF CAMERA	DAY/TIME (GMT)	LATITUDE LONGITUDE	DEPTH (MTRS)	FRAMES SHOT	DIST OFF. BOTT	STEREO	COLOR1 COLOR2	ASA1 ASA2	FSTOP1 FSTOP2	FOCUS1 FOCUS2	FILM1 FILM2	GEOGRAPHIC LOCATION
038	ICE HOLE	2731321	48 58.1009 57 56.3743	81	3	152	N	COLOR	400	5.6	152	EKTACHROME	HUMBER ARM, NFLD
041	ICE HOLE	2731349	48 58.3538 57 55.4741	62	3	152	N	COLOR	400	5.6	152	EKTACHROME	HUMBER ARM, NFLD
044	ICE HOLE	2731413	48 58.5986 57 55.7617	65	3	152	N	COLOR	400	5.6	152	EKTACHROME	HUMBER ARM, NFLD
047	ICE HOLE	2731439	48 58.7963 57 55.5684	50	3	152	N	COLOR	400	5.6	152	EKTACHROME	HUMBER ARM, NFLD
050	ICE HOLE	2731535	48 58.5810 57 56.4747	74	3	152	N	COLOR	400	5.6	152	EKTACHROME	HUMBER ARM, NFLD
053	ICE HOLE	2731602	48 58.3704 57 57.4443	79	3	152	N	COLOR	400	5.6	152	EKTACHROME	HUMBER ARM, NFLD
056	ICE HOLE	2731626	48 58.2078 57 57.4788	90	3	152	N	COLOR	400	5.6	152	EKTACHROME	HUMBER ARM, NFLD
059	ICE HOLE	2731655	48 58.1801 57 57.3567	90	3	152	N	COLOR	400	5.6	152	EKTACHROME	HUMBER ARM, NFLD
062	ICE HOLE	2731727	48 57.9513 57 57.9630	95	3	152	N	COLOR	400	5.6	152	EKTACHROME	HUMBER ARM, NFLD
084	ICE HOLE	2751733	49 07.6620 57 56.3353	68	3	152	N	COLOR	400	5.6	152	EKTACHROME	GOOSE ARM, NFLD
087	ICE HOLE	2751757	49 07.8143 57 57.3031	89	3	152	N	COLOR	400	5.6	152	EKTACHROME	GOOSE ARM, NFLD
093	ICE HOLE	2751952	49 08.7429 58 08.1871	80	3	152	N	COLOR	400	5.6	152	EKTACHROME	MIDDLE ARM, NFLD
096	ICE HOLE	2761637	49 03.5487 58 21.7665	12	3	152	N	COLOR	400	5.6	152	EKTACHROME	YORK HARBOUR, NFLD
099	ICE HOLE	2761653	49 03.6946 58 22.0558	12	3	152	N	COLOR	400	5.6	152	EKTACHROME	YORK HARBOUR, NFLD
101	ICE HOLE	2761710	49 04.5014 58 21.3958	30	3	152	N	COLOR	400	5.6	152	EKTACHROME	YORK HARBOUR, NFLD
107	ICE HOLE	2771132	48 58.0741 57 56.8217	91	3	152	N	COLOR	400	5.6	152	EKTACHROME	HUMBER ARM, NFLD
109	ICE HOLE	2771158	48 57.6876 57 56.8996	71	3	152	N	COLOR	400	5.6	152	EKTACHROME	HUMBER ARM, NFLD

ATLANTIC GEOSCIENCE CENTRE
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TABLE 4

CAMERA STATIONS

CRUISE NUMBER = 94138
CHIEF SCIENTIST = J. SHAW
PROJECT NUMBER = 900031

SAMPLE NUMBER	TYPE OF CAMERA	DAY/TIME (GMT)	LATITUDE LONGITUDE	DEPTH (MTRS)	FRAMES SHOT	DIST OFF. BOTT	STEREO	COLOR1 COLOR2	ASA1 ASA2	FSTOP1 FSTOP2	FOCUS1 FOCUS2	FILM1 FILM2	GEOGRAPHIC LOCATION
111	ICE HOLE	2771228	48 57.5625 57 57.5103	69	3	152	N	COLOR	400	5.6	152	EKTACHROME	HUMBER ARM, NFLD

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TABLE 5

WATER SAMPLES

CRUISE NUMBER = 94138
CHIEF SCIENTIST = J. SHAW
PROJECT NUMBER = 900031

SAMPLE NUMBER	SAMPLE TYPE	JULIAN DAY/TIME	LATITUDE LONGITUDE	DEPTH (MTRS)	BOTTLE VOLUMN	SAMPLE DEPTHS (1-10)	GEOGRAPHIC LOCATION	NOTES
033	CTD	2731157	48 57.676 57 57.936	94			HUMBER ARM, NFLD	
036	CTD	2731249	48 57.801 57 57.572	92			HUMBER ARM, NFLD	
039	CTD	2731325	48 58.094 57 56.443	83			HUMBER ARM, NFLD	
042	CTD	2731354	48 58.345 57 55.561	63			HUMBER ARM, NFLD	
045	CTD	2731418	48 58.601 57 55.805	69			HUMBER ARM, NFLD	
048	CTD	2731445	48 58.782 57 55.657	56			HUMBER ARM, NFLD	
051	CTD	2731540	48 58.574 57 56.580	75			HUMBER ARM, NFLD	
054	CTD	2731607	48 58.316 57 57.531	81			HUMBER ARM, NFLD	
057	CTD	2731632	48 58.145 57 57.607	91			HUMBER ARM, NFLD	
060	CTD	2731701	48 58.162 57 57.511	91			HUMBER ARM, NFLD	
063	CTD	2731732	48 57.918 57 58.118	96			HUMBER ARM, NFLD	
074	CTD	2741809	48 58.266 57 55.511	63			HUMBER ARM, NFLD	
075	CTD	2741819	48 58.427 57 55.143	48			HUMBER ARM, NFLD	
076	CTD	2741825	48 58.518 57 55.393	60			HUMBER ARM, NFLD	
077	CTD	2741832	48 58.658 57 55.637	61			HUMBER ARM, NFLD	

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TABLE 5

WATER SAMPLES

CRUISE NUMBER = 94138
CHIEF SCIENTIST = J. SHAW
PROJECT NUMBER = 900031

SAMPLE NUMBER	SAMPLE TYPE	JULIAN DAY/TIME	LATITUDE LONGITUDE	DEPTH (MTRS)	BOTTLE VOLUMN	SAMPLE DEPTHS (1-10)	GEOGRAPHIC LOCATION	NOTES
078	CTD	2741844	48 58.640 57 57.038	51			HUMBER ARM, NFLD	
079	CTD	2741851	48 58.435 57 56.951	84			HUMBER ARM, NFLD	
080	CTD	2741900	48 58.189 57 56.849	89			HUMBER ARM, NFLD	
081	CTD	2741908	48 57.929 57 56.641	84			HUMBER ARM, NFLD	
082	CTD	2741915	48 57.723 57 56.571	37			HUMBER ARM, NFLD	
085	CTD	2751738	49 07.695 57 56.371	69			GOOSE ARM, NFLD	
089	CTD	2751802	49 07.856 57 57.352	89			GOOSE ARM, NFLD	
090	CTD	2751847	49 08.314 58 02.087	177			MIDDLE ARM, NFLD	
091	CTD	2751918	49 08.447 58 05.985	191			MIDDLE ARM, NFLD	
094	CTD	2751956	49 08.771 58 08.120	82			MIDDLE ARM, NFLD	
097	CTD	2761640	49 03.523 58 21.760	12			YORK HARBOUR, NFLD	
102	CTD	2761713	49 04.463 58 21.412	29			YORK HARBOUR, NFLD	
103	CTD	2761747	49 06.148 58 15.557	127			BAY OF ISLANDS, NFLD	
105	CTD	2771040	48 58.918 58 03.125	92			HUMBER ARM, NFLD	
A015	CTD	274	48 58.089 57 54.535	2.0			HUMBER RIVER DELTA, NFLD	

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TABLE 5

WATER SAMPLES

CRUISE NUMBER = 94138
CHIEF SCIENTIST = J. SHAW
PROJECT NUMBER = 900031

SAMPLE NUMBER	SAMPLE TYPE	JULIAN DAY/TIME	LATITUDE LONGITUDE	DEPTH (MTRS)	BOTTLE VOLUMN	SAMPLE DEPTHS (1-10)	GEOGRAPHIC LOCATION	NOTES
A016	CTD	274	48 58.139 57 54.697	2.2			HUMBER RIVER DELTA, NFLD	
A017	CTD	274	48 58.171 57 54.892	1.8			HUMBER RIVER DELTA, NFLD	
A018	CTD	274	48 58.242 57 55.062	2.2			HUMBER RIVER DELTA, NFLD	
A019	CTD	274	48 58.240 57 55.102	7.0			HUMBER RIVER DELTA, NFLD	
A020	CTD	274	48 58.250 57 55.099	14.0			HUMBER RIVER DELTA, NFLD	

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TABLE 6

LAND SAMPLES

CRUISE NUMBER = 94138
CHIEF SCIENTIST = J. SHAW
PROJECT NUMBER = 900031

SAMPLE NUMBER	TYPE OF SAMPLER	DAY/TIME (GMT)	LATITUDE LONGITUDE	DEPTH (M)	TOTAL LENGTH	GEOGRAPHIC LOCATION	LAND SAMPLE NOTES
A001	SECTION	273	49 10.6545 57 51.2473	-2.3		HEAD OF GOOSE ARM, NFLD	RAISED DELTA FORESET. SHELL.
A002	SECTION	273	49 10.6545 57 51.2473	-2.5		HEAD OF GOOSE ARM, NFLD	RAISED DELTA FORESET. PEBBLY SAND.
A003	SECTION	273	49 10.6545 57 51.2473	-3.1		HEAD OF GOOSE ARM, NFLD	RAISED DELTA FORESET. CLAYEY SILT.
A004	SECTION	273	49 10.6545 57 51.2473	-2.9		HEAD OF GOOSE ARM, NFLD	RAISED DELTA FORESET. SAND.
A005	HAND GRAB	273	49 10.6511 57 51.2959	.2		HEAD OF GOOSE ARM, NFLD	TIDAL FLAT. MUDDY SAND.
A006	HAND GRAB	273	49 10.7611 57 51.3506	-.8		HEAD OF GOOSE ARM, NFLD	BEACH. SAND.
A025	HAND GRAB	276	49 03.4955 58 22.3288	.1		YORK HARBOUR, NFLD	BEACH. SAND.
A026	HAND GRAB	276	48 58.3083 57 53.2503	0		WILD COVE, NFLD	DELTA.
A028	HAND GRAB	276	48 58.2379 57 53.2964	0		WILD COVE, NFLD	TIDAL FLAT.
A029	HAND GRAB	276	48 58.3485 57 53.2867	0		WILD COVE, NFLD	TIDAL FLAT.

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TABLE 7

SEISMIC RECORDS

CRUISE NUMBER = 94138
CHIEF SCIENTIST = J. SHAW
PROJECT NUMBER = 900031

ROLL NUMBERS	START DAY/TIME	STOP DAY/TIME	HYDROPHONE	LINE NUMBERS	RECORD TYPE	GEOGRAPHIC LOCATION	RECORDER	SYSTEM / SOUND SOURCE
1	2591533	2601728	EXTERNAL	1-10	SINGLE	CHEDABUCTO BAY	EPC 8700	BUBBLE PULSER BOOMER
001	2591558	2601727	EXTERNAL	1-10	SINGLE	CHEDABUCTO BAY	EPC 8300	SEISTEC BOOMER
2	2611234	2611754	EXTERNAL	11-13	SINGLE	CHEDABUCTO BAY	EPC 8700	BUBBLE PULSER BOOMER
002	2611234	2611754	EXTERNAL	11-13	SINGLE	CHEDABUCTO BAY	EPC 8300	SEISTEC BOOMER
3	2621321	2621811	EXTERNAL	14-20	SINGLE	CHEDABUCTO BAY	EPC 8700	BUBBLE PULSER BOOMER
003	2621321	2621811	EXTERNAL	14-20	SINGLE	CHEDABUCTO BAY	EPC 8300	SEISTEC BOOMER
4	2631256	2631803	EXTERNAL	21-28	SINGLE	CHEDABUCTO BAY	EPC 8700	BUBBLE PULSER BOOMER
004	2631306	2631803	EXTERNAL	21-28	SINGLE	CHEDABUCTO BAY	EPC 8300	SEISTEC BOOMER
5	2641310	2641527	EXTERNAL	29-32	SINGLE	CHEDABUCTO BAY	EPC 8700	BUBBLE PULSER BOOMER
005	2641310	2641526	EXTERNAL	29-32	SINGLE	CHEDABUCTO BAY	EPC 8300	SEISTEC BOOMER
6	2651331	2651758	EXTERNAL	33-37	SINGLE	ST. GEORGE'S BAY	EPC 8700	BUBBLE PULSER BOOMER
006	2651331	2651758	EXTERNAL	33-37	SINGLE	ST. GEORGE'S BAY	EPC 8300	SEISTEC BOOMER
7	2661312	2661624	EXTERNAL	38-40	SINGLE	ST. GEORGE'S BAY	EPC 8700	BUBBLE PULSER BOOMER
007	2661313	2661624	EXTERNAL	38-40	SINGLE	ST. GEORGE'S BAY	EPC 8300	SEISTEC BOOMER
8	2671126	2671331	EXTERNAL	41-43	SINGLE	ST. GEORGE'S BAY	EPC 8700	BUBBLE PULSER BOOMER
008	2671127	2671330	EXTERNAL	41-43	SINGLE	ST. GEORGE'S BAY	EPC 8300	SEISTEC BOOMER
9	2691313	2691804	EXTERNAL	44-54	SINGLE	BAY OF ISLANDS	EPC 8700	BUBBLE PULSER BOOMER

ATLANTIC GEOSCIENCE CENTRE
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TABLE 7

SEISMIC RECORDS

CRUISE NUMBER = 94138
CHIEF SCIENTIST = J. SHAW
PROJECT NUMBER = 900031

ROLL NUMBERS	START DAY/TIME	STOP DAY/TIME	HYDROPHONE	LINE NUMBERS	RECORD TYPE	GEOGRAPHIC LOCATION	RECORDER	SYSTEM / SOUND SOURCE
009	2691313	2691804	EXTERNAL	44-54	SINGLE	BAY OF ISLANDS	EPC 8300	SEISTEC BOOMER
10	2701130	2701918	EXTERNAL	55-92	SINGLE	BAY OF ISLANDS	EPC 8700	BUBBLE PULSER BOOMER
010	2701131	2701918	EXTERNAL	55-92	SINGLE	BAY OF ISLANDS	EPC 8300	SEISTEC BOOMER
11	2711240	2712003	EXTERNAL	93-103	SINGLE	BAY OF ISLANDS	EPC 8700	BUBBLE PULSER BOOMER
011	2711305	2712004	EXTERNAL	93-103	SINGLE	BAY OF ISLANDS	EPC 8300	SEISTEC BOOMER
12	2721352	2722006	EXTERNAL	104-116	SINGLE	BAY OF ISLANDS	EPC 8700	BUBBLE PULSER BOOMER
012	2721512	2722006	EXTERNAL	104-116	SINGLE	BAY OF ISLANDS	EPC 8300	SEISTEC BOOMER
013	2751348	2761551	EXTERNAL	117-136	SINGLE	BAY OF ISLANDS	EPC 8300	SEISTEC BOOMER
13	2751349	2761455	EXTERNAL	117-135	SINGLE	BAY OF ISLANDS	EPC 8700	BUBBLE PULSER BOOMER
14	2761456	2761551	EXTERNAL	135-136	SINGLE	BAY OF ISLANDS	EPC 8700	BUBBLE PULSER BOOMER

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TABLE 8

SIDESCAN RECORDS

CRUISE NUMBER = 94138
CHIEF SCIENTIST = J. SHAW
PROJECT NUMBER = 900031

ROLL NUMBERS	START DAY/TIME	STOP DAY/TIME	LINE NUMBERS	RECORD TYPE	GEOGRAPHIC LOCATION	RECORDER	SIDESCAN SYSTEM
001	2591335	2591656	1-3	SINGLE	CHEDABUCTO BAY	ALDEN	SIMRAD 992
002	2591657	2601729	3-10	SINGLE	CHEDABUCTO BAY	ALDEN	SIMRAD 992
003	2611234	2611755	11-13	SINGLE	CHEDABUCTO BAY	ALDEN	SIMRAD 992
004	2621324	2621811	14-20	SINGLE	CHEDABUCTO BAY	ALDEN	SIMRAD 992
005	2631255	2631803	21-28	SINGLE	CHEDABUCTO BAY	ALDEN	SIMRAD 992
006	2641311	2641526	29-32	SINGLE	CHEDABUCTO BAY	ALDEN	SIMRAD 992
007	2651335	2651758	33-37	SINGLE	ST. GEORGE'S BAY	ALDEN	SIMRAD 992
008	2661312	2661624	38-40	SINGLE	ST. GEORGE'S BAY	ALDEN	SIMRAD 992
009	2671125	2671331	41-43	SINGLE	ST. GEORGE'S BAY	ALDEN	SIMRAD 992
010	2691316	2691742	44-54	SINGLE	BAY OF ISLANDS	ALDEN	SIMRAD 992
011	2701129	2701915	55-92	SINGLE	BAY OF ISLANDS	ALDEN	SIMRAD 992
012	2711309	2712000	93-103	SINGLE	BAY OF ISLANDS	ALDEN	SIMRAD 992
013	2721354	2722005	104-116	SINGLE	BAY OF ISLANDS	ALDEN	SIMRAD 992
014	2751354	2761551	117-136	SINGLE	BAY OF ISLANDS	ALDEN	SIMRAD 992

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TABLE 9

BATHYMETRY RECORDS

CRUISE NUMBER = 94138
CHIEF SCIENTIST = J. SHAW
PROJECT NUMBER = 900031

ROLL NUMBERS	START DAY/TIME	STOP DAY/TIME	FREQUENCY	LINE NUMBERS	PARAMETER	GEOGRAPHIC LOCATION	RECORDER	NOTES
001	2601240	2701807	30 KHZ	6-84		CHEDABUCTO BAY TO BAY OF ISLANDS	ELAC	
002	2701810	2751952	30 KHZ	84-124		CHEDABUCTO BAY	ELAC	
003	2761200	2771228	30 KHZ	125-136		CHEDABUCTO BAY	ELAC	

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TABLE 10

DIGITAL TAPES

CRUISE NUMBER = 94138
CHIEF SCIENTIST = J. SHAW
PROJECT NUMBER = 900031

REEL NUMBER	NARC NUMBER	START DAY/TIME	STOP DAY/TIME	LINE NUMBERS	PARAMETER	GEOGRAPHIC LOCATION	DIGITAL TAPE NOTES
001		2591315	2591926	1-5	SIDESCAN	CHEDABUCTO BAY	
002		2601238	2601728	6-10	SIDESCAN	CHEDABUCTO BAY	
003		2611228	2611754	11-13	SIDESCAN	CHEDABUCTO BAY	
004		2621321	2621716	14-19	SIDESCAN	CHEDABUCTO BAY	
005		2621722	2621811	19-20	SIDESCAN	CHEDABUCTO BAY	
006		2631257	2631427	21-23	SIDESCAN	CHEDABUCTO BAY	
007		2631433	2631803	23-28	SIDESCAN	CHEDABUCTO BAY	
008		2641312	2641525	29-32	SIDESCAN	CHEDABUCTO BAY	
009		2651335	2651758	33-37	SIDESCAN	ST. GEORGE'S BAY	
010		2661313	2661623	38-40	SIDESCAN	ST. GEORGE'S BAY	
011		2671126	2671331	41-43	SIDESCAN	ST. GEORGE'S BAY	
012		2691336	2691720	44-54	SIDESCAN	BAY OF ISLANDS	
013		2701133	2701710	55-79	SIDESCAN	BAY OF ISLANDS	
014		2701713	2701919	79-92	SIDESCAN	BAY OF ISLANDS	
015		2711236	2711829	93-101	SIDESCAN	BAY OF ISLANDS	
016		2711834	2712001	102-103	SIDESCAN	BAY OF ISLANDS	
017		2721346	2722003	104-116	SIDESCAN	BAY OF ISLANDS	
018		2751350	2751605	117-124	SIDESCAN	BAY OF ISLANDS	
019		2761226	2761551	125-136	SIDESCAN	BAY OF ISLANDS	

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TABLE 11

ANALOGUE TAPES

CRUISE NUMBER = 94138
CHIEF SCIENTIST = J. SHAW
PROJECT NUMBER = 900031

TAPE NUMBERS	START DAY/TIME	STOP DAY/TIME	LINE NUMBERS	PARAMETER	GEOGRAPHIC LOCATION	CHANNEL INFO	SYSTEM / SOUND SOURCE
001	2591543	2591631	2-3	SEISTEC/BP	CHEDABUCTO BAY	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER
002	2591632	2591720	3	SEISTEC/BP	CHEDABUCTO BAY	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER
003	2591720	2591807	3-4	SEISTEC/BP	CHEDABUCTO BAY	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER
004	2591807	2591854	4	SEISTEC/BP	CHEDABUCTO BAY	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER
005	2591854	2591926	4-5	SEISTEC/BP	CHEDABUCTO BAY	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER
006	2601239	2601328	6	SEISTEC/BP	CHEDABUCTO BAY	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER
007	2601328	2601416	6	SEISTEC/BP	CHEDABUCTO BAY	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER
008	2601416	2601507	6-7	SEISTEC/BP	CHEDABUCTO BAY	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER
009	2601510	2601612	8-9	SEISTEC/BP	CHEDABUCTO BAY	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER
010	2601612	2601700	9-10	SEISTEC/BP	CHEDABUCTO BAY	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER
011	2601700	2601728	10	SEISTEC/BP	CHEDABUCTO BAY	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER
012	2611234	2611320	11	SEISTEC/BP	CHEDABUCTO BAY	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER
013	2611320	2611411	11	SEISTEC/BP	CHEDABUCTO BAY	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER

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ANALOGUE TAPES

CRUISE NUMBER = 94138
CHIEF SCIENTIST = J. SHAW
PROJECT NUMBER = 900031

TAPE NUMBERS	START DAY/TIME	STOP DAY/TIME	LINE NUMBERS	PARAMETER	GEOGRAPHIC LOCATION	CHANNEL INFO	SYSTEM / SOUND SOURCE
014	2611411	2611457	11-12	SEISTEC/BP	CHEDABUCTO BAY	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER
015	2611457	2611546	12	SEISTEC/BP	CHEDABUCTO BAY	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER
016	2611546	2611632	12-13	SEISTEC/BP	CHEDABUCTO BAY	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER
017	2611632	2611719	13	SEISTEC/BP	CHEDABUCTO BAY	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER
018	2611719	2611754	13	SEISTEC/BP	CHEDABUCTO BAY	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER
019	2621321	2621407	14	SEISTEC/BP	CHEDABUCTO BAY	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER
020	2621407	2621449	14-15	SEISTEC/BP	CHEDABUCTO BAY	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER
021	2621449	2621537	15-16	SEISTEC/BP	CHEDABUCTO BAY	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER
022	2621537	2621625	16-18	SEISTEC/BP	CHEDABUCTO BAY	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER
023	2621625	2621713	18-19	SEISTEC/BP	CHEDABUCTO BAY	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER
024	2621713	2621758	19-20	SEISTEC/BP	CHEDABUCTO BAY	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER
025	2621758	2621811	20	SEISTEC/BP	CHEDABUCTO BAY	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER
026	2631257	2631346	21-22	SEISTEC/BP	CHEDABUCTO BAY	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER

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TABLE 11

ANALOGUE TAPES

CRUISE NUMBER = 94138
CHIEF SCIENTIST = J. SHAW
PROJECT NUMBER = 900031

TAPE NUMBERS	START DAY/TIME	STOP DAY/TIME	LINE NUMBERS	PARAMETER	GEOGRAPHIC LOCATION	CHANNEL INFO	SYSTEM / SOUND SOURCE
027	2631346	2631427	22-23	SEISTEC/BP	CHEDABUCTO BAY	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER
028	2631432	2631520	23-24	SEISTEC/BP	CHEDABUCTO BAY	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER
029	2631520	2631607	24-25	SEISTEC/BP	CHEDABUCTO BAY	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER
030	2631607	2631655	25-26	SEISTEC/BP	CHEDABUCTO BAY	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER
031	2631655	2631741	26-28	SEISTEC/BP	CHEDABUCTO BAY	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER
032	2631741	2631803	28	SEISTEC/BP	CHEDABUCTO BAY	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER
033	2641311	2641357	29	SEISTEC/BP	CHEDABUCTO BAY	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER
034	2641357	2641445	29-30	SEISTEC/BP	CHEDABUCTO BAY	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER
035	2641445	2641525	30-32	SEISTEC/BP	CHEDABUCTO BAY	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER
036	2651359	2651420	33	SEISTEC/BP	ST GEORGE'S BAY	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER
037	2651420	2651507	33-34	SEISTEC/BP	ST GEORGE'S BAY	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER
038	2651507	2651555	34-35	SEISTEC/BP	ST GEORGE'S BAY	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER
039	2651555	2651643	35-36	SEISTEC/BP	ST GEORGE'S BAY	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER

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TABLE II

ANALOGUE TAPES

CRUISE NUMBER = 94138
CHIEF SCIENTIST = J. SHAW
PROJECT NUMBER = 900031

TAPE NUMBERS	START DAY/TIME	STOP DAY/TIME	LINE NUMBERS	PARAMETER	GEOGRAPHIC LOCATION	CHANNEL INFO	SYSTEM / SOUND SOURCE
040	2651643	2651731	36-37	SEISTEC/BP	ST GEORGE'S BAY	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER
041	2651731	2651758	37	SEISTEC/BP	ST GEORGE'S BAY	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER
042	2661313	2661400	38-39	SEISTEC/BP	ST GEORGE'S BAY	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER
043	2661400	2661446	39-40	SEISTEC/BP	ST GEORGE'S BAY	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER
044	2661446	2661530	40	SEISTEC/BP	ST GEORGE'S BAY	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER
045	2661530	2661617	40	SEISTEC/BP	ST GEORGE'S BAY	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER
046	2661617	2671201	40-41	SEISTEC/BP	ST GEORGE'S BAY	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER
047	2671201	2671257	42-43	SEISTEC/BP	ST GEORGE'S BAY	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER
048	2671257	2671331	43	SEISTEC/BP	ST GEORGE'S BAY	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER
049	2691336	2691424	44-45	SEISTEC/BP	BAY OF ISLANDS	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER
050	2691424	2691511	45-47	SEISTEC/BP	BAY OF ISLANDS	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER
051	2691511	2691557	47-50	SEISTEC/BP	BAY OF ISLANDS	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER
052	2691557	2691645	50-53	SEISTEC/BP	BAY OF ISLANDS	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER

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ANALOGUE TAPES

CRUISE NUMBER = 94138
CHIEF SCIENTIST = J. SHAW
PROJECT NUMBER = 900031

TAPE NUMBERS	START DAY/TIME	STOP DAY/TIME	LINE NUMBERS	PARAMETER	GEOGRAPHIC LOCATION	CHANNEL INFO	SYSTEM / SOUND SOURCE
053	2691645	2691733	53-54	SEISTEC/BP	BAY OF ISLANDS	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER
054	2691733	1691804	54	SEISTEC/BP	BAY OF ISLANDS	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER
055	2701133	2701222	55-58	SEISTEC/BP	BAY OF ISLANDS	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER
056	2701222	2701313	58-63	SEISTEC/BP	BAY OF ISLANDS	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER
057	2701313	2701401	63-67	SEISTEC/BP	BAY OF ISLANDS	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER
058	2701401	2701449	67-70	SEISTEC/BP	BAY OF ISLANDS	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER
059	2701449	2701532	70-72	SEISTEC/BP	BAY OF ISLANDS	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER
060	2701532	2701620	73-75	SEISTEC/BP	BAY OF ISLANDS	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER
061	2701620	2701707	76-79	SEISTEC/BP	BAY OF ISLANDS	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER
062	2701707	2701755	79-83	SEISTEC/BP	BAY OF ISLANDS	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER
063	2701755	2701843	83-88	SEISTEC/BP	BAY OF ISLANDS	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER
064	2701843	2701919	88-92	SEISTEC/BP	BAY OF ISLANDS	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER
065	2711325	2711406	93-95	SEISTEC/BP	BAY OF ISLANDS	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER

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TABLE II

ANALOGUE TAPES

CRUISE NUMBER = 94138
CHIEF SCIENTIST = J. SHAW
PROJECT NUMBER = 900031

TAPE NUMBERS	START DAY/TIME	STOP DAY/TIME	LINE NUMBERS	PARAMETER	GEOGRAPHIC LOCATION	CHANNEL INFO	SYSTEM / SOUND SOURCE
066	2711406	2711454	95-97	SEISTEC/BP	BAY OF ISLANDS	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER
067	2711454	2711542	97-98	SEISTEC/BP	BAY OF ISLANDS	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER
068	2711542	2711620	98-99	SEISTEC/BP	BAY OF ISLANDS	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER
069	2711620	2711717	99-100	SEISTEC/BP	BAY OF ISLANDS	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER
070	2711717	2711805	100-101	SEISTEC/BP	BAY OF ISLANDS	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER
071	2711805	2711853	101-102	SEISTEC/BP	BAY OF ISLANDS	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER
072	2711853	2711931	102-103	SEISTEC/BP	BAY OF ISLANDS	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER
073	2711931	2712001	103	SEISTEC/BP	BAY OF ISLANDS	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER
074	2721516	2721603	104	SEISTEC/BP	BAY OF ISLANDS	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER
075	2721603	2721651	104	SEISTEC/BP	BAY OF ISLANDS	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER
076	2721651	2721739	105-106	SEISTEC/BP	BAY OF ISLANDS	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER
077	2721739	2721827	106-110	SEISTEC/BP	BAY OF ISLANDS	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER
078	2721827	2721917	110-115	SEISTEC/BP	BAY OF ISLANDS	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER

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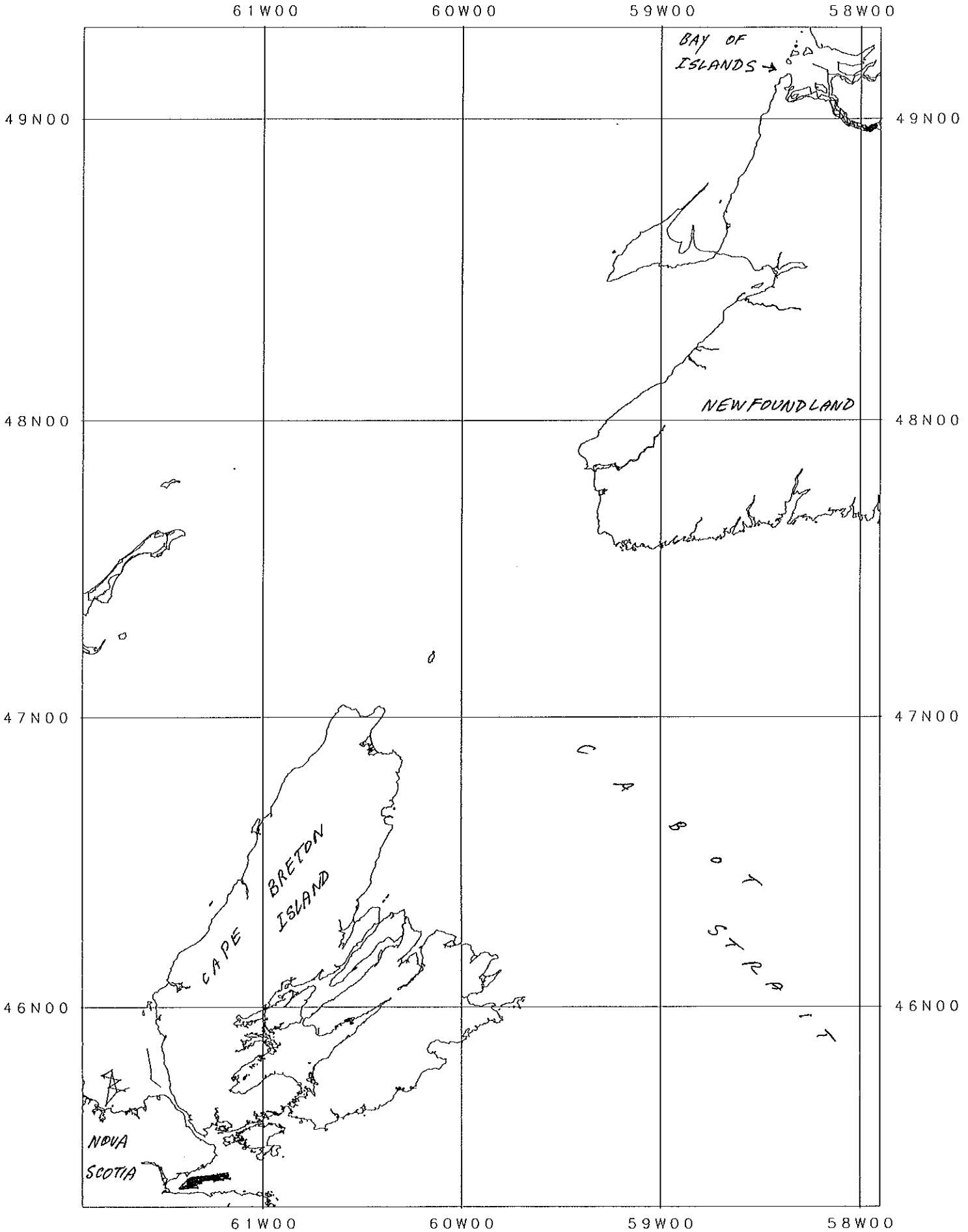
TABLE 11

ANALOGUE TAPES

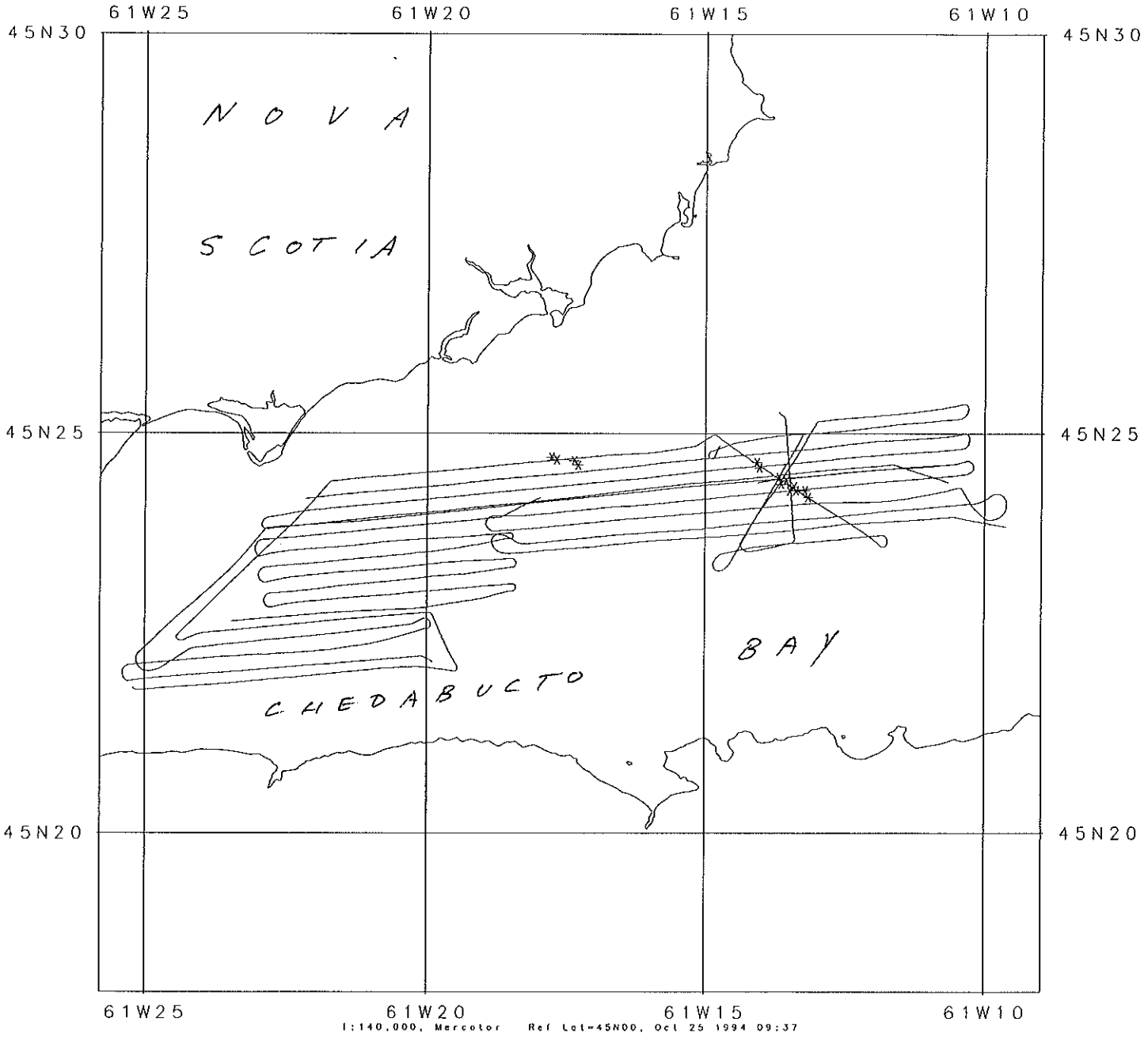
CRUISE NUMBER = 94138
CHIEF SCIENTIST = J. SHAW
PROJECT NUMBER = 900031

TAPE NUMBERS	START DAY/TIME	STOP DAY/TIME	LINE NUMBERS	PARAMETER	GEOGRAPHIC LOCATION	CHANNEL INFO	SYSTEM / SOUND SOURCE
079	2721917	2722003	115-116	SEISTEC/BP	BAY OF ISLANDS	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER
080	2751350	2751437	117-119	SEISTEC/BP	BAY OF ISLANDS	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER
081	2751437	2751525	119-123	SEISTEC/BP	BAY OF ISLANDS	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER
082	2751525	2751605	123-124	SEISTEC/BP	BAY OF ISLANDS	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER
083	2761226	2761314	125-128	SEISTEC/BP	BAY OF ISLANDS	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER
084	2761314	2761403	128-130	SEISTEC/BP	BAY OF ISLANDS	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER
085	2761403	2761450	130-134	SEISTEC/BP	BAY OF ISLANDS	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER
086	2761450	2761537	134-136	SEISTEC/BP	BAY OF ISLANDS	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER
087	2761537	2761551	136	SEISTEC/BP	BAY OF ISLANDS	FM - SEISMIC TRIG. DR - BUBBLEPULSER DR - SEISTEC	SEISTEC/BP BOOMER

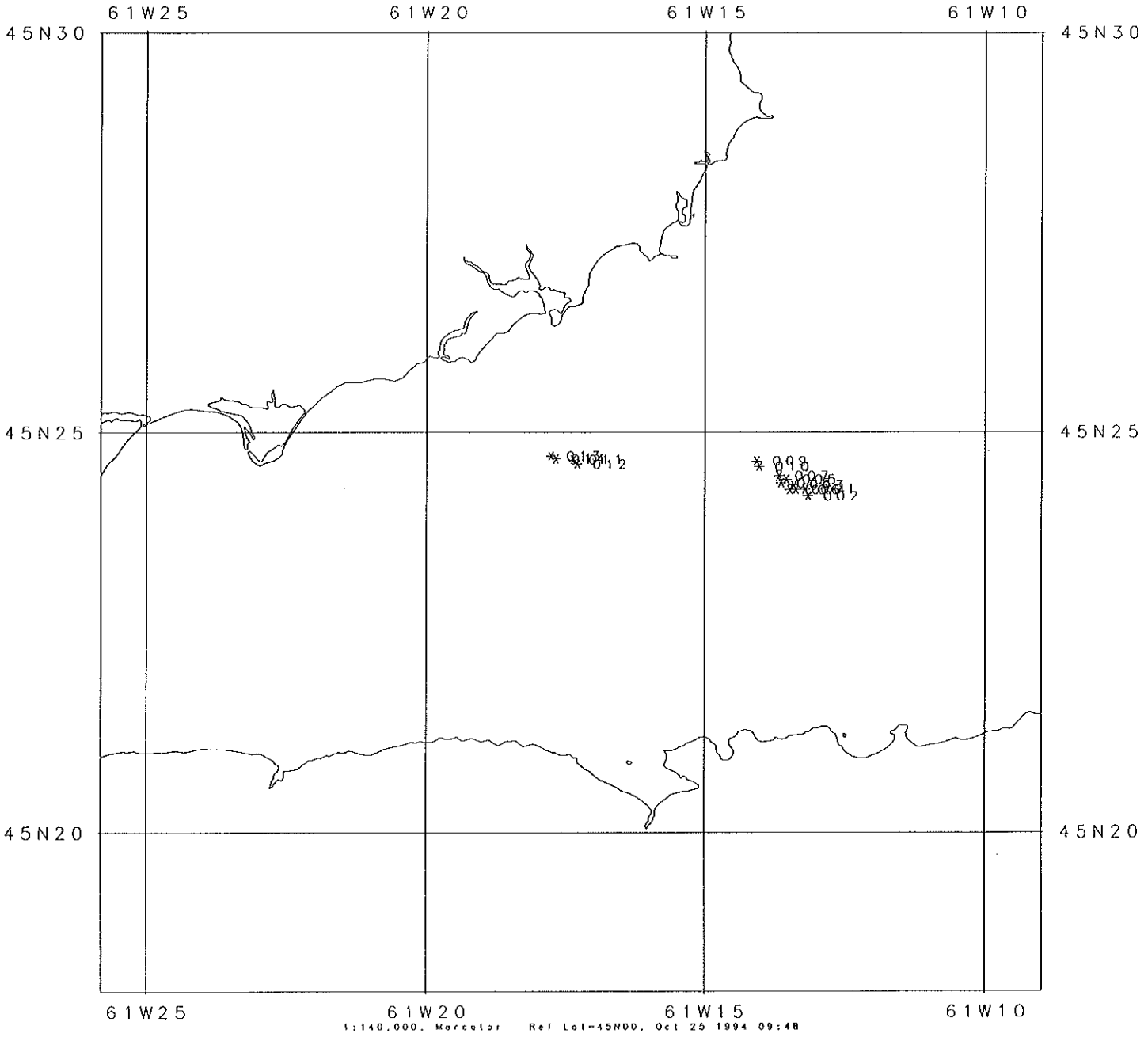
Appendix 3: Survey Areas; Ship's Tracks; Sampling Locations



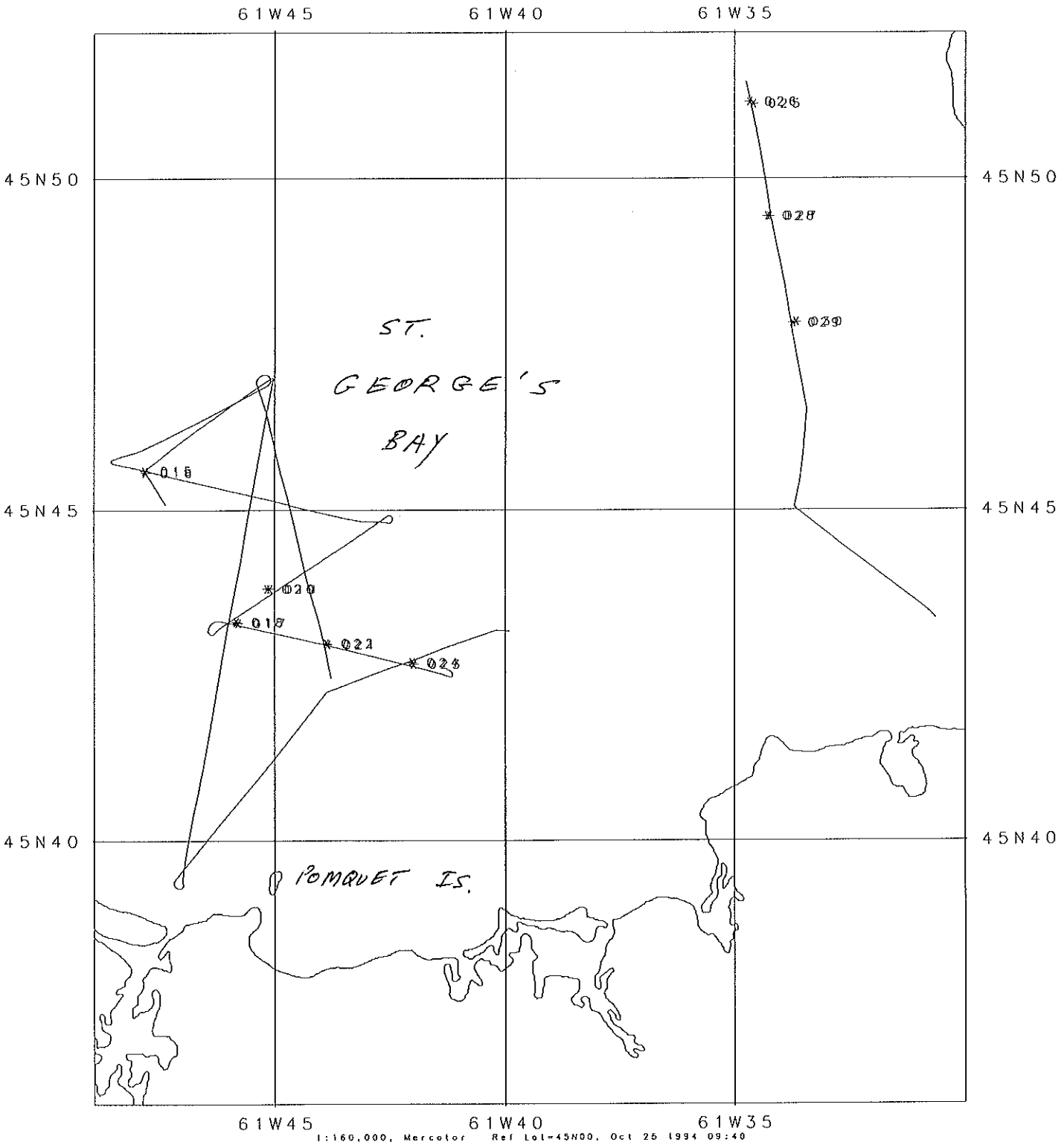
Map 1: Survey areas



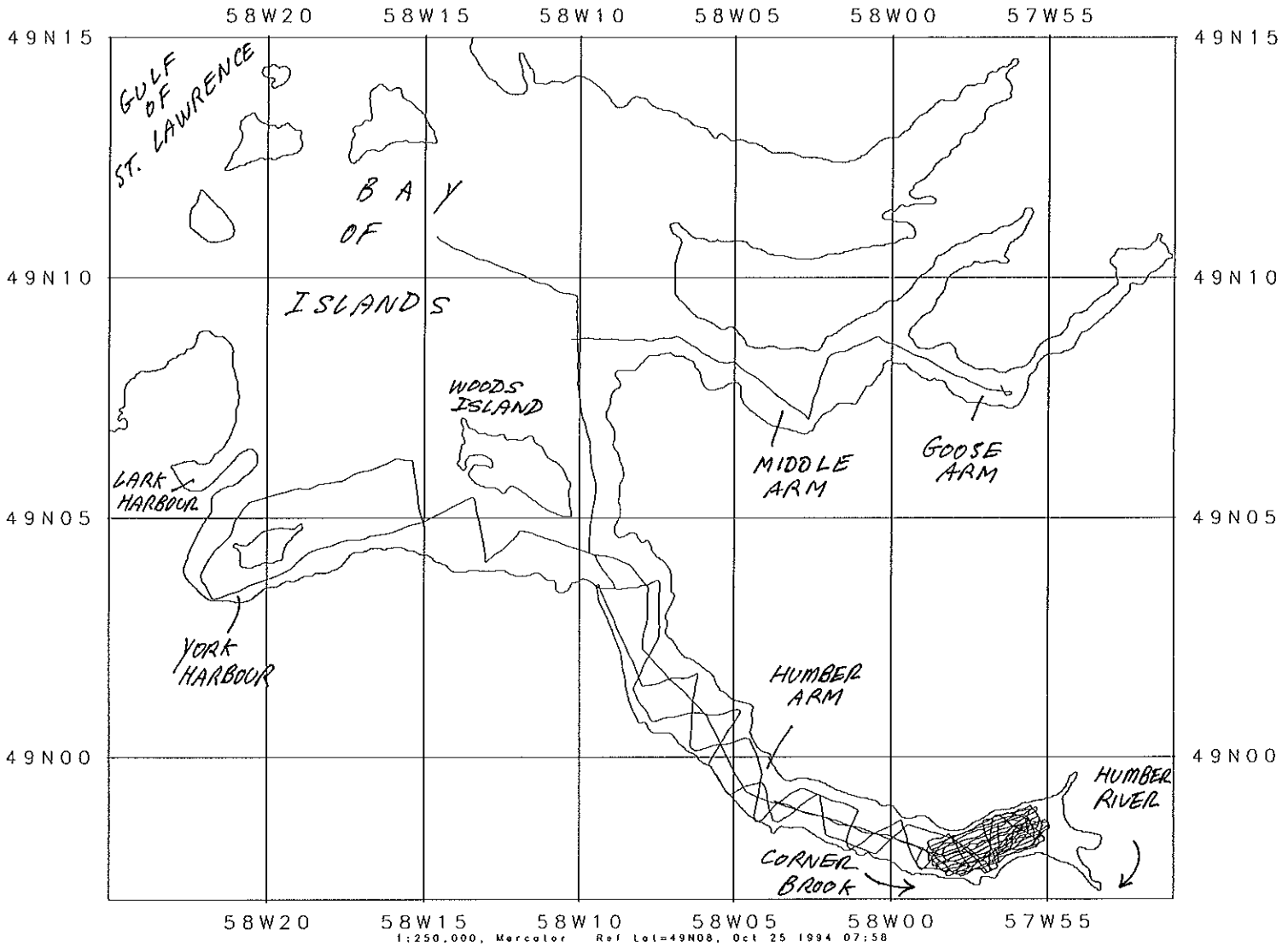
Map 2: Ships' tracks and samples, Chedabucto Bay, N.S.



