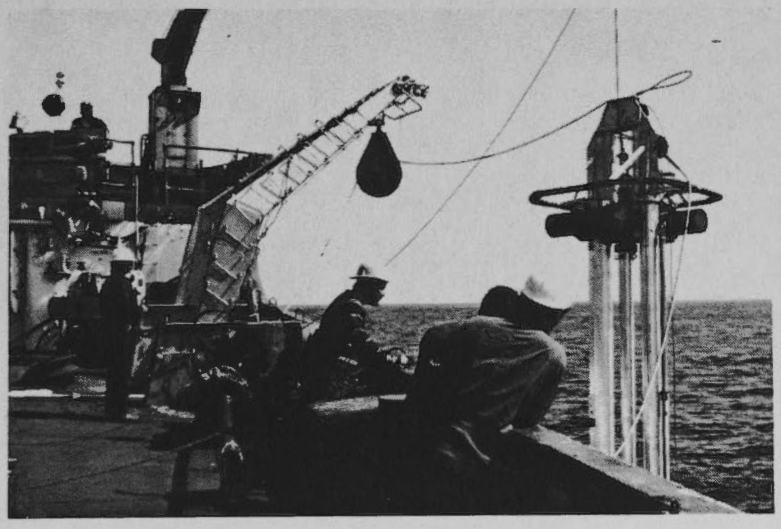
CRUISE REPORT 91-026

C.S.S. DAWSON OPERATIONS IN NEWFOUNDLAND COASTAL WATERS: LA POILE BAY TO BAY D'ESPOIR, NOTRE DAME BAY, AND BAY OF EXPLOITS

J. Shaw, H. Russell, A. Sherin, T. Atkinson



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GENERAL INFORMATION

Cruise: Dawson 91–026

Dates: 24 June - 8 July 1991

Areas of operation: 1) Southwest Newfoundland coastal waters: La Poile Bay, Connoire Bay, White Bear Bay, Bay d'Espoir, and adjacent inner shelf areas.

2) Northeast Newfoundland coastal waters: Notre Dame Bay, including the La Scie area, Tilt Cove, Betts Cove, mouth of Halls Bay, Bay of Exploits, Hamilton Sound, Funk Island area, and between Musgrave Harbour and Cape Freels.

Agency: Geological Survey of Canada
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OBJECTIVES

The objective of cruise 91-026 was to collect geological data from Newfoundland coastal waters. The surveys were concentrated in two areas:

1) the southwest coast, in particular La Poile Bay, Connoire Bay, White Bear Bay and Bay d'Espoir (Figure 1). In this region the objective was to collect data which would provide information on patterns of deglaciation and postglacial relative sea-level changes. In particular, it was hoped that vibracores collected from features previously identified as submerged outwash terraces (Forbes and Shaw, 1988) would facilitate dating of the postglacial relative sea-level lowstand.

2) the Notre Dame Bay region, including Bay of Exploits, the La Scie area, Tilt Cove, Betts Cove, Hamilton Sound and waters around Funk Island (Figure 1). This part of the cruise was funded under the Canada - Newfoundland Cooperation Agreement on Mineral Development 1990-1994. The objective was to assess the potential of this region to host marine gold placers.

ORGANIZATION

Cruise 91-026 was organised in two phases, the first of which was along the southwest coast, from La Poile Bay to Bay d'Espoir. Upon completion of this phase Dawson sailed to St. John's where a brief stop was made outside the harbour to transfer personnel. The vessel then sailed north to undertake the second phase of work, in Notre Dame Bay.

Geophysical surveys were conducted during the night, so that the vessel approached the coast and entered inlets during daylight. Samples were collected during daylight. The restrictions on overtime for the ship's crew limited sampling to 8 am to 12 noon and 1 pm to 5 pm (ship's time - ADT).

SUMMARY OF ACCOMPLISHMENTS

During cruise 91-026, four vibracores, eight piston cores, and 39 IKU samples were obtained, in addition to the acoustic data. The track lengths (in kilometres) of acoustic data (Figure 2) are as follows:

Parameter	South coast	Northeast coast	Total
Sleeve gun	265	845	1110
Huntec DTS	192	804	995
3.5 kHz	831	432	1263
Klein sidescan sonar	220	249	469

Grab samples were not collected along the south coast. Seven cores were collected - the following is a brief description:

Sample	Type	Length (m)	Objective
001	vibracore	0.42	To core topset beds of submerged deltaic deposits and collect material to date a lowstand of relative sea level
002	vibracore	0.65	To core bottomset beds in submerged deltaic deposits and collect material to date a lowstand of relative sea level
003	piston	8.77	To core glacialmarine and marine sediments and obtain datable material.
004	piston	8.81	To core glacialmarine and marine sediments and obtain datable material.
005	piston	8.66	To core glacialmarine and marine sediments and obtain datable material.
006	piston	8.63	To core stratified glacialmarine sediments which appear to interdigitate with a prominent moraine off Facheux Bay.
007	piston	8.76	To core bottomset beds of a submerged delta in White Bear Bay, and obtain material to date a lowstand of relative sea level.

In the second phase of work, off the northeast coast, three piston cores, two vibracores, and 39 IKU samples were obtained (two of the IKU samples were negligible in size; vibracoring at sample site 032 was aborted due to equipment failure). Details on the cores are as follows:

Sample	Type	Length (m)	Objective
008	piston	0.81	To core glacialmarine sediments and date glacial events in Bay of Exploits.
009	piston	5.43	To core glacialmarine sediments and date glacial events in Bay of Exploits.
010	piston	2.78	To core glacialmarine sediments and date glacial events in Bay of Exploits.
032	vibracore	0.00	To groundtruth acoustic data off La Scie - aborted due to equipment failure.
041	vibracore	1.60	To groundtruth acoustic data in Hamilton Sound.
042	vibracore	3.42	To groundtruth acoustic data in Hamilton Sound.

PRELIMINARY SCIENTIFIC RESULTS

Southwest Coast

A previous survey using C.S.S. Navicula (Forbes and Shaw, 1988) located seaward- prograded sediment bodies offshore from Connoire Bay and in La Poile Bay (North Bay and Northeast Arm). These were interpreted as submerged deltas or outwash terraces. The authors noted that similar features were present on hydrographic charts in other bays along the south coast, including White Bear Bay and La Hune. Earlier, Flint (1940) observed that on chart 2416 (CHS chart 4633) the soundings suggested "sizable deltas with the breaks of their crests of their distal slopes occurring at depths ranging between 30 and 120 feet below sea level". The locations of these features were Wolf Bay (Bay de Loup), White Bear Bay, Old Man Bay (Bay de Vieux), and La Hune Bay. In addition to the sites noted by Flint (1940), similar features occur at Hare Bay, Facheux Bay, and in Bay d'Espoir (North Bay, East Bay, and in the vicinity of St. Alban's).

Connoire Bay

At Connoire Bay only one core was collected. Because of retention problems, it is probably of little value. The deposit at this location is probably deltaic in origin, but, compared with the other sites of submerged deltas, which are within sheltered bays, it is located in a highly exposed setting. The presence of rippled gravel on the surface confirms that sediment is mobile under present conditions. Thus, the deposit has been sufficiently modified by wave action to minimise the value of a radiocarbon date, since it is difficult to accurately relate the depth of the lip of the sediment body to a particular water level .