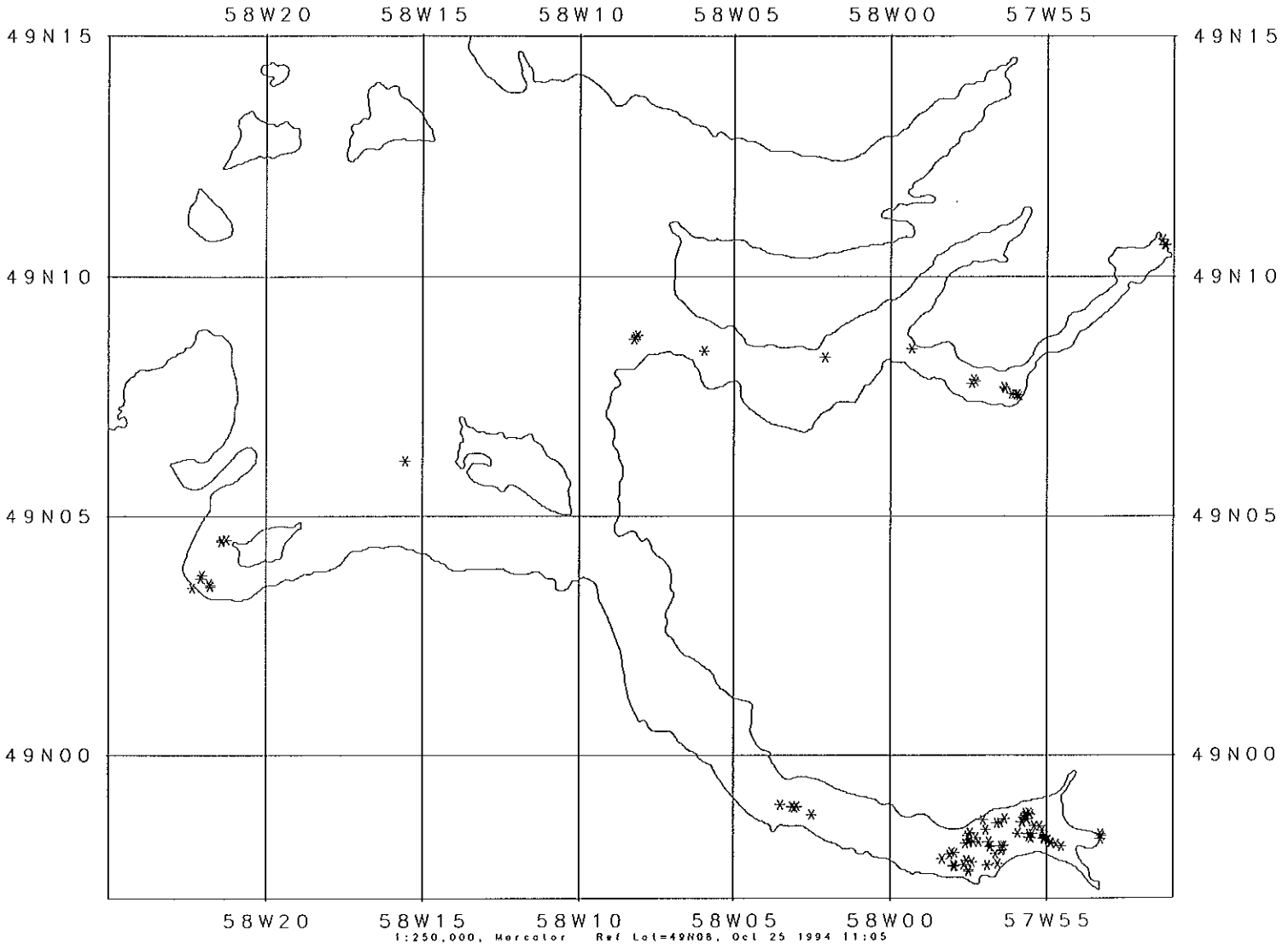
Map 3: Numbered sample locations, Chedabucto Bay.



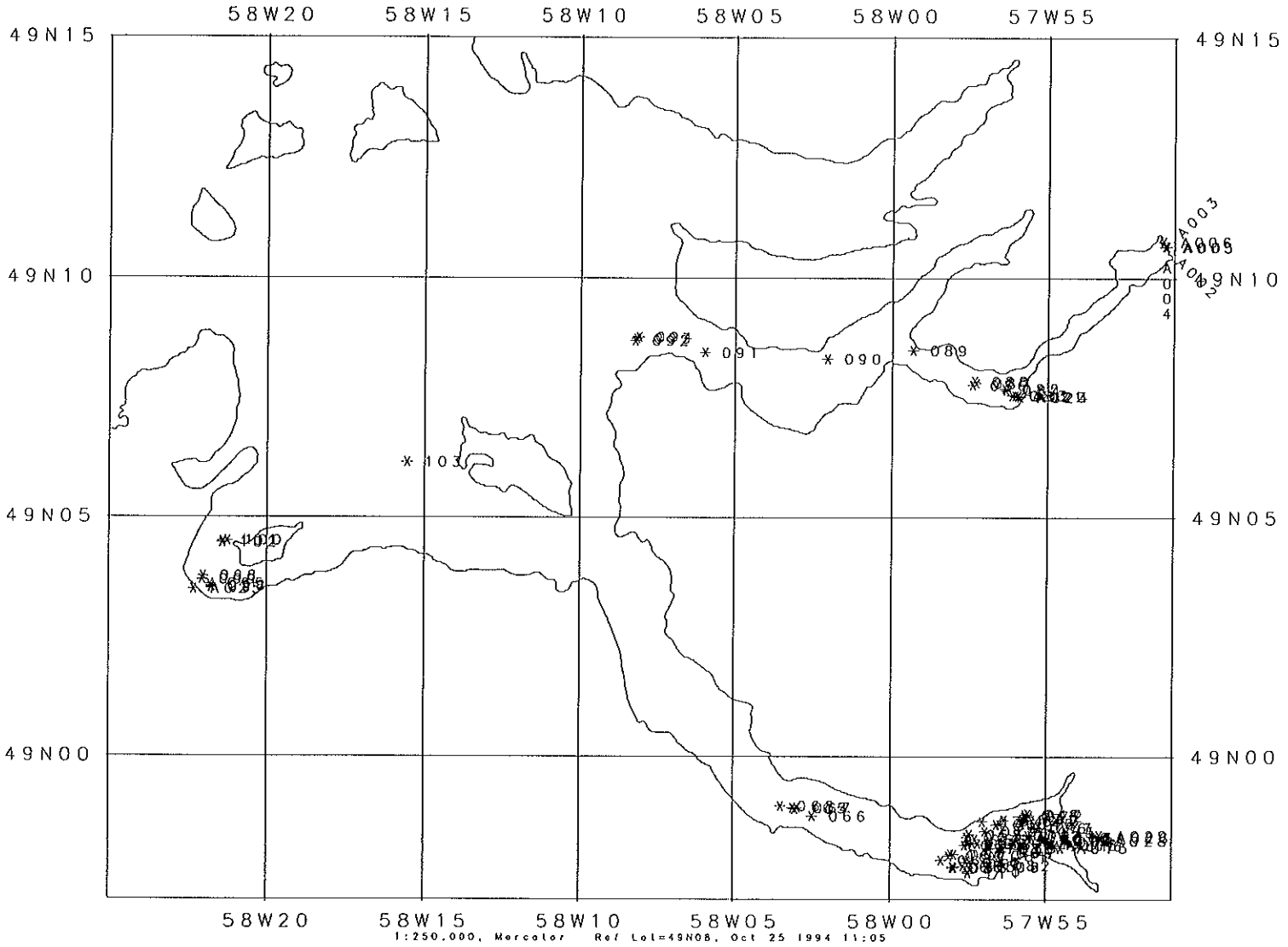
Map 4: Ship's tracks and numbered sample locations, St. George's Bay, N.S.



Map 5: Ship's tracks, Bay of Islands, Nfld.



Map 6: Sample locations, Bay of Islands.



Map 7: Numbered sample locations, Bay of Islands.

Appendix 4: Foraminiferal analyses of cores 94-138-104 (Humber Arm) and 90-013-064 (Notre Dame Bay)

FORAMINIFERAL ANALYSIS

OF

CORE 94-138-104, HUMBER ARM

AND

CORE 90-013-064, NOTRE DAME BAY

by

James Ceman

Report prepared for Dr. John Shaw
Natural Resources Canada
Geological Survey of Canada
Bedford Institute of Oceanography
Dartmouth, Nova Scotia
March 8, 1995

Core 94-138-104, Humber Arm

Core 94-138-104 was collected from a water depth of 92 m in the Humber Arm, Newfoundland. The 1.63 m core penetrated a relatively thin section of the postglacial seismic unit and bottomed in an acoustically laminated seismic unit (Fig. 1). In general, the upper 50 cm of the core consists of bioturbated dark gray or dark grayish brown silty clay with several worm tubes present, especially in the upper 25 cm of the core. A dark grayish brown muddy, gravelly sand is present between 50 and 57 cm. A reddish brown buttery clay is present from 57 cm to the end of the core (Fig. 2).

Foraminiferal zones

Zone HA1 Most of the samples from this zone contain low numbers of foraminiferal tests and one sample was barren of foraminifera (Fig. 2). Foraminiferal assemblages containing low numbers of tests have been reported in cores off eastern Canada (Vilks *et al.*, 1989), from the southeastern channels of the Canadian Arctic Archipelago (MacLean *et al.*, 1989) and from the Gulf of St. Lawrence (Rodrigues *et al.*, 1993). Rodrigues *et al.* (1993) stated that these assemblages were probably related to high levels of meltwater into the area. Therefore, the assemblages in this zone are related to a glaciomarine environment where temperature and salinity are probably about 0°C and <20‰ respectively.

Zone HA2 The dominant species in this zone are *Cassidulina reniforme* and

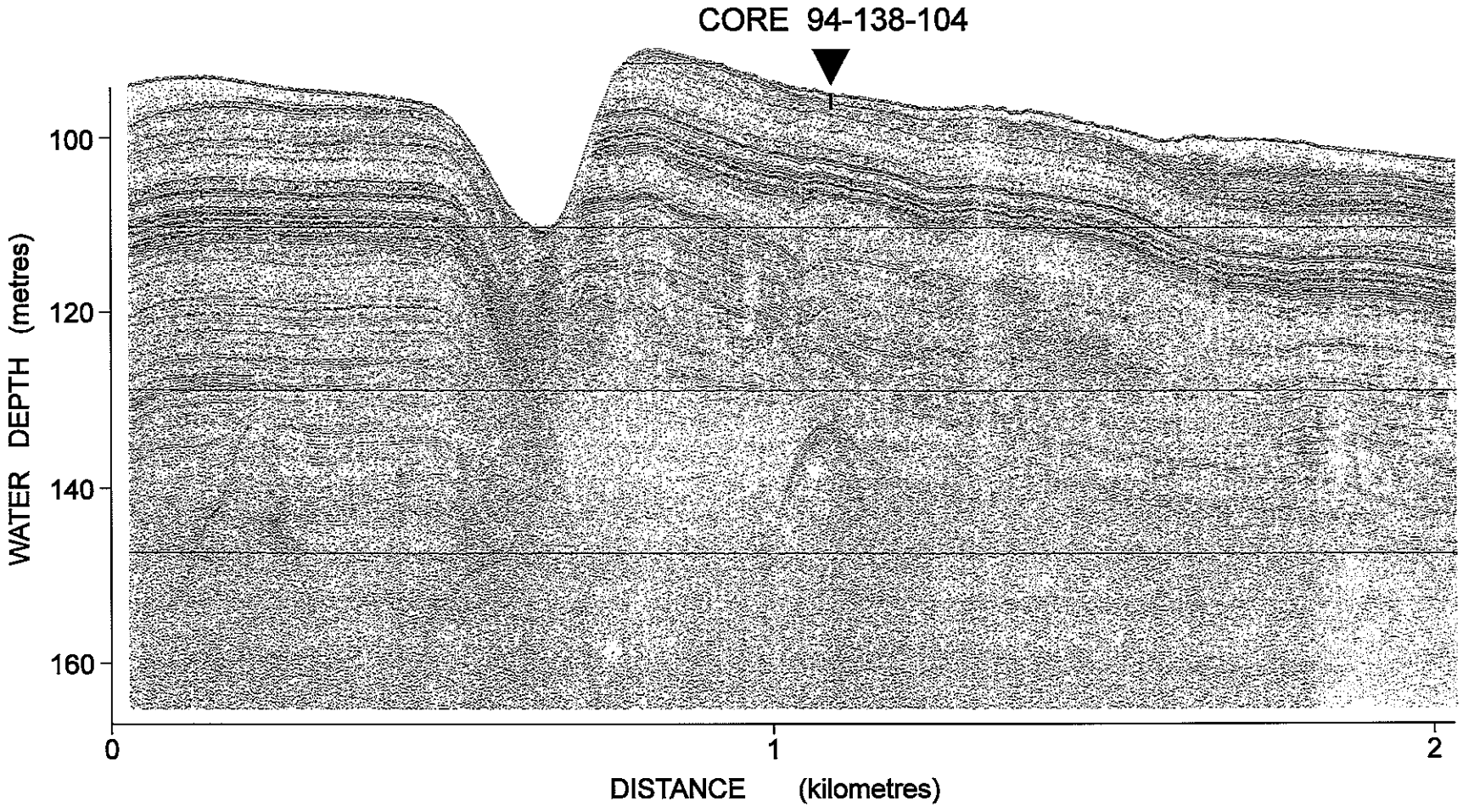


Figure 1. Seistec high resolution seismic profile across core site 94-138-104.

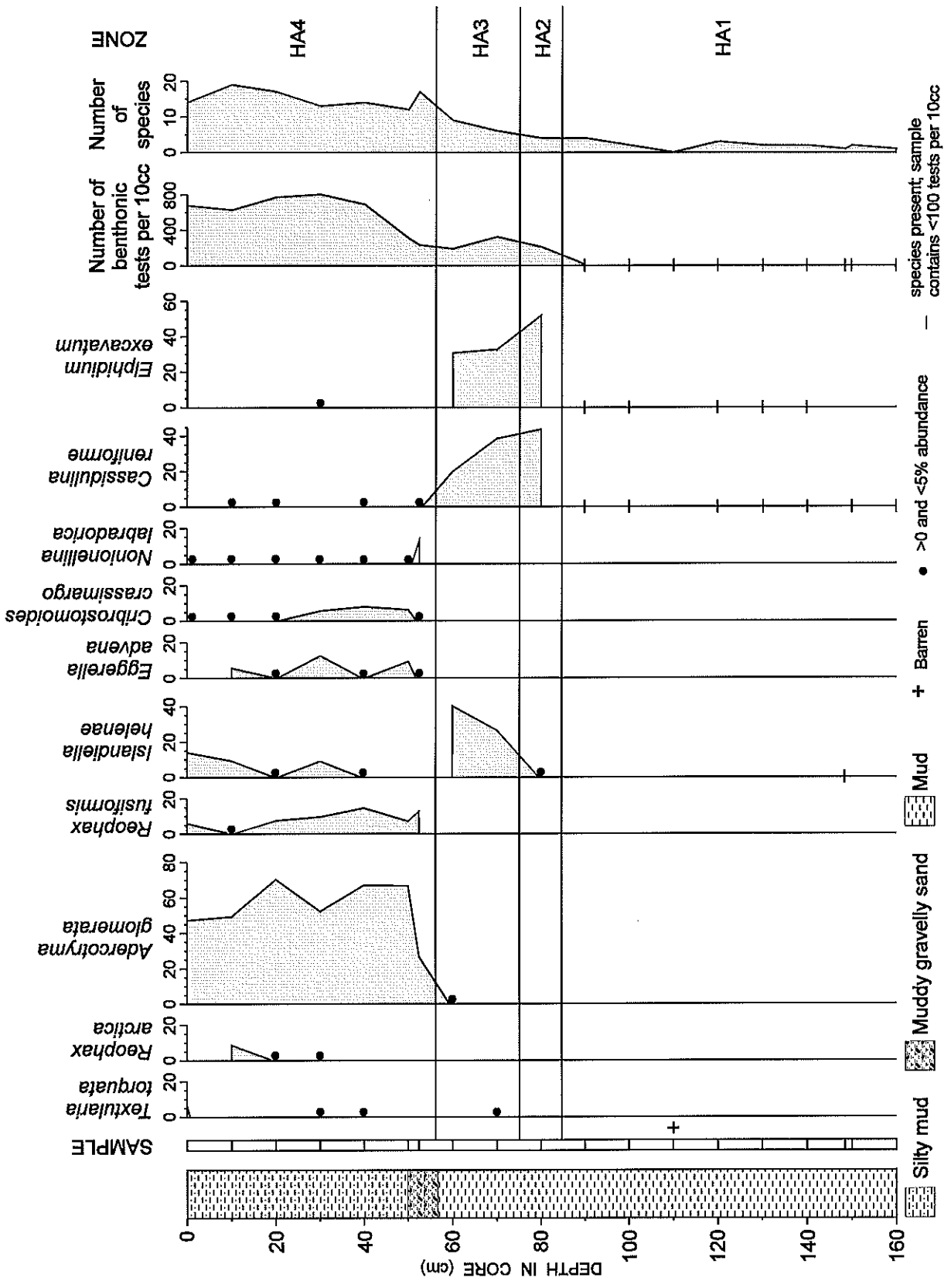


Figure 2. Major benthonic foraminiferal species and zones for core 94-138-104.

Elphidium excavatum clavata. Assemblages in which *Cassidulina reniforme* and *Elphidium excavatum clavata* are abundant have been found in cores from Hudson Bay (Leslie, 1965), Hudson Strait (Maclean *et al.*, 1992; Vilks *et al.*, 1989) Notre Dame Channel (Scott *et al.*, 1984), eastern Barrow Strait (MacLean *et al.*, 1989) and Chaleur Trough (Rodrigues *et al.*, 1993). These two species can tolerate a wide range of temperature and salinity conditions and are the first to appear following glacial conditions. Vilks *et al.*, (1989) and MacLean *et al.* (1992) interpret this assemblage to represent glaciomarine, ice-proximal conditions and Scott *et al.* (1984) state that this assemblage appears to characterize an ice margin environment. Therefore, the foraminiferal assemblages in this zone are indicative of a glaciomarine, ice margin type of environment with temperature and salinity probably about 0°C and 25 - 30‰, respectively.

Zone HA3 The abundance of *Cassidulina reniforme* decreases and that of *Islandiella helenae* increases in this zone. Vilks *et al.* (1989) stated that the abundance of *Islandiella helenae* indicated a salinity between 32.5 and 33.5‰. In the Gulf of St. Lawrence, *Islandiella helenae* is most abundant in the intermediate watermass with temperatures <2.3°C and salinity between 30 and 33.6‰ (Rodrigues and Hooper, 1982). Therefore, the temperature and salinity of the bottom water during this zone was <3°C and 30 to 33.5‰, respectively. The abundance of Islandiella helenae in this zone indicates increasing salinity from <30‰ in zone HA2 to between 30 and

33.5‰ in this zone.

Zone HA4 This zone is marked by the dominance of *Adercotryma glomerata* and the presence of other agglutinated foraminiferal species. This species is abundant between 300 and 700 m on the continental slope of Newfoundland where the average temperature and salinity is 3.2°C and 34.8‰, respectively (Schafer and Cole, 1982). It is also abundant between 72 and 149 m in the Gulf of St. Lawrence where the temperature is between -2.0 and 2.6°C and salinity ranges from 31.4 to 33.7‰ (Rodrigues and Hooper, 1982). *Adercotryma glomerata* is abundant in the upper part of cores collected from the Casino Bank Basin (Scott *et al.*, 1984), and Notre Dame Channel (Scott *et al.*, 1984; Mudie and Guilbault, 1982). The temperature and salinity conditions for this species is similar to those for *Islandiella helenae* except for the higher salinity range for *Adercotryma glomerata*. However, since *Islandiella helenae* is abundant in some samples from this zone, the faunal change does not necessarily reflect higher salinity conditions. Mudie and Guilbault (1982) suggested that this species may mark the change to an environment of sediment erosion. In core 94-138-104, this species becomes abundant in the muddy gravelly sand and silty mud portion of the core (Fig. 2). Rodrigues and Hooper (1982) noted that *Adercotryma glomerata* is associated with areas that have a narrow annual temperature range. This may indicate that the temperature of the bottom water at the core site has been relatively stable during zone HA4. It appears

that this zone indicates the final paleoceanographic change to post glacial conditions in this area.

Core 90-013-64, Notre Dame Bay

This core was collected from a water depth of 311 m from Notre Dame Bay. The core penetrated an upper acoustically transparent seismic unit, an acoustically laminated unit and bottomed in an acoustically unstratified seismic unit (Fig. 3).

Foraminiferal Zones

Zone ND1 The foraminiferal assemblages from this zone contain less than 100 tests per 10 cc of sediment (Fig. 4). This assemblage is similar to zone HA1 in core 94-138-104 and is described in the previous section. Therefore, this zone represents a glaciomarine environment, probably with high levels of glacial meltwater in the area.

Zone ND2 *Cassidulina reniforme* and *Elphidium excavatum* are the main species in this zone. This zone is similar to zone HA2 in core 94-138-104. A similar assemblage is described from the lower part of core 78-023-20 which was collected further seaward of core 64 (Scott et al., 1984). As stated in zone HA2, this assemblage indicates a glaciomarine or ice margin environment with temperature and salinity probably about 0°C and 25 - 30‰ respectively.

Zone ND3 The main species in this zone are *Cassidulina reniforme*,

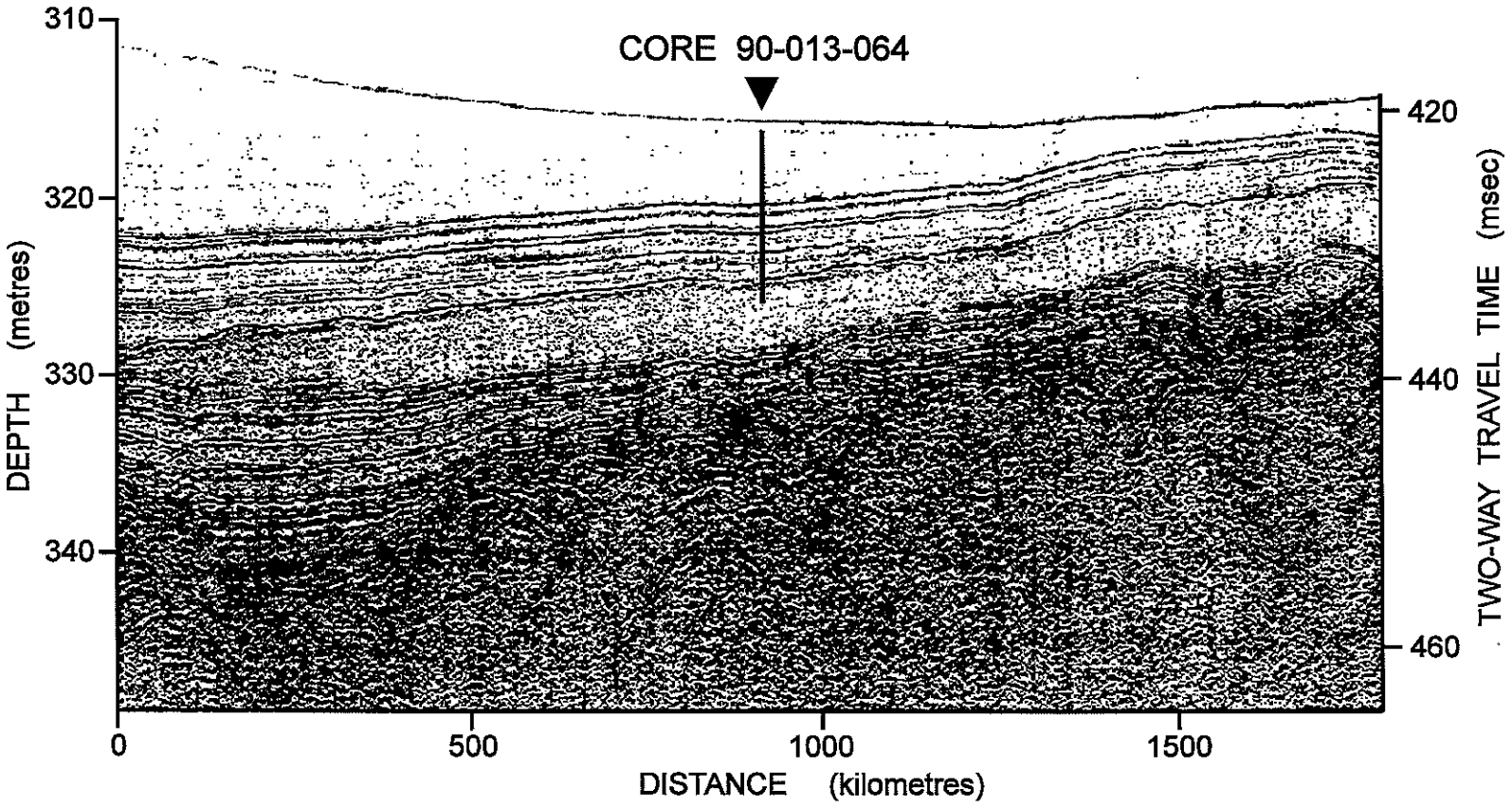


Figure 3. Seismic profile across core site 90-013-064.

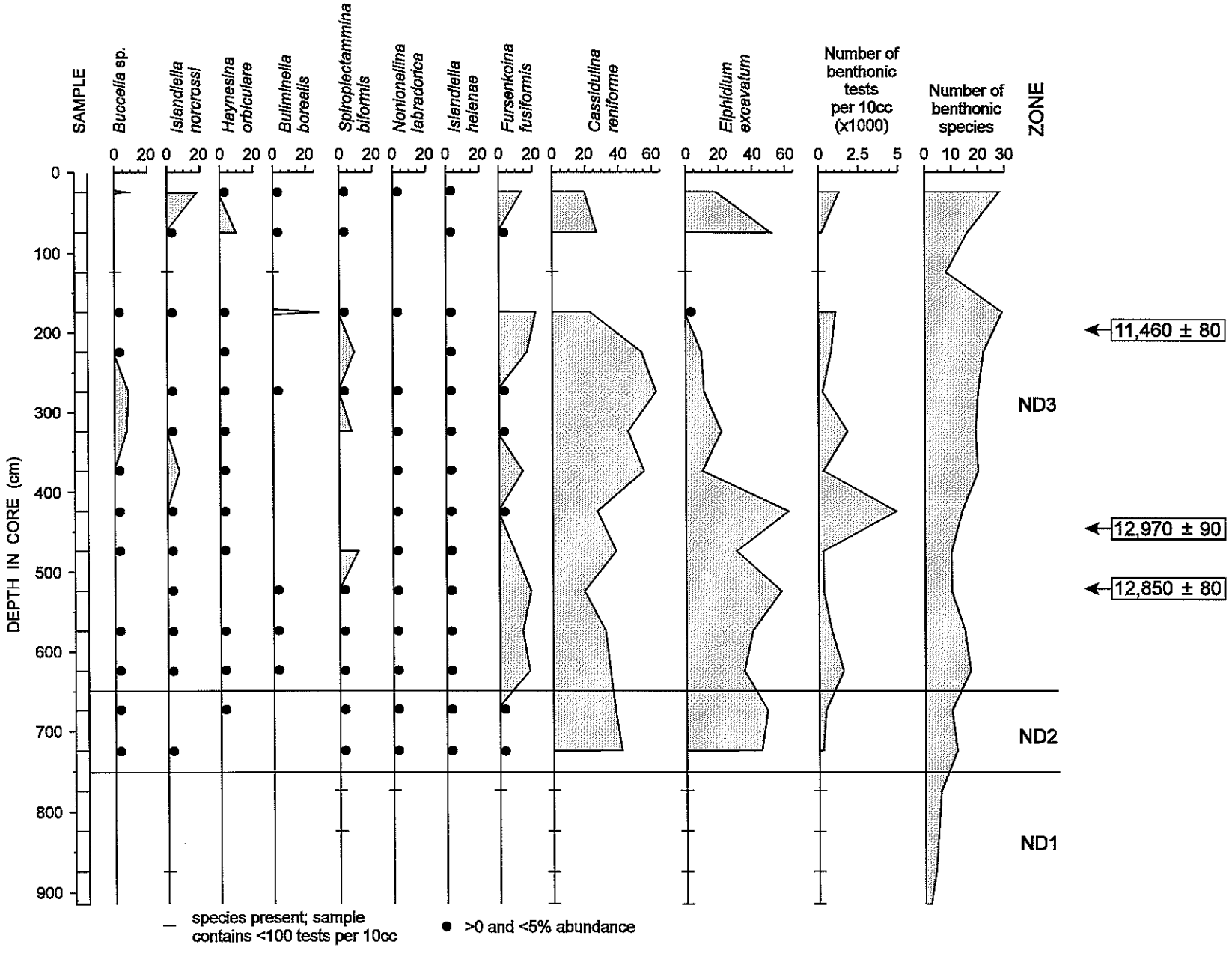


Figure 4. Major benthonic foraminiferal species and zones for core 90-013-064.

Elphidium excavatum and *Fursenkoina fusiformis*. The abundance of other species oscillate throughout this zone (Fig. 4). Scott *et al.* (1984) found a similar assemblage in the middle part of core 78-023-20 and suggested that this assemblage could occur under a floating ice shelf. More recently, Vilks *et al.* (1989) discussed the modern distribution of *Fursenkoina fusiformis* and stated that the species can tolerate a wide range of salinity conditions, generally between 32 and 35‰ and that it prefers a muddy substrate. They found that *Fursenkoina fusiformis* was abundant in cores from Hudson Strait and interpreted this zone to represent glaciomarine, ice-distal conditions. Alve (1994) reviewed the opportunistic features and environments of *Fursenkoina fusiformis* (as *Stainforthia fusiformis*) and found that it flourished in temperate, shelf and marginal marine environments but required salinities to be greater than 30‰. The ages from this zone indicate a relatively high sedimentation rate which may suggest that the area was still under the influence of meltwater input into the area. The foraminiferal assemblage located at 124 cm contains low numbers of tests. The reason for this is unclear but may be the result of a brief period of increased amounts of meltwater into the area. A higher resolution sample interval may resolve some of the uncertainty for this zone, however, a glaciomarine, ice distal environment similar to that of Vilks *et al.* (1989) is appropriate for this zone. Scott *et al.* (1984) described two faunal zones above their zone which is similar to zone ND3. These two zones were primarily in the gravity

core. It is possible that the upper part of the sediment column is missing from core 90-013-064 and the accompanying trigger weight core should be checked to see if the zones are missing from the piston core or if in fact they are not present at core site.

References

ALVE, E. 1994, Opportunistic features of the foraminifer *Stainforthia fusiformis* (Williamson): evidence from Frierfjord, Norway: Journal of Micropaleontology, vol. 13, p. 24.

LESLIE, R. J., 1965, Ecology and paleoecology of Hudson Bay foraminifera: Bedford Institute of Oceanography, Report B.I.O. 65-6, 192 p.

MACLEAN, B., SONNICHSEN, G., VILKS, G., POWELL, C., MORAN, K., JENNINGS, A., HODGSON, D. and DEONARINE, B., 1989, Marine geological and geotechnical investigations in Wellington, Byam Martin, Austin and adjacent channels, Canadian Arctic Archipelago: Geological Survey of Canada, Paper 89-11, 69 p.

MACLEAN, B., VILKS, G. and DEONARINE, B., 1992, Depositional environments and history of Late Quaternary sediments in Hudson Strait and Ungava Bay: further evidence from seismic and biostratigraphic data: Géographie physique et Quaternaire, vol. 46, p. 311-329.

MUDIE, P.J. and GUILBAULT, J.-P., 1982, Ecostratigraphic and paleomagnetic studies of Late Quaternary sediments on the northeast Newfoundland shelf: in Current Research, Part B, Geological Survey of Canada, Paper 82-1B, p. 107-116.

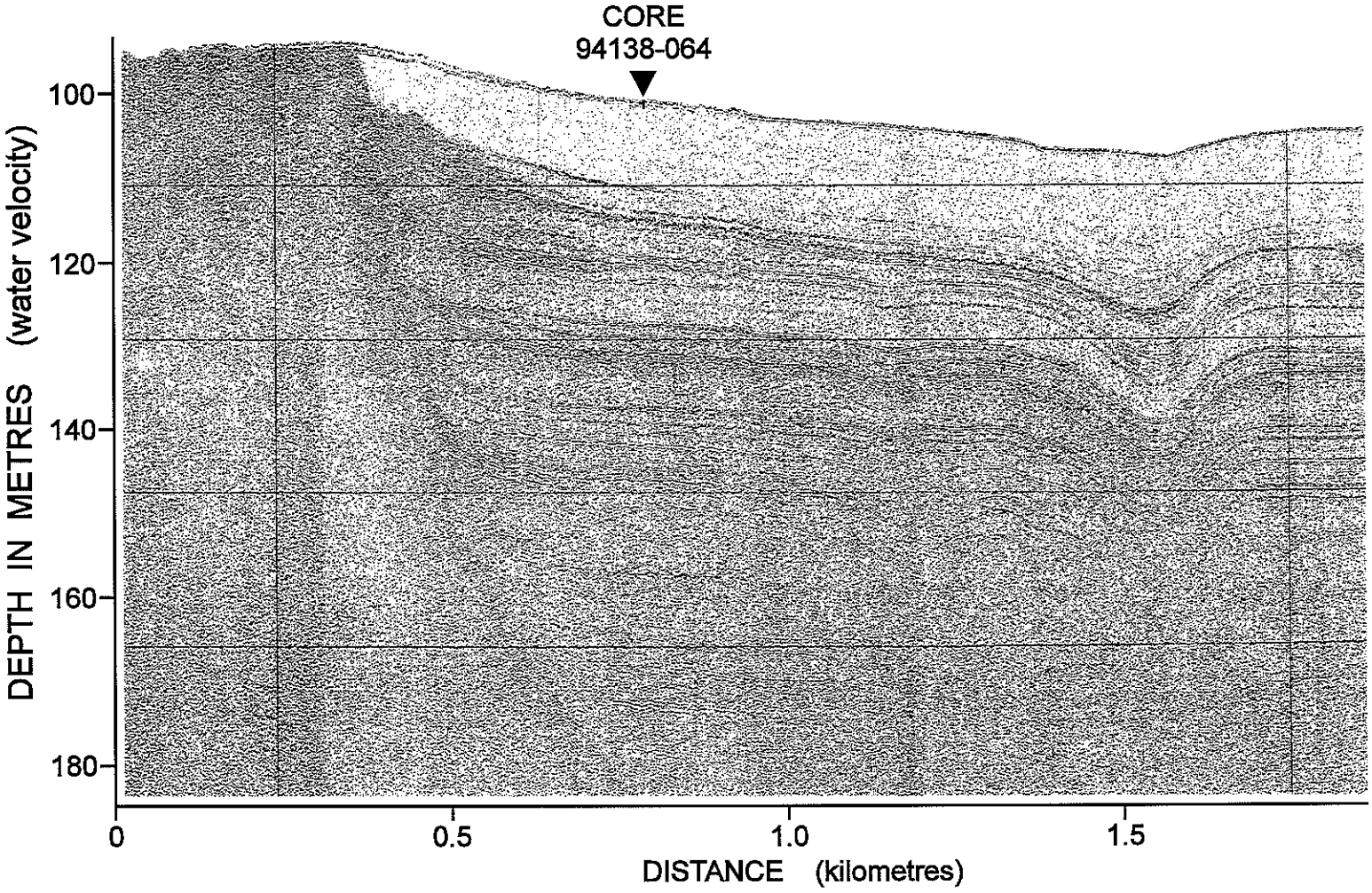
RODRIGUES, C. G., CEMAN, J. A. and VILKS, G., 1993, Late Quaternary paleoceanography of deep and intermediate watermasses off Gaspé Peninsula, Gulf of St. Lawrence: foraminiferal evidence: Canadian Journal of Earth Sciences, vol. 30, p. 1390-1403.

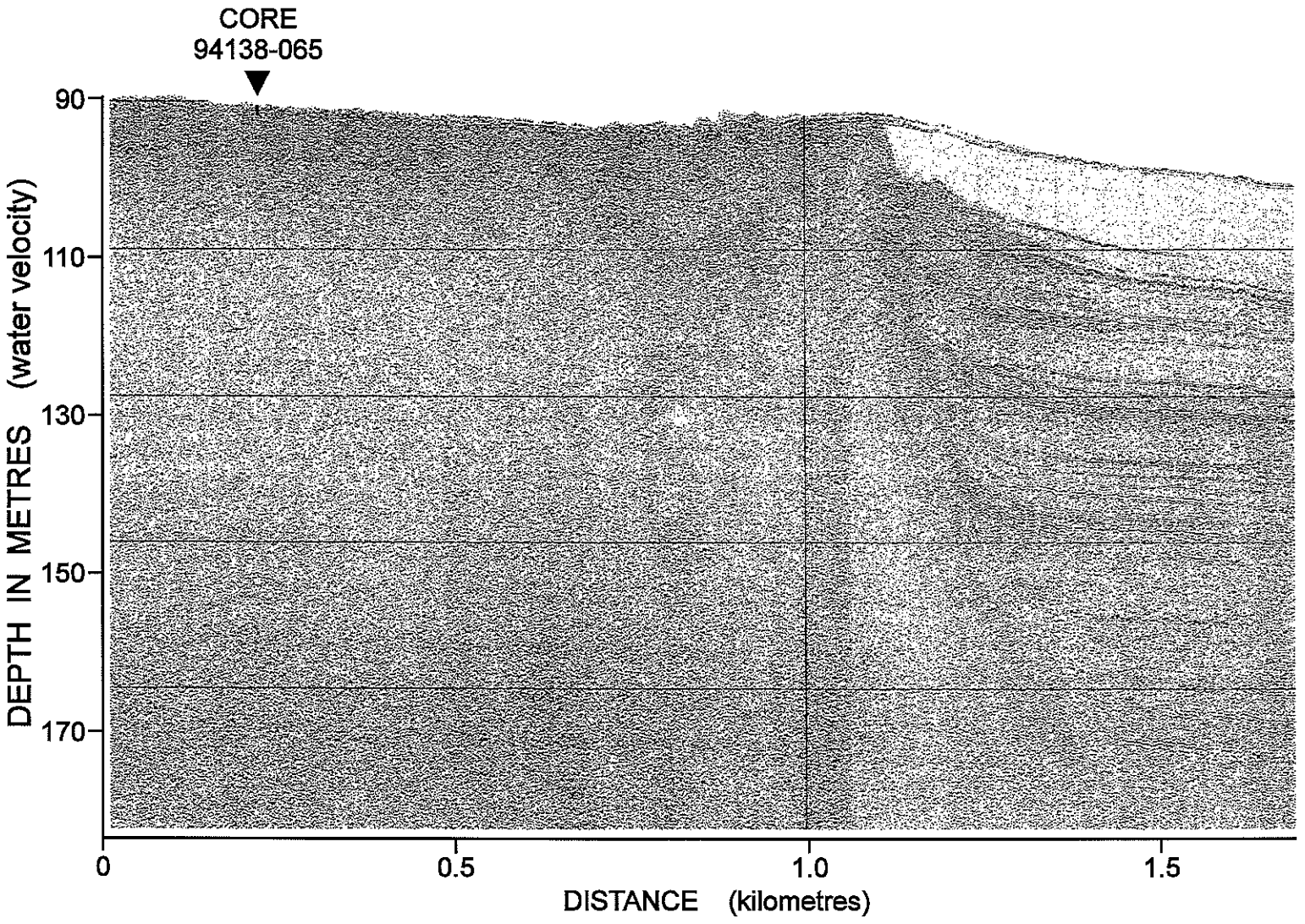
RODRIGUES, C.G. and HOOPER, K., 1982, Recent benthonic foraminiferal associations from offshore environments in the Gulf of St. Lawrence: Journal of Foraminiferal Research, vol. 12, no. 4, p. 327-352.

SCHAFER, C.T. and COLE, F.E., 1982, Living benthic foraminifera distributions on the continental slope and rise east of Newfoundland, Canada: Geological Society of America Bulletin, vol. 93, p. 207-217.

VILKS, G., MACLEAN, B., DEONARINE, B., CURRIE, C.G. and MORGAN, K., 1989, Late Quaternary paleoceanography and sedimentary environments in Hudson Strait: Géographie physique et Quaternaire, vol. 43, no. 2, p. 161-178.

Appendix 5: Seismic sections at Core sites in Bay of Islands


CORE
94138-064
100
120
140
160
180
DEPTH IN METRES (water velocity)
0
0.5
1.0
1.5
DISTANCE (kilometres)


CORE
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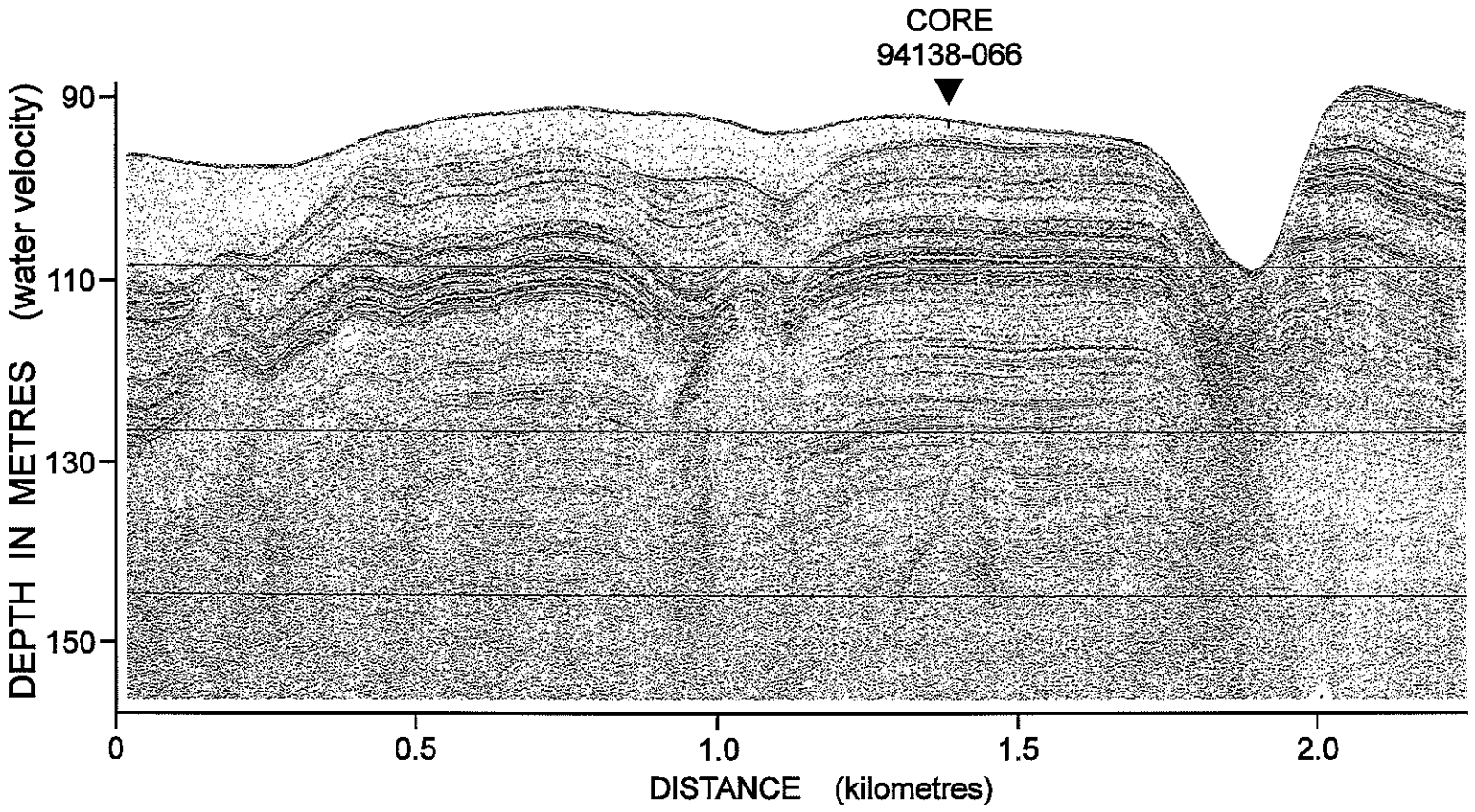
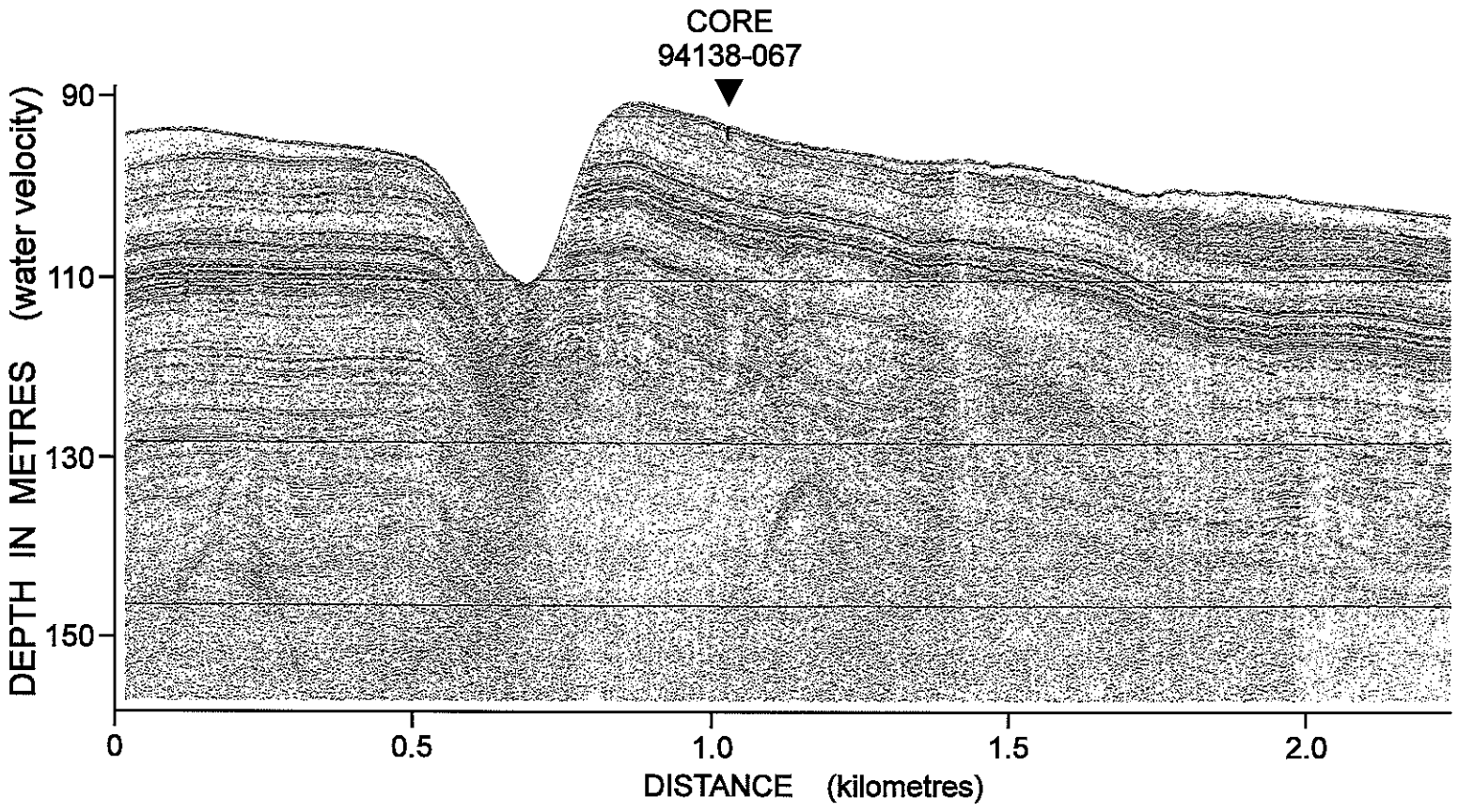
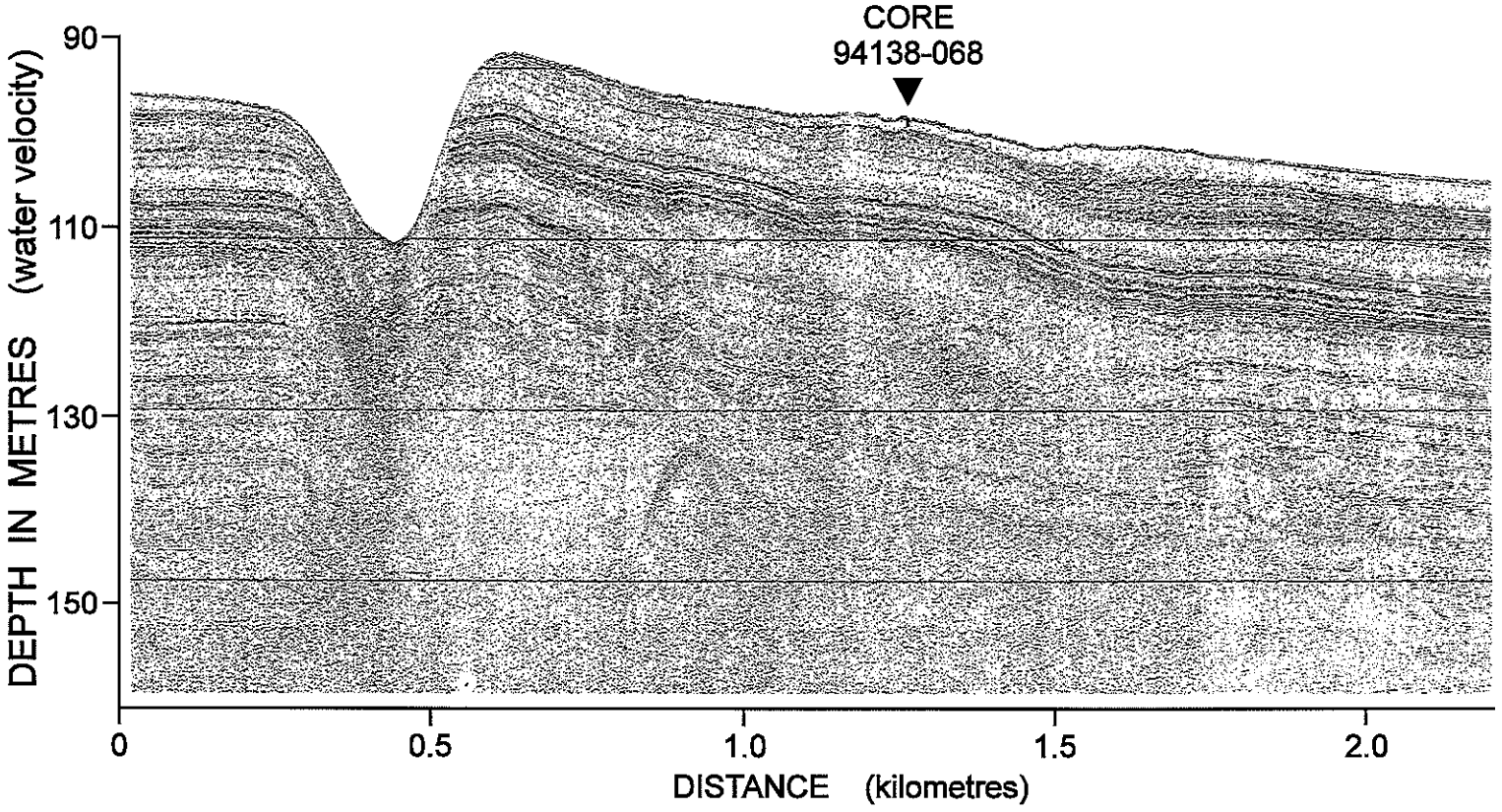
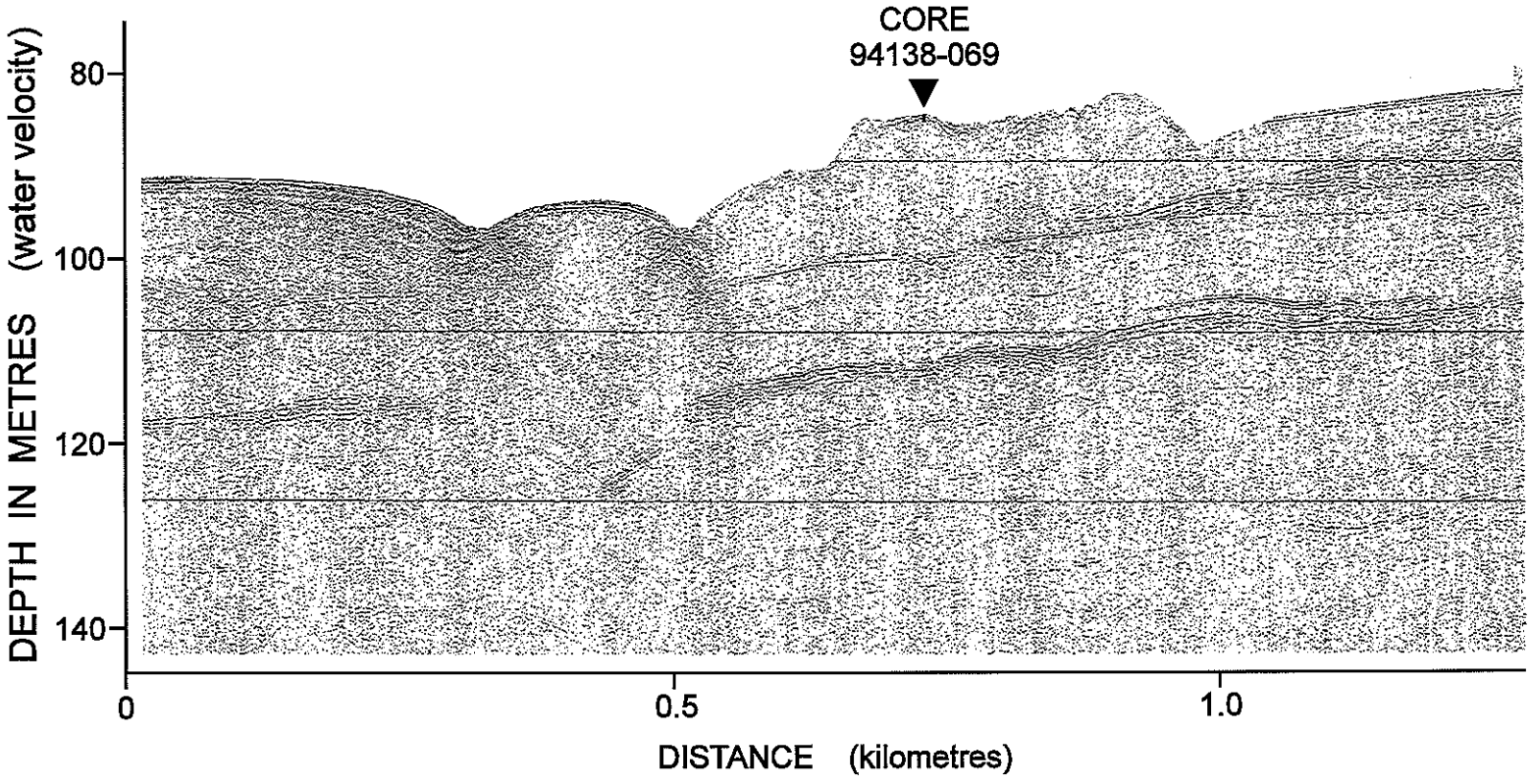
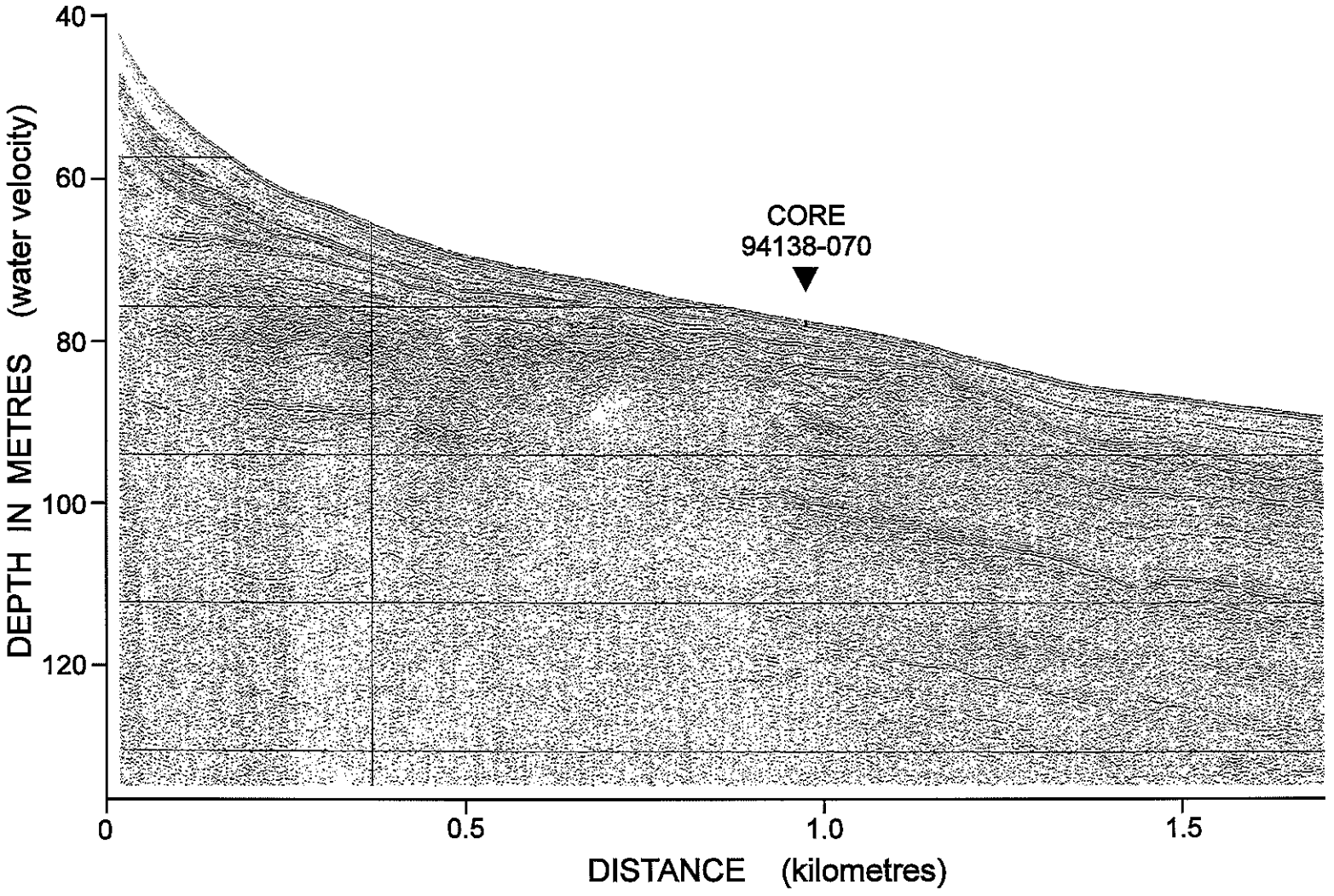
90
110
130
150
170
DEPTH IN METRES (water velocity)
0
0.5
1.0
1.5
DISTANCE (kilometres)

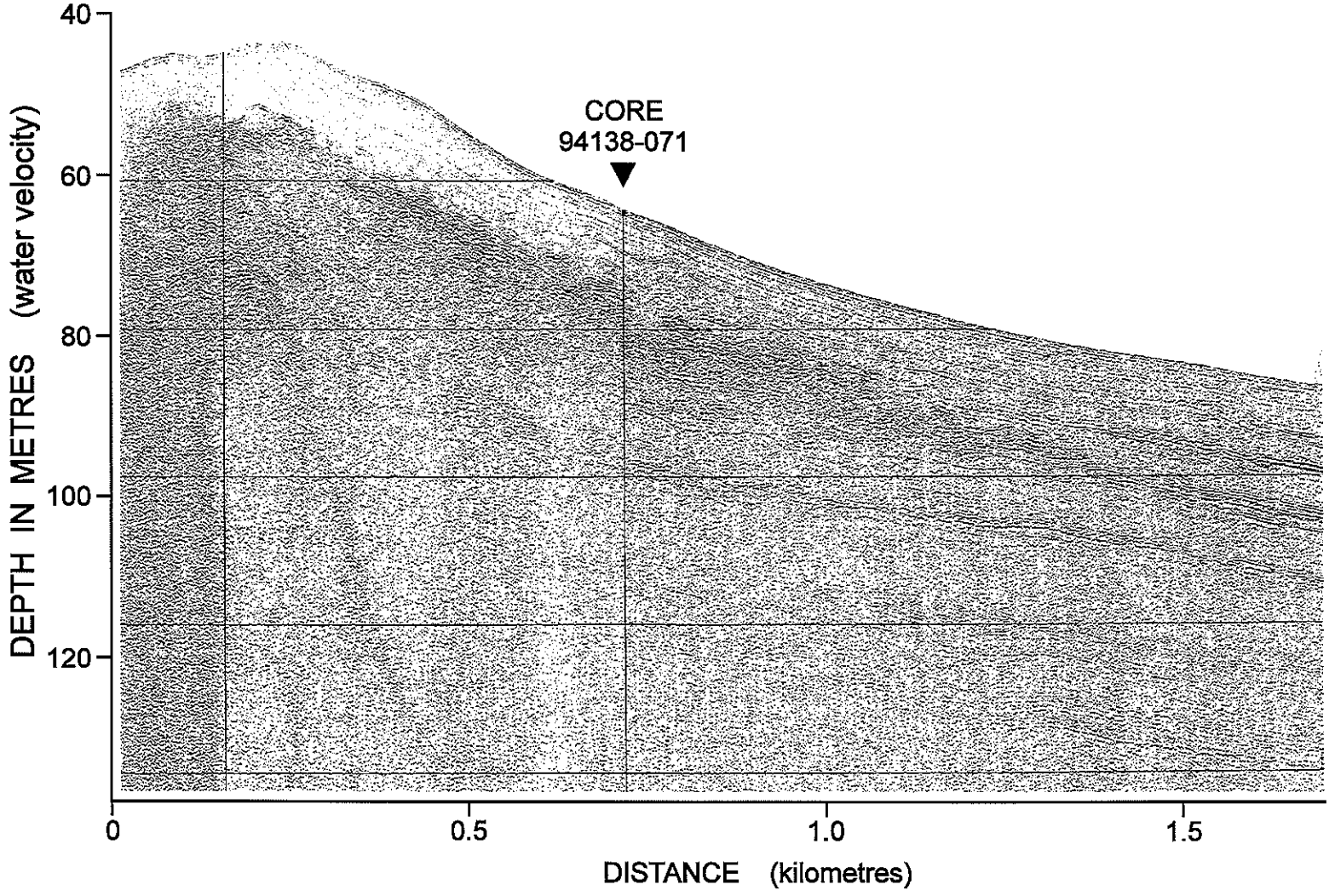

CORE
94138-066
DEPTH IN METRES (water velocity)
90
110
130
150
0
0.5
1.0
1.5
2.0
DISTANCE (kilometres)

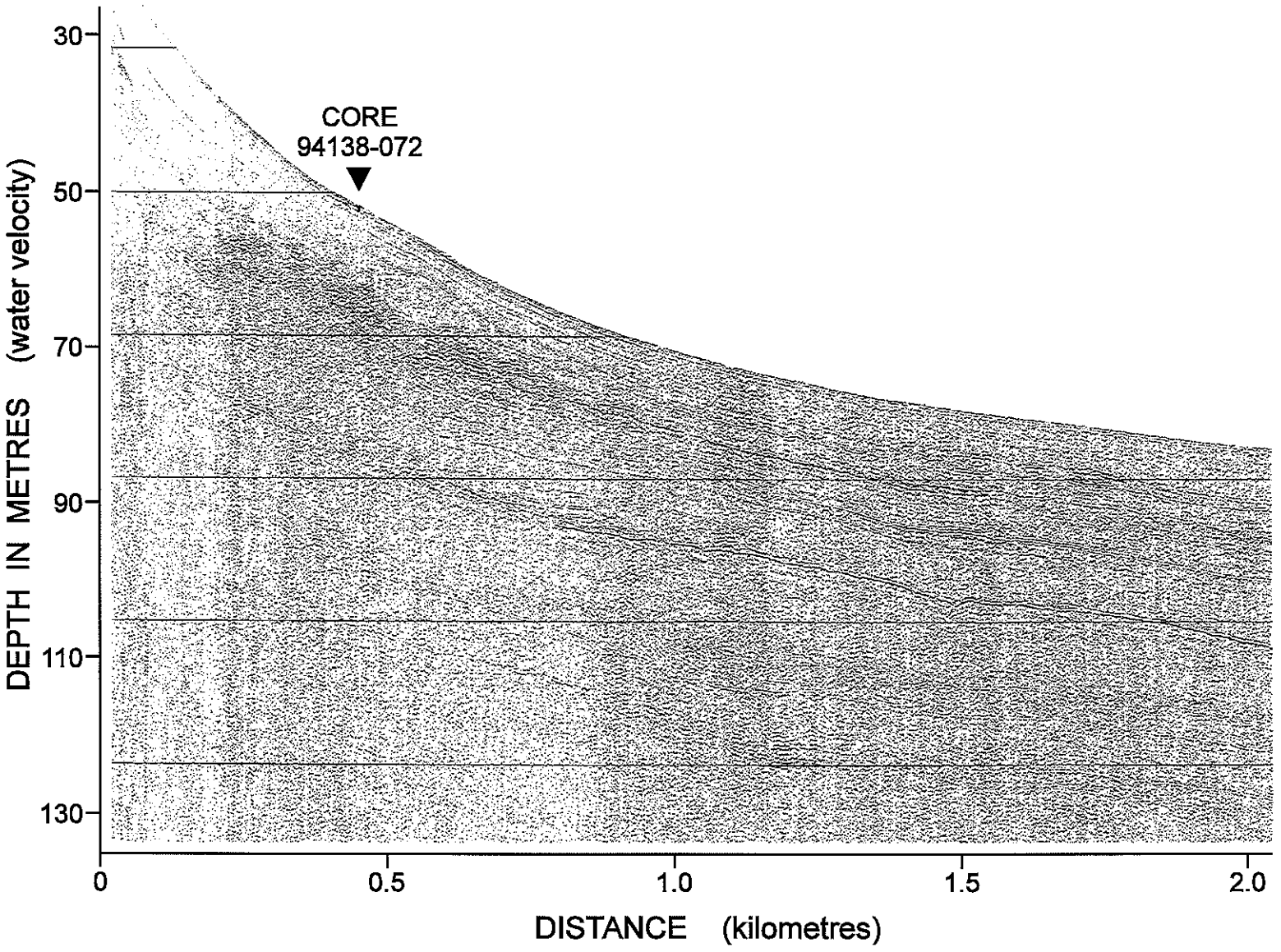

CORE
94138-067
DEPTH IN METRES (water velocity)
90
110
130
150
0
0.5
1.0
1.5
2.0
DISTANCE (kilometres)

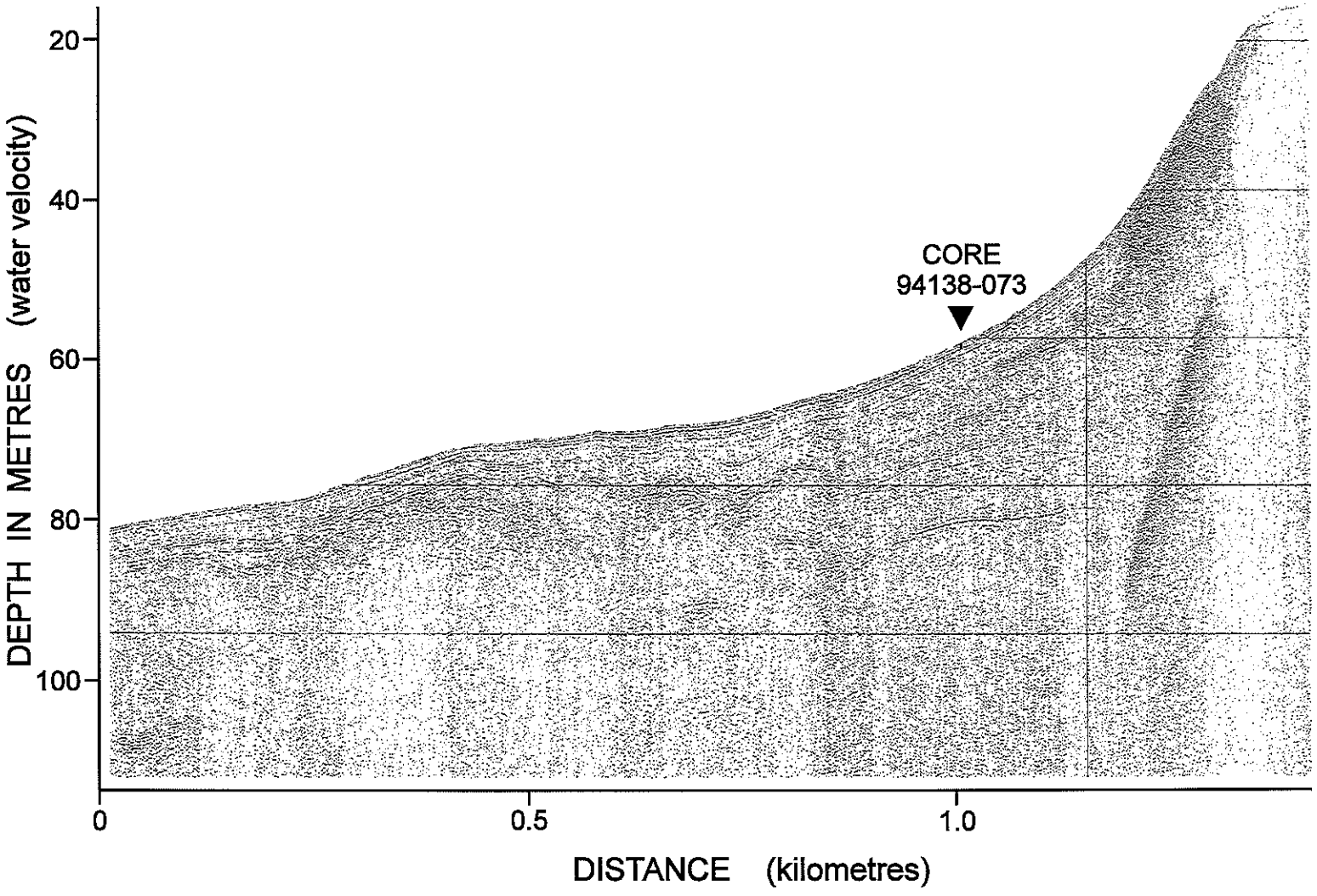

CORE
94138-068
90
110
130
150
DEPTH IN METRES (water velocity)
0
0.5
1.0
1.5
2.0
DISTANCE (kilometres)

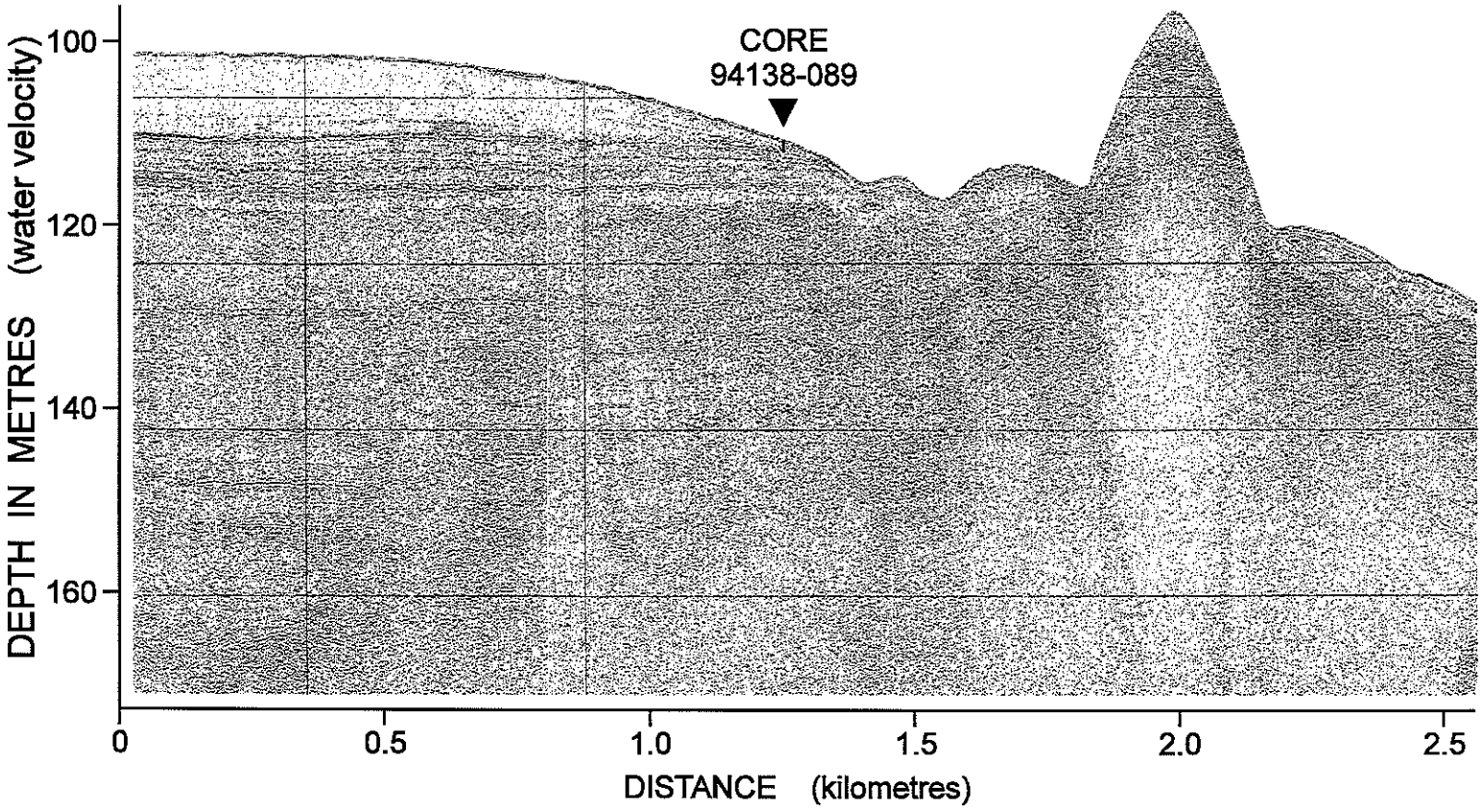

CORE
94138-069
80
100
120
140
DEPTH IN METRES (water velocity)
0
0.5
1.0
DISTANCE (kilometres)

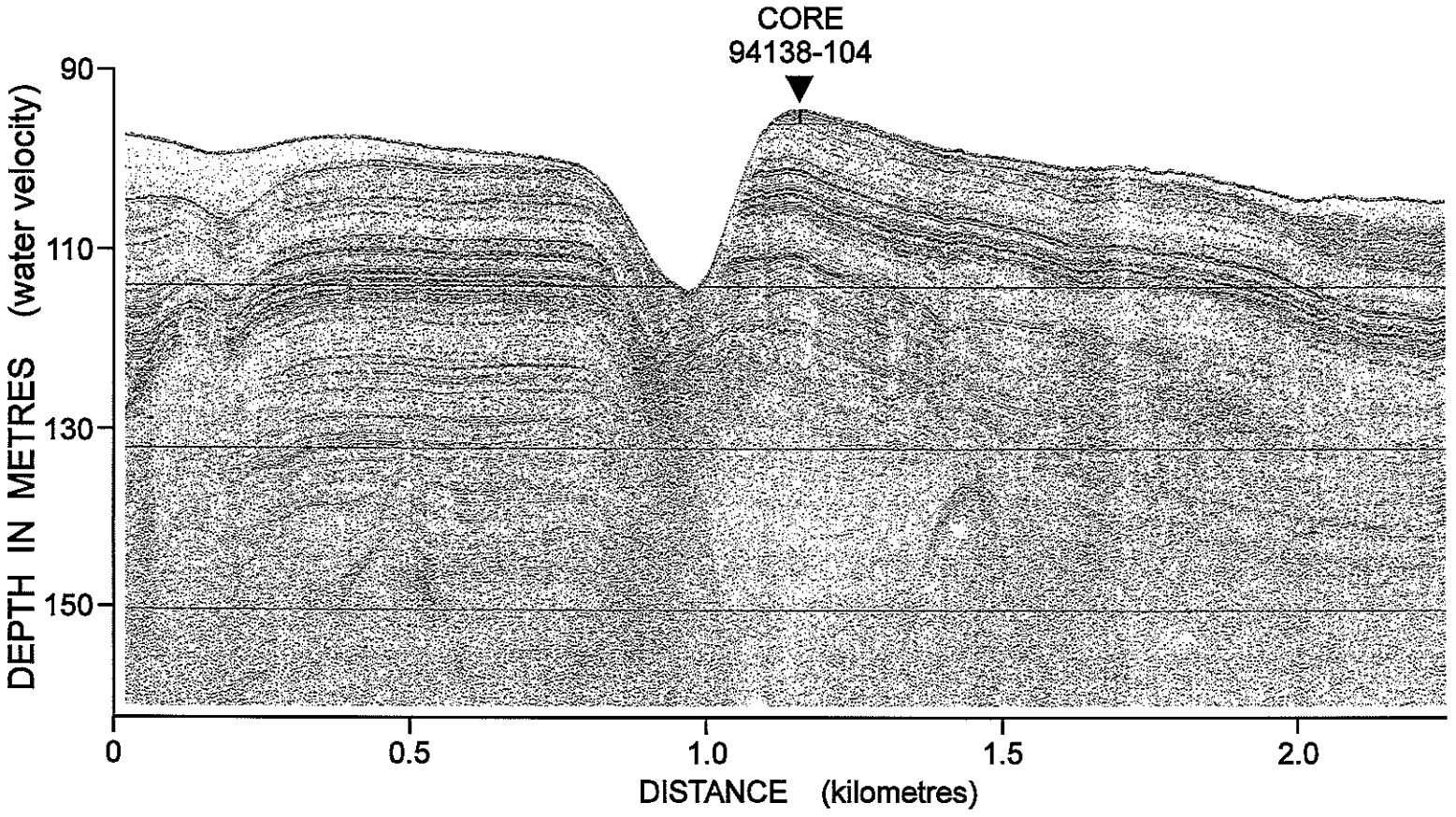

40
60
80
100
120
DEPTH IN METRES (water velocity)
CORE
94138-070
0
0.5
1.0
1.5
DISTANCE (kilometres)


CORE
94138-071
40
60
80
100
120
DEPTH IN METRES (water velocity)
0
0.5
1.0
1.5
DISTANCE (kilometres)


CORE
94138-072
30
50
70
90
110
130
DEPTH IN METRES (water velocity)
0
0.5
1.0
1.5
2.0
DISTANCE (kilometres)


20
40
60
80
100
DEPTH IN METRES (water velocity)
CORE
94138-073
0
0.5
1.0
DISTANCE (kilometres)


CORE
94138-089
100
120
140
160
DEPTH IN METRES (water velocity)
0
0.5
1.0
1.5
2.0
2.5
DISTANCE (kilometres)


CORE
94138-104
90
110
130
150
DEPTH IN METRES (water velocity)
0
0.5
1.0
1.5
2.0
DISTANCE (kilometres)

Appendix 6: Grain-size data, core 94-138-104

Calculation Results for
The Sample with the Identifier:

V3.0
16: 5:1995
9727
33
94138-104 2-4
94138
900031
J. SHAW
LEHIGH CORE, HUMBER ARM, NEWFOUNDLAND.
RD009727
SWF00230
2.00000000000000E+0000
4.00000000000000E+0000
0
0
0
0
0
0
0
0
51098
104
104
LEHIGH
CORE
48:58.90
-58:3.06
92.00
n lines for future expansion
#

Results

Midpoints		Relative Frequency	Cumulative Frequency
MM	PHI	Percentages	Percentages
2.69e+01	-4.75	0.00	0.00
1.90e+01	-4.25	0.00	0.00
1.35e+01	-3.75	0.00	0.00
9.51e+00	-3.25	0.00	0.00
6.73e+00	-2.75	0.00	0.00
4.76e+00	-2.25	0.00	0.00
3.36e+00	-1.75	0.00	0.00
2.38e+00	-1.25	0.04	0.04
1.68e+00	-0.75	0.16	0.20
1.19e+00	-0.25	0.12	0.32
8.41e-01	0.25	0.00	0.32
5.95e-01	0.75	0.03	0.35
4.20e-01	1.25	0.20	0.55

2.97e-01	1.75	0.16	0.71
2.10e-01	2.25	0.36	1.07
1.49e-01	2.75	1.07	2.14
1.05e-01	3.25	3.46	5.60
7.43e-02	3.75	3.02	8.62
5.26e-02	4.25	1.24	9.86
3.72e-02	4.75	4.09	13.95
2.63e-02	5.25	5.19	19.13
1.86e-02	5.75	5.75	24.89
1.31e-02	6.25	7.76	32.65
9.29e-03	6.75	6.73	39.37
6.57e-03	7.25	8.73	48.10
4.65e-03	7.75	9.50	57.60
3.28e-03	8.25	7.12	64.72
2.32e-03	8.75	5.84	70.57
1.64e-03	9.25	5.04	75.61
1.16e-03	9.75	5.53	81.14
8.21e-04	10.25	3.66	84.80
5.81e-04	10.75	3.96	88.77
2.44e-04	12.00	11.23	100.00

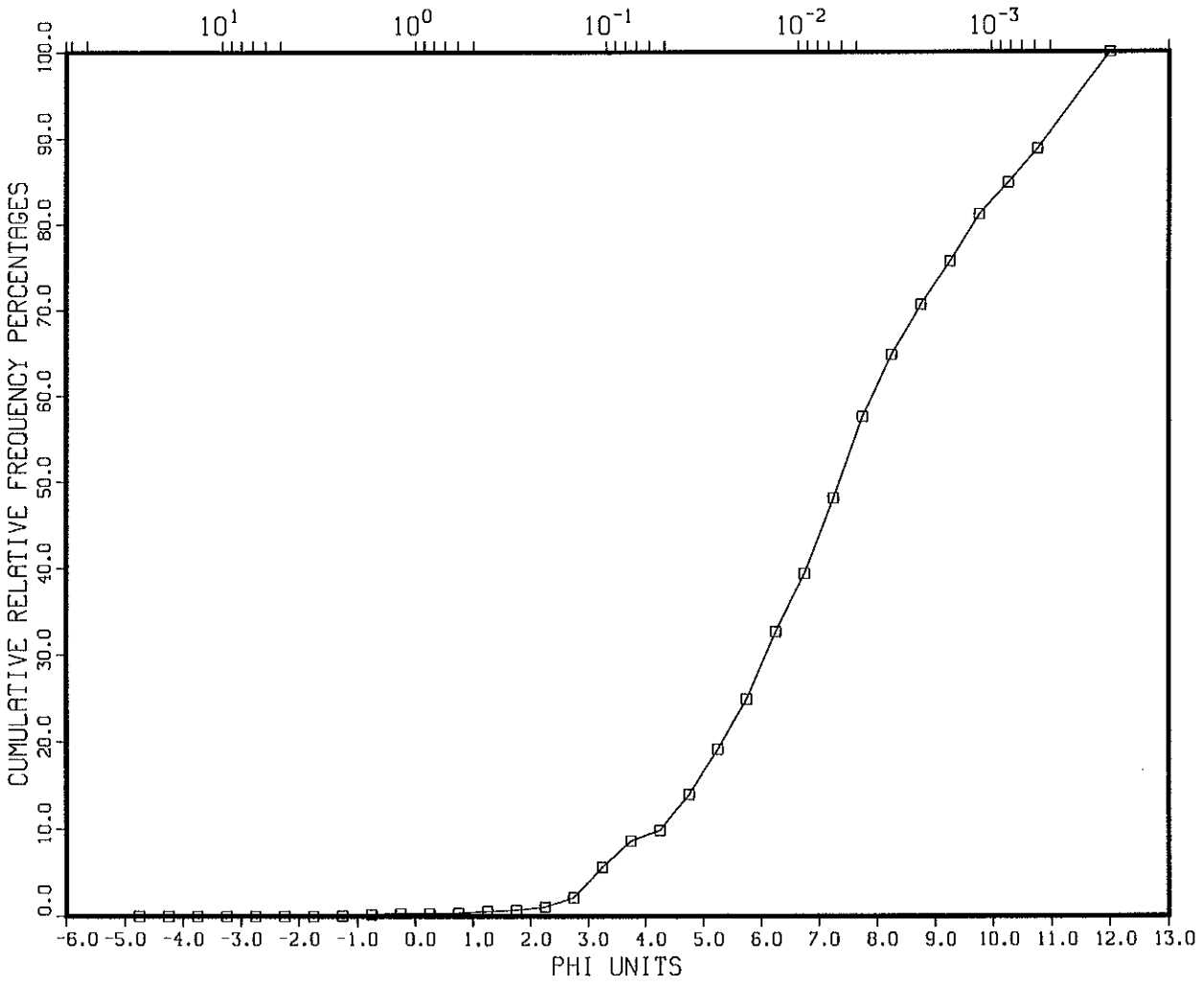
Grain Size Breakdown

% Gravel	% Sand	% Silt	% Clay	% Mud
0.04	8.58	48.98	42.40	91.38

Statistical Measures

Mean (PHI)	Standard Deviation (PHI)	Kurtosis (No Dim.)	Skewness (No Dim.)
7.68	2.51	2.64	-0.06