La Poile Bay

La Poile Bay has a bedrock sill at a depth of about 40 m, and a bedrock trough landward of the sill extends down to 335 m below sea level. The acoustic data confirm what was observed on the earlier Navicula survey (Forbes and Shaw, 1988), namely that the bay contains thick deposits of stratified glacialmarine sediments, with pockets of shallow gas which obscure the acoustic stratigraphy in some places. The maximum thickness of Quaternary sediments is 160 m.

Inner shelf offshore from La Poile and Connoire Bays

Immediately offshore from La Poile and Connoire Bays there is little or no surficial sediment at the seabed, but beyond about 10 km offshore Quaternary sediments obscure bedrock. Here, stratified glacialmarine sediments average 20 m in thickness, but are thinner close to the relatively shallow (165 m) Rose Blanche Bank. They are draped over ridges of acoustically incoherent sediment, interpreted as glacial diamict or till. The ridges are up to 10 m thick and are spread approximately 1.5 km apart.

Acoustically stratified (sedimentary) bedrock in the area is located between 12 and 17 km offshore. In general, the area of Quaternary sediments offshore coincides with the areas of sedimentary bedrock.

White Bear Bay

The bedrock sill at the mouth of White Bear Bay is at a depth of about 110 m. Behind the sill the seabed drops to a depth of 260 m. Maximum sediment thickness in the bay is 256 m, at a location where the depth is 254 m, so the bedrock trough has a maximum depth of 510 m below sea level.

Airgun and 3.5 kHz data delineate thick deposits of stratified glacialmarine sediments in White Bear Bay, overlain in places by deposits of acoustically transparent sediment, up to 25 m thick. At the head of the bay, the strong reflection at the top of the (presumed) glacialmarine sediments passes upwards into the steeply dipping reflections of a submerged delta. The surface of this terrace, close to the lip, is 23 m below mean sea level. Piston core 007 was targeted to intersect prodelta sediments. Unfortunately, a piston malfunction caused 'suck-up' to occur in the core, ie. sediment was sucked into the barrel from a horizontal plane. The site will have to be cored again in order to date the formation of the delta.

Inner shelf - Ramea to Grey River

The basin between Burgeo Islands and Ramea Islands contains relatively thick (up to 45 m) deposits of well-stratified glacialmarine and marine sediments overlying bedrock.

In the area between Ramea Islands and White Bear Bay these sediments are absent - the acoustic unit exposed at the seabed has a highly reflective upper surface. Thickness is difficult to ascertain, even on airgun records, but there is some evidence that the deposits are thin and comprise glacial diamict.

The most striking features in this region are prominent moraines located at the mouth of Grey River and off Bay de Vieux - the former has a maximum thickness of 65 m. There is some indication on air gun profiles of lateral transitions from acoustically incoherent reflections to continuous coherent reflections characteristic of glacialmarine sediments. Good quality piston cores obtained in glacialmarine and marine sediments will help in reconstructing scenarios of deglaciation in this region.

Bay d' Espoir and Hermitage Bay

The sill at the mouth of Bay d'Espoir lies at a depth of 206 m. It has a bedrock core, but morainic material, mainly on the seaward side, reaches 75 m in thickness. The moraine appears to display a lateral transition to stratified glacialmarine sediments more than 50 m thick. Landward of the sill the seabed drops to a maximum depth of 774 m, forming one of the deepest basins on the Newfoundland Shelf. Stratified glacialmarine sediments here are 293 m thick, and the bedrock basin extends down to 1067 m below sea level.

A more prominent moraine off Facheux Bay is located at a depth of 119 m and has a maximum thickness of 110 m. On airgun and 3.5 kHz records (Huntec was inoperative) reflections in well-stratified glacialmarine sediments appear to be rooted within the moraine. These sediments were penetrated by core 006. Nearby, shallow gas obscures the stratigraphy in banked stratified sediments which are up to 165 m thick.

Northeast Coast (Baie Verte to Cape Freels)

The surveys in this region confirm the previous interpretation (Shaw and Wile, 1990; Shaw et al., 1990; Jenner and Shaw, 1991), that the character of the seabed varies greatly, ranging from areas of coarse wave-mobilized sediment, often impacted by icebergs, to regions of deep, quiescent muddy bottoms. Quaternary sediment thickness varies significantly, so that in some regions the seabed is largely bedrock,while elsewhere deep fiord basins contain great thicknesses (usually up to 150 m) of stratified glacialmarine sediment.

Notre Dame Bay - east of Baie Verte

In Notre Dame Bay, off the east coast of the Baie Verte Peninsula, the survey lines traverse extensive morainic deposits, up to 35 m thick. These are overlain by thin (about 5 m) draped glacialmarine deposits and an uppermost unit of variable thickness containing

weak internal reflections - this unit tends towards acoustical transparency in places. Generally the glacial diamict contains several or more internal reflections. The implications of these and of other features will, it is hoped, be revealed by closer inspection of the data.

Bay of Exploits

The Bay of Exploits contains a thick fill of stratified glacialmarine sediments, similar to that in Halls Bay (surveyed in 1990 using C.S.S. Hudson and C.S.S. Navicula). Several cores will help determine the age of these sediments. The Huntec profile collected on the traverse into the bay is disappointing - the operator lost tracking on the bottom after the vessel crossed the sill and began to cross the basin. The bedrock sill at the mouth is at a depth of 86 m and the landward basin has a maximum depth of 644 m. The well-stratified sediments are up to 183 m thick, and the deepest bedrock basin is 792 m below sea level. Crosslines showed that the sediment body is narrow - typically about 1 km wide, and is confined by the steep bedrock walls of the bay.

Tilt Cove

Detailed surveys were conducted offshore from Tilt Cove in depths of 25 to 100 m and twelve IKU samples were collected. Tilt Cove is the site of a copper mine which was closed in 1976 after 70 years of operation. This is also the region in which muddy samples collected in deep water offshore using C.S.S. Hudson (Shaw and Wile, 1990; Shaw et al., 1990) contained anomalous levels of gold.

The survey site is an irregular bedrock shelf with numerous small pockets of acoustically transparent sandy mud up to 10 m thick. The intervening bedrock ridges have a thin veneer of sand and gravel. Numerous furrows and pits show that the area is impacted by icebergs, and indeed, many grounded icebergs were observed in the vicinity. The plotted position of one such iceberg showed that it was grounded in 90 m water depth.

Betts Cove

It was intended to obtain numerous IKUs here, but due to a lack of large-scale charts, only one line was surveyed and only one sample was collected. The shallows here are bedrock; sediment, mainly gravel and sand, occurs only in a few pockets.

La Scie, north coast of Baie Verte Peninsula

Lines around La Scie confirmed the interpretation based on data from C.S.S. Navicula surveys: an outer iceberg-furrowed zone and a narrow inner rocky zone with a thin cover of mobile sediments, typically sand and gravel. Lines close to the coast to the

west of La Scie showed a thin sediment cover with iceberg furrows. Due to the lack of a suitable chart the lines were not close enough to the coast to survey the inner, mobile sediment zone observed on a C.S.S. Navicula survey in 1990.

Hamilton Sound

The survey confirmed that the Quaternary sediment cover is extremely thin in this area. The larger IKU samples showed that the coarse gravel which is typical here often forms an armoured pavement, one clast thick, over sand. Vibracores showed that sediment pockets, previously believed to consist of sand, are muddy at depth.

Funk Island region - Cape Freels to Musgrave Harbour

The Cape Freels region has several characteristics favourable for the formation of marine placers - stable Holocene relative sea levels and high wave energy. This region is offshore from the stretch of sandy coastline described by Shaw and Forbes (1990). Coastal dunes are common, unlike other parts of Newfoundland. This coastline has developed against a background of slowly rising relative sea level, in contrast to parts of the study area farther west.

The wide shallow inner shelf in this region is dominated by bedrock. Offshore the (Devonian granite?) basement rocks plunge below gently dipping Cretaceous/Tertiary strata (Fader et al., 1989) mantled by glacial and glacialmarine deposits. The sidescan sonar data show what may be the largest area of gravel ripples yet encountered offshore from Canada. While extensive, the deposits are very thin - several metres at most - and often comprise pea-sized gravel derived from local granites, mixed with shelly medium sand.

SUMMARY OF OPERATIONS

All times in Coordinated Universal Time (UT), equivalent to Atlantic Standard Time (AST) + 4 hours, or Atlantic Daylight Time (ADT)+ 3 hours.

Monday 24 June (day 175)

C.S.S. Dawson loaded for planned departure at 13:00. Sailing time is postponed until 16:00, due to non-arrival of food supplies and laundry. Ship sails at 16:15 for Connoire Bay after life boat drill, ETA 20:00. Ship's speed reduced during night due to ruptured fuel line. Weather conditions ideal: light wind (Beaufort Force 2) with coastal fog and slight swell.

Tuesday 25 June (day 176)

The 3.5 kHz Raytheon profiler is started at 15:30 in the Laurentian Channel. C.S.S. Dawson arrives off Connoire Bay at 21:30. First seismic line is started at 21:58 with Huntec, 3.5 kHz and sidescan sonar. Airgun is not deployed due to the danger of entanglement with other gear during turn in Connoire Bay. Switch from 3.5 to 12 kHz after 30 minutes due to interference on the Huntec profiles. Tow gear into Connoire Bay and traverse region seaward. At 00:30 start sleeve gun. Continue survey lines toward La Poile during night. Clear skies, light winds (Beaufort Force 2), slight swell.

Wednesday 26 June (day 177)

Tow gear during night and arrive off La Poile Bay at 08:30. Complete seismic survey of the bay and retrieve gear from water by 11:44. At 12:45 deploy vibracorer (sample 001). Encounter hydraulics problem with winch during core recovery; the anchor chain and legs of vibracorer become entangled.

Due to incorrect spooling of cable onto winch at BIO it is necessary to unspool and respool the cable under tension. This is completed in 100 fathoms of water using the Benthos head. Return to Connoire Bay and put vibracorer over the side (sample 002) at 18:30. Depart station 002 at 19:30 with 3.5 kHz operating and move to a survey area in vicinity of Ramea Islands. Commence Huntec and sleeve gun survey at 21:15 in channel west of Ramea. Weather continues fine, with clear skies, light winds (Beaufort Force 2), and a slight swell.

Thursday 27 June (day 178)

During the morning complete survey between Ramea Island and White Bear Bay. Huntec develops a water leak at 06:40; the fish is recovered and repairs begin. For the remainder of the night survey with sleeve gun and 3.5 kHz. Huntec is redeployed at 11:00 but after several minutes the leak alarm sounds. Between 13:40 and 19:30 collect three Benthos cores east of White Bear Bay (samples 003 - 005). Sample recovery for the three cores is better than 95 percent. Hydraulic problems with winch delay coring at station 005.

Dawson proceeds to mouth of White Bear Bay. At 20:52 deploy gear at mouth of bay and survey into the bay with 3.5 kHz and sleeve gun. Gear recovered in shallow water at bay head at 23:00.

After leaving the bay, Huntec is lowered to 100 metres in an attempt to remove water from the cable. Following recovery of Huntec, Dawson steams at transit speed to an area seaward of Chaleur Bay, collecting 3.5 kHz data en route. Partly cloudy conditions during the day with a moderate easterly wind (Beaufort Force 4). In the evening stratus cloud caps the hilltops outside the bays.

Friday 28 June (day 179)

Commence surveys (sleeve gun and 3.5 kHz) at 04:00 offshore from Chaleur Bay. Traverse bathymetric feature at mouth of Facheux Bay, cross Hermitage Bay, and enter outer Baie d'Espoir in foggy conditions. Finish seismic surveys in the bay at 12:14, earlier than planned so as to permit sampling at Facheux and White Bear Bays. Core seaward of morainic feature at Facheux Bay at 13:58 (sample 006). Steam to White Bear Bay, take up position on station at 18:34, and collect Benthos core (sample 007). Thick fog at the mouth of the bay - clearing inland. Started passage for St. John's at 18:45, with 3.5 kHz operating until 23:30.

Saturday 29 June (day 180)

In transit to St. John's in thick fog, intermittent rain and heavy swell. Numerous icebergs are observed on radar. ETA at St. John's 24:00 UT. Huntec operator continues to work on the Huntec fish. Dawson arrives off St. John's narrows at 00:30. D.R. Grant disembarks by ship's launch and D.L. Forbes embarks. Numerous bergs in vicinity of harbour entrance and thick, patchy fog. Dawson departs for Notre Dame Bay at 01:30. Huntec deployed for test to a depth of 80 metres. Huntec test is successful.

Sunday 30 June (day 181)

In transit for Bay of Exploits. Weather conditions deteriorate in the morning. Soon Dawson is experiencing gale force winds, driving rain and heavy seas associated with the transit of a deep low east of the Strait of Belle Isle. The decision is made not to survey in the Cape Freels area as planned, but to continue to the sheltered waters of Bay of Exploits. Sea conditions force reduction in speed while north of Fogo Island. Weather moderates slightly during run towards the southwest in Notre Dame Bay.

Monday 1 July (day 182)

Arrive at the mouth of Bay of Exploits and deploy gear at 02:30. Conduct survey along axis of the bay to Botwood. Sidescan sonar is deployed at 08:47 near the head of the bay. All gear brought onboard at 10:57 and ship moves to first sample station. Three piston cores are collected (samples 008 - 010) between 12:00 and 16:16. From 17:18 to 19:49, while returning seaward, the vessel surveys along lines transverse to the axis of the bay (sleeve gun and 3.5 kHz only). Survey gear is deployed at 20:42 in Notre Dame Bay (airgun, Huntec, 3.5 kHz). The sidescan sonar is carried suspended from the "A" frame in anticipation of deployment upon arrival at Tilt Cove. Ideal weather conditions: light winds (Beaufort force 2), no swell. Numerous icebergs observed in Notre Dame Bay.