94138-104 2-4,RD009727, J. SHAW
,00230, LEHIGH CORE, HUMBER ARM, NEWFOUNDLAND.
MILLIMETER EQUIVALENTS



Calculation Results for
The Sample with the Identifier:

V3.0
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9728
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94138-104 44-46
94138
900031
J. SHAW
LEHIGH CORE, HUMBER ARM, NEWFOUNDLAND.
RD009728
SWF00230
4.40000000000000E+0001
4.60000000000000E+0001
0
0
0
0
0
0
0
0
51098
104
104
LEHIGH
CORE
48:58.90
-58:3.06
92.00
n lines for future expansion
#

Results

Midpoints		Relative Frequency	Cumulative Frequency
MM	PHI	Percentages	Percentages
2.69e+01	-4.75	0.00	0.00
1.90e+01	-4.25	0.00	0.00
1.35e+01	-3.75	0.00	0.00
9.51e+00	-3.25	0.00	0.00
6.73e+00	-2.75	0.00	0.00
4.76e+00	-2.25	0.00	0.00
3.36e+00	-1.75	0.32	0.32
2.38e+00	-1.25	0.19	0.51
1.68e+00	-0.75	0.23	0.75
1.19e+00	-0.25	0.13	0.88
8.41e-01	0.25	0.00	0.88
5.95e-01	0.75	0.25	1.12

4.20e-01	1.25	0.53	1.65
2.97e-01	1.75	1.01	2.66
2.10e-01	2.25	2.20	4.86
1.49e-01	2.75	5.11	9.96
1.05e-01	3.25	3.76	13.73
7.43e-02	3.75	2.12	15.85
5.26e-02	4.25	1.82	17.68
3.72e-02	4.75	4.72	22.39
2.63e-02	5.25	4.86	27.25
1.86e-02	5.75	4.92	32.17
1.31e-02	6.25	6.62	38.78
9.29e-03	6.75	7.08	45.86
6.57e-03	7.25	7.15	53.02
4.65e-03	7.75	6.61	59.63
3.28e-03	8.25	5.61	65.24
2.32e-03	8.75	4.52	69.76
1.64e-03	9.25	4.01	73.77
1.16e-03	9.75	5.04	78.81
8.21e-04	10.25	3.75	82.56
5.81e-04	10.75	3.97	86.53
2.44e-04	12.00	13.47	100.00

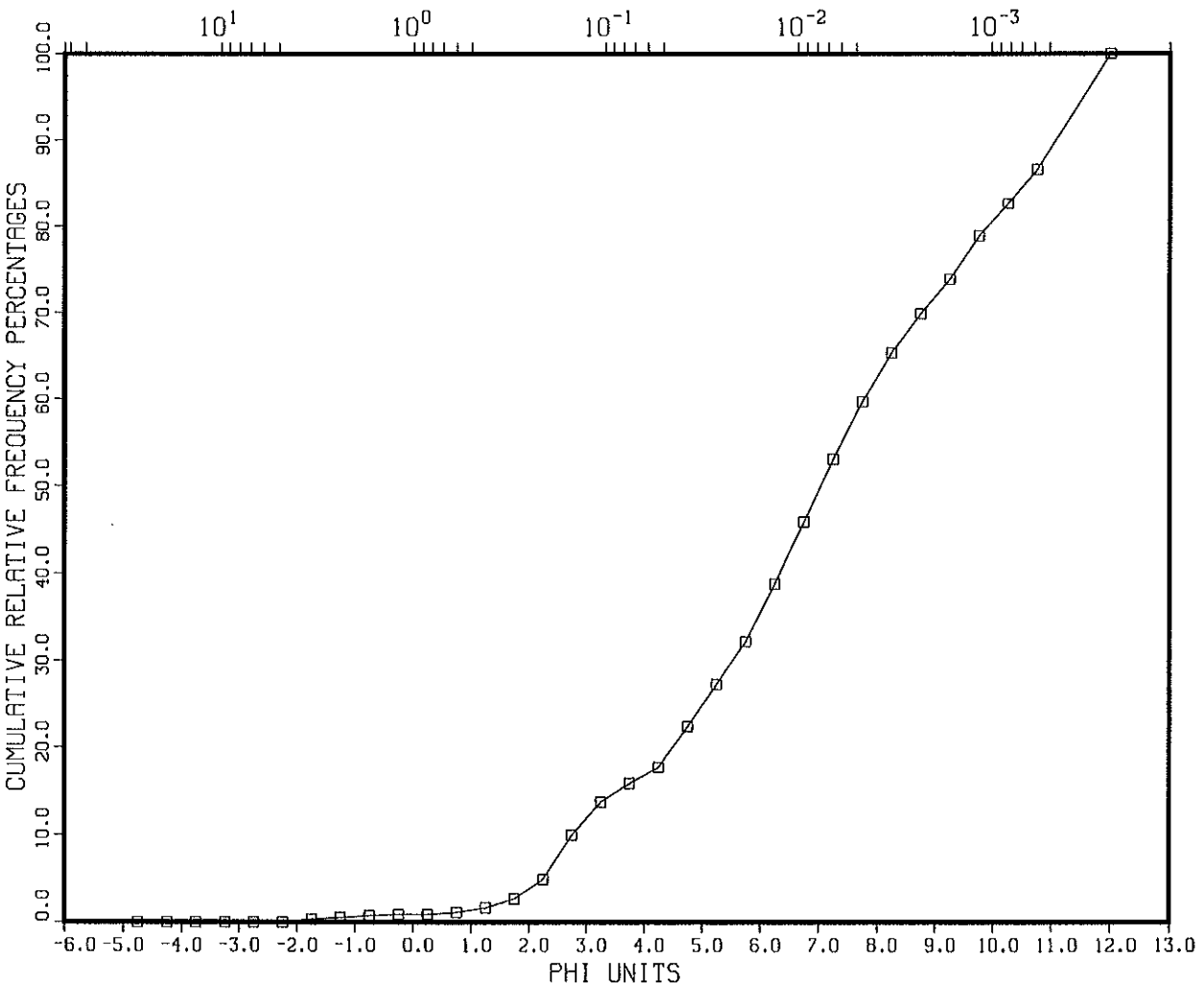
Grain Size Breakdown

% Gravel	% Sand	% Silt	% Clay	% Mud
0.51	15.34	43.78	40.37	84.15

Statistical Measures

Mean (PHI)	Standard Deviation (PHI)	Kurtosis (No Dim.)	Skewness (No Dim.)
7.32	3.00	2.44	-0.17

94138-104 44-46,RD009728, J. SHAW
,00230, LEHIGH CORE, HUMBER ARM, NEWFOUNDLAND.



Calculation Results for
The Sample with the Identifier:

V3.0
16: 5:1995
9729
33
94138-104 50-54
94138
900031
J. SHAW
LEHIGH CORE, HUMBER ARM, NEWFOUNDLAND.
RD009729
SWF00230
5.00000000000000E+0001
5.40000000000000E+0001
0
0
0
0
0
0
0
0
51098
104
104
LEHIGH
CORE
48:58.90
-58:3.06
92.00
n lines for future expansion
#

Results

Midpoints		Relative Frequency	Cumulative Frequency
MM	PHI	Percentages	Percentages
2.69e+01	-4.75	0.00	0.00
1.90e+01	-4.25	0.00	0.00
1.35e+01	-3.75	4.42	4.42
9.51e+00	-3.25	1.57	5.98
6.73e+00	-2.75	2.68	8.66
4.76e+00	-2.25	1.42	10.08
3.36e+00	-1.75	0.65	10.73
2.38e+00	-1.25	1.13	11.87
1.68e+00	-0.75	0.97	12.84
1.19e+00	-0.25	1.30	14.14
8.41e-01	0.25	0.63	14.76
5.95e-01	0.75	1.92	16.69

4.20e-01	1.25	3.29	19.98
2.97e-01	1.75	4.39	24.37
2.10e-01	2.25	6.26	30.63
1.49e-01	2.75	8.76	39.39
1.05e-01	3.25	2.86	42.24
7.43e-02	3.75	1.87	44.11
5.26e-02	4.25	4.14	48.25
3.72e-02	4.75	3.18	51.42
2.63e-02	5.25	3.47	54.90
1.86e-02	5.75	3.36	58.26
1.31e-02	6.25	4.19	62.45
9.29e-03	6.75	3.62	66.06
6.57e-03	7.25	4.20	70.26
4.65e-03	7.75	4.27	74.53
3.28e-03	8.25	3.69	78.22
2.32e-03	8.75	2.47	80.69
1.64e-03	9.25	2.99	83.68
1.16e-03	9.75	2.76	86.44
8.21e-04	10.25	2.65	89.09
5.81e-04	10.75	2.72	91.81
2.44e-04	12.00	8.19	100.00

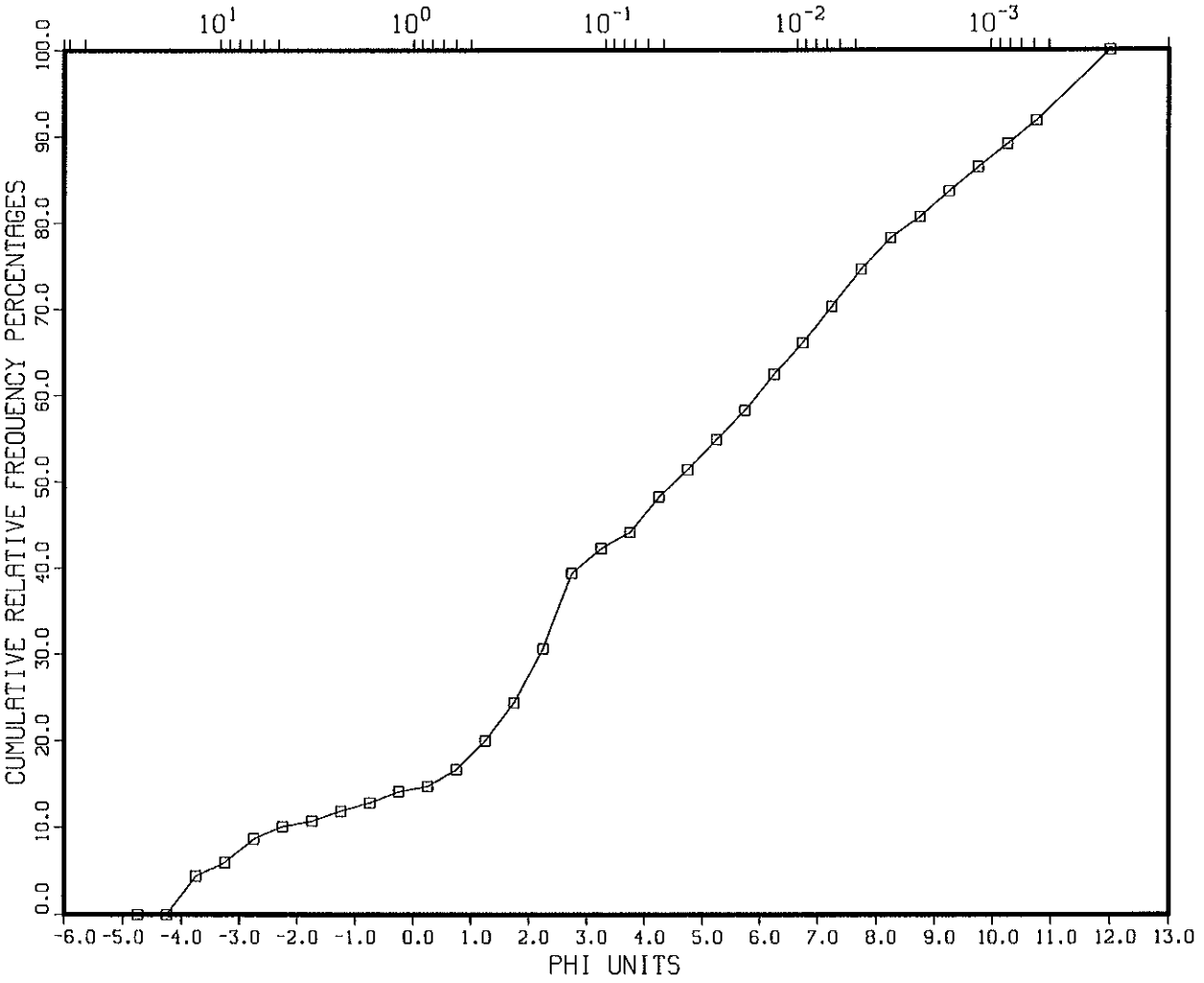
Grain Size Breakdown

% Gravel	% Sand	% Silt	% Clay	% Mud
11.87	32.24	30.42	25.47	55.89

Statistical Measures

Mean (PHI)	Standard Deviation (PHI)	Kurtosis (No Dim.)	Skewness (No Dim.)
4.78	4.35	2.27	-0.16

94138-104 50-54,RD009729, J. SHAW
,00230, LEHIGH CORE, HUMBER ARM, NEWFOUNDLAND.
MILLIMETER EQUIVALENTS



Calculation Results for
The Sample with the Identifier:

V3.0
16: 5:1995
9730
33
94138-104 62-64
94138
900031
J. SHAW
LEHIGH CORE, HUMBER ARM, NEWFOUNDLAND.
RD009730
SWF00230
6.20000000000000E+0001
6.40000000000000E+0001
0
0
0
0
0
0
0
0
51098
104
104
LEHIGH
CORE
48:58.90
-58:3.06
92.00
n lines for future expansion
#

Results

Midpoints		Relative Frequency	Cumulative Frequency
MM	PHI	Percentages	Percentages
2.69e+01	-4.75	0.00	0.00
1.90e+01	-4.25	0.00	0.00
1.35e+01	-3.75	0.00	0.00
9.51e+00	-3.25	0.00	0.00
6.73e+00	-2.75	0.00	0.00
4.76e+00	-2.25	0.00	0.00
3.36e+00	-1.75	0.00	0.00
2.38e+00	-1.25	0.00	0.00
1.68e+00	-0.75	0.05	0.05
1.19e+00	-0.25	0.00	0.05
8.41e-01	0.25	0.00	0.05
5.95e-01	0.75	0.03	0.09

4.20e-01	1.25	0.10	0.19
2.97e-01	1.75	0.13	0.32
2.10e-01	2.25	0.14	0.46
1.49e-01	2.75	0.41	0.87
1.05e-01	3.25	1.52	2.39
7.43e-02	3.75	1.22	3.61
5.26e-02	4.25	0.55	4.16
3.72e-02	4.75	1.24	5.40
2.63e-02	5.25	4.20	9.60
1.86e-02	5.75	3.67	13.28
1.31e-02	6.25	4.20	17.47
9.29e-03	6.75	2.03	19.51
6.57e-03	7.25	5.13	24.64
4.65e-03	7.75	6.89	31.53
3.28e-03	8.25	5.93	37.46
2.32e-03	8.75	5.95	43.41
1.64e-03	9.25	5.60	49.01
1.16e-03	9.75	6.04	55.05
8.21e-04	10.25	6.46	61.51
5.81e-04	10.75	6.02	67.53
2.44e-04	12.00	32.47	100.00

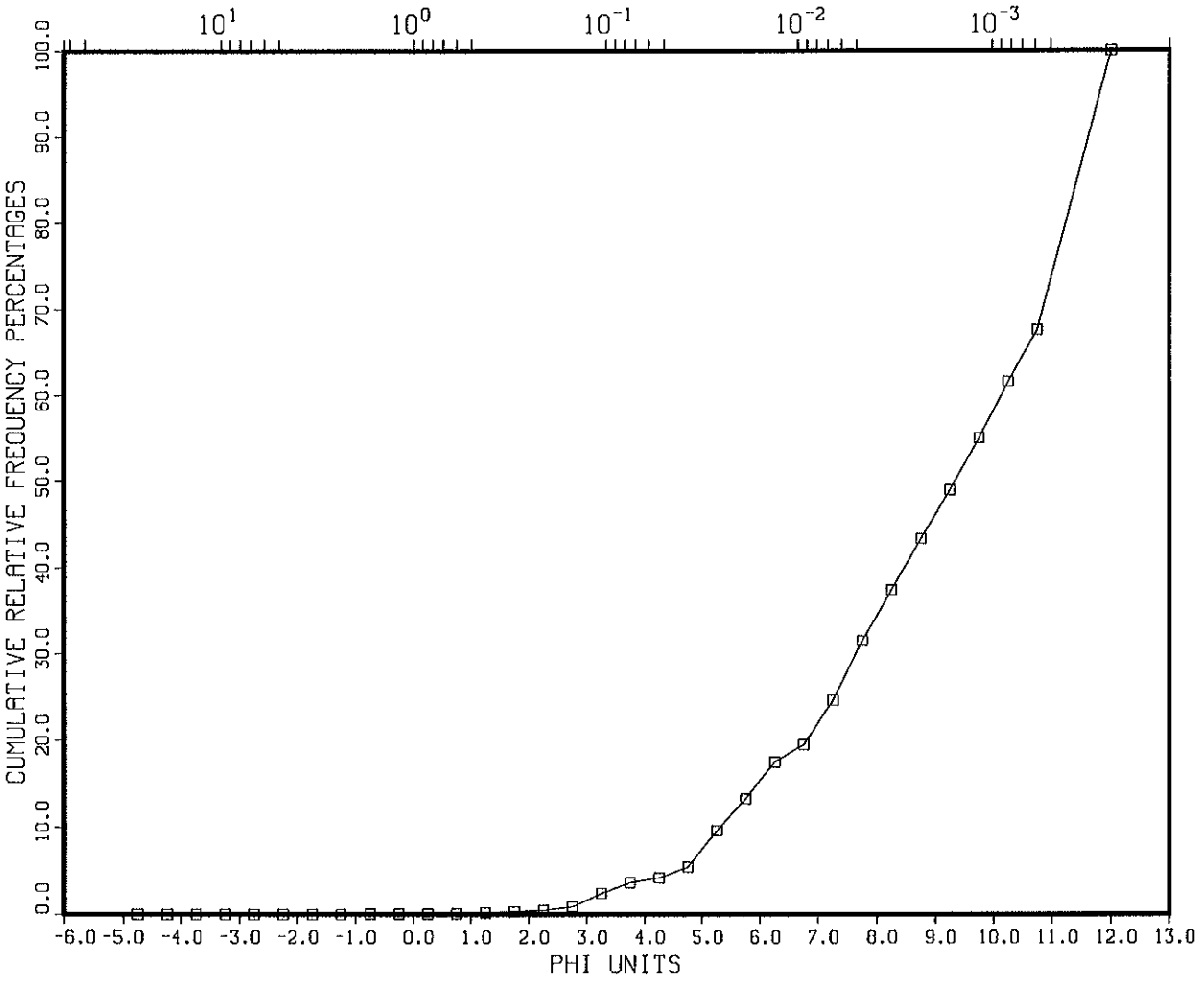
Grain Size Breakdown

% Gravel	% Sand	% Silt	% Clay	% Mud
0.00	3.61	27.92	68.47	96.39

Statistical Measures

Mean (PHI)	Standard Deviation (PHI)	Kurtosis (No Dim.)	Skewness (No Dim.)
9.26	2.55	2.52	-0.61

94138-104 62-64,RD009730, J. SHAW
,00230, LEHIGH CORE, HUMBER ARM, NEWFOUNDLAND.
MILLIMETER EQUIVALENTS



Calculation Results for
The Sample with the Identifier:

V3.0
16: 5:1995
9731
33
94138-104 98-100
94138
900031
J. SHAW
LEHIGH CORE, HUMBER ARM, NEWFOUNDLAND.
RD009731
SWF00230
9.80000000000000E+0001
1.00000000000000E+0002
0
0
0
0
0
0
0
0
51098
104
104
LEHIGH
CORE
48:58.90
-58:3.06
92.00
n lines for future expansion
#

Results

Midpoints		Relative Frequency	Cumulative Frequency
MM	PHI	Percentages	Percentages
2.69e+01	-4.75	0.00	0.00
1.90e+01	-4.25	0.00	0.00
1.35e+01	-3.75	0.00	0.00
9.51e+00	-3.25	0.00	0.00
6.73e+00	-2.75	0.00	0.00
4.76e+00	-2.25	0.00	0.00
3.36e+00	-1.75	0.00	0.00
2.38e+00	-1.25	0.00	0.00
1.68e+00	-0.75	0.06	0.06
1.19e+00	-0.25	0.00	0.06
8.41e-01	0.25	0.00	0.07
5.95e-01	0.75	0.01	0.08

4.20e-01	1.25	0.02	0.10
2.97e-01	1.75	0.04	0.13
2.10e-01	2.25	0.02	0.16
1.49e-01	2.75	0.03	0.19
1.05e-01	3.25	0.14	0.33
7.43e-02	3.75	0.21	0.54
5.26e-02	4.25	2.29	2.84
3.72e-02	4.75	1.31	4.15
2.63e-02	5.25	0.75	4.89
1.86e-02	5.75	0.68	5.58
1.31e-02	6.25	0.60	6.18
9.29e-03	6.75	1.28	7.47
6.57e-03	7.25	2.84	10.31
4.65e-03	7.75	4.33	14.64
3.28e-03	8.25	4.28	18.91
2.32e-03	8.75	5.55	24.47
1.64e-03	9.25	6.23	30.70
1.16e-03	9.75	7.55	38.25
8.21e-04	10.25	7.98	46.23
5.81e-04	10.75	8.80	55.03
2.44e-04	12.00	44.97	100.00

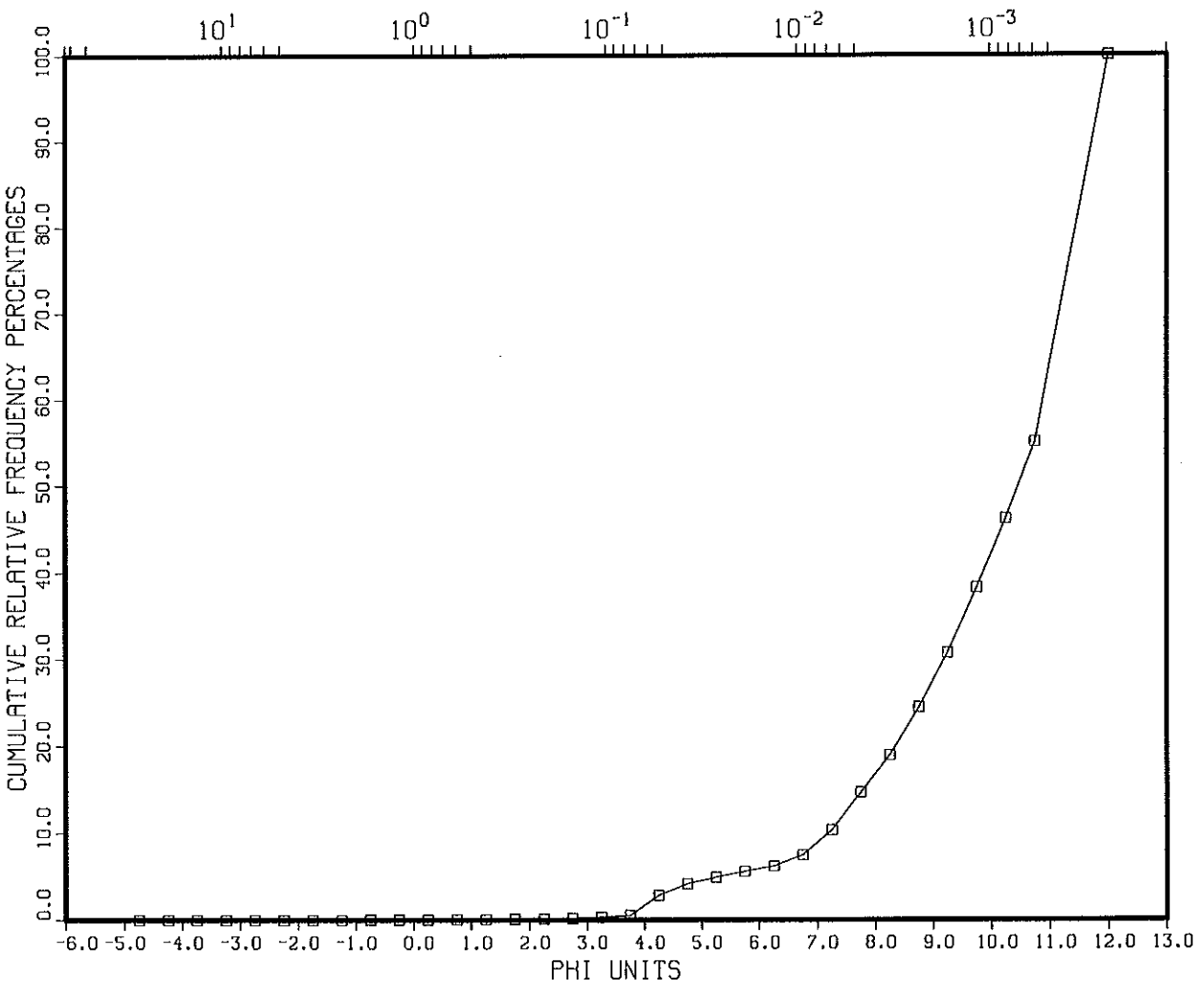
Grain Size Breakdown

% Gravel	% Sand	% Silt	% Clay	% Mud
0.00	0.54	14.09	85.36	99.46

Statistical Measures

Mean (PHI)	Standard Deviation (PHI)	Kurtosis (No Dim.)	Skewness (No Dim.)
10.23	2.10	4.28	-1.25

94138-104 98-100,RD009731, J. SHAW
,00230, LEHIGH CORE, HUMBER ARM, NEWFOUNDLAND.



Calculation Results for
The Sample with the Identifier:

V3.0
16: 5:1995
9732
24
94138-104 118-120
94138
900031
J. SHAW
LEHIGH CORE, HUMBER ARM, NEWFOUNDLAND.
RD009732
SWF00230
1.18000000000000E+0002
1.20000000000000E+0002
0
0
0
0
0
0
0
0
51098
104
104
LEHIGH
CORE
48:58.90
-58:3.06
92.00
n lines for future expansion
#

Results

Midpoints		Relative Frequency	Cumulative Frequency
MM	PHI	Percentages	Percentages
8.00e+00	-3.00	0.00	0.00
8.41e-01	0.25	0.00	0.00
5.95e-01	0.75	0.02	0.02
4.20e-01	1.25	0.02	0.04
2.97e-01	1.75	0.05	0.09
2.10e-01	2.25	0.03	0.12
1.49e-01	2.75	0.13	0.25
1.05e-01	3.25	0.50	0.76
7.43e-02	3.75	0.24	0.99
5.26e-02	4.25	1.60	2.59
3.72e-02	4.75	0.33	2.93
2.63e-02	5.25	0.46	3.38

1.86e-02	5.75	0.40	3.79
1.31e-02	6.25	1.10	4.89
9.29e-03	6.75	1.94	6.83
6.57e-03	7.25	1.78	8.61
4.65e-03	7.75	4.92	13.53
3.28e-03	8.25	4.86	18.40
2.32e-03	8.75	5.29	23.69
1.64e-03	9.25	5.44	29.12
1.16e-03	9.75	7.35	36.47
8.21e-04	10.25	7.80	44.27
5.81e-04	10.75	8.22	52.50
2.44e-04	12.00	47.50	100.00

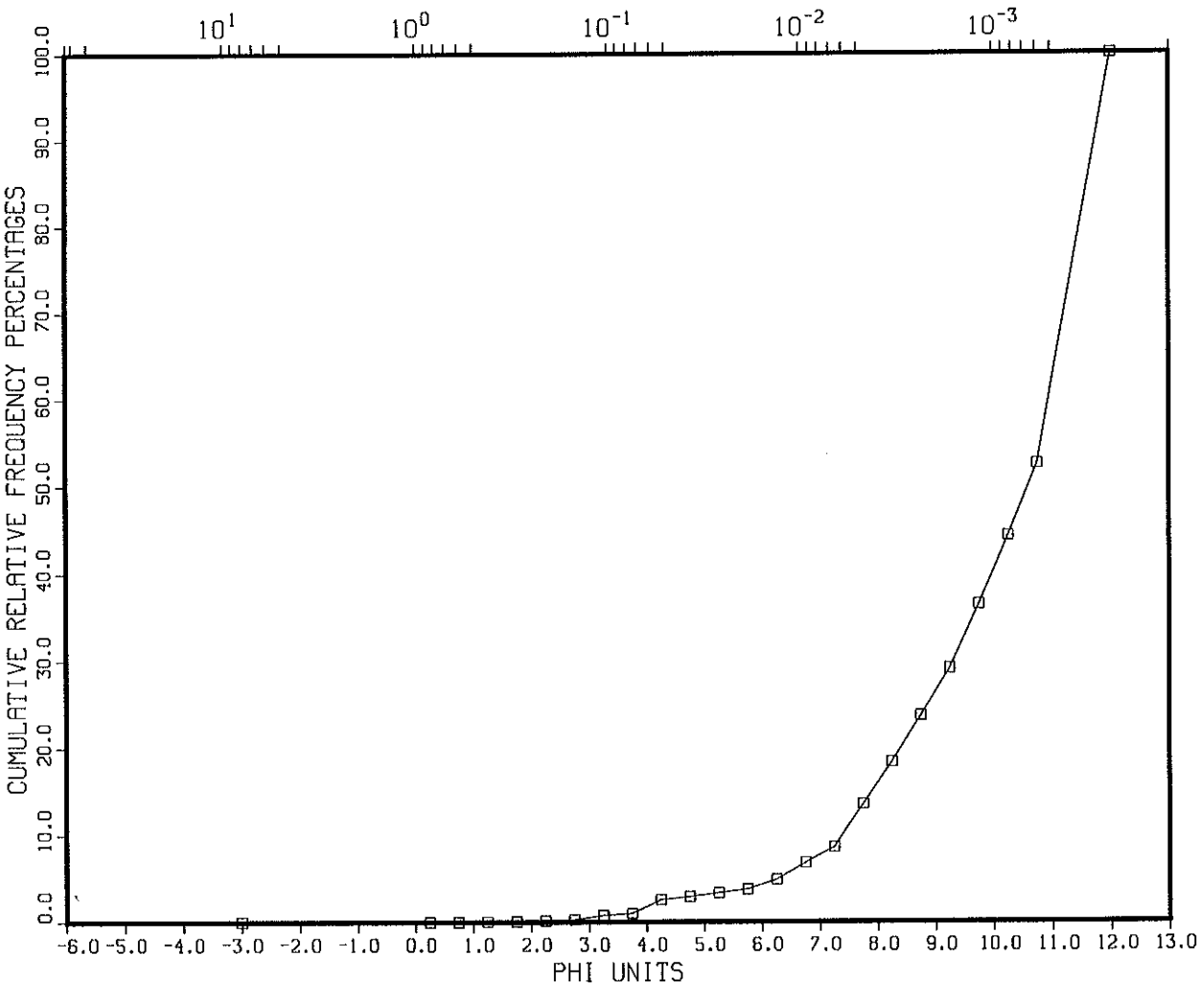
Grain Size Breakdown

% Gravel	% Sand	% Silt	% Clay	% Mud
0.00	0.99	12.54	86.47	99.01

Statistical Measures

Mean (PHI)	Standard Deviation (PHI)	Kurtosis (No Dim.)	Skewness (No Dim.)
10.34	2.03	4.35	-1.27

94138-104 118-120,RD009732, J. SHAW
,00230, LEHIGH CORE, HUMBER ARM, NEWFOUNDLAND.
MILLIMETER EQUIVALENTS



Calculation Results for
The Sample with the Identifier:

V3.0
16: 5:1995
9733
33
94138-104 138-140
94138
900031
J. SHAW
LEHIGH CORE, HUMBER ARM, NEWFOUNDLAND.
RD009733
SWF00230
1.38000000000000E+0002
1.40000000000000E+0002
0
0
0
0
0
0
0
0
51098
104
104
LEHIGH
CORE
48:58.90
-58:3.06
92.00
n lines for future expansion
#

Results

Midpoints		Relative Frequency	Cumulative Frequency
MM	PHI	Percentages	Percentages
2.69e+01	-4.75	0.00	0.00
1.90e+01	-4.25	0.00	0.00
1.35e+01	-3.75	0.00	0.00
9.51e+00	-3.25	0.00	0.00
6.73e+00	-2.75	0.00	0.00
4.76e+00	-2.25	0.00	0.00
3.36e+00	-1.75	0.00	0.00
2.38e+00	-1.25	0.00	0.00
1.68e+00	-0.75	0.00	0.00
1.19e+00	-0.25	0.04	0.04
8.41e-01	0.25	0.00	0.04
5.95e-01	0.75	0.01	0.05

4.20e-01	1.25	0.01	0.06
2.97e-01	1.75	0.01	0.07
2.10e-01	2.25	0.04	0.11
1.49e-01	2.75	0.16	0.27
1.05e-01	3.25	0.39	0.66
7.43e-02	3.75	0.42	1.07
5.26e-02	4.25	0.15	1.22
3.72e-02	4.75	0.39	1.61
2.63e-02	5.25	1.21	2.83
1.86e-02	5.75	1.19	4.01
1.31e-02	6.25	1.55	5.56
9.29e-03	6.75	2.14	7.70
6.57e-03	7.25	2.73	10.43
4.65e-03	7.75	5.34	15.77
3.28e-03	8.25	4.95	20.72
2.32e-03	8.75	5.47	26.19
1.64e-03	9.25	5.77	31.96
1.16e-03	9.75	7.78	39.74
8.21e-04	10.25	8.54	48.27
5.81e-04	10.75	8.53	56.80
2.44e-04	12.00	43.20	100.00

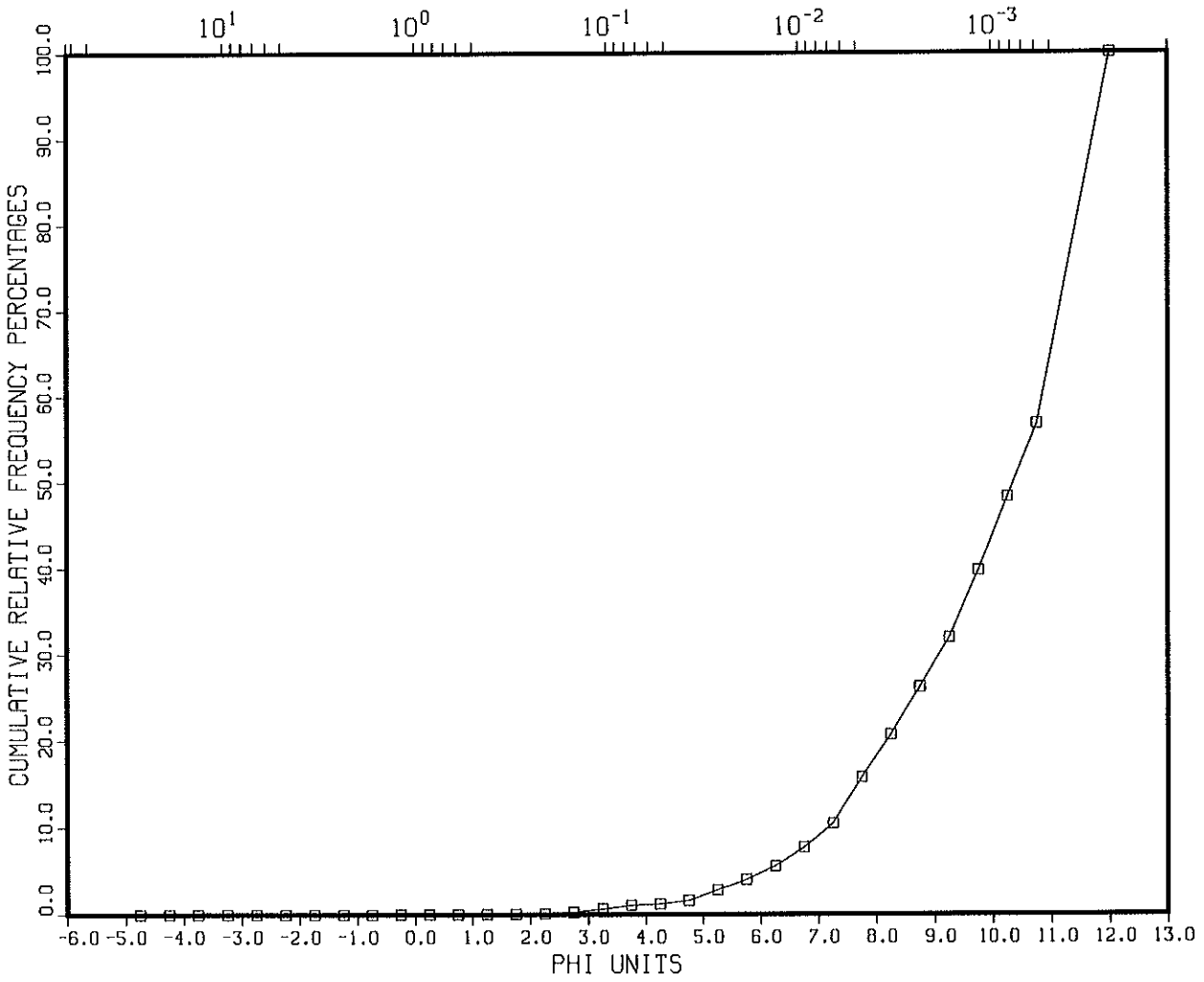
Grain Size Breakdown

% Gravel	% Sand	% Silt	% Clay	% Mud
0.00	1.07	14.69	84.23	98.93

Statistical Measures

Mean (PHI)	Standard Deviation (PHI)	Kurtosis (No Dim.)	Skewness (No Dim.)
10.20	2.02	3.74	-1.06

94138-104 138-140,RD009733, J. SHAW
,00230, LEHIGH CORE, HUMBER ARM, NEWFOUNDLAND.
MILLIMETER EQUIVALENTS



Calculation Results for
The Sample with the Identifier:

V3.0
16: 5:1995
9734
24
94138-104 153-155
94138
900031
J. SHAW
LEHIGH CORE, HUMBER ARM, NEWFOUNDLAND.
RD009734
SWF00230
1.53000000000000E+0002
1.55000000000000E+0002
0
0
0
0
0
0
0
0
51098
104
104
LEHIGH
CORE
48:58.90
-58:3.06
92.00
n lines for future expansion
#

Results

Midpoints		Relative Frequency	Cumulative Frequency
MM	PHI	Percentages	Percentages
8.00e+00	-3.00	0.00	0.00
8.41e-01	0.25	0.00	0.00
5.95e-01	0.75	0.00	0.00
4.20e-01	1.25	0.00	0.01
2.97e-01	1.75	0.00	0.01
2.10e-01	2.25	0.01	0.01
1.49e-01	2.75	0.03	0.04
1.05e-01	3.25	0.20	0.24
7.43e-02	3.75	0.38	0.62
5.26e-02	4.25	1.09	1.71
3.72e-02	4.75	2.29	4.00
2.63e-02	5.25	0.48	4.48

1.86e-02	5.75	1.17	5.65
1.31e-02	6.25	1.07	6.72
9.29e-03	6.75	1.55	8.26
6.57e-03	7.25	2.68	10.94
4.65e-03	7.75	3.67	14.61
3.28e-03	8.25	3.27	17.89
2.32e-03	8.75	5.16	23.04
1.64e-03	9.25	5.27	28.32
1.16e-03	9.75	7.48	35.80
8.21e-04	10.25	7.89	43.69
5.81e-04	10.75	8.39	52.08
2.44e-04	12.00	47.92	100.00

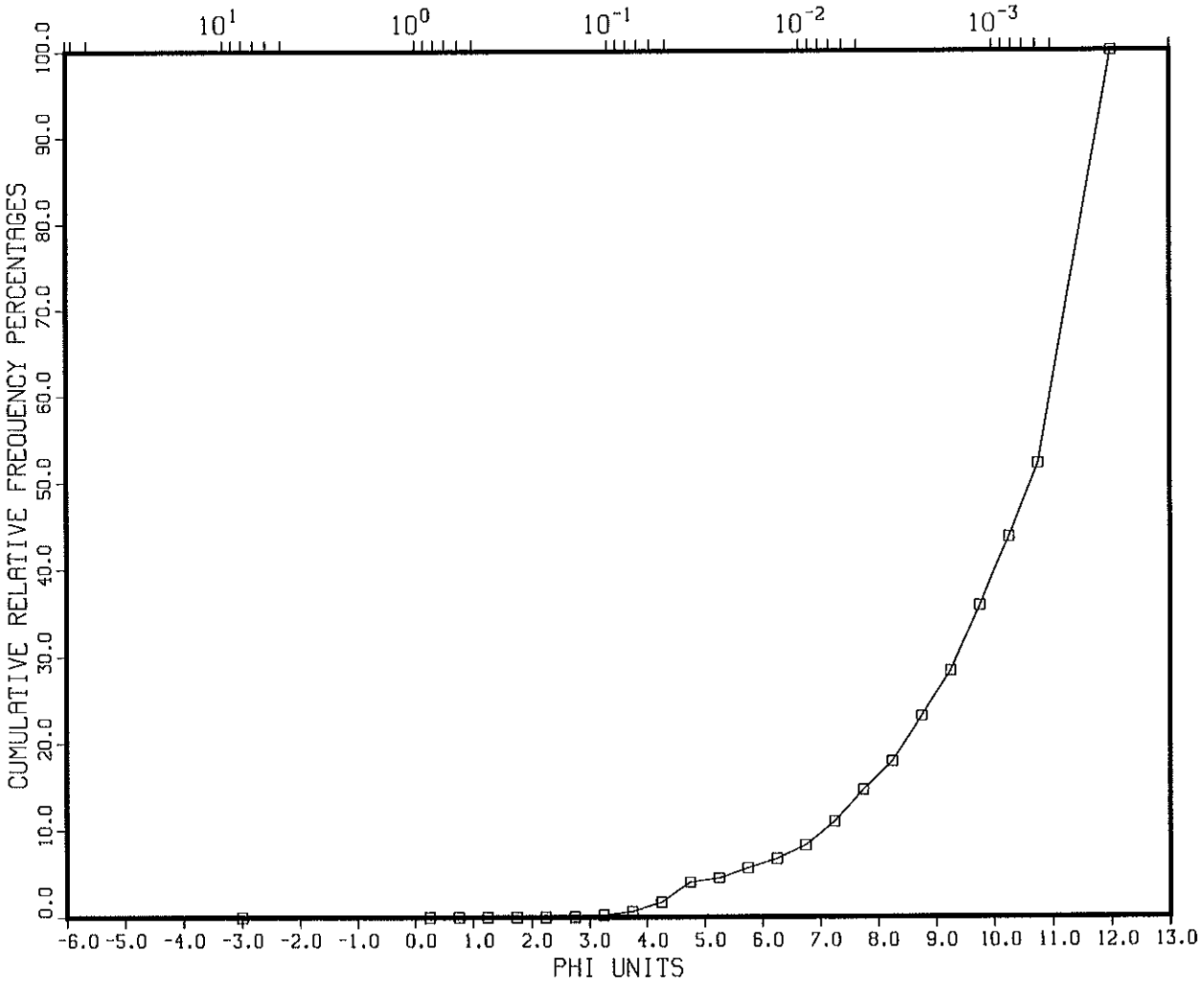
Grain Size Breakdown

% Gravel	% Sand	% Silt	% Clay	% Mud
0.00	0.62	13.99	85.39	99.38

Statistical Measures

Mean (PHI)	Standard Deviation (PHI)	Kurtosis (No Dim.)	Skewness (No Dim.)
10.32	2.09	3.85	-1.23

94138-104 153-155,RD009734, J. SHAW
,00230, LEHIGH CORE, HUMBER ARM, NEWFOUNDLAND.
MILLIMETER EQUIVALENTS



Appendix 7: Core data

CRUISE NUMBER.	94138	SAMPLE NUMBER.	064	TOTAL LENGTH.	89 CM.
SAMPLE TYPE	LEHIGH	CALENDAR DATE.	07-11-94	PROJECT NUMBER.	90-0031
GEOGRAPHIC LOCATION.	HUMBER ARM, NFLD.				
DESCRIBED BY.	J. SHAW.	PAGE OF	1 / 1		

SYMBOL LEGEND: WORM HOLES; BARK; SHELL

CORE DESCRIPTION

CORE DEPTH (CM.)	DEFORMATION	CONSISTENCY	CA CO3	COLOR (SOIL/ROCK)	X-RAY DESCRIPTION	VISUAL DESCRIPTION	SEDIMENT STRUCTURES	SUBSAMPLE WORK DONE
0				2.5Y 2/1		0-13 BLACK SOFT ORGANIC MUD WITH BARK FRAGS. V. MOIST		
10								
						13-90 VERY DARK GRAY SILTY CLAY WITH A 'MARBLED' APPEARANCE - DUE TO BIOTURBATION. THESE ARE 2.5Y 4/2 - DARK GRAYISH BROWN.		
20				2.5Y 3/0				
30						SMALL WORM HOLES (2mm)		
40						WORM TUBE AT 28 LARGE HOLE AT 29		
50						A FEW SMALL SHELL FRAGS AT 27.		
60								
70								
80							HOLE	
90								
100								

13

90

NOTES.