Tuesday 2 July (day 183)

Dawson is offshore from Tilt Cove at 09:30 and begins surveying closely spaced lines, with sidescan sonar deployed in addition to the other acoustic systems. Shore parallel survey lines are spaced at 400 metre intervals and sidescan sonar range is set at 200 metres. The sleeve gun is turned off as the vessel approaches fishing nets close to the coast. Following the survey three IKU samples are collected (samples 011 - 013) in 40 to 77 metres of water. Broken hydraulic hose results in IKU being on the bottom at station 013 for one hour. Weather is fine; numerous icebergs are observed, some apparently grounded off Tilt Cove.

Upon completion of sampling, Dawson steams into Green Bay and sleeve gun is deployed at 22:07 while abeam of Stacking Harbour. Upon completion of a short crossline the survey continues into Notre Dame Bay along the axis of Green Bay. For 30 minutes the vessel follows an incorrect course, taking it away from the axis of the bay with its thick package of Quaternary sediments and onto the relatively shallow bedrock flanks. Huntec is deployed at 23:00.

Wednesday 3 July (day 184)

Dawson runs a pattern of lines in Notre Dame Bay during the night, moving eastward then northward. Gear is retrieved at 13:46 just offshore from Betts Cove. Twelve IKU samples are collected, beginning with one at Betts Cove. Dawson steams northward to deploy gear on Thursday morning. Perfect weather continues: light winds (Beaufort force 0 to 3), calm seas, good visibility. Icebergs are numerous, especially in the vicinity of Gull Island where many appear to be grounded.

Thursday 4 July (day 185)

Huntec and sleeve gun are deployed at 00:21. During the night the mate reduces speed so as not to arrive inshore before full light conditions. Sidescan sonar is deployed at 08:30. The vessel continues on a course along the coast, from La Scie towards Mings Bight. Due to late arrival at La Scie the survey is terminated shortly after passing Confusion Bay. Gear is aboard at 12:11.

Six IKU samples are collected in the vicinity of La Scie (samples 026 - 031), followed by an aborted attempt to collect a vibracore (sample 032). A sidescan sonar survey is conducted during the crew's lunchtime, from 15:12 to 16:15. Two IKU samples (033, 034) are collected between 17:00 and 18:10. A final sample (035) is obtained just before 20:00, from the surface of a moraine near Gull Island.

Dawson steams out to sea and gear is deployed at 22:06 (sleeve gun and Huntec). At 23:33 scientific party are asked to bring the gear onboard due to proximity of loose

pack ice. Captain decides to leave Notre Dame Bay area for region east of Fogo Island due to ice hazard. Weather conditions ideal: overcast to broken cloud, light winds (Beaufort force 0 to 3) with slight swell. Numerous icebergs observed during the day.

Friday 5 July (day 186)

Seismic equipment is deployed at 01:00 north of Fogo Island. Dawson runs east along 50^0 north until north of Funk Islands. Gear retrieved at 11:20 and course is set for Deadman's Bay area. Sidescan and sleeve gun survey starts at 14:29. Huntec is deployed at 20:16. During the night a line is surveyed eastward from the Deadman's Bay area, northward inside Funk Island, then towards Fogo Island and Hamilton Sound. Weather is fine: partly cloudy, light winds, slight sea. Large numbers of icebergs are observed in this region, many grounded in shallow areas.

Saturday 6 July (day 187)

Just after 06:50 an uncharted rock pinnacle is identified on the 3.5 kHz in the path of the sidescan fish. The fish is at 82 metres depth. It is being raised at just over 5 metres per minute, and has cleared several pinnacles at depths of 87 m and 85 m respectively, when it collides with the side of a pinnacle which rises to within 47 m of the sea surface. The fish is at a depth of 65 m at impact; it has risen 17 metres since the start of retrieval. The impact with the bottom breaks the fish into several pieces. The nose cone assembly is lost but the body with transducers and K wing depressor are recovered.

The survey continues into Hamilton Sound and the gear is retrieved at 12:25. Between 13:11 and 14:37 five IKU samples are collected (samples 036 - 040). Two vibracores are collected between 16:31 and 18:22 (samples 041 and 042). Sampling for the day ends at 19:43 with a final IKU (sample 043). During the evening the ship steams northeastward towards a position north of Funk Island.

Sunday 7 July (day 188)

The seismic gear is deployed at 00:04. During the 7:00 to 11:00 watch an air leak occurs in the sleeve gun. The gun is brought on board and a Bolt 600 airgun is deployed. An hour later a leak also develops in this gun and it is retrieved. The Bolt gun is repaired and redeployed. The seismic equipment is retrieved at 11:49. Starting at 12:57, nine IKU samples (samples 044 - 052) are collected off Deadman's Bay.

Dawson departs survey area en route for St. John's at 17:50. The 3.5 kHz is maintained in operation for several hours while steaming across Bonavista Bay.

Monday 8 July (day 189)

Dawson enters St. John's Harbour and receives docking instructions for pier

number two in the container port. The ship docks at 12:00. The morning is spent awaiting information concerning unloading the ship, the problem being that the wharf is unionised. Shaw and Atkinson meet with DFO officials. At 14:00 news arrives that the scientific equipment can be discharged. A five-ton truck, left at Coastguard Headquarters by Program Support personnel several days earlier, is loaded during the afternoon. The surplus load, mainly the vibracorer equipment, is loaded onto a flatbed truck and shipped to Halifax.

Shaw postpones departure time for most of the personnel. MacLean leaves for Halifax on AC-1895 at 18:00. The majority of scientific staff fly to Halifax on AC-1897 departing at 20:00. Forbes flies to Stephenville. Shaw and Jodrey depart in the truck for Port aux Basques at 18:45. The vehicle is weighed on scales just outside St. John's and is allowed to continue.

Tuesday 9 July (day 190)

Russell flies to Halifax. Shaw and Jodrey leave Port aux Basques on the ferry M.V. Caribou at 11:00. In the afternoon the truck is weighed on scales at the Canso Causeway, found to be overweight, and a summons is issued to Jodrey. The journey is resumed upon payment of a special fee ($50). Shaw and Jodrey arrive at B.I.O. at 22:30.

TECHNICAL SUMMARY

Navigation

The ship's position was provided by one of two electronic navigational systems or, when close to shore, by radar fixes. When positioned by radar, the ship's position was still available as GPS latitudes and longitudes, but often the position on a nautical chart differed from that obtained by radar. All navigational information was obtained from the ship's bridge and transferred electronically to the lower lab.

The ship's position was obtained electronically by a Northstar Loran/GPS 800 and/or a Racal– Decca Loran C–1028. During surveys the position fixes from the Northstar system were logged at one minute intervals on the micro–VAX. These data were obtained from the Northstar by the ISAH (Integrated System For Automated Hydrography) system installed on the bridge, and routed via a RS232C connection to the VAX. When running seismic lines these data were displayed on a remote terminal in the upper laboratory; in addition, a hard copy was generated on a serial printer. The Racal–Decca positions were displayed via digital repeaters in both laboratories.

While working along the south coast of Newfoundland the LORAN 5930 chain was used. TD lines were available only on chart 4015 and as a result the ship was positioned

by radar fixes when operating with the larger scale charts. On the northeast coast the 7930 chain was utilised.

The Northstar GPS 800 system is a combined Loran C/GPS receiver. The position obtained by this system is generated from Loran C TDs with a correction applied using data from GPS. The GPS datum is NAD 83, which at a scale of 1:350,000 coincides with the NAD 27 datum. ISAH had a dual function: as a link between the VAX and the Northstar GPS system, and as a bridge display for running seismic lines and sample station positioning.

On many charts of Newfoundland coastal waters there is divergence in the latitudinal/longitudinal positions indicated and those obtained by electronic navigation. A comparison of CHS charts for the south coast with GPS data indicates a disparity of up to one–third of a nautical mile (for example, in the vicinity of Ramea Islands and White Bear Bay, chart 4633). Similar problems on the northeast coast were reported by Shaw et al. (1990).

Sidescan sonar

The Klein 595 system was used, comprising a Klein dual frequency, 100 and 500 kHz, 422S–101 HF fish and a Klein 710 thermal printer. The Klein transducers operated at a firing rate of 350 ms. Several different ranges were used (200 m,100 m) and the scale lines on the records were placed 15 m apart. The system was calibrated at various times to provide zero scale distortion at ship's speeds of 4, 4.1 and 4.8 knots. Record annotation was provided at five minute intervals by the Klein system independently of the TSS. In addition to the hard copy, data were stored on channels seven to twelve of the KR 5000 tape recorder.

Deployment of the sidescan was achieved using the stern gantry of the ship and an electrically powered hydraulic winch. The winch could be operated either manually at the stern of the vessel or remotely from the upper lab.

Damage to the sidescan sonar system

The sidescan sonar was deployed without incident until Saturday 6 July (day 187) when it collided with the bottom off Fogo Island during the 4 am shift change. Along the survey line the fish was being operated in average water depths of 110 m. At approximately 06:52 a rock pinnacle was identified on the 3.5 kHz in the path of the sidescan fish. The fish was at 82 metres depth. It was being raised at just over 5 metres per minute, and had cleared several pinnacles at depths of 87 m and 85 m, respectively, when it collided at 06:56 with the side of an uncharted pinnacle which rose to within 47 m of the sea surface. The fish was at a depth of 65 m at impact; it had risen 17 metres since the start of retrieval. The impact with the bottom broke the fish into several pieces. The

nose cone assembly was lost but the body with transducers and K wing depressor were recovered.

The lack of adequate soundings in the area of operations is one of the factors which contributed to the accident. The chart being used was 4520, an old chart based on British Admiralty surveys to 1905, at a scale of 1:286 000 and. The soundings surrounding the impact site average 88 m, so the fish collided with an anomalously shallow (47 m) part of the seabed. It could be argued that the sidescan sonar should not be deployed except where recent, large-scale charts exist. Unfortunately, this would rule out work in many areas around Newfoundland.

Contributory causes of the accident may have been: 1) the higher speed of the vessel at the time (5.2 - 5.4 knots) which would have meant that more cable than usual was out (the speed was partially dictated by constraints on overtime for the ship's crew); 2) the possibility that the joystick control in the laboratory raised the fish at a slower rate than the quarterdeck controls.

Huntec DTS

The Huntec Deep Tow System (DTS) was operated in conjunction with an IKB Technologies Computerised Acoustic Reflectivity Module (C–Arm). The AGC number three tow fish was used with a NSRF LT–10 hydrophone. The system was operated with a 540 joule power source at 4 Kv. The return signal was filtered using a low band filter adjustable from 500 to 1200 kHz. The Huntec Boomer was triggered at 750 msec intervals.

Hard copy output was to one of three EPC recorders, at print speeds of 250 msec and variable paper rates. Vertical scale marks are provided at 10 msec spacings which correspond to 7.5 metres. The internal geophone was sent to an EPC 4100 recorder while the external geophone was recorded on an EPC 320S and an EPC 4800 graphic recorder. Backup tape storage was provided by channels 4 to 6 of the TEAC XR 5000 recorder. The TSS provided annotation on the Huntec record at ten minute intervals.

Operational problems

Huntec was out of operation from 04:40 Thursday 27 June until 02:30 Sunday 30 June (Friday night and Saturday were travel time). The initial problem appeared to be water in the junction box. A high voltage arc destroyed the high voltage cable and signal cables in the tow cable sub-assembly. The cable jacket had split 15 cm below the mechanical termination. The delay in repairing the damage may have been compounded by conflicting wiring diagrams available to the operator. The operations report submitted by Seakem Oceanography (who provide Huntec operators under contract) recommends that correct and updated versions of cable wiring diagrams should be provided on cruises.

The Huntec system performed flawlessly during the remainder of the trip. The recorders produce large amounts of atmospheric carbon. Several staff objected strongly this, and it is recommended that a ventilation system be installed on future cruises.

Air-guns

Two air-guns were used: a 40 cubic inch Texas Instruments sleeve-gun (which provided the bulk of the data) or a Bolt 600 air-gun. The guns were fired at a pressure of 1500 psi from a compressor with a 45 cubic foot per minute capacity. The return signal was recorded within the frequency spectrum of 150 Hz to 3 kHz. Output was to an EPC 3200S graphic recorder at 100 lines per inch and half or one second sweep speeds. Vertical scale lines are at 0.1 msec spacings and timing marks are displayed at ten minute intervals. In deep water, a print delay of 500 msec was incorporated using the EPC recorder controls. Data were also printed in tandem with the Huntec record on an EPC 4800 graphic recorder. Backup storage was provided by channel 2 and 3 of the XR 5000. The TSS provided annotation on the records at ten minute intervals.

The sleeve gun was fired by one of three techniques: as a slave to the Huntec, as a slave to the Huntec using the TSS to introduce an 80 msec trigger delay; or by the Seismic Firing Unit MK II, when the Huntec was not in use. When slaved to the Huntec, the firing rate was 4.5 seconds, otherwise it was three seconds.

3.5 and 12 kHz acoustic systems

The 12 kHz Raytheon provided bathymetric data while the ORE 3.5 kHz provided bathymetry and a sub–bottom profile. The 3.5 kHz had a 2.5 Kw power source and a 1 msec pulse width. Outputs of the two systems were printed on Raytheon recorders at 1 sec sweep speeds and a paper rate of 200 lines per inch. Scale lines were provided at 36 m intervals. Backup data storage was not provided on the XR 5000. The TSS provided annotation on the 3.5 kHz record at ten minute intervals. Where depths obtained from the 3.5 kHz are reported, 5 m has been added to allow for the depth of the transducer below the hull.

Seistec System

An IKB Technologies Seistec receiver with Huntec Boomer was carried on deck. This system was mounted on a wooden catamaran and could be launched by the ships crane. The power source was an ORE Geopulse 5420–A system with a ORE Geopulse 5210–A receiver. The system had an operational frequency spectrum of 300 Hz to 3 kHz. This system was not deployed during the survey.