CRUISE NUMBER. 94138 | SAMPLE NUMBER. 065 | TOTAL LENGTH. 83 CM.

SAMPLE TYPE LEHIGH | CALENDAR DATE. 07-11-94 | PROJECT NUMBER. 90-003/

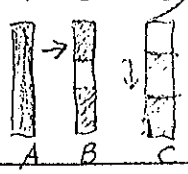
GEOGRAPHIC LOCATION. HUMBER ARM, NFLD

DESCRIBED BY. J. SHAW | PAGE 1 OF 1

SYMBOL LEGEND: ☐ ☐ ☐ ☒ BARK ☐ ☐

CORE DESCRIPTION

CORE DEPTH (CM.)	DEFORMATION	CONSISTENCY	CA CO3	COLOR (SOIL/ROCK)	X-RAY DESCRIPTION	VISUAL DESCRIPTION	SEDIMENT STRUCTURES	SUBSAMPLE WORK DONE
0				2.5Y 2/1		0-43 BLACK ORGANIC MUCK WITH WOOD + BARK CHIPS. VERY SOFT. TWO 95x40x7m PIECES OF BARK AT 40		
10								
20						VERY GASSY, FROTHY, SOUPY, GOOY STRUCTURELESS GOUP. A LOT OF WATER		
30						30-40. STONES H_2S SMELL. SOME GRAY SLIME		
40						43-58 STIFFER BLACK ORGANIC SILTY CLAY MUD		43
50						58-63 GAP		58
60						63-83 BLACK ORGANIC SILTY CLAY MUD		63
70						NOTE: AFTER CORING THIS CORE HAD A LENGTH OF 103 cm. HOWEVER, ON DECK, IT DIVIDED INTO TWO PARTS SEPARATED BY WATER. GAS BUBBLES WERE COMMON. WE PIERCED THE CORE, LET OUT THE WATER, AND THE UPPER PART OF THE CORE (PROBABLY ABOVE 43) SUBSIDED		
80								83
90								
100								



NOTES.

CRUISE NUMBER. 94 138 | CORE NUMBER. 066 | CORE LENGTH. 79 CM.

SAMPLE TYPE LEHIGH | CALENDAR DATE. 07-11-94 | PROJECT NUMBER.

GEOGRAPHIC LOCATION. Humber Arm

DESCRIBED BY. | PAGE 1 OF 1

CORE DESCRIPTION

SYMBOL LEGEND

- wood chip
- worm tubes
- empty burrows
- worm burrows
- gravel
- mud

CORE DEPTH (CM.)	DEFORMATION	CONSISTENCY	CA CO3	COLOR (SOIL/ROCK)	X-RAY DESCRIPTION	VISUAL DESCRIPTION	SEDIMENT STRUCTURES	SUBSAMPLE WORK DONE
0				2.5Y 4/2		0-79 Dark greyish brown silty mud, extensively bioturbated, with models of greyish brown (2.5Y 5/2). Top 7 cm is very dark grey with numerous vertically worm tubes. Wood chip at 2 cm, 45 x 20 x 7 mm. Top 7 cm also contains some angular gravel. There are empty burrows, up to 7mm diameter, at 21cm, 26 cm, 37 cm & 52 cm. Numerous smaller holes which are 2mm in diameter.		
10								
20								
30								
40								
50								
60								
70								
79								79
80								
90								
100								

NOTES.

CRUISE NUMBER. 94138 | SAMPLE NUMBER. 067 | TOTAL LENGTH. 143 CM.

SAMPLE TYPE GEHIGH. | CALENDAR DATE. 07-11-94 | PROJECT NUMBER. 90-0031

GEOGRAPHIC LOCATION. HUMBER ARM

DESCRIBED BY. | PAGE 1 OF 2

SYMBOL LEGEND: WORM TUBE; MUD; CLAST; SAND

CORE DESCRIPTION

CORE DEPTH (CM.)	DEFORMATION	CONSISTENCY	CA CO3	COLOR (SOIL/ROCK)	X-RAY DESCRIPTION	VISUAL DESCRIPTION	SEDIMENT STRUCTURES	SUBSAMPLE WORK DONE
0				5Y3/1		0-15 VERY DARK GRAY SOFT SILTY MUD; SCATTERED WORM TUBES og ot.		
15				5Y4/2		15-28 OLIVE GRAY SILTY MUD WITH VERY DARK GRAY MOTTLES. WORM TUBES. SOME ANGULAR GRIT		15
28				5Y4/2		28-45 OLIVE GRAY SILTY MUD, FAINT LAMINATED APPEARANCE VERY COARSE SILT 39-41 (SLIGHTLY DARKER); SOME GRIT IN THIS INTERVAL ALSO		28
45				5Y3/2		45-48(53) DARK OLIVE GRAY GRAVELLY SANDY SILT POORLY SORTED. GRAVEL AT 48-53cm - SHALE 60x25x5mm, ANG.		48
60				10YR 4/3		48(53)-141.5 SOFT BUTTERY CLAY, DARKER MOTTLES DOWN TO 110 cm. LENS OF MUDDY FINE SAND AND MUDDY V. FINE SAND AT 55cm SCATTERED GRAVEL 100x60x35 m piece OF GNEISS AT 75-82 (SAMPLE) ANGULAR CLAST AT 96cm 20x15x10 mm			✓
90								
100								

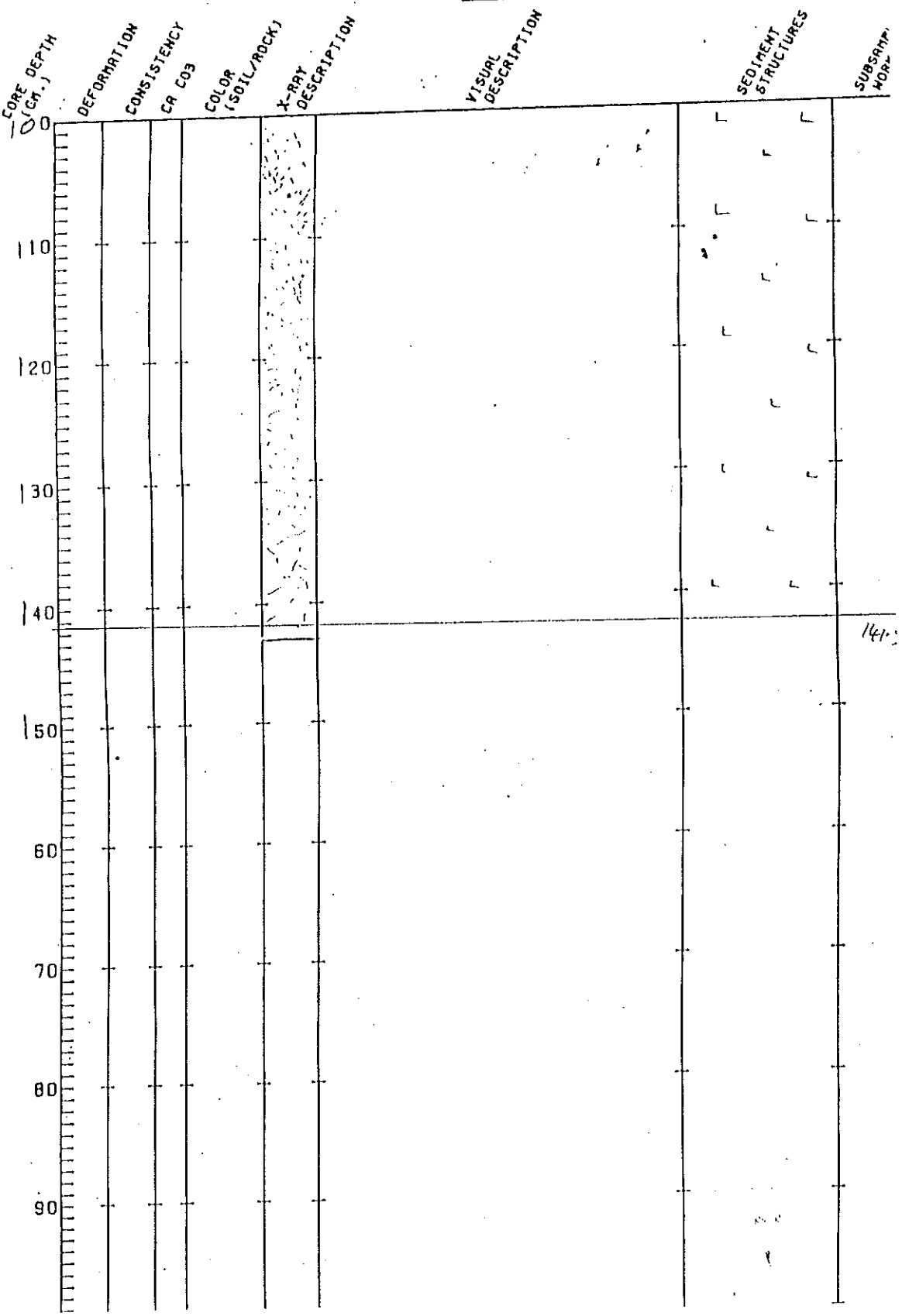
NOTES.

ATLANTIC GEOSCIENCE CENTRE

CRUISE NUMBER. 94138	SAMPLE NUMBER. 067	TOTAL LENGTH. 143
SAMPLE TYPE LEHIGH	CALENDAR DATE. 07-11-94	PROJECT NUMBER. 90-0031
GEOGRAPHIC LOCATION. HUMBER ARM		
DESCRIBED BY. J. SHAW	PAGE 2 OF 2	

SYMBOL LEGEND

CORE DESCRIPTION



CRUISE NUMBER. 94128 | SAMPLE NUMBER. 068 | TOTAL LENGTH. 104 CM.

SAMPLE TYPE LEHIGH | CALENDAR DATE. 07-11-94 | PROJECT NUMBER. 90-0031

GEOGRAPHIC LOCATION. HUMBER ARM

DESCRIBED BY. J.SHAW | PAGE OF 1/2

SYMBOL LEGEND

11	WORM TUBE	≈	MOTTLES		
O	WORM HOLE				

CORE DESCRIPTION

CORE DEPTH (CM.) | DEFORMATION | CONSISTENCY | CA CO3 | COLOR (SOIL/ROCK) | X-RAY DESCRIPTION | VISUAL DESCRIPTION | SEDIMENT STRUCTURES | SUBSAMPLE WORK DONE

0-35

2.5Y 3/0

BLACK SILT, HIGHLY BIOTURBATED LARGE WORM HOLES (d = 5mm); eg at 10, 12, 17, 21, 22, 23, 27-30 WORM TUBE AT SURFACE. LIGHTER AUREOLE AROUND WORM HOLES

35-104

DIFFUSE UPPER BOUNDARY - OVER 10cm.

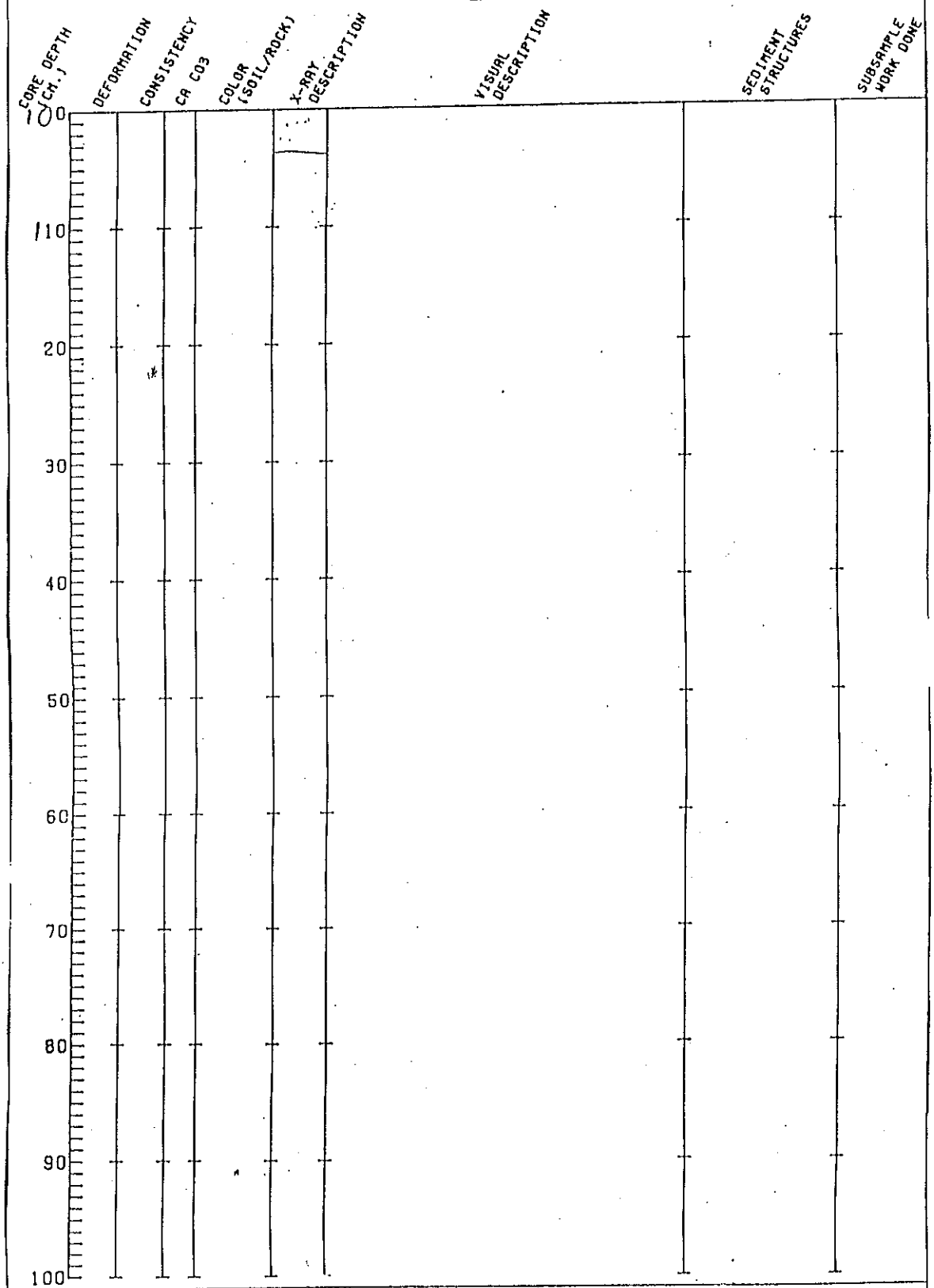
2.5Y 3/2

VERY DARK GRAYISH BROWN SILTY MUD, HIGHLY BIOTURBATED. SOME BURROWS - INC. A 7mm DIAMETER BURROW AT 60. CM. BURROW MARKS ARE LIGHTER (2.5Y 5/2).

NOTES.

CRUISE NUMBER. 94138	SAMPLE NUMBER. 068	TOTAL LENGTH. 104 CM.		
SAMPLE TYPE LEHIGH	CALENDAR DATE.	PROJECT NUMBER. 90-0031		
GEOGRAPHIC LOCATION. HUMBER ARM, NFLD.	SYMBOL LEGEND			
DESCRIBED BY. J. SHAW	PAGE OF 2 / 2			

CORE DESCRIPTION



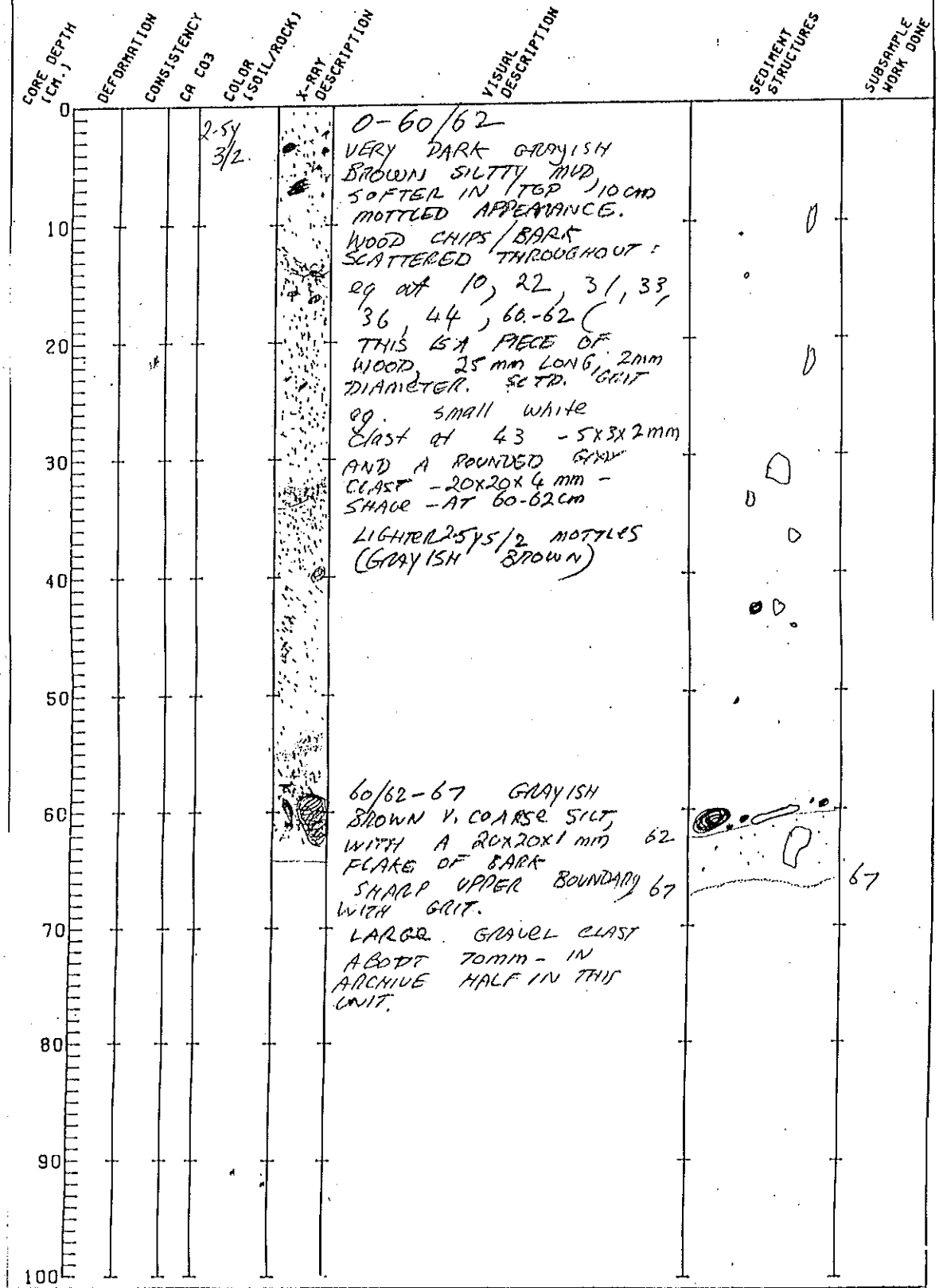
NOTES.

CRUISE NUMBER. 94138	SAMPLE NUMBER. 069		LENGTH. 64 CM.
SAMPLE TYPE LEHIGH.	CALENDAR DATE. 07-11-94	PROJECT NUMBER. 90-0031	
GEOGRAPHIC LOCATION. HUMBER ARM, NFLD.			
DESCRIBED BY. J. SHAW	PAGE ___ OF ___		

SYMBOL LEGEND

- ● GRAVEL
- 0 WOOD CHIP/BARK

CORE DESCRIPTION



NOTES.

CRUISE NUMBER. 94 138

SAMPLE NUMBER. 070

TOTAL LENGTH. 88 CM.

SAMPLE TYPE LEHIGH CORE

CALENDAR DATE. 07-11-94

PROJECT NUMBER.

GEOGRAPHIC LOCATION.

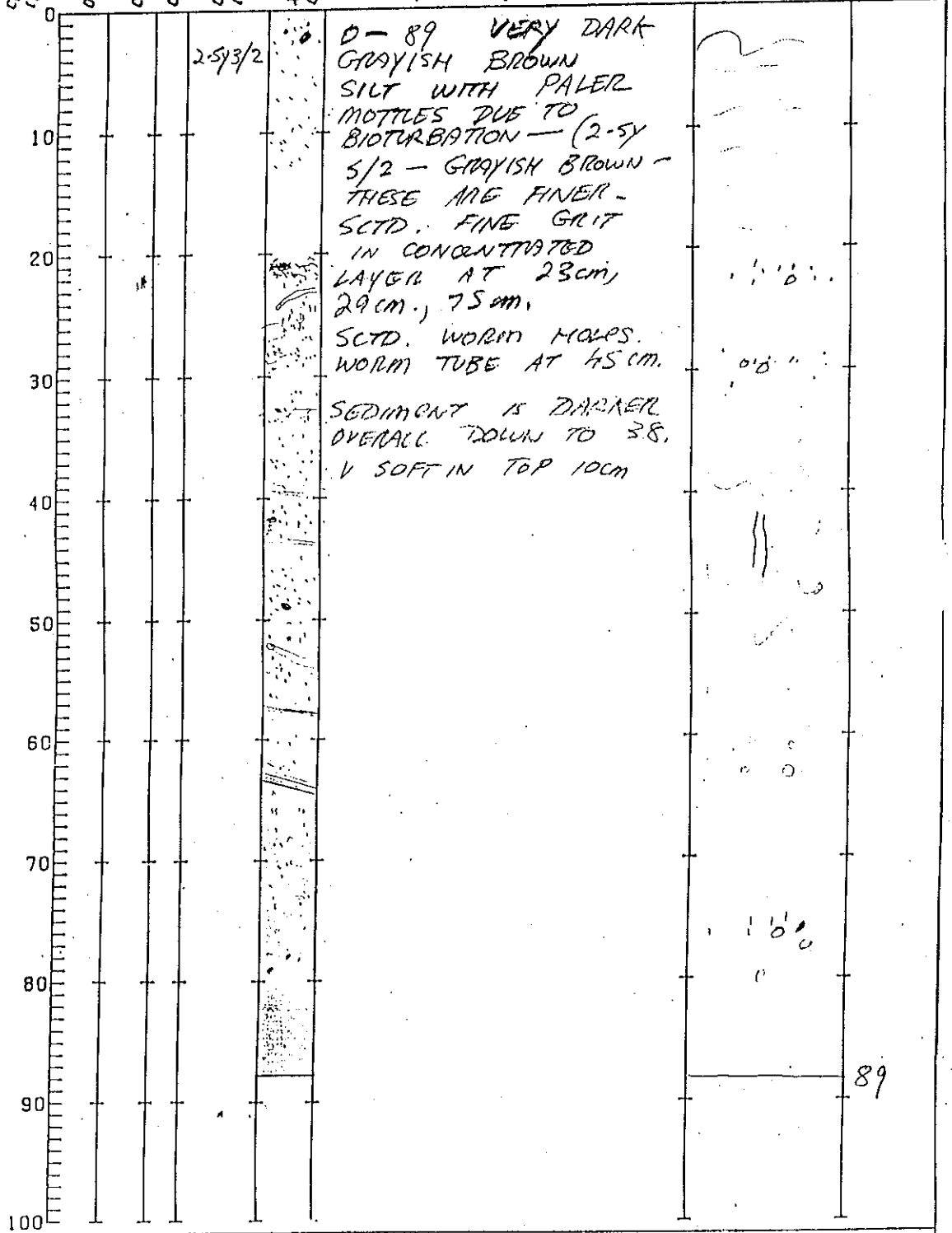
DESCRIBED BY.

PAGE ___ OF ___

SYMBOL LEGEND

WORM TUBE | GRAVEL GRIT | WORM HOLE

CORE DESCRIPTION



NOTES.

CRUISE NUMBER. 94138 | SAMPLE NUMBER. 072 | LENGTH. 50 CM.

SAMPLE TYPE LEHIGH | CALENDAR DATE. 07-11-94 | PROJECT NUMBER. 90-0031

GEOGRAPHIC LOCATION. HUMBER ARM.

DESCRIBED BY. J. SHAW | PAGE ___ OF ___

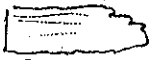
SYMBOL LEGEND: WOOD CHIP | 5 mottles | 0 GRAVEL

CORE DESCRIPTION

CORE DEPTH (CM.) | DEFORMATION | CONSISTENCY | CA CO3 | COLOR (SOIL/ROCK) | X-RAY DESCRIPTION | VISUAL DESCRIPTION | SEDIMENT STRUCTURES | SUBSAMPLE WORK DONE

0 – 15 cm 2.5Y 3/2 VERY DARK GRAYISH BROWN SILT VERY SOFT, WITH SOME GRAVEL AND SCTD. WOOD CHIPS

CHIP AT 15 cm = 55 x 25 x 4 mm



ANGULAR CLAST AT 15cm (50 x 50 x 30 mm)

2.5Y 3/2

15 – 50 VERY DARK GRAYISH BROWN SILT, FIRMER THAN 0-15 cm. IRREGULAR MOTTLES (2.5Y 5/2 GRAYISH BROWN) THESE MAY BE FINER-GRAINED – CLAY – PERHAPS INFILLED BURROWS.

SCTD. WORM HOLES, 3mm.

SCTD FINE GRIT.

15

50

NOTES.

NUMBER. 94138	NUMBER. 073	LENGTH. 76 CM.
SAMPLE TYPE LEHIGH	CALENDAR DATE. 07-11-94	PROJECT NUMBER. 90-0031
GEOGRAPHIC LOCATION. HUMBER ARM, NFLD.		
DESCRIBED BY. JOHN SHAW	PAGE 1 OF 1	

SYMBOL LEGEND: WORM TUBES; MOTTLES; GRAVEL; GRIT; WORM HOLE

CORE DESCRIPTION

CORE DEPTH (CM.) | DEFORMATION | CONSISTENCY | CA CO3 | COLOR (SOIL/ROCK) | X-RAY DESCRIPTION | VISUAL DESCRIPTION | SEDIMENT STRUCTURES | SUBSAMPLE WORK DONE

0-74 cm

2.5Y 3/2

(2.5Y 4/2 mottles)

VERY DARK GRAYISH BROWN (2.5Y 3/2) SILT WITH LIGHTER MOTTLES, HEAVILY BIOTURBATED COARSENS DOWNWARDS. SOFT AT TOP

SCATTERED ANGULAR GRIT

WORM HOLES (3mm) AND WORM TUBES AS SHOWN

POCKET OF CLAY 20-23 cm.

30 x 15 x 8 mm ANG. CLAST AT 23 cm

SHORE GRITTY 48-52, 38-40 cm.

94-138-073 SAMPLE 65-70 (0.52g)

74

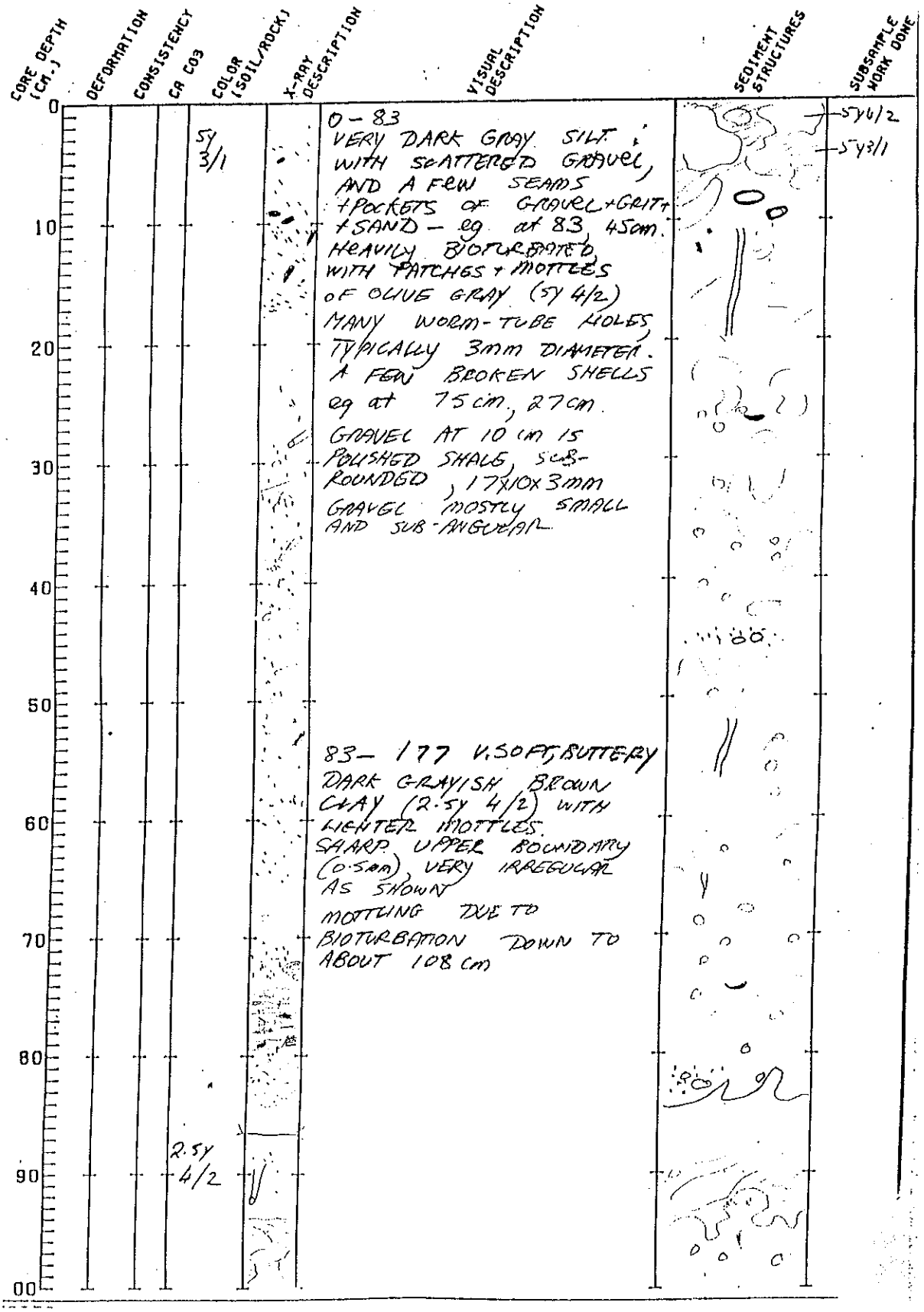
0 10 20 30 40 50 60 70 80 90 100

...ITES.

CRUISE NUMBER. 94138	SAMPLE NUMBER. 089	TOTAL LENGTH. 176 CM.
SAMPLE TYPE LEHIGH	CALENDAR DATE. 08-11-94	PROJECT NUMBER. 90-0031
GEOGRAPHIC LOCATION. GOOSE ARM, BAY OF ISLANDS		
DESCRIBED BY. J. SHAW	PAGE 1 OF 2	

SYMBOL LEGEND: shell; gravel; worm tube; worm tube; sand; mottling

CORE DESCRIPTION



CRUISE NUMBER. 94138	SAMPLE NUMBER. 089	TOTAL LENGTH. 176 CM.
SAMPLE TYPE LEHIGH	CALENDAR DATE. 08-11-94	PROJECT NUMBER. 90-0031
GEOGRAPHIC LOCATION. GOOSE ARM, BAY OF ISLANDS, NFLD		
DESCRIBED BY. J.SHAW	PAGE 2 OF 2	

SYMBOL LEGEND

◇ GRAVEL ____ ____ ____ ____

SHELL ____ ____ ____ ____

CORE DESCRIPTION

CORE DEPTH (CM.)	DEFORMATION	CONSISTENCY	CA CO3	COLOR (SOIL/ROCK)	X-RAY DESCRIPTION	VISUAL DESCRIPTION	SEDIMENT STRUCTURES	SUBSAMPLE WORK DONE
0/00						SCATTERED BROKEN SHELL FRAGMENTS at: 100, 114, 143, 163, 168.		
10						SCATTERED CLASTS OF GRAVEL, ANGULAR – SUB ANGULAR eg: 15x10x8 mm at 134; 18x8x8 mm at 120; grey colour.		
20								
30						Sample 94138-089-163 ~20mg wet.		
40								
50								
60								Samp 163
70							177	
80								
90								
200								

NOTES

CRUISE NUMBER. 94138		SAMPLE NUMBER. 104		TOTAL LENGTH. 163 CM.	
SAMPLE TYPE LEHIGH		CALENDAR DATE. 07-11-94		PROJECT NUMBER. 90-0031	
GEOGRAPHIC LOCATION. HUMBER ARM, NFLD.					
DESCRIBED BY. J. SHAW		PAGE 1 OF 2			

CORE DESCRIPTION

SYMBOL LEGEND: PEBBLE · DARK MUD · X GRAIN-SIZE SAMPLE · WORM TUBE · MUD

Columns: CORE DEPTH (CM.) · DEFORMATION · CONSISTENCY · CA CO3 · COLOR (SOIL/ROCK) · X-RAY DESCRIPTION · VISUAL DESCRIPTION · SEDIMENT STRUCTURES · SUBSAMPLE WORK DONE

Color: 0: 2.5Y 3/0 · ~17: 2.5Y 4/2 · ~32: 2.5Y 4/2 · ~54: 2.5Y 4/2 · ~67: 2.5YR 5/4

Visual description:

CORE X-RAY START ≈ 10 cm
LINER too long.

0-13 VERY DARK GRAY SILTY MUD. VERTICAL WORM TUBES V. SOFT - ALMOST BLACK

13-25 DARK GRAYISH BROWN SILTY CLAY, BIOTURBATED - V. DK. GRAY MOTTLES WORM TUBES PLATY PEBBLES AT TOP LOWER BOUNDARY DIFFUSE OVER 5cm

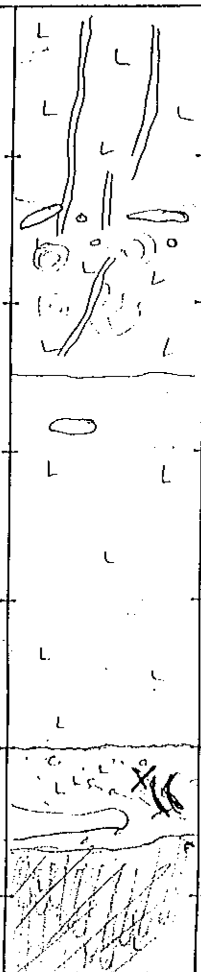
25-50 DARK GRAYISH BROWN SILTY CLAY SCATTERED ANGULAR SHALEY PEBBLES. LIGHTER MOTTLES

@ 20YISYS chips/silt at 28 BIOTURBATED. FAINTLY LAMINATED

50-57 DARK GRAYISH BROWN POORLY SORTED MUDDY GRAVELLY SAND. LENSE OF UNDERLYING UNIT.

57-159 REDDISH BROWN BUTTERY CLAY - NO GRAVEL.

INCREASING LAMINAE TWDS. BASE
SLIGHTLY DARKER, GRAYER DOWN TO 74.



Subsample work done:
X 2-4cm
--13
--25
X NOTE: 52cm bivalve discovered during grainsize sampling
X 44-46
770±60
50
X 50-54
57
X 62-64
Beta 81980
74
X 98-100

no change downward = no obvious deposition

^{14}C date on frags. of a bivalve at 52cm.
5770 ± 60 BP
$\delta^{13}C = 0.8$ ‰
CONVENTIONAL AGE = 5770 ± 60
RESERVOIR CORRECTED = 5360 ± 60 BP
Beta 81980
CAMS-20267

NOTES.

CRUISE NUMBER. 94138 | CORE NUMBER. 104 | TOTAL LENGTH. 163 CM.

SAMPLE TYPE LEHIGH. | CALENDAR DATE. 07-11-94 | PROJECT NUMBER. 90-0031

GEOGRAPHIC LOCATION. HUMBER ARM, NFLD.

DESCRIBED BY. J. SHAW | PAGE 2 OF 2

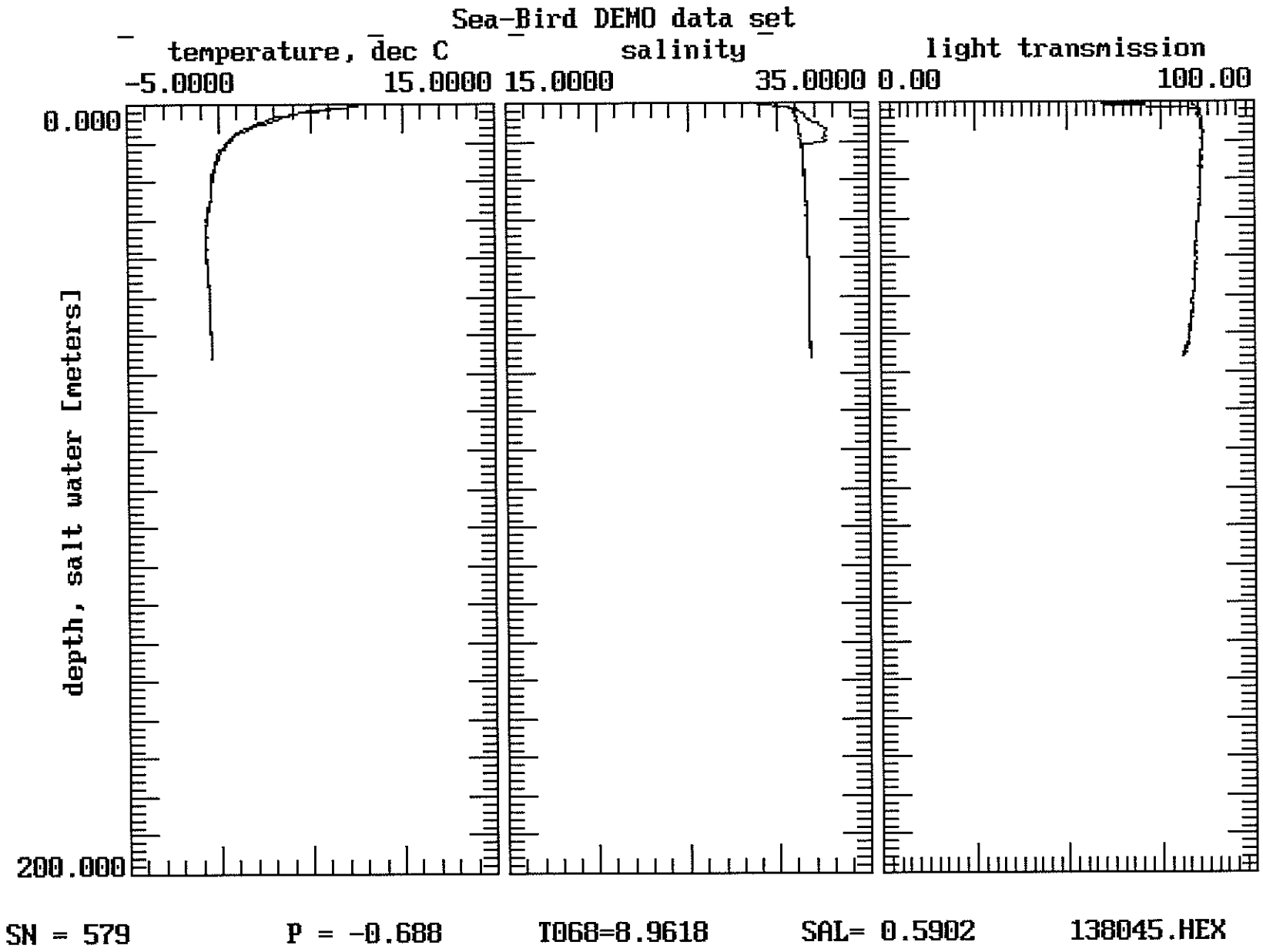
SYMBOL LEGEND

CORE DESCRIPTION

CORE DEPTH (CM.)	DEFORMATION	CONSISTENCY	CA CO3	COLOR (SOIL/ROCK)	X-RAY DESCRIPTION	VISUAL DESCRIPTION	SEDIMENT STRUCTURES	SUBSAMPLE WORK DONE
100						~~AHC~~ LAMINAR ARG DK. BANDS FROM 0.3 - 1.0 cm. WIDE		
110								
120								× 118-120
130								
140								× 138-140
150								
160								× 153-155
70								× 159
80								
90								
100								

NOTES.