Vibracorer

The vibracorer, fabricated by Brook Ocean Technology, was used for the first time on the preceding cruise (91-018, G. Fader Senior Scientist). The frame of the corer was approximately 6 metres high while the core barrel length was 4.6 m (15 ft). A ten foot barrel had been used on the previous cruise. The System was operated remotely from the surface. The maximum depth of deployment was 100 m using a 4:1 scope for the power cable.

Power for the corer was provided by two 2 hp electric motors with counter weights. The barrel assembly and attached motors were spring-mounted. This arrangement produced a hammering effect when the core barrel was vibrating vertically. The barrel was retracted from the sediment using a 5 hp electric winch and a wire cable. The core barrel contained a plastic sleeve and a finger-style core catcher. The sleeve and catcher were retained in place by a threaded metal cutting edge.

Vibracorer performance

The winch retract clutch was not working: slack cable was lashed to the guide tubes to facilitate extension with the retract winch engaged. The extensionometer did not work. At one location the core barrel, once lowered, could not be pulled out by five people. Eventually a crane had to be used.

At the first sampling site, on a sandy terrace in La Poile Bay, the apparent penetration was 2.0 m but recovery was a disappointing 0.37 m of coarse sand. The corer legs snagged the anchor chain of the ship - this delay ended any hopes of collecting a piston core in the glacialmarine sediments in the bay.

At Connoire Bay the sediments at the target site appeared transparent on the acoustic records, suggesting they were fine grained - a good target for vibracoring. Here, however, the vibracore was also disappointingly short - only 0.33 m with a penetration of 2.0 m. There was evidence of core loss during recovery - some fingers on the basket retainer were bent outwards and there was a hole down the middle of the core - the latter consisted of very fine sand). In subsequent operations stiffer catchers were used - they were wrapped in nylon socks to improve their retaining capacity.

Given these poor results, a decision was made not to attempt a vibracore at White Bear Bay but rather to concentrate on collecting a piston core from the fine-grained sediments immediately seaward of the deltaic deposits. The next attempt to vibracore - offshore from La Scie - was a failure. The motors on the vibracorer failed to work. They were disassembled and repaired. Vibracoring in Hamilton Sound, however, was successful. The first core was 1.5 m long with a penetration of 1.8 m; the second and final core had a length of 3.5 m. At both sites the target appeared transparent on acoustic records and the cores appeared to consist largely of sandy mud.

General comments and recommendations

Clearly the retention of cores is an aspect of the vibracorer system which should be examined. Perhaps core barrels with one-way valve/split pistons could be used, and the catchers could be redesigned. With the present vertical operating system the vibracorer is subject to continuous stress and vibration during transit, especially in bad weather. Also, because it stands upright, ships crew are needed to dismantle the vibracorer. This cuts down on the amount of sampling time.

With the present operating method a technician is required to climb a ladder, manoeuver under the protective tubing, and perch at the top of the vibracorer to insert or remove the core barrel. This practice is judged to be hazardous, especially when operating in a heavy swell.

Given these drawbacks a horizontal deployment and core handling system would be safer and more convenient. It is also recommended that the extensionometer be repaired, the software modified, the winch replaced and the engaging gear redesigned.

Benthos piston corer

The Benthos piston corer worked flawlessly. At most sites penetration was complete using 30 ft (9.1 m) barrels; core retention was excellent. Perhaps thought should be given as to how modifications in handling techniques might enable the Dawson replacement vessel to handle 40 ft barrels.

IKU sampler

This was a smaller version of the original IKU sampler and was built at AGC. It was deployed from the gallows on the starboard side of the vessel and was moved to and from its storage location on the deck using the fo'c'sle crane. It worked well, and generally returned large volume samples. In gravelly sediments the sampler was able to penetrate the surficial lag and recover sediments from the subsurface. In fine sediments sufficient volumes were obtained to allow subsampling with push cores.

AGC WATCH SCHEDULE

The rigid enforcement of the ship's personnel overtime ban meant that overtime by AGC staff was also limited. If the crew had worked overtime, important sampling data could have been obtained but only for a short time until the AGC overtime constraint took effect. The watch schedule was as follows:

0-4	McDonald, Atkinson, Pape
4-8	McDonald, Wile, Russell
8-12	Frobel, MacLean, Jodrey
12-16	Atkinson, Jodrey, Pape, Grant
16-20	Wile, Russell
20-24	McDonald, Frobel, MacLean

IMPACT OF FINANCIAL CONSTRAINTS WITHIN SHIPS DIVISION

The financial constraints within Ships Division had an impact on operations during the cruise. In informal conversations with ship's personnel it appeared that hydraulic lines to winches, gallows etc. had not been maintained as in the past. Hydraulic lines burst violently five times during sampling operations. One rupture of a hydraulic line occurred with the IKU on the bottom a hundred metres or so away from systems of cod traps. Hydraulic fluid was spread on the sea in an area of intense fishing activity.

During the cruise the deck crew worked from 08:00 until 17:00, with one hour for lunch and two coffee breaks. No operation was commenced which possibly might have extended past 17:00. Anything in progress at 17:00 was to be stopped. The following examples illustrate the effects of this restriction:

1) Ships Division decided that the ship would not depart on Sunday as previously agreed. On Monday Dawson left Dartmouth five hours late. Combined with overtime restrictions, this resulted in no coring being attempted on our first day of operations; coring in two areas had to be done during the second day.

2) Dawson arrived at La Poile Bay in the morning and vibracoring commenced. There was a delay when the feet of the vibracorer snagged the ship's anchor chain. Two important piston cores needed to be collected but the vessel had to proceed to Connoire Bay (one hour's steam away) to collect a vibracore there before 17:00.

3) Dawson completed a line at the head of White Bear Bay at approximately 19:30. An important core target could not be attempted. Dawson steamed east for four hours to a point where gear was deployed. Next morning, lines in Bay d'Espoir were terminated early, and a core was collected before steaming for four hours back to White Bear Bay to collect a core there before 17:00. In this example, to avoid one hour's overtime for two crew members the vessel steamed at full speed for four hours during valuable sampling time.

3) On the last day of the cruise sampling was terminated at 15:00 so that the crew could have the gear stowed for the journey home by 17:00.

In general, these restrictions resulted in a loss of survey data, cores, and samples. Other factors compounded the situation: working in coastal areas it was necessary to begin lines close to the coast after daylight; usually surveys finished several hours after 08:00, cutting into valuable sampling time. It is estimated that if three deck crew had been allowed to have two hours overtime on 10 days, we would have collected (at least) an additional four vibracores, four piston cores, and 24 IKU samples, as well as extra survey data. This represents 25% of the data collected.

WEATHER AND ICE CONDITIONS

Weather was good except for Sunday 30th June when a low pressure system moved along a trajectory to the north of the ship, generating gale-force westerlies. Plans were altered and Dawson continued through the storm; surveys were commenced in Bay of Exploits.

During the first week of the cruise, heavy pack ice was reported in the Strait of Belle Isle, around Baie Verte Peninsula, the Cape Freels area, and Bonavista Bay. By the second week, when surveys began in the Notre Dame area, most of the ice was gone. Unfortunately, pack ice drifting down from the Strait of Belle Isle forced the termination of surveys in Notre Dame Bay on the evening of Thursday 4 July.

Icebergs were observed visually and on radar once the vessel rounded Cape Race. They were numerous - close to a hundred were seen on radar at one time. They were especially common around Gull Island, where many were grounded, and offshore from Deadman's Bay, in the Funk Island area. They interfered little with operations.

CHARTS

In general, navigation charts are inadequate for research in coastal waters around Newfoundland. On the northeast coast chart 4520 was used. This is an an old chart with incorrectly positioned land in many areas - especially the north coast of Baie Verte Peninsula. In the Betts Cove area numerous IKUs were planned but we only collected one - the vessel had to approach the coast carefully on one line only, due to a lack of large scale charts. Poor charts also played a role in the damage to the sidescan off Fogo Island.

The charts used are the following:

Southwest coast

4015 Sydney to Saint-Pierre, January 1987 edition, scale 1: 350,000 at latitude 48° 00' N.
Comments: this large scale-chart was used to plan offshore tracks. It contains bathymetric details lacking in older charts in the region (see below).

4633 Ramea Islands to Bonne Bay. Reproduction of U.S.N.O.O. chart 2416, April 1943 edition; from British surveys between 1872 and 1885; scale 1: 75,000 at latitude 47° 35' N.
Comments: this is an old chart, useful for coastal surveys but lacking detailed soundings and isobaths offshore.

4634 La Poile Bay to Ramea Islands. Reproduction of U.S.N.O.O. chart 2417, August 1946 edition; from British surveys between 1861 and 1899; scale 1: 75,000 at latitude 47° 35' N.
Comments: as for chart 4633.

4635 Cape Ray to La Poile Bay. Reproduction of U.S.N.O.O. chart 2418, June 1942 edition; from British surveys between 1860 and 1891; scale 1: 75,000 at latitude 47° 35' N.
Comments: this chart was used to navigate on the approach to La Poile Bay. Within the latter it is almost identical to chart 4634. Again, detailed bathymetry is lacking offshore.

4644 Bay d'Espoir and Hermitage Bay, edition 12, March 1987; scale 1: 50,000 at latitude 47° 43.5' N.
Comments: this is an excellent modern chart, highly suitable for coastal surveys.

Charts 15074-A, 15076-A, and 15078-A in the National Resource series were used to assist with track planning. Despite their small scale (1: 250, 000) they contain bathymetric detail often lacking on other charts.

Northeast coast

4520 Orange Bay to Cape Bonavista, 1983 edition, scale 1: 286,000 at latitude 49° 40' N. Reproduction of U.S.O.O. Chart No. 1101. From surveys to 1905 with additions from other sources.
Comments: longitudes are incorrect on this chart, particularly in the Baie Verte area.

4522 Approaches to Tilt Cove and La Scie Harbour; edition 37, September 1987, various scales.
Comments: these are modern charts, of great value when surveying close to the coast.

4530 Hamilton Sound (Eastern Portion); edition 3, March 1983, scale 1:40,000 at latitude 49° 40' N.
Comment: this is another modern, and hence extremely valuable, chart.

4560 Indian Bay to Wadham Islands; edition March 1986, scale 1:75,000 at latitude 49° 20' N.
Comments: a modern chart, surveyed 1956-62.

4595 Bay of Exploits, Sheet I (North). Reproduction of former British Admiralty Chart 3406. Surveyed in 1881, 1902; edition 38, September 1983, scale 1: 24,500. Comment: latitudes and longitudes are incorrect.

4596 Bay of Exploits, Sheet II (Middle). Reproduction of former British Admiralty Chart 3433. Surveyed in 1902-3; edition January 1981, scale 1: 24,600.
Comment: latitudes and longitudes are incorrect.

4597 Bay of Exploits, Sheet III (South). Reproduction of former British Admiralty Chart 3434. Surveyed in 1903; edition 48, November 1973, scale 1: 24,600 at latitude 46°10' N.
Comment: latitudes and longitudes are incorrect. A modern chart (4524) exists for Botwood Harbour, but the ship's track was outside the charted area.

4588 Bay of Exploits, Sheet IV (Northeast). Reproduction of former British Admiralty Chart 3482. Surveyed in 1881, 1904-5, 1908-9; edition January 1983, scale 1: 24,650.
Comments: latitudes and longitudes are incorrect.

ACKNOWLEDGMENTS

We thank Captain F. Berchem and the officers and crew of C.S.S. Dawson for their cooperation during the cruise. Drafts of this report were reviewed by G.B. Fader and K. A. Edwardson.

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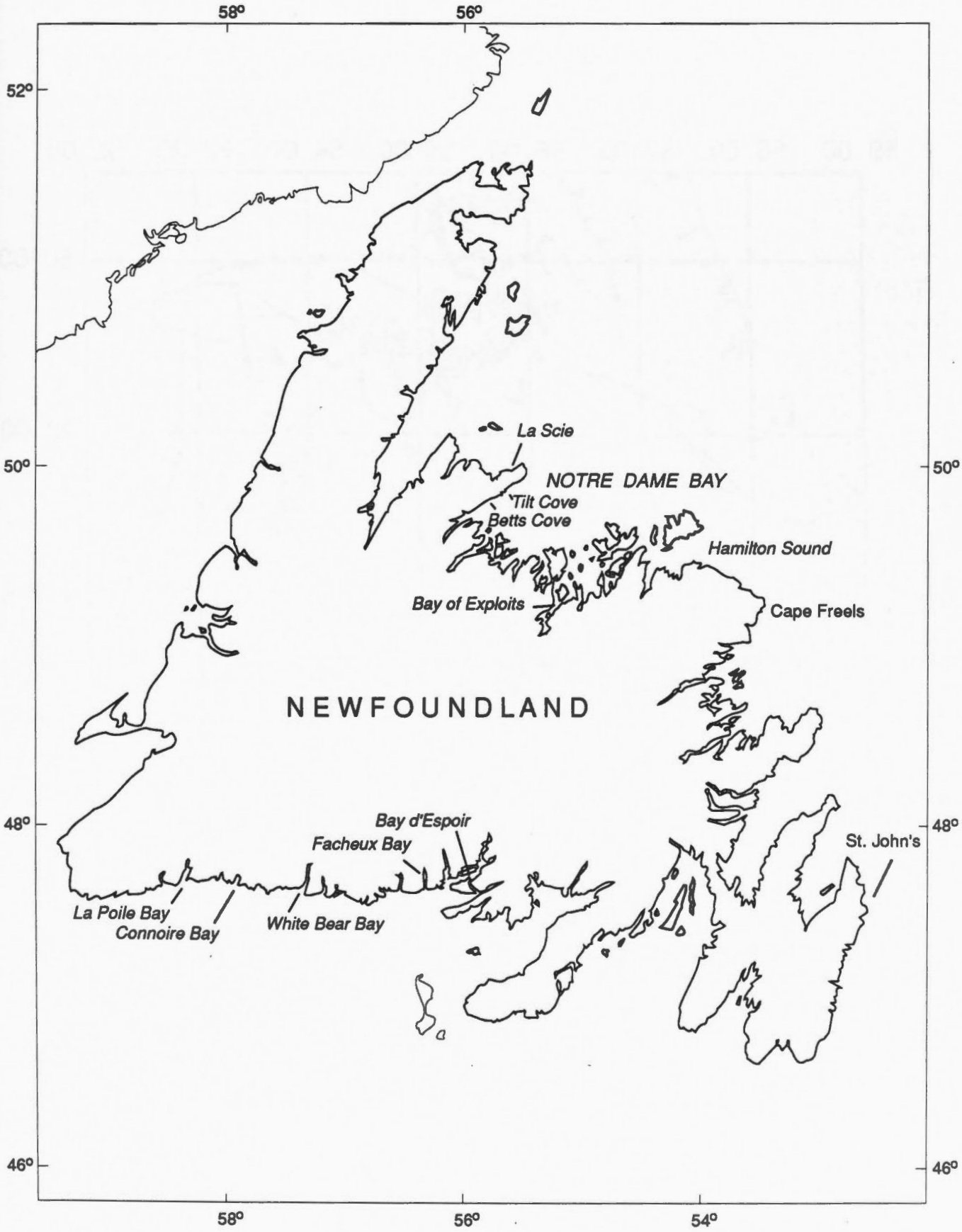