Appendix 8: CTD Data


Sea-Bird DEMO data set
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15.0000
salinity
15.0000
35.0000
light transmission
0.00
100.00
0.000
200.000
depth, salt water [meters]
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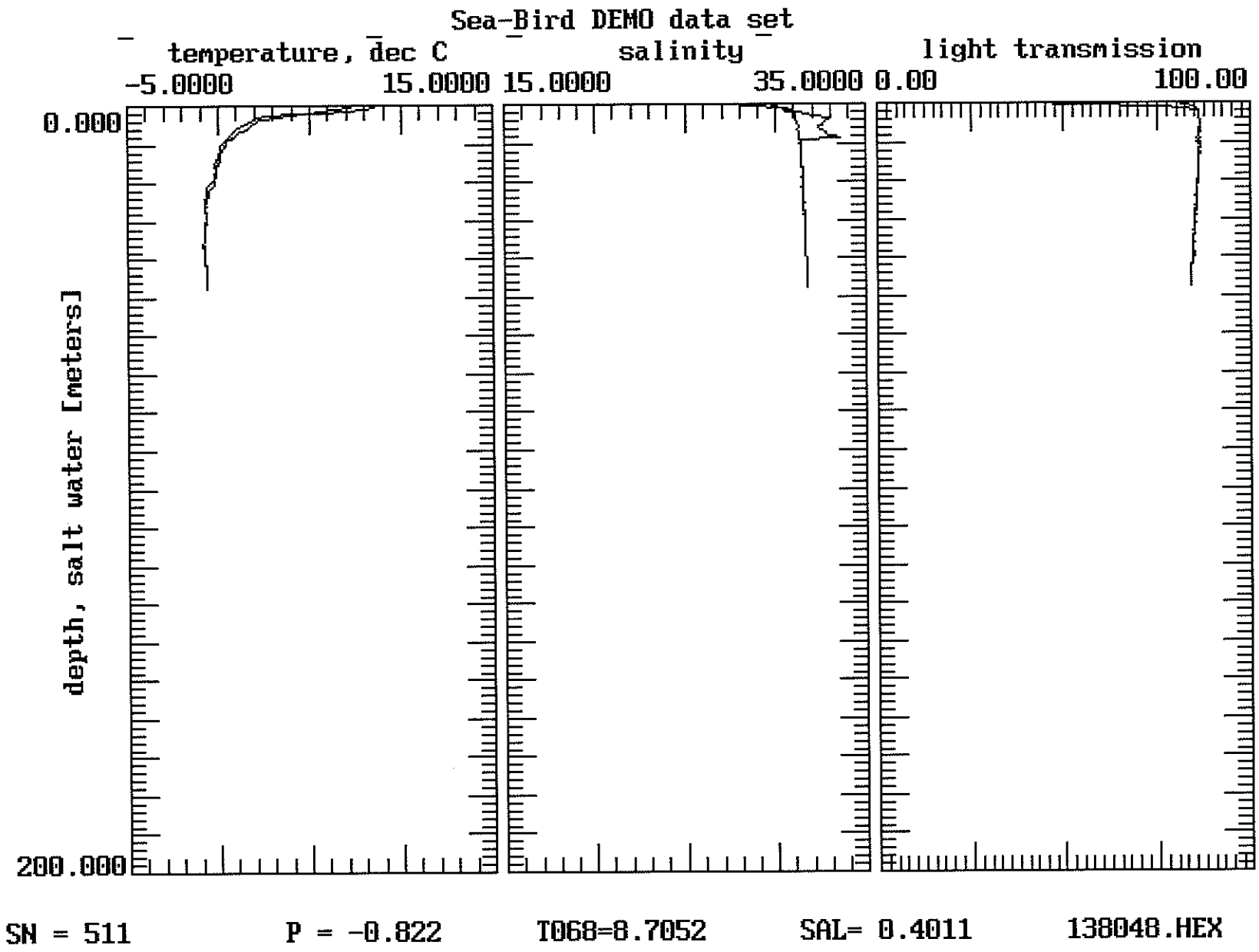
P = -0.688
T068=8.9618
SAL= 0.5902
138045.HEX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salinity
15.0000
35.0000
light transmission
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100.00
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T068=8.7052
SAL= 0.4011
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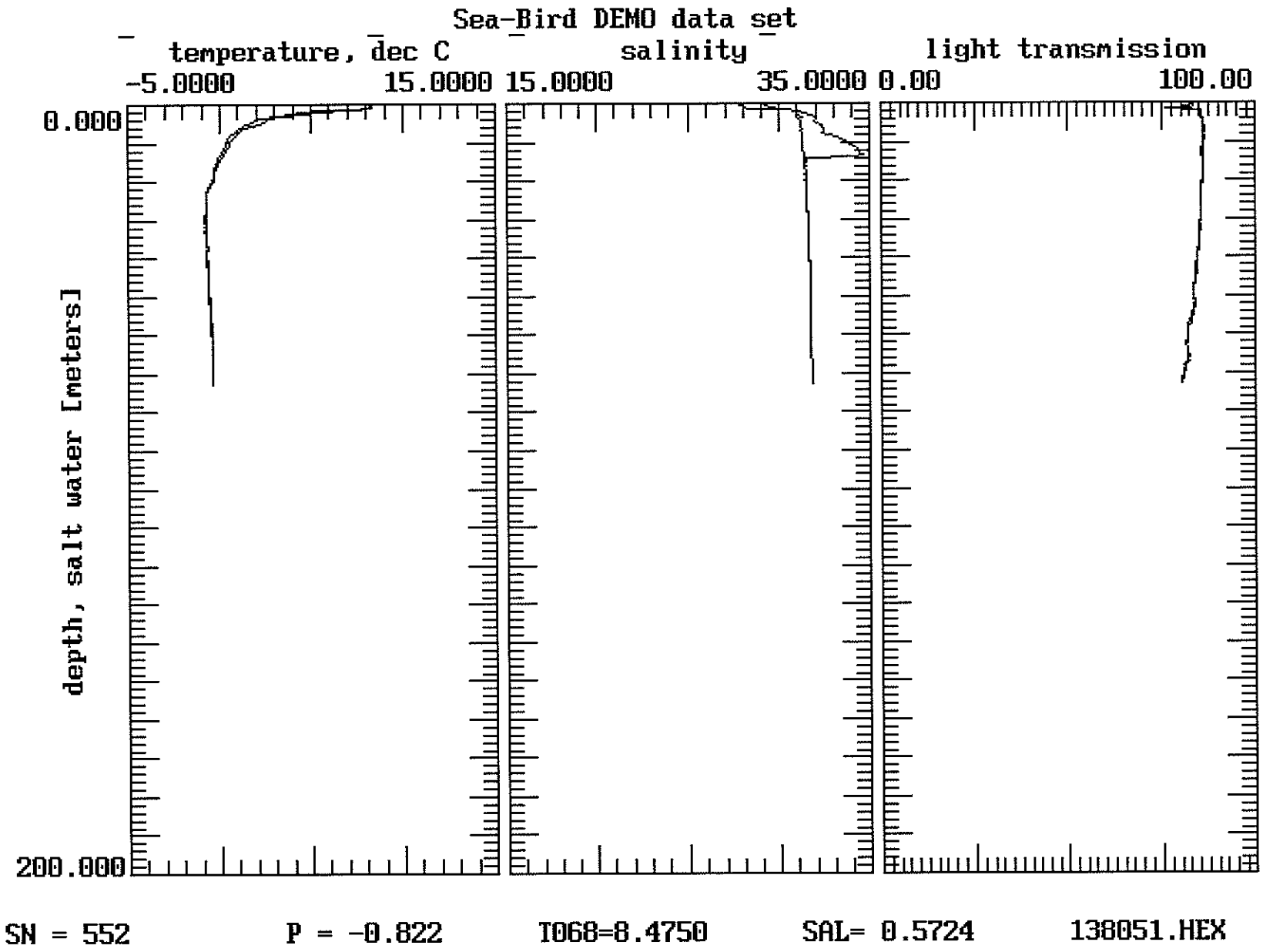
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salinity
15.0000
35.0000
light transmission
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100.00
0.000
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200.000
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I068=8.4750
SAL= 0.5724
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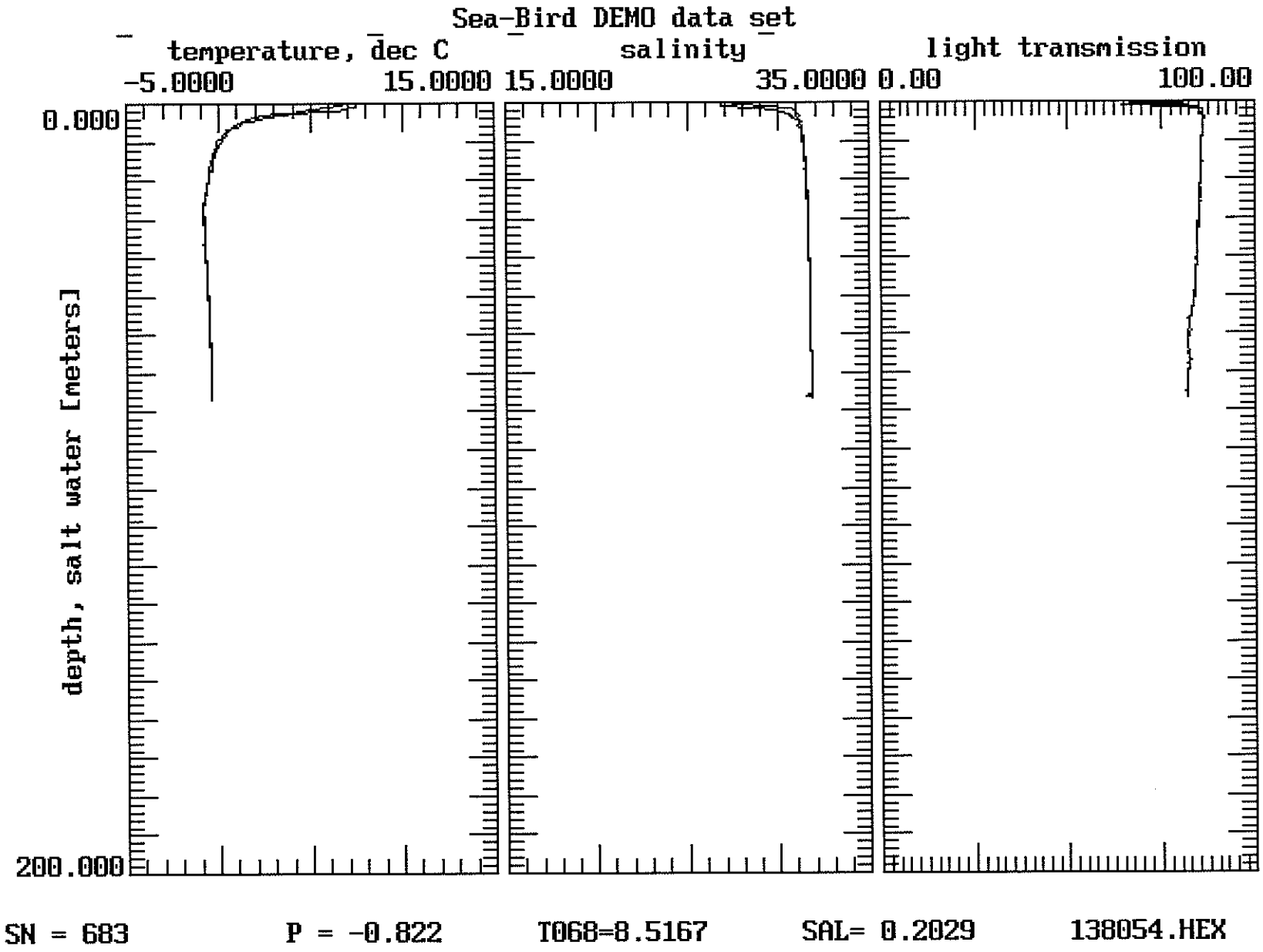
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15.0000
salinity
15.0000
35.0000
light transmission
0.00
100.00
0.000
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200.000
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T068=8.5167
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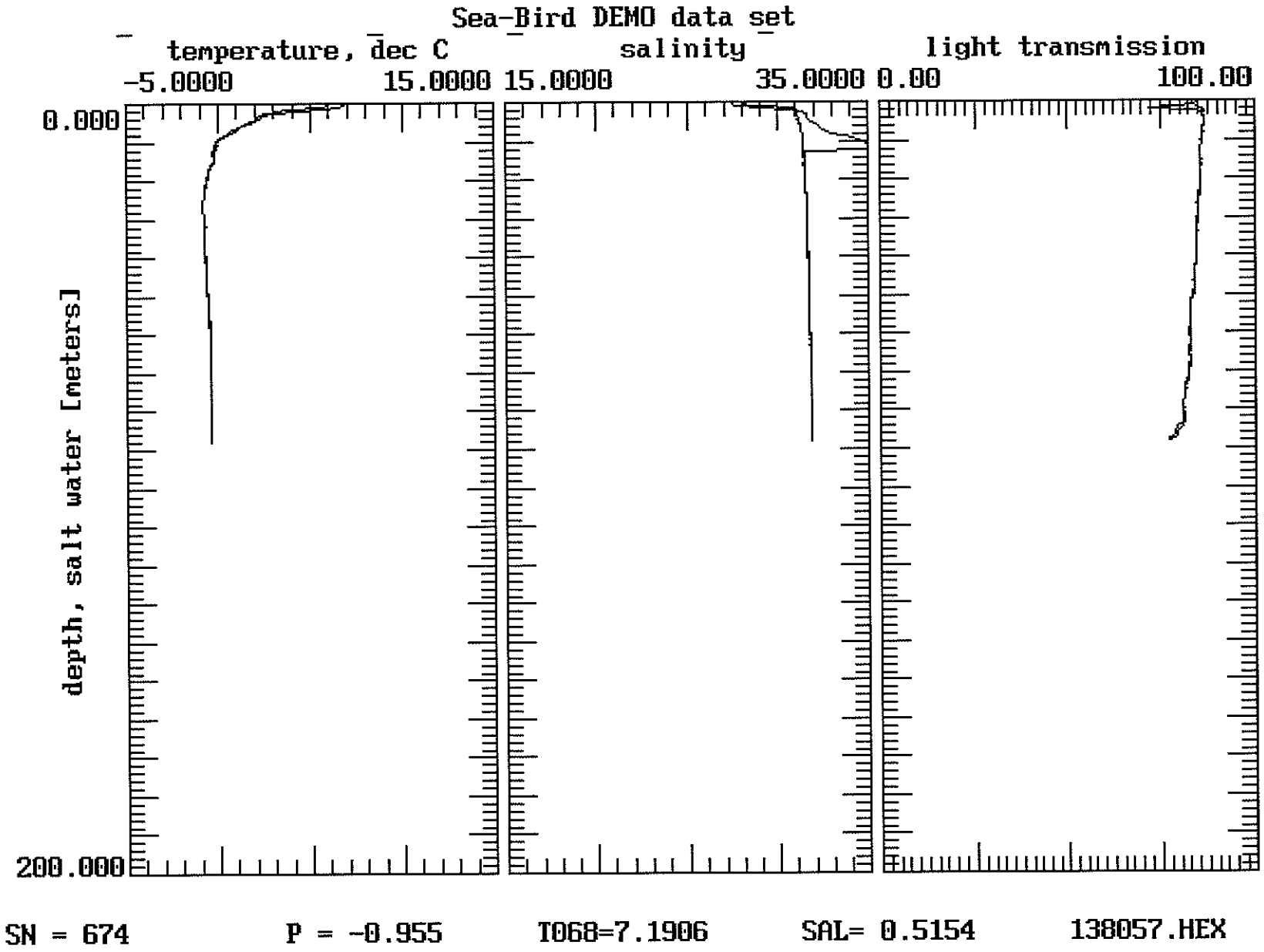
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salinity
15.0000
35.0000
light transmission
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100.00
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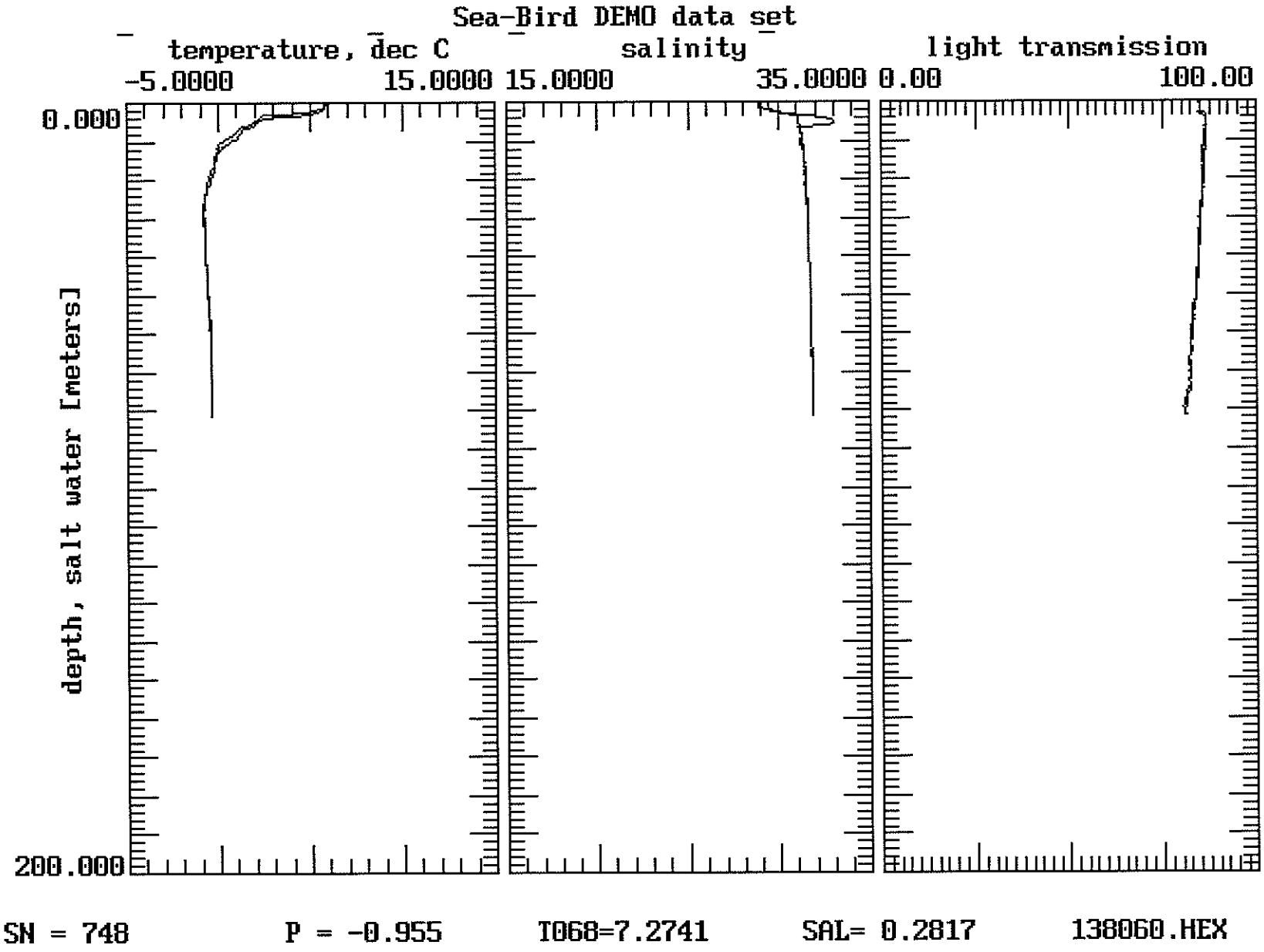
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35.0000
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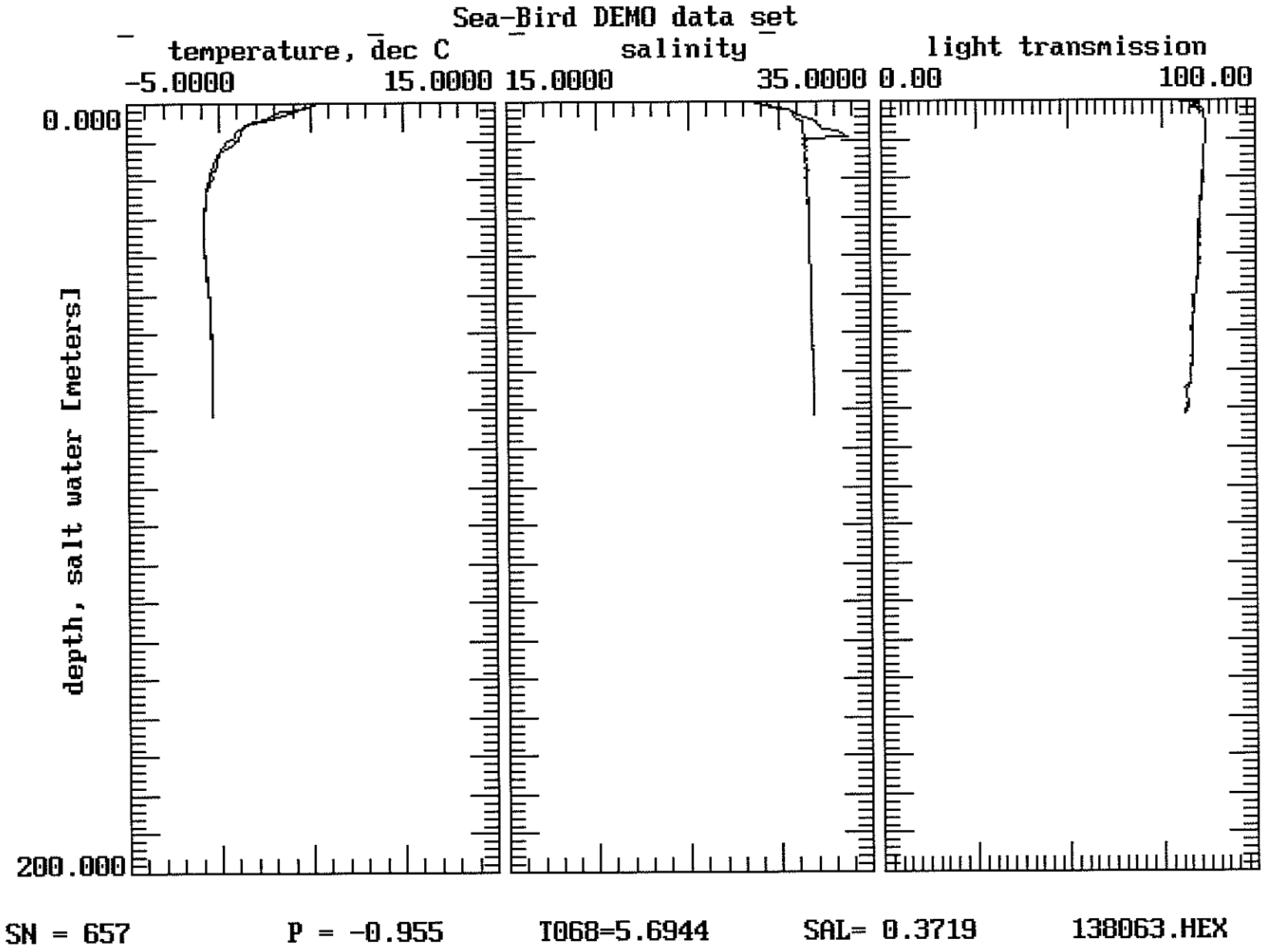
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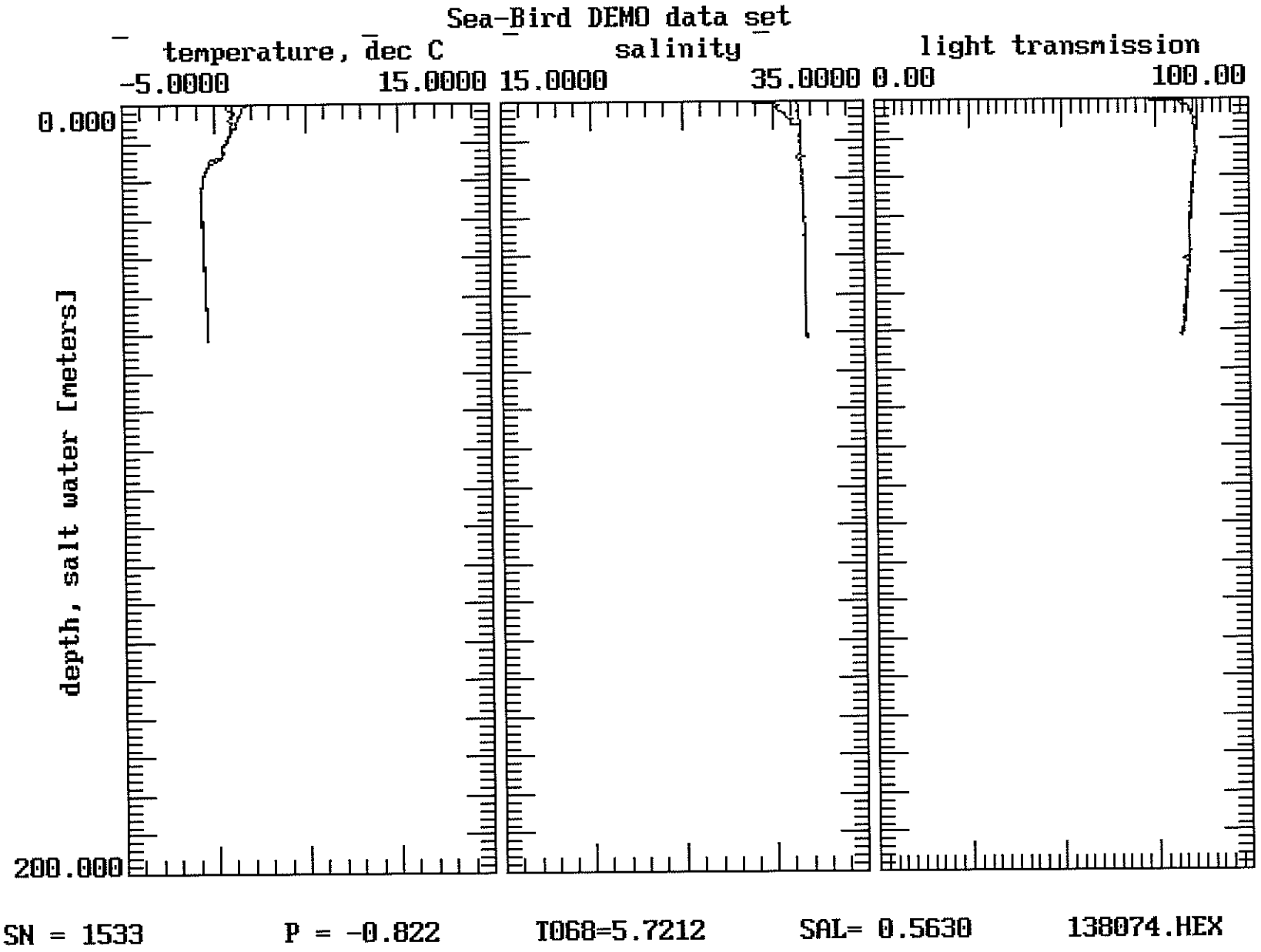
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15.0000
salinity
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35.0000
light transmission
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100.00
0.000
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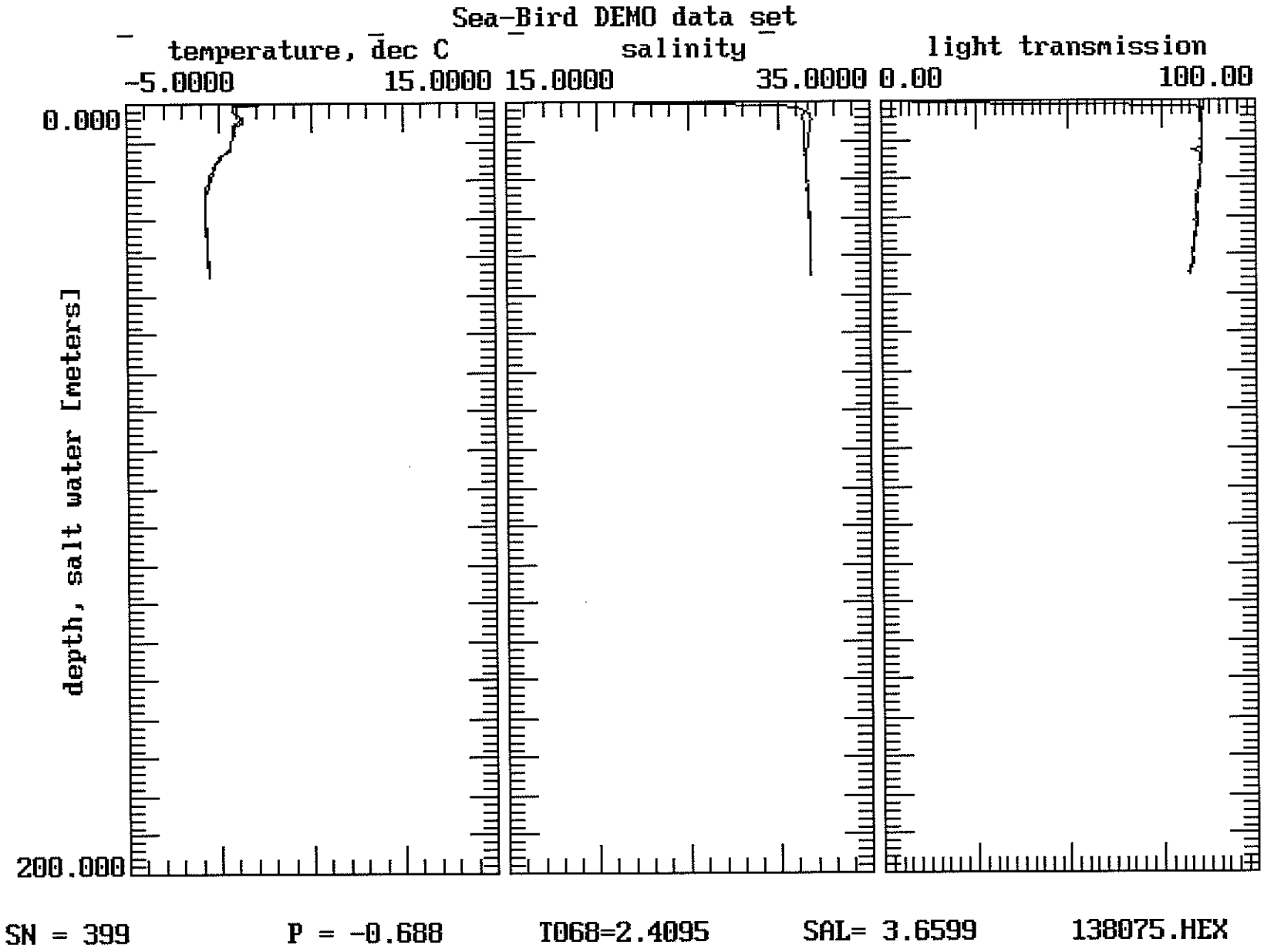
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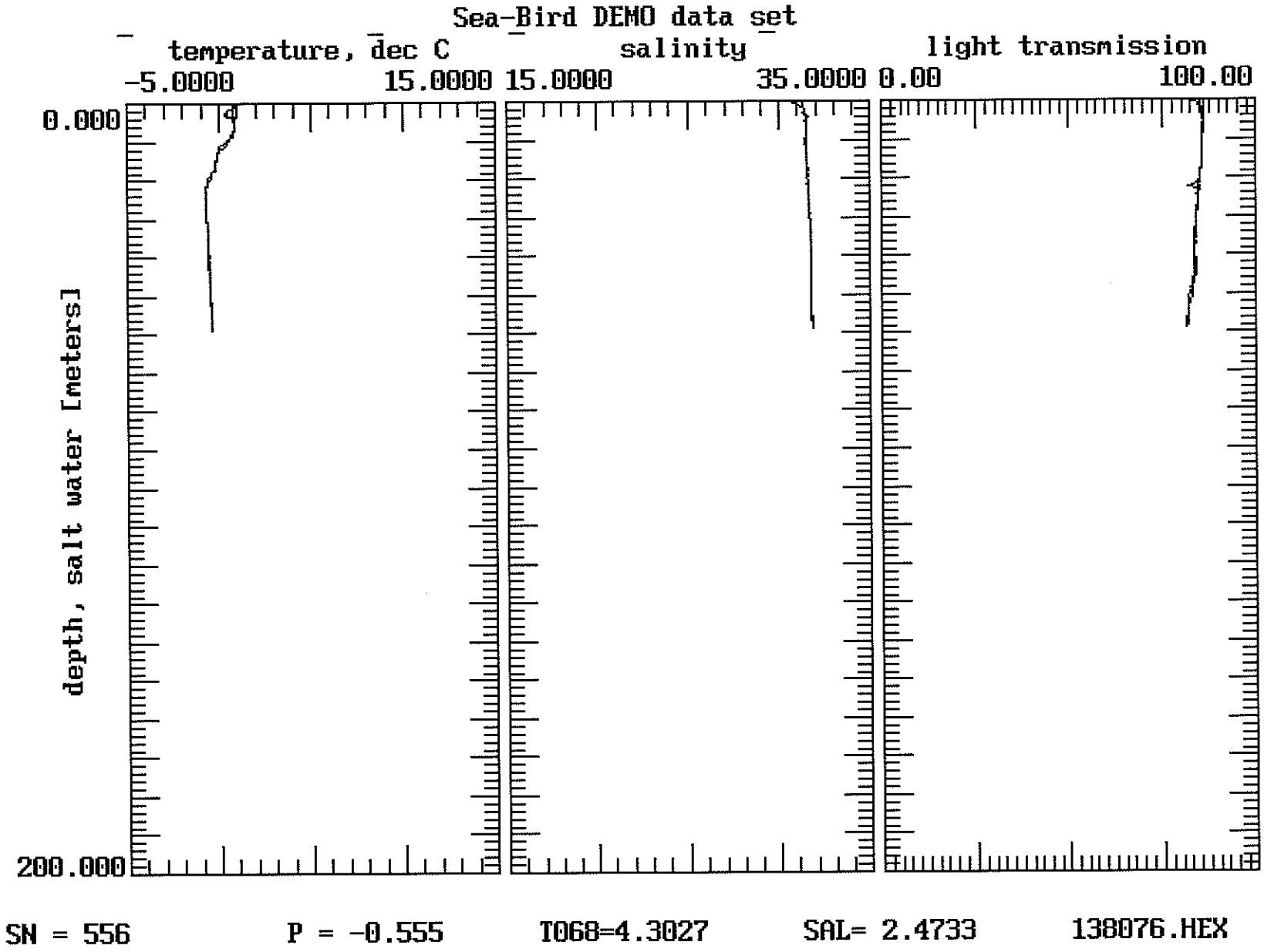
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salinity
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light transmission
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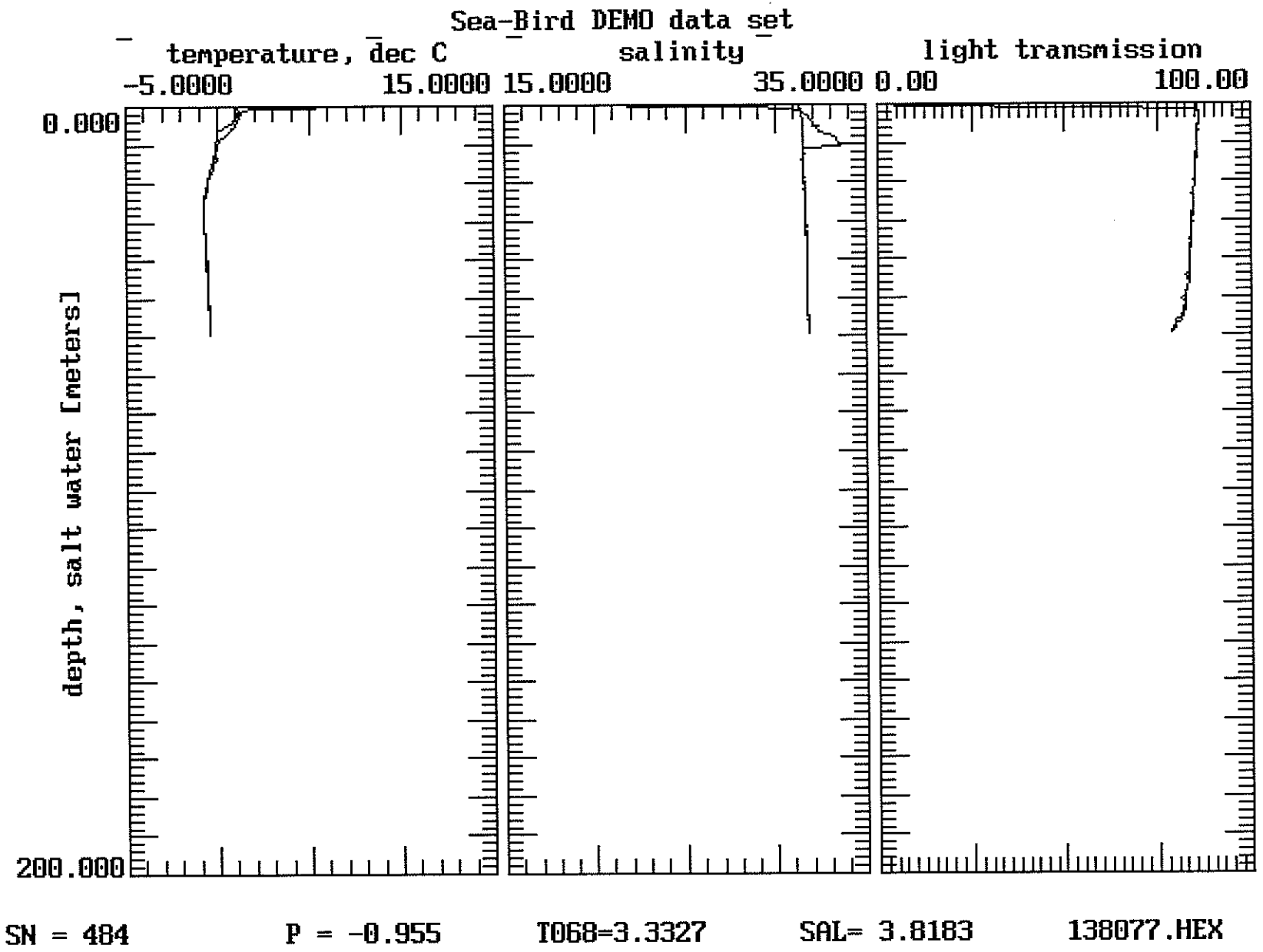
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100.00
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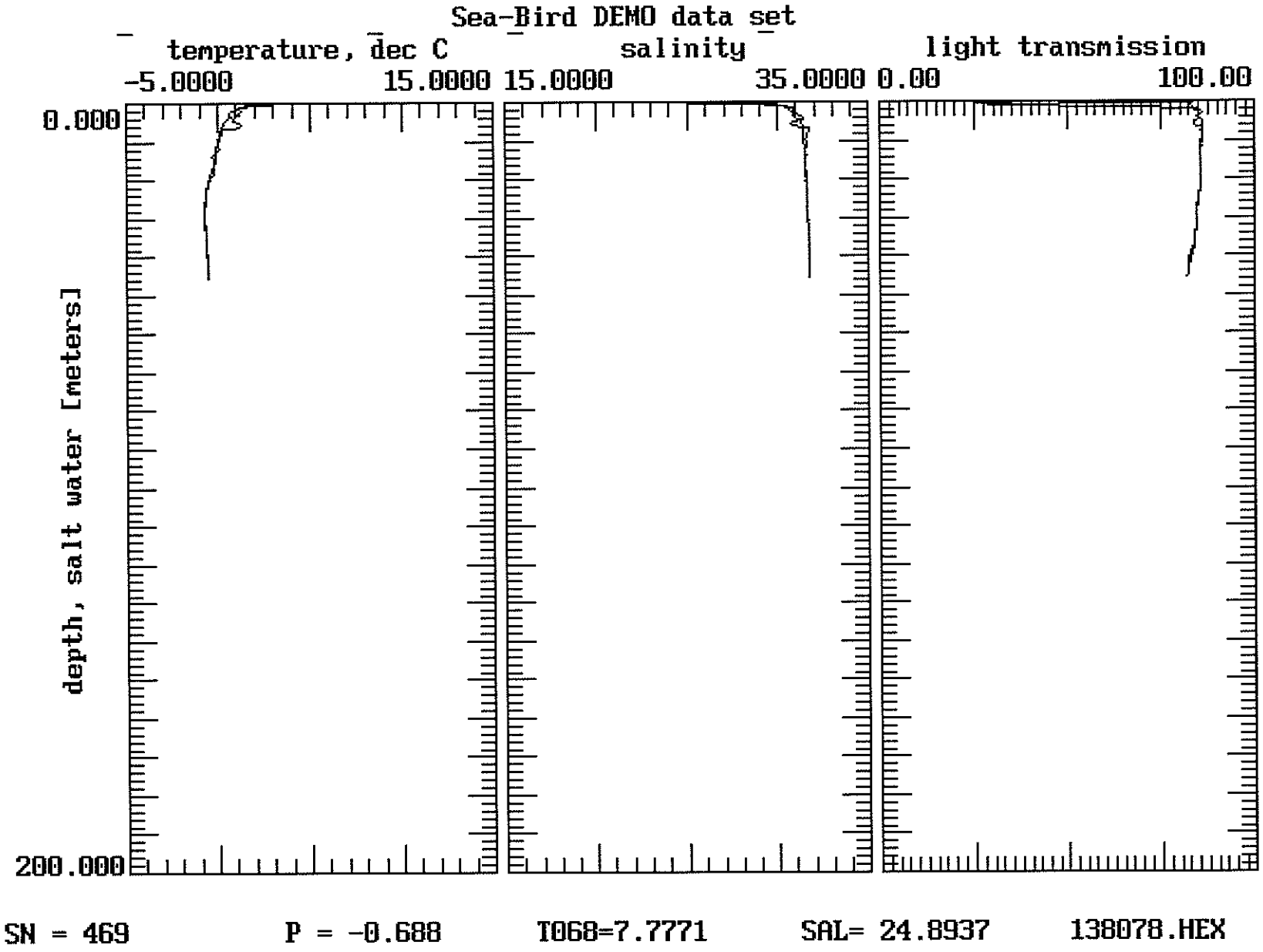
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salinity
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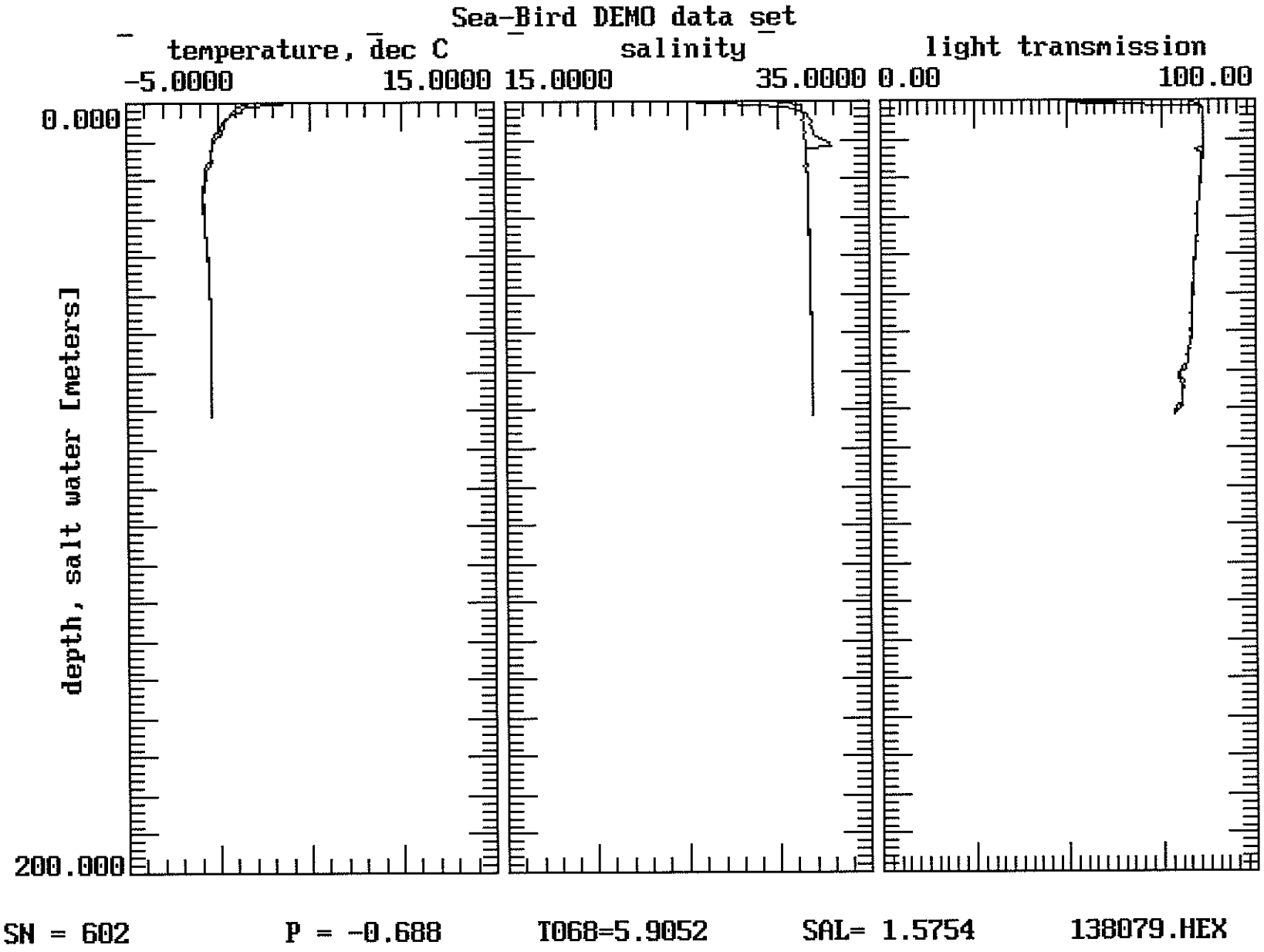
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salinity
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35.0000
light transmission
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100.00
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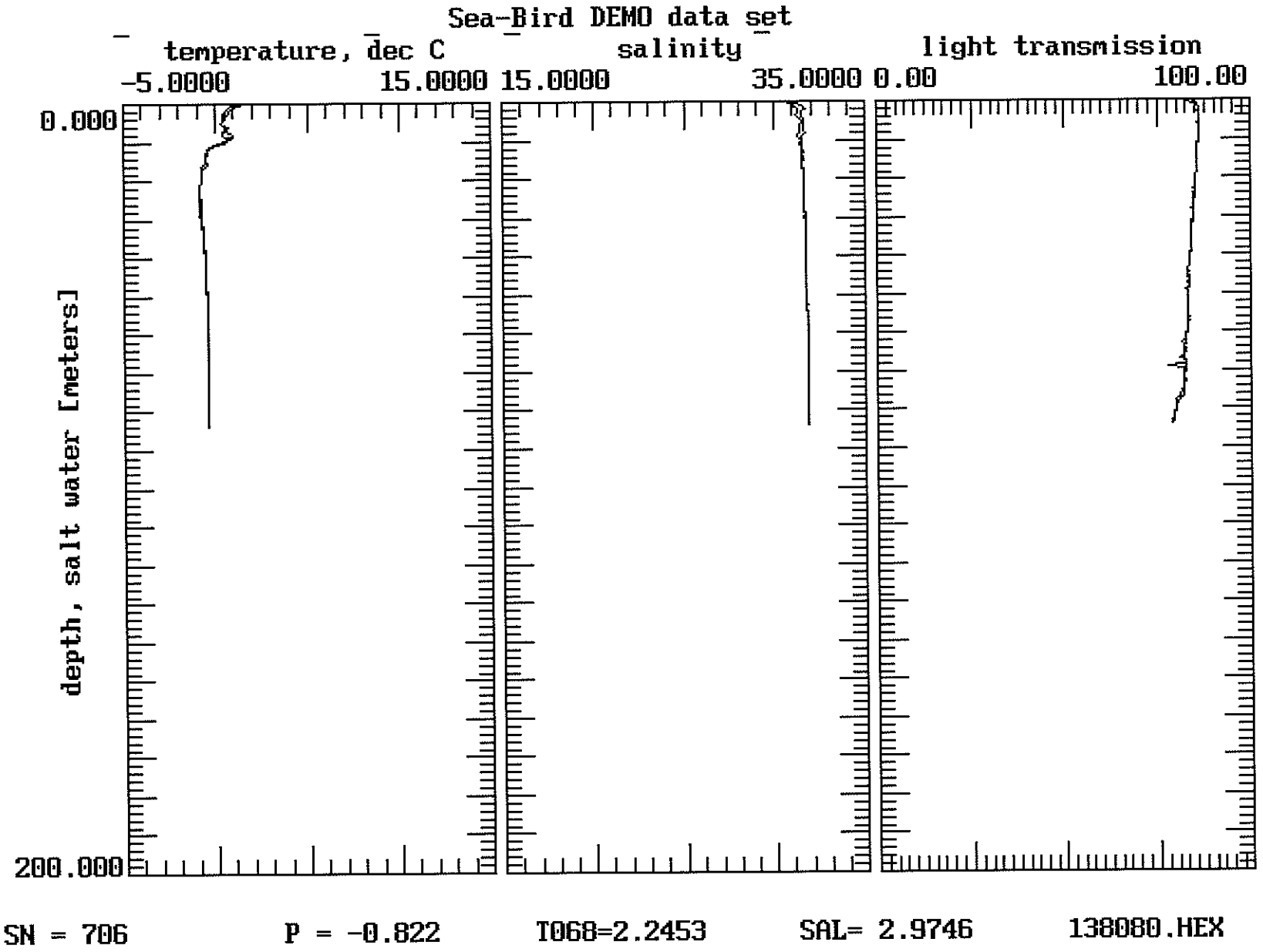
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salinity
15.0000
35.0000
light transmission
0.00
100.00
0.000
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200.000
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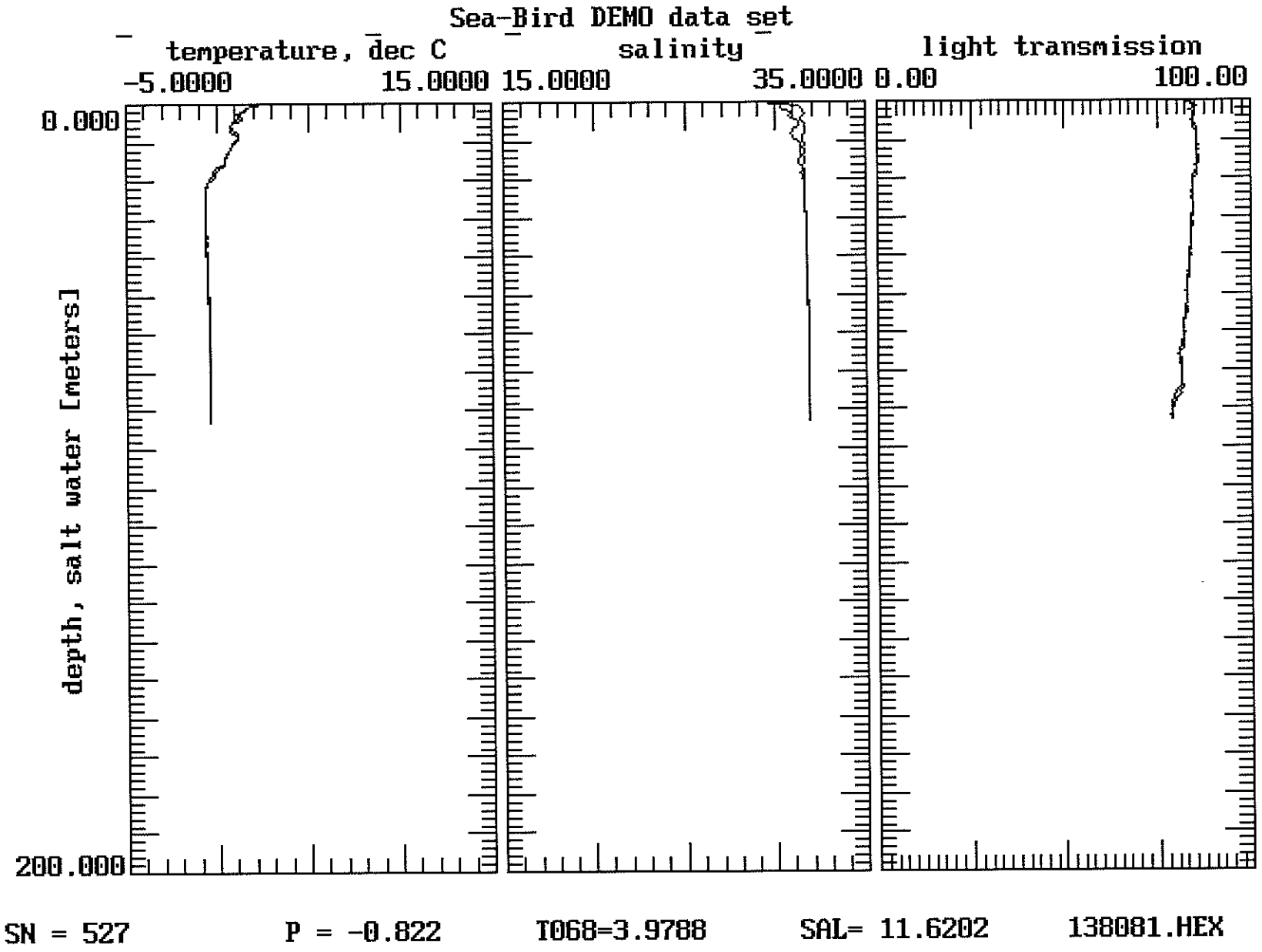
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salinity
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light transmission
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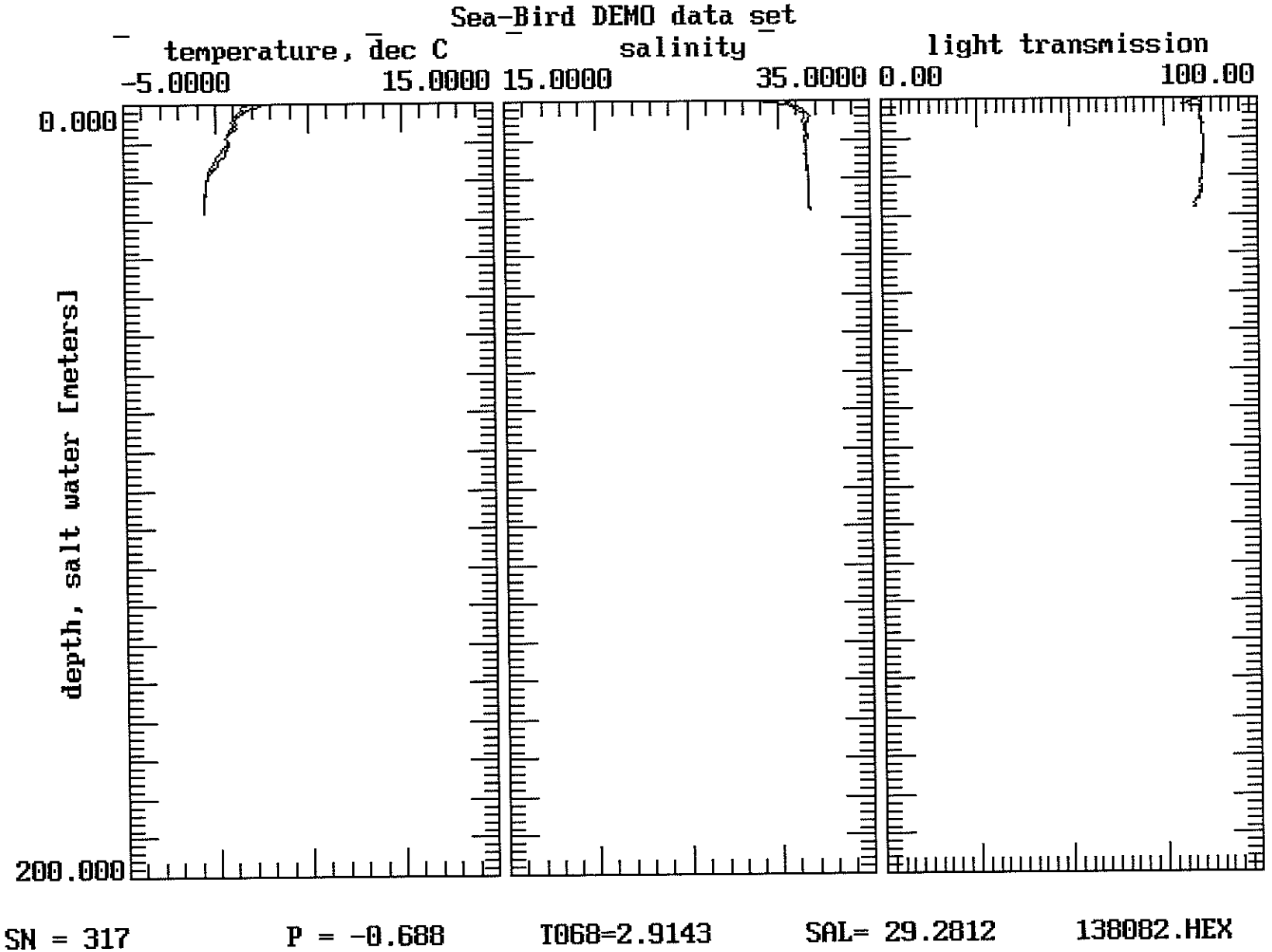
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salinity
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35.0000
light transmission
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100.00
0.000
200.000
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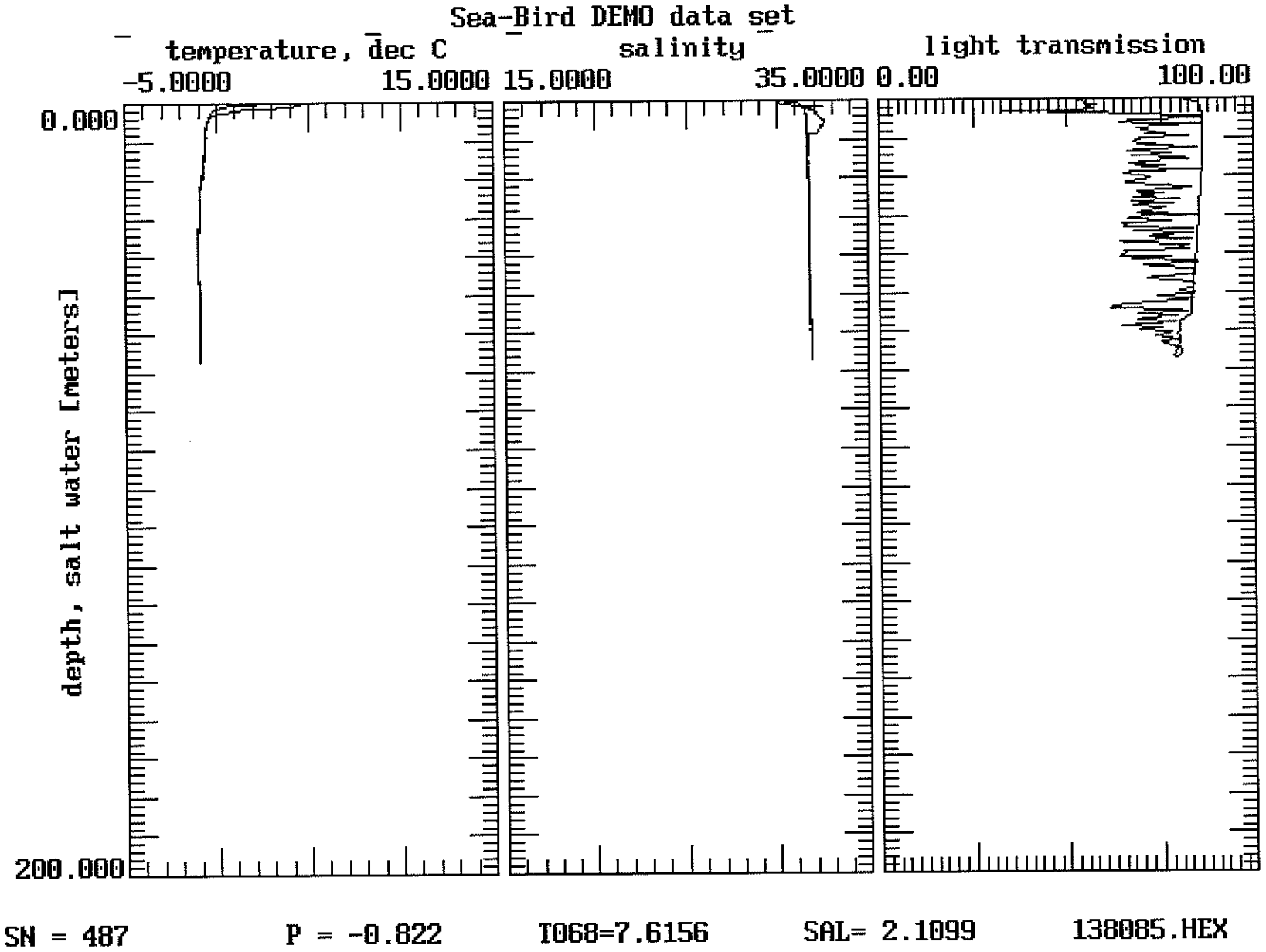
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salinity
15.0000
35.0000
light transmission
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100.00
0.000
200.000
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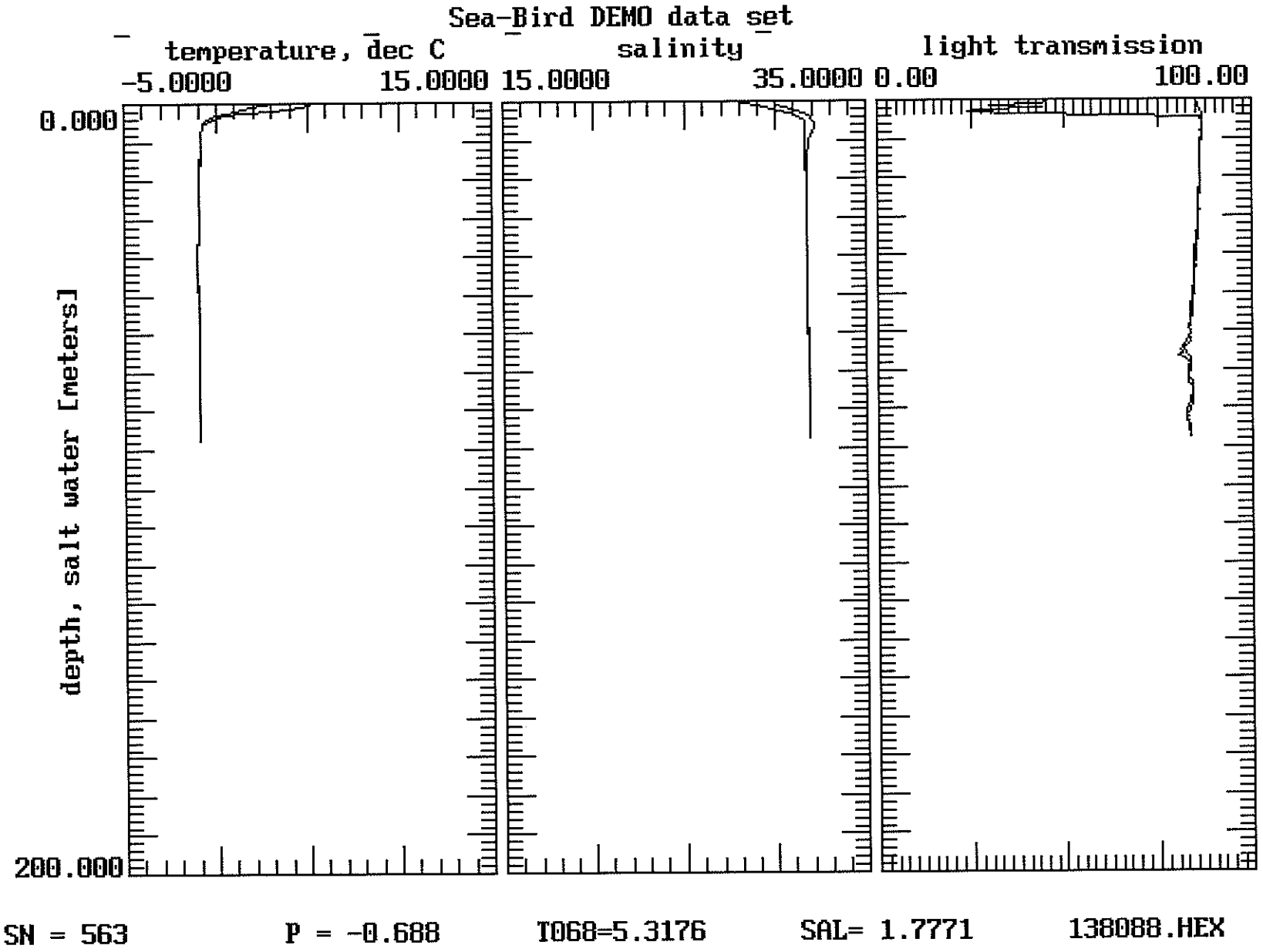
Sea-Bird DEMO data set
temperature, dec C
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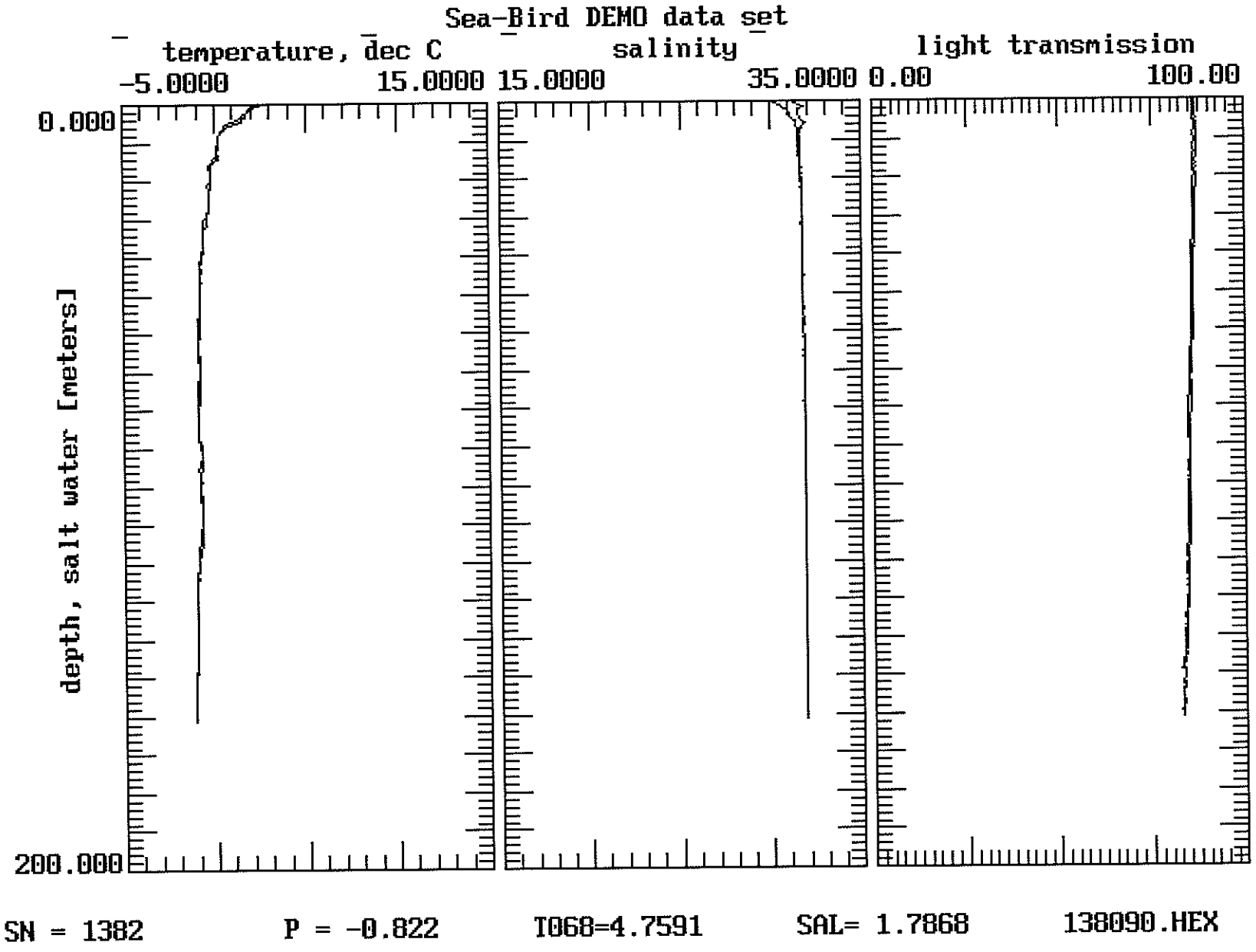
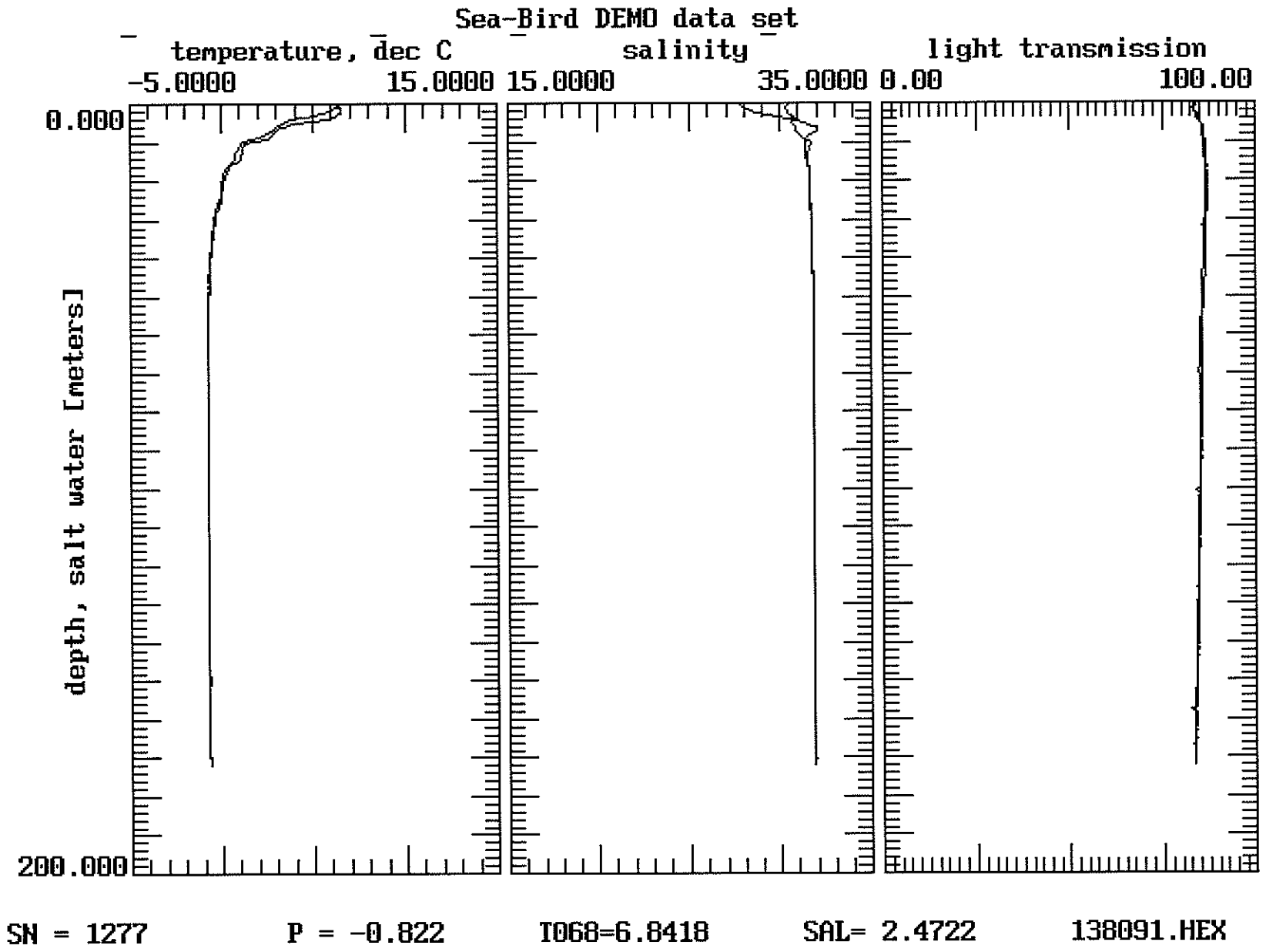
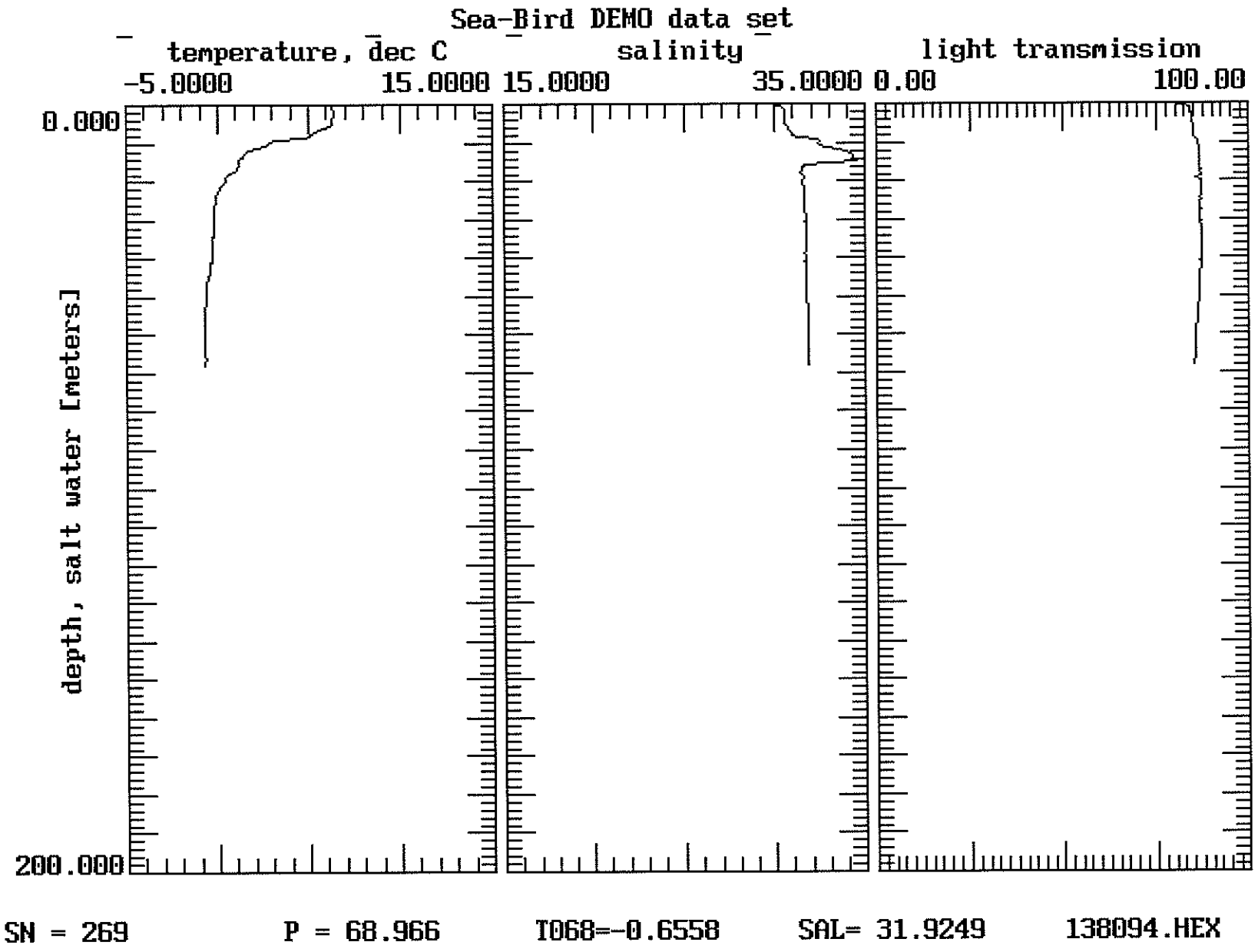
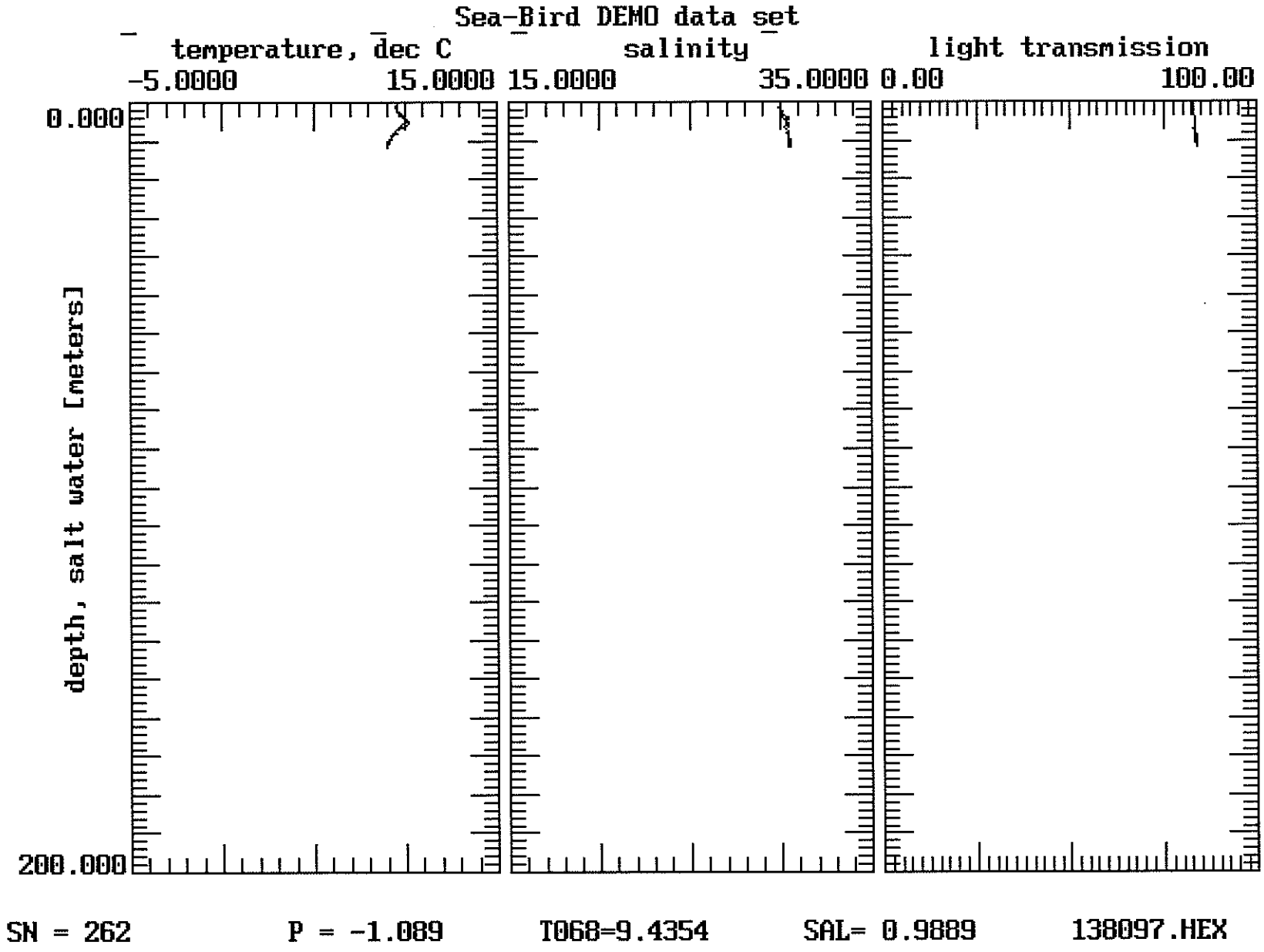
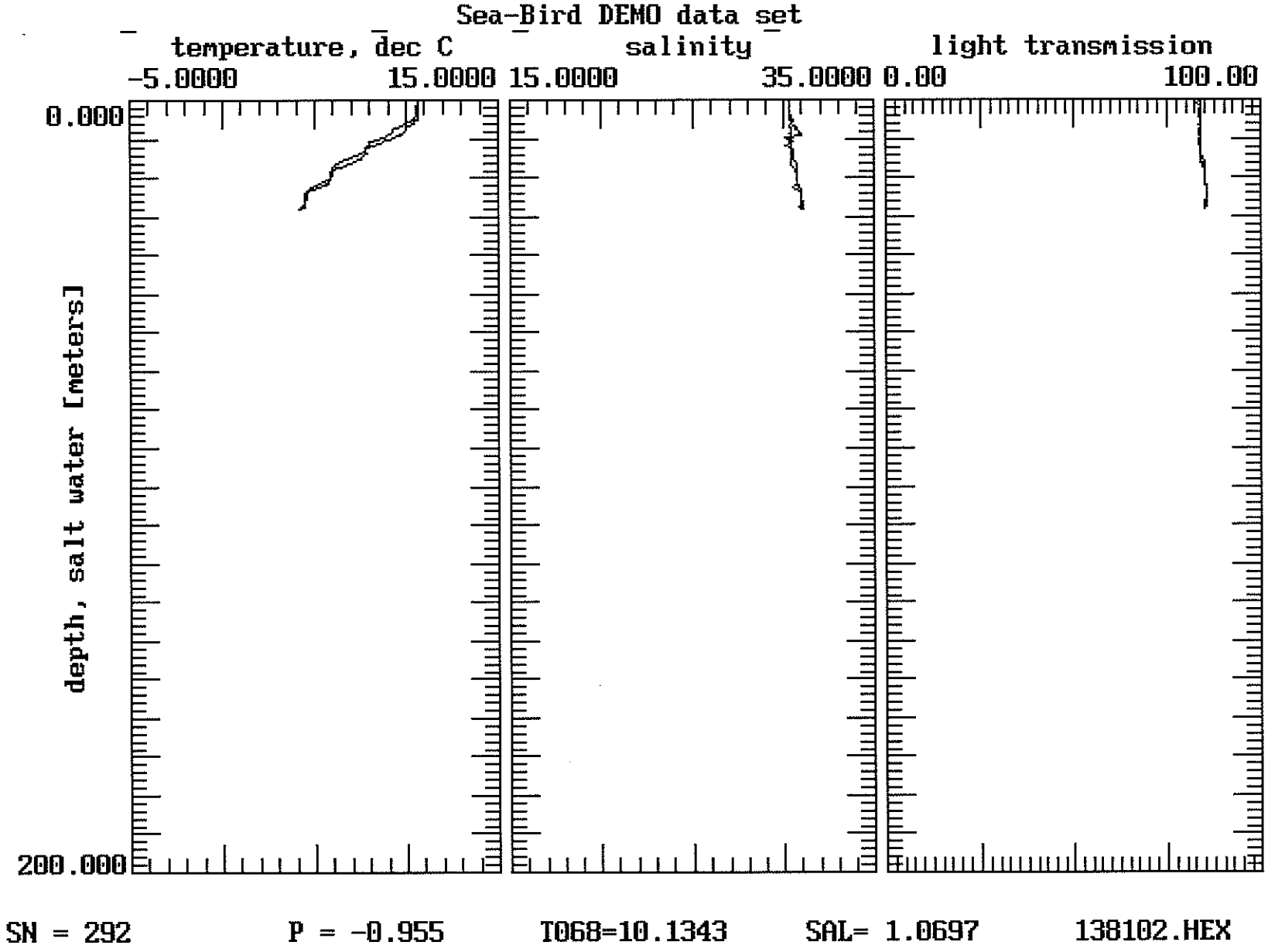
15.0000
salinity
15.0000
35.0000
light transmission
0.00
100.00
0.000
200.000
depth, salt water [meters]
SN = 563
P = -0.688
T068=5.3176
SAL= 1.7771
138088.HEX

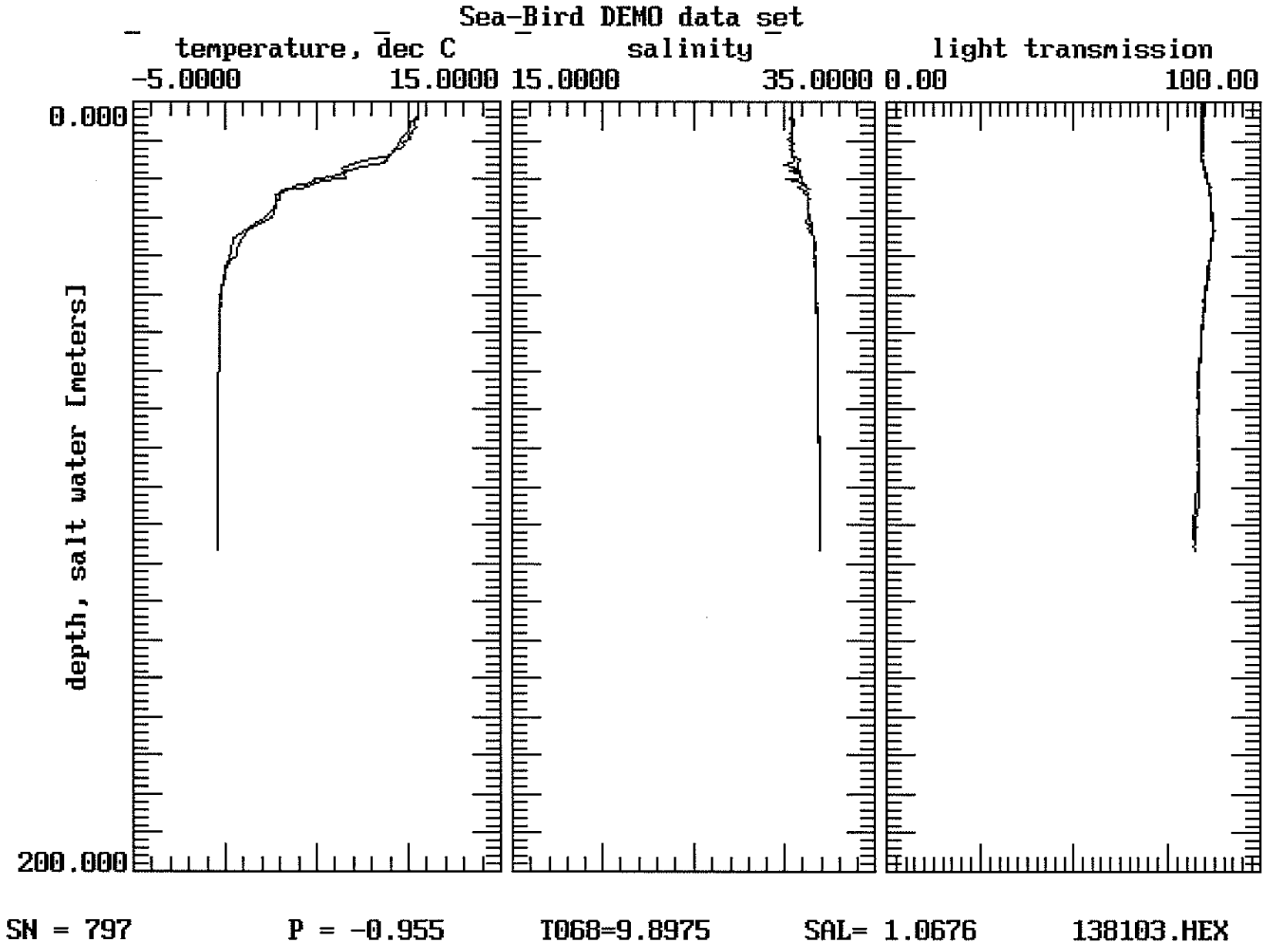

Sea-Bird DEMO data set
temperature, dec C
-5.0000
15.0000
salinity
15.0000
35.0000
light transmission
0.00
100.00
0.000
200.000
depth, salt water [meters]
SN = 1382
P = -0.822
T068=4.7591
SAL= 1.7868
138090.HEX

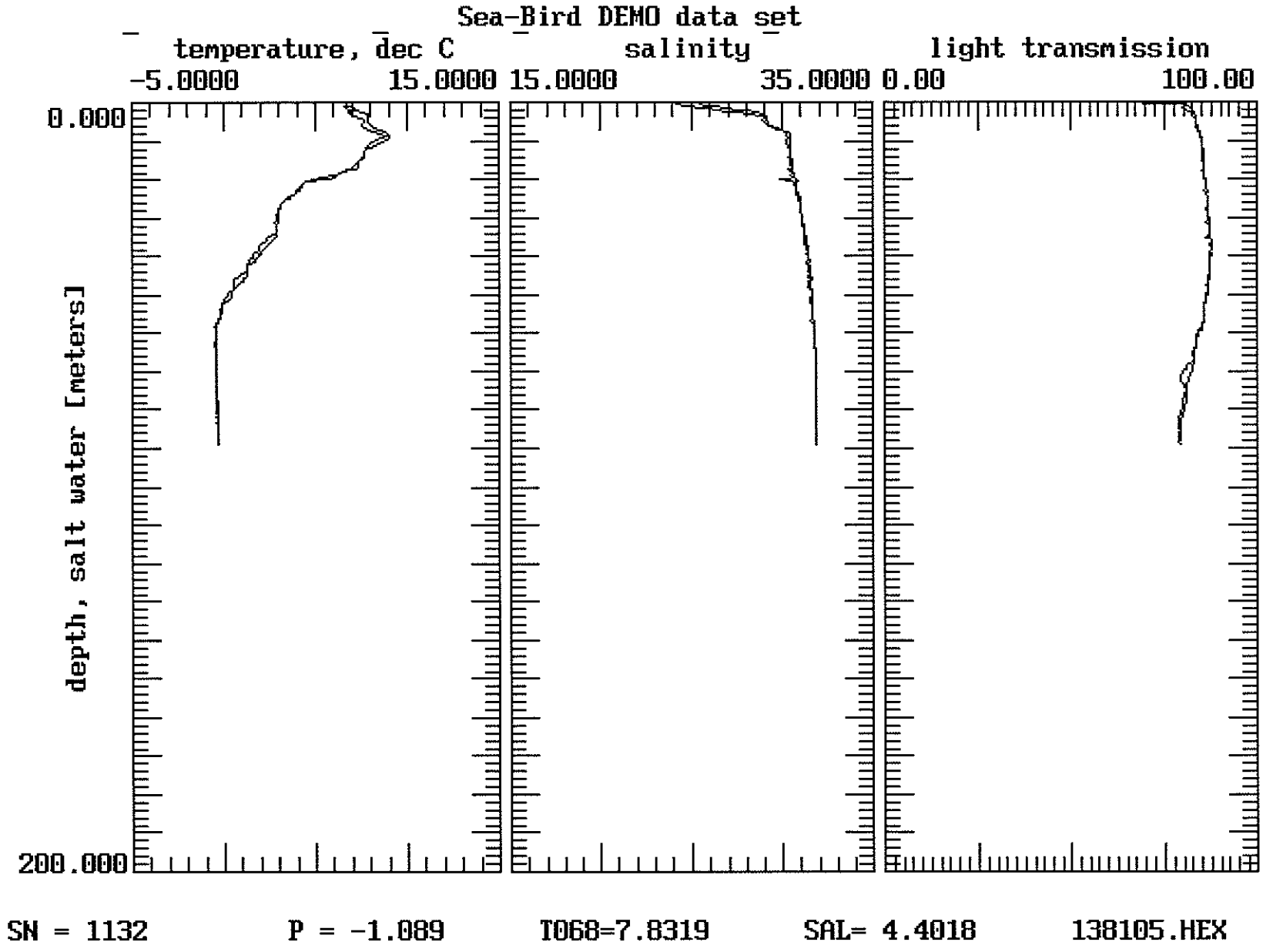

Sea-Bird DEMO data set
temperature, dec C
-5.0000
15.0000
salinity
15.0000
35.0000
light transmission
0.00
100.00
0.000
200.000
depth, salt water [meters]
SN = 1277
P = -0.822
I068=6.8418
SAL= 2.4722
138091.HEX


Sea-Bird DEMO data set
temperature, dec C
-5.0000
15.0000
salinity
15.0000
35.0000
light transmission
0.00
100.00
0.000
depth, salt water [meters]
200.000
SN = 269
P = 68.966
T068=-0.6558
SAL= 31.9249
138094.HEX


Sea-Bird DEMO data set
temperature, dec C
salinity
light transmission
-5.0000
15.0000
15.0000
35.0000
0.00
100.00
0.000
200.000
depth, salt water [meters]
SN = 262
P = -1.089
T068=9.4354
SAL= 0.9889
138097.HEX

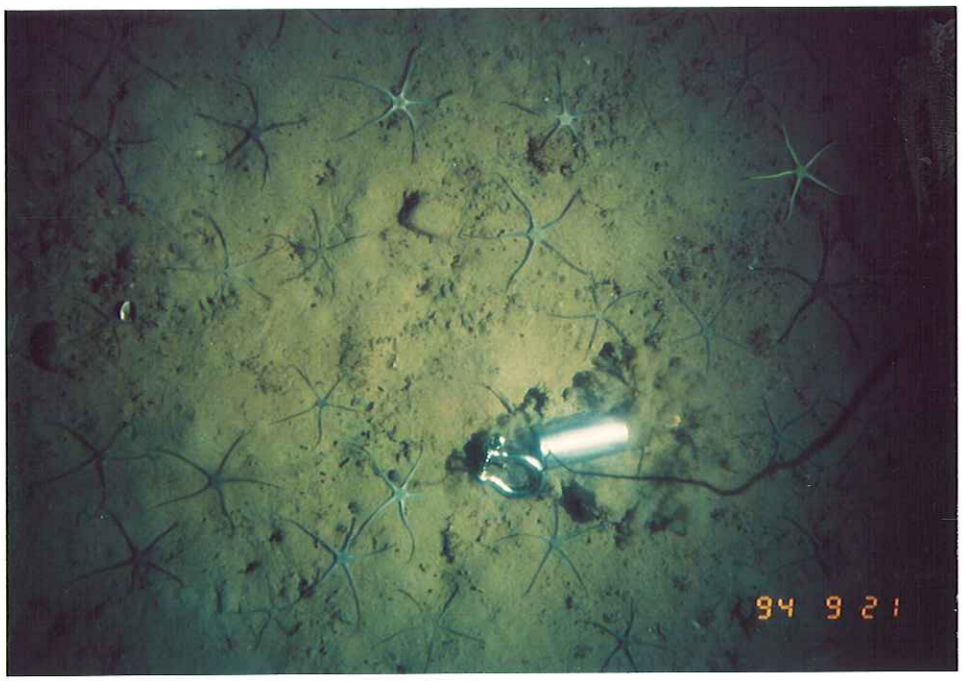

Sea-Bird DEMO data set
temperature, dec C
-5.0000
15.0000
salinity
15.0000
35.0000
light transmission
0.00
100.00
0.000
200.000
depth, salt water [meters]
SN = 292
P = -0.955
T068=10.1343
SAL= 1.0697
138102.HEX


Sea-Bird DEMO data set
temperature, dec C
-5.0000
15.0000
salinity
15.0000
35.0000
light transmission
0.00
100.00
0.000
200.000
depth, salt water [meters]
SN = 797
P = -0.955
T068=9.8975
SAL= 1.0676
138103.HEX

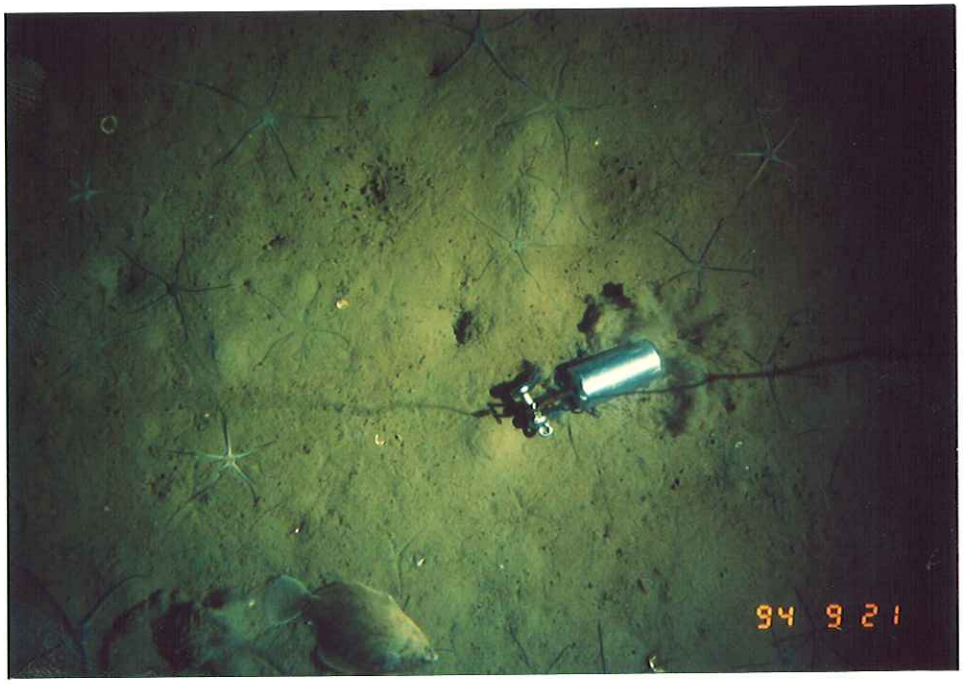

Sea-Bird DEMO data set
temperature, dec C
-5.0000
15.0000
salinity
15.0000
35.0000
light transmission
0.00
100.00
0.000
depth, salt water [meters]
200.000
SN = 1132
P = -1.089
T068=7.8319
SAL= 4.4018
138105.HEX

Appendix 9: Sea-bed Photographs

Note: 3.4 m should be added to depths
to compensate for the ship's draft.

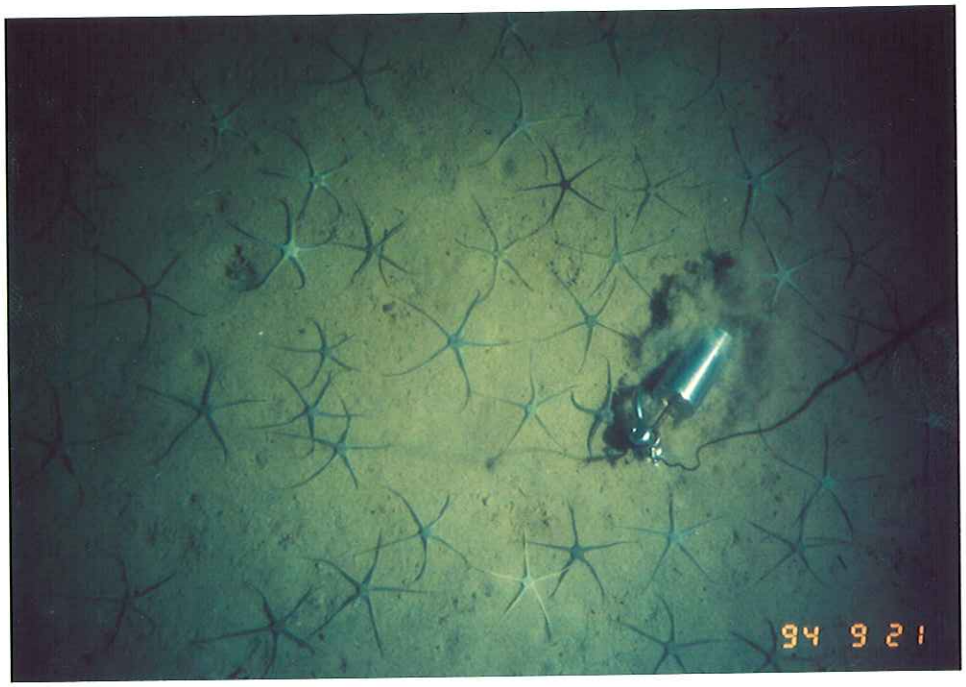


94-138-002 #1 Chedabucto Bay, N.S., depth 35 m.



94-138-004 #3 Chedabucto Bay, N.S., depth 32 m.

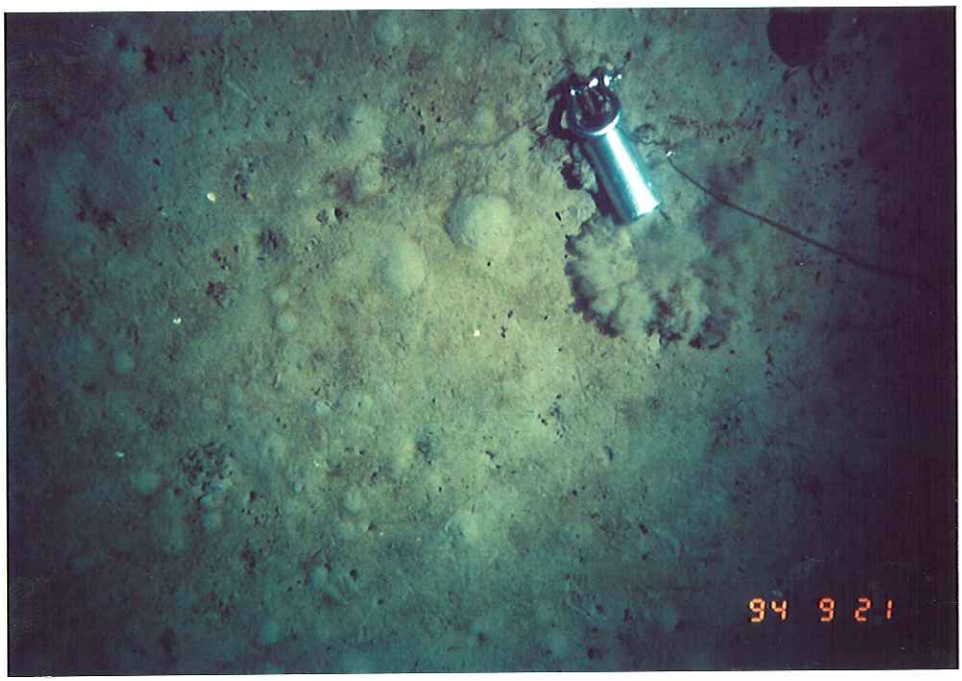
94-138-006 #1 Chedabucto Bay, N.S., depth 31 m.



94-138-008 #2 Chedabucto Bay, N.S., depth 31 m.

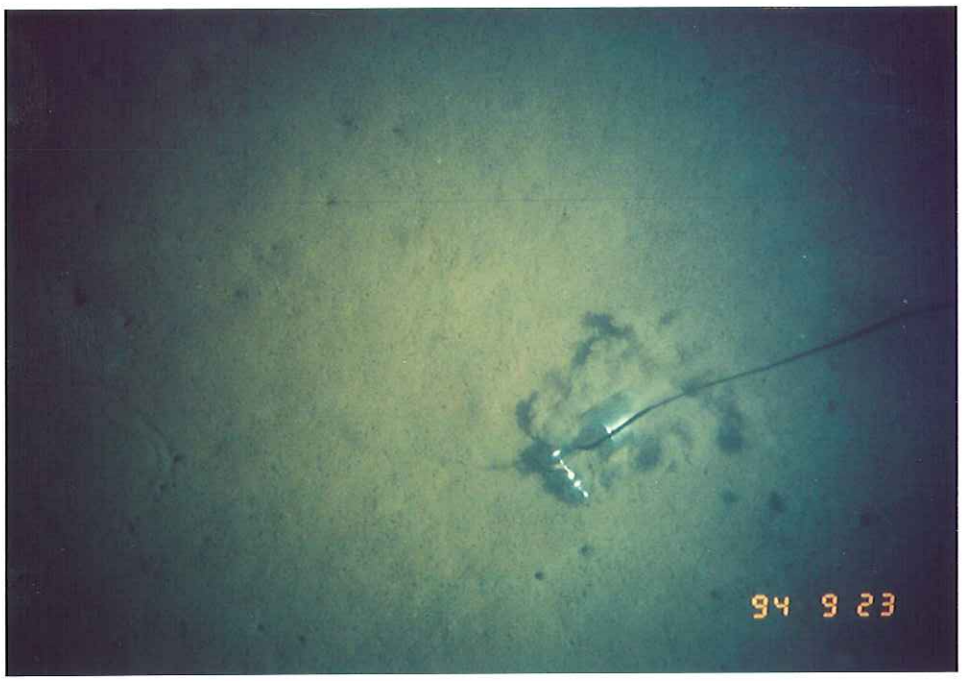
94-138-010 #2 Chedabucto Bay, N.S., depth 28 m.

94-138-012 #1 Chedabucto Bay, N.S., depth 24 m.



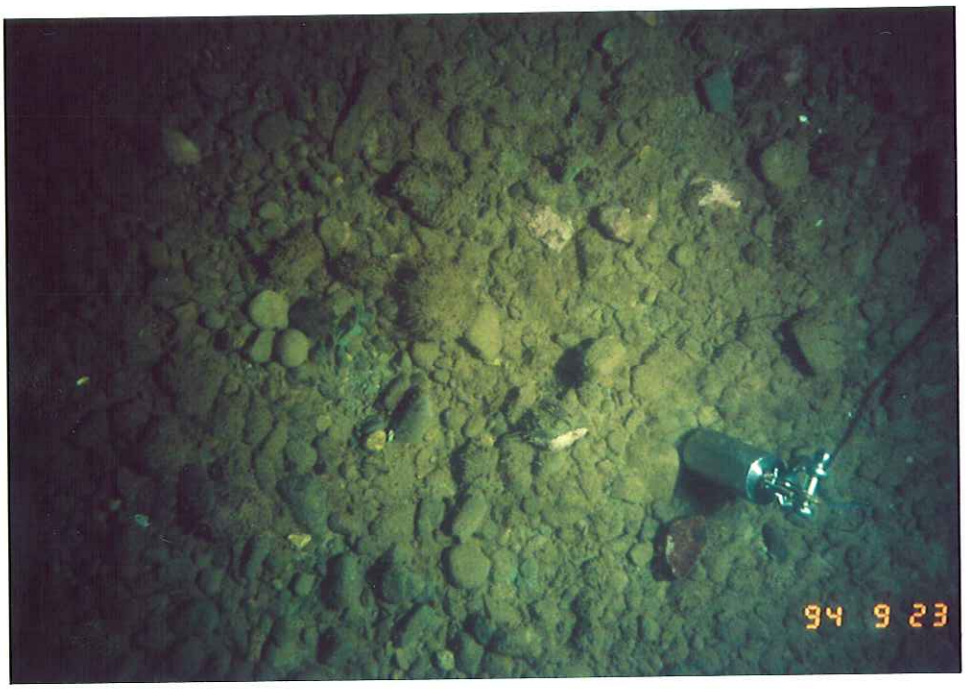
94-138-014 #2 Chedabucto Bay, N.S., depth 22 m.

94-138-016 #3 St. George's Bay, N.S., depth 18 m.

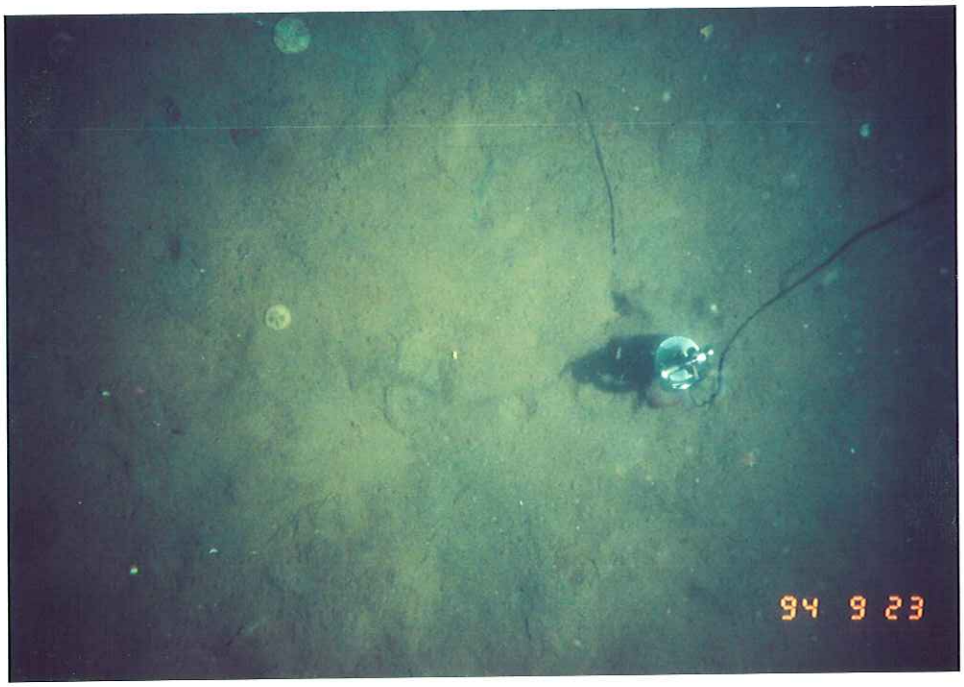


94-138-018 #1 St. George's Bay, N.S., depth 23 m.

94-138-020 #1 St. George's Bay, N.S., depth 21 m.



94-138-022 #1 St. George's Bay, N.S., depth 15 m.



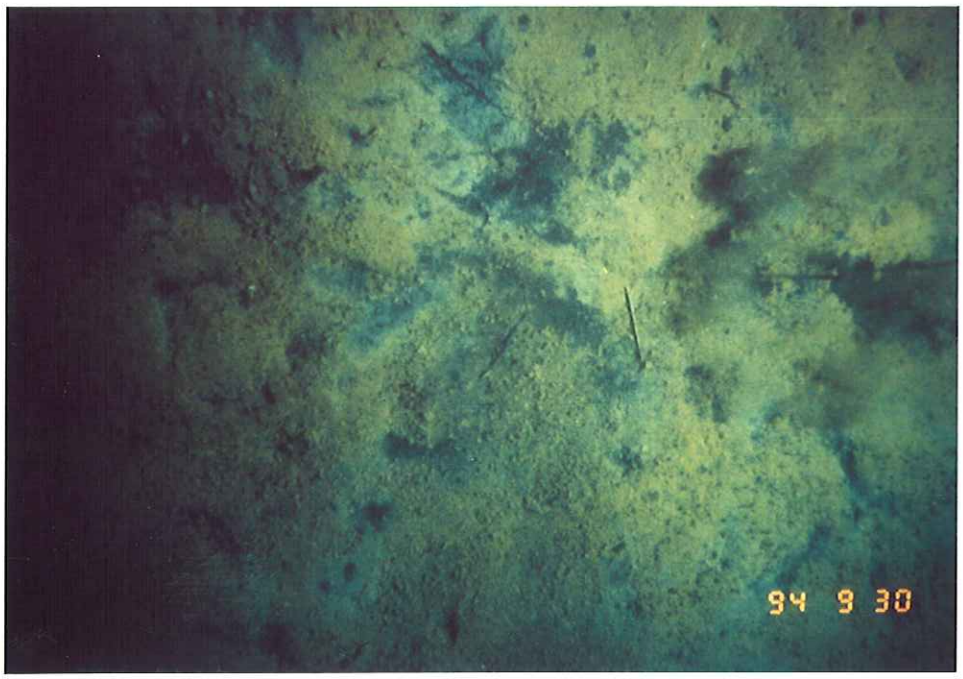
94-138-024 #2 St. George's Bay, N.S., depth 19 m.

94-138-026 #2 St. George's Bay, N.S., depth 21 m.

94-138-028 #3 St. George's Bay, N.S., depth 17 m.

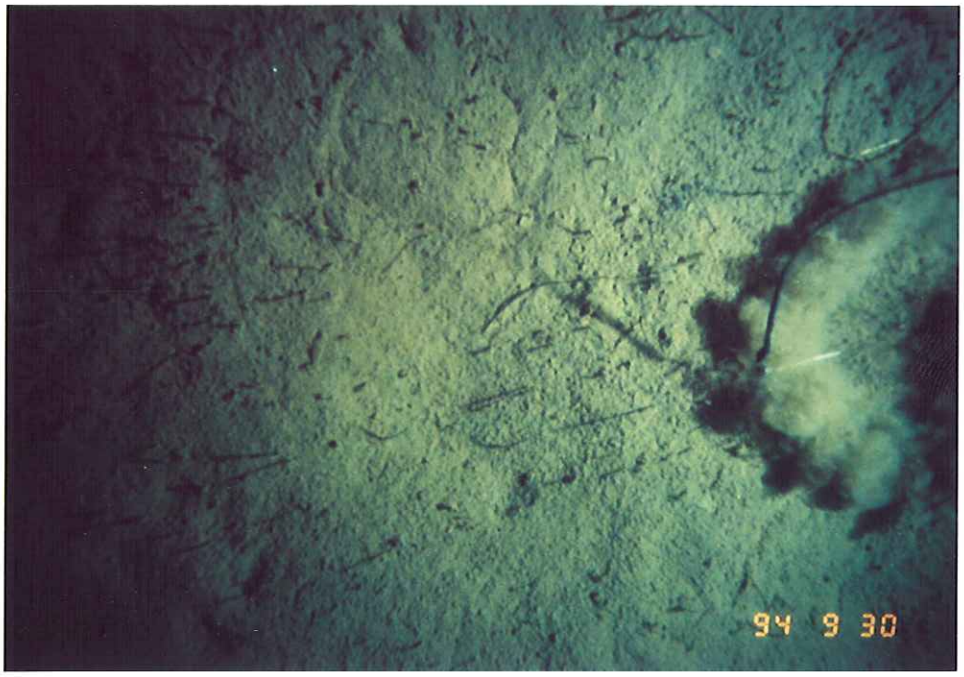
94-138-030 #1 St. George's Bay, N.S., depth 14 m.

94-138-032 #1 Humber Arm, Nfld., depth 93 m.

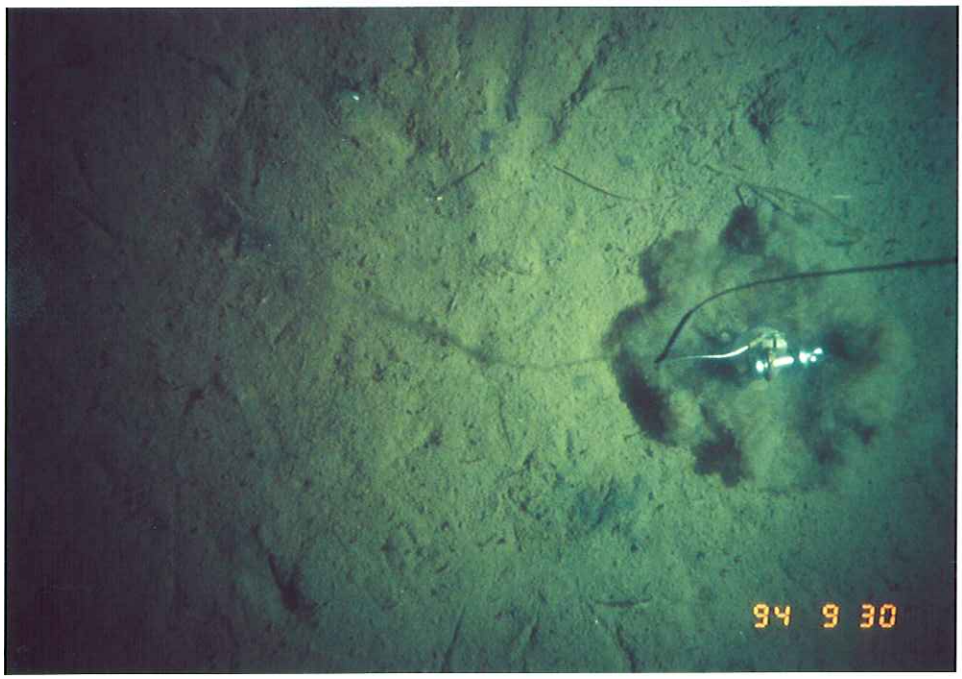


94-138-035 #1 Humber Arm, Nfld., depth 90 m.

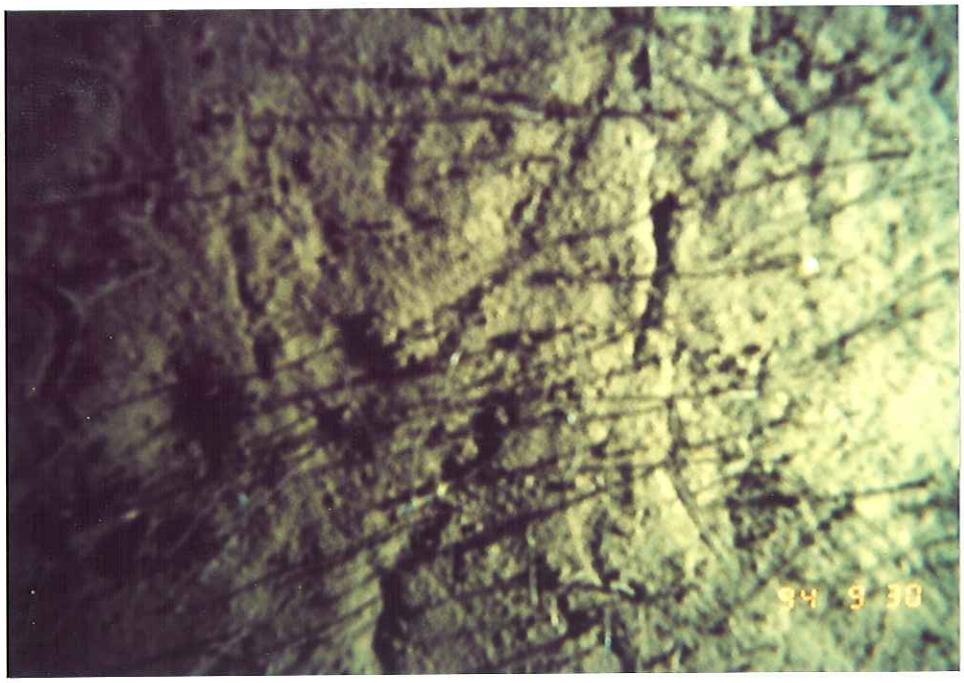
94-138-038 #2 Humber Arm, Nfld., depth 81 m.



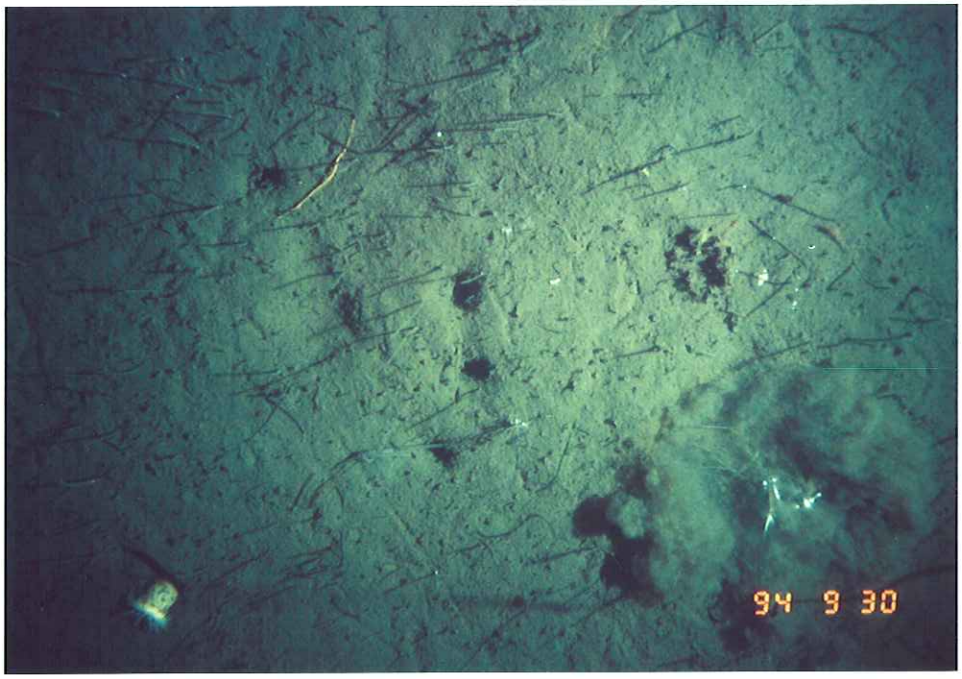
94-138-041 #1 Humber Arm, Nfld., depth 62 m.



94-138-044 #2 Humber Arm, Nfld., depth 65 m.



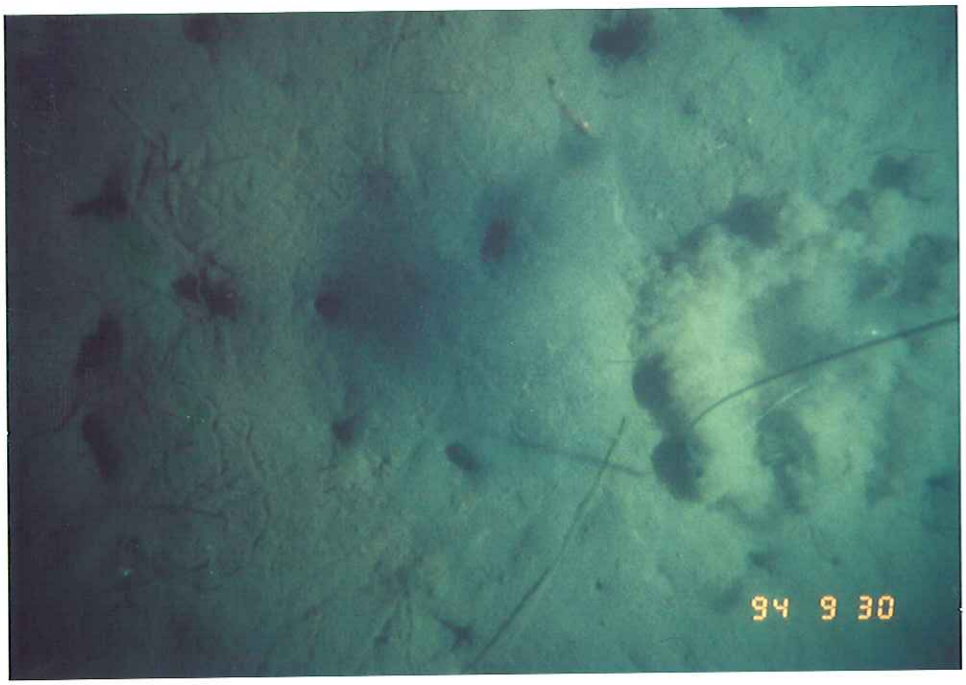
94-138-047 #1 Humber Arm, Nfld., depth 50 m.



94-138-047 #3 Humber Arm, Nfld., depth 50 m.

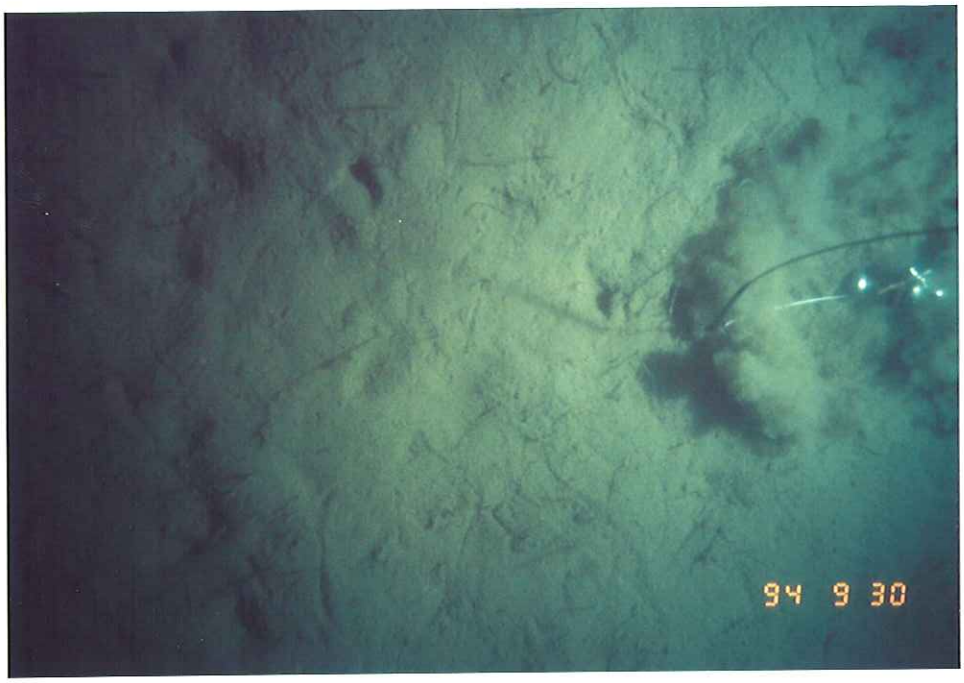
94-138-050 #1 Humber Arm, Nfld., depth 74 m.

94-138-053 #1 Humber Arm, Nfld., depth 79 m.



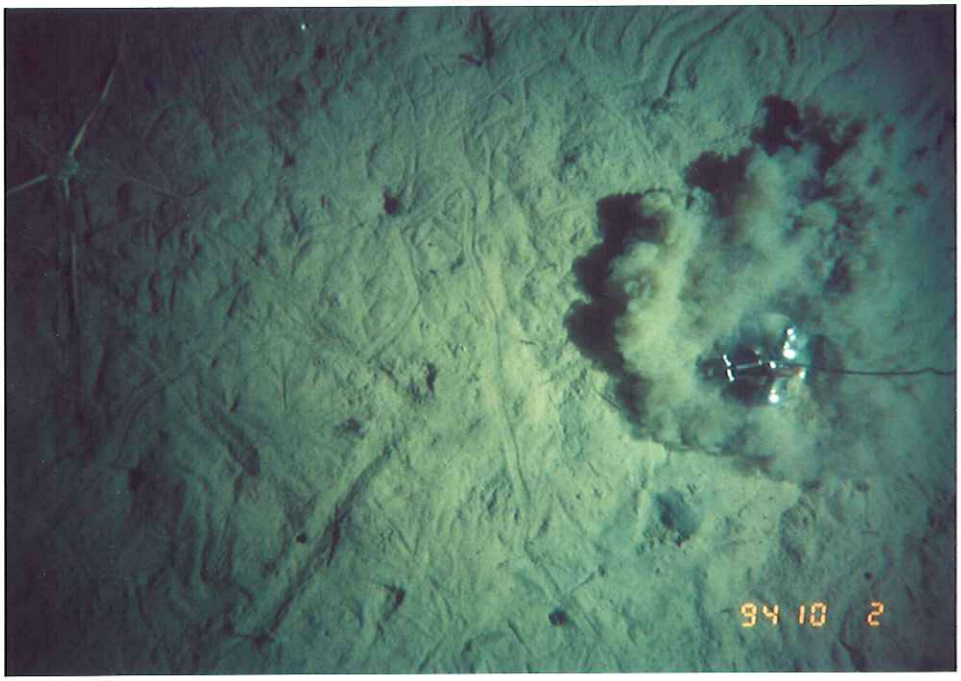
94-138-056 #1 Humber Arm, Nfld., depth 90 m.

94-138-059 #3 Humber Arm, Nfld., depth 90 m.

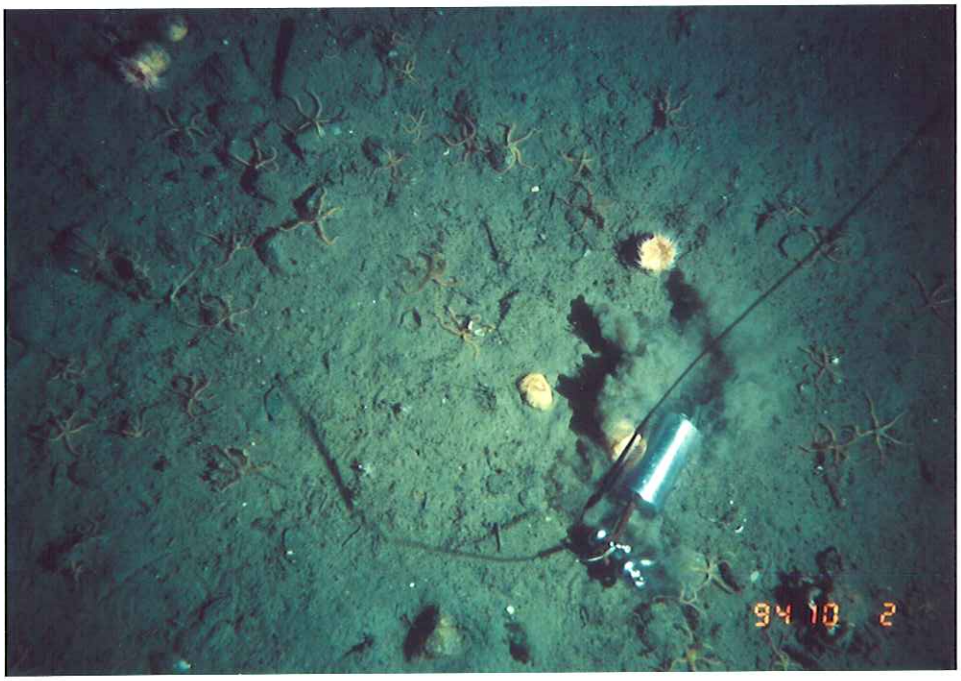


94-138-062 #1 Humber Arm, Nfld., depth 95 m.

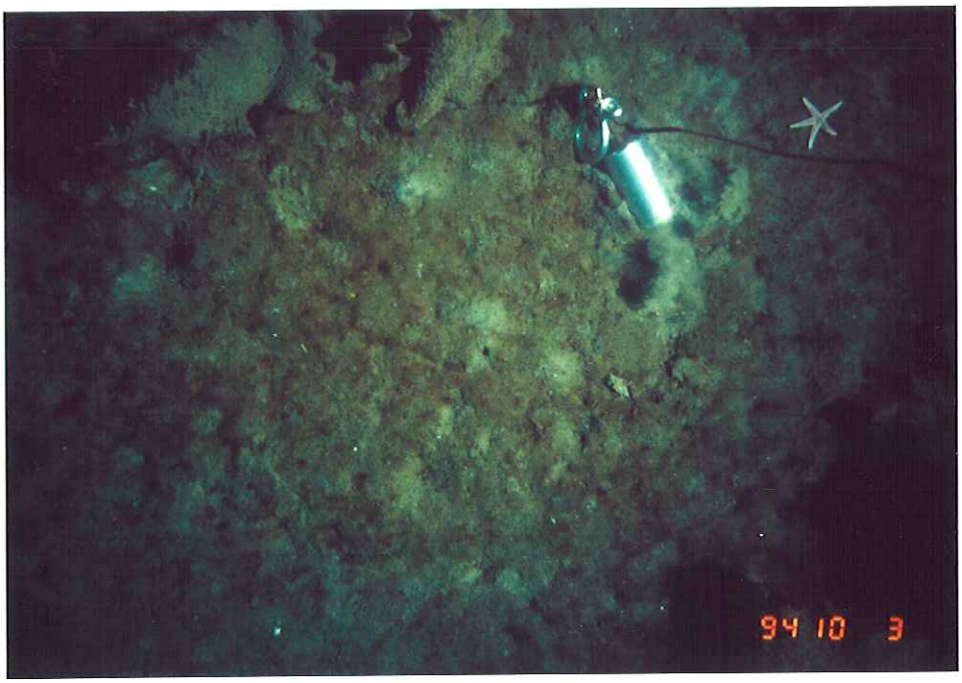
94-138-084 #1 Goose Arm, Nfld., depth 68 m.



94-138-087 #1 Goose Arm, Nfld., depth 89 m.



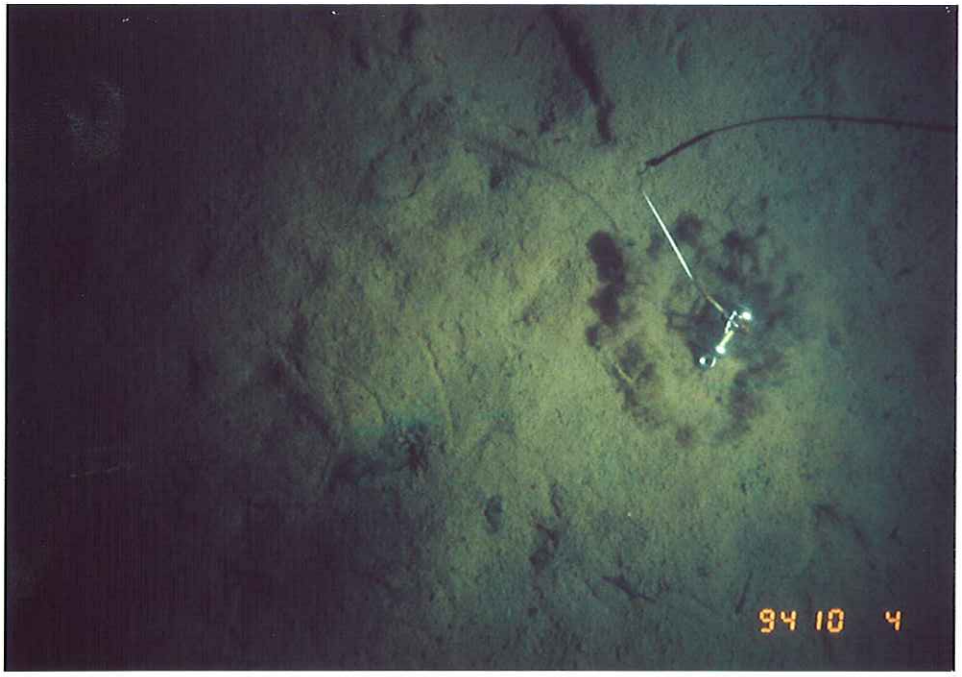
94-138-093 #1 Middle Arm, Nfld., depth 80 m.



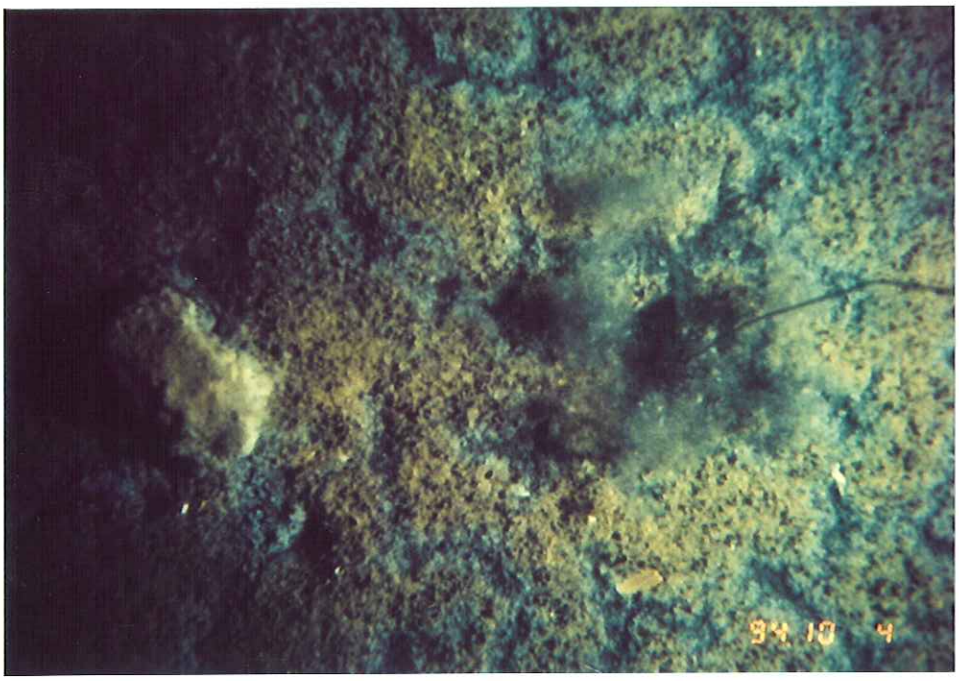
94-138-096 #3 York Harbour, Nfld., depth 12 m.

94-138-099 #3 York Harbour, Nfld., depth 12 m.

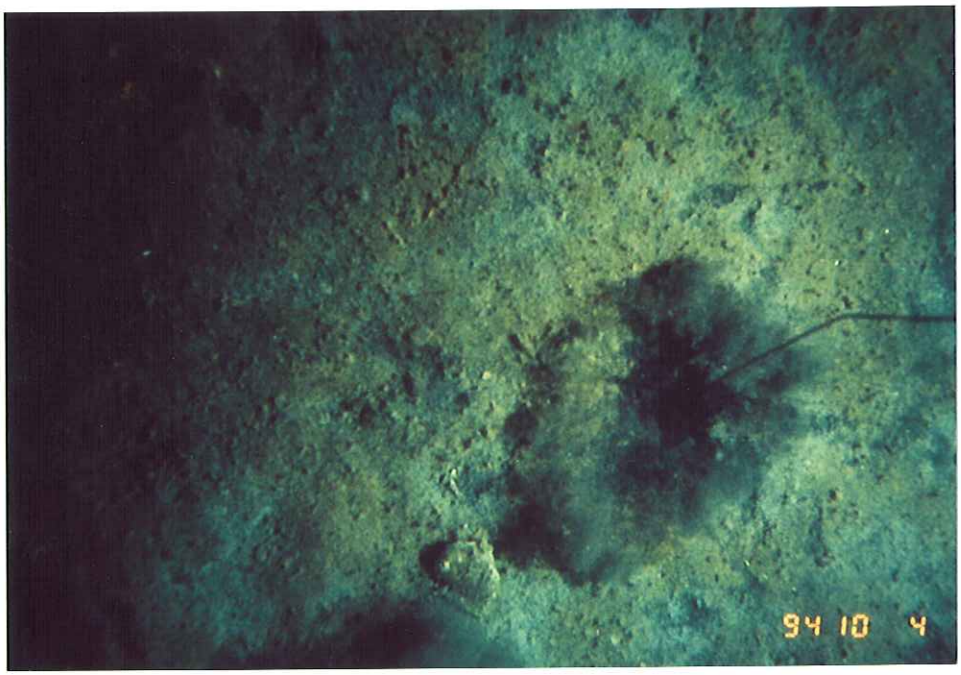
94-138-101 #3 York Harbour, Nfld., depth 30 m.



94-138-107 #3 Humber Arm, Nfld., depth 91 m.



94-138-109 #1 Humber Arm, Nfld., depth 71 m.



94-138-111 #1 Humber Arm, Nfld., depth 69 m.