Figure 1: Location of survey areas, cruise 91-026.

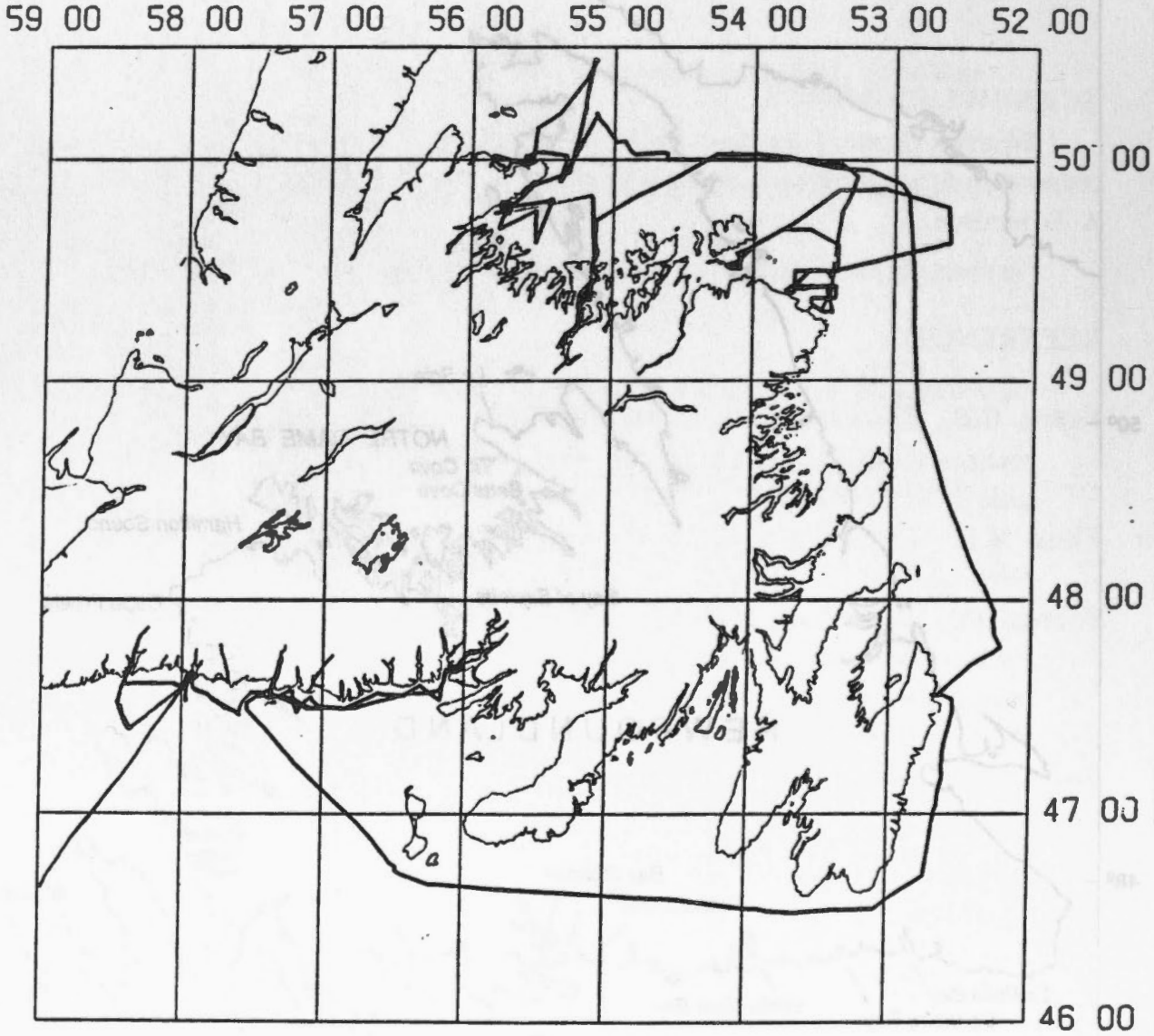

Figure 2: Tracks of cruise 91-026, C.S.S. Dawson.

Appendix 1

Data Tables

ATLANTIC GEOSCIENCE CENTRE
DATA SECTION
-SHIP- REPORTING PACKAGE

TABLE 1

TOTAL SAMPLE INVENTORY

CRUISE NUMBER = 91026
CHIEF SCIENTIST = DR. JOHN SHAW
PROJECT NUMBER = 900032

SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DAY/TIME	SEISMIC DAY/TIME	LATITUDE	LONGITUDE	DEPTH (M)	GEOGRAPHIC LOCATION
001	CORE	1771248	1771040	47 44.60N	58 20.02W	19.00	HEAD OF LA POILE BAY SOUTH COAST NEWFOUNDLAND
002	CORE	1771830	1770005	47 38.15N	57 56.53W	78.6	OFF CONNOIRE BAY SOUTH COAST NEWFOUNDLAND
003	CORE	1781345	1780135	47 31.10N	57 12.19W	224	EAST OF RAMEA ISLANDS SOUTH COAST NEWFOUNDLAND
004	CORE	1781617	1770630	47 30.89N	57 08.69W	236	EAST OF RAMEA ISLANDS SOUTH COAST NEWFOUNDLAND
005	CORE	1781730	1780305	47 29.98N	57 05.53W	234	EAST OF RAMEA ISLANDS SOUTH COAST NEWFOUNDLAND
006	CORE	1791353	1790555	47 34.23N	56 23.82W	215.8	OFF FACHEUX BAY SOUTH COAST NEWFOUNDLAND
007	CORE	1791834	1782222	47 40.72N	57 19.03W	190	WHITE BEAR BAY NEAR TERRACE SOUTH COAST NEWFOUNDLAND
008	CORE	1821214	1820821	49 16.22N	55 13.15W	194	BAY OF EXPLOITS NORTHEAST NEWFOUNDLAND
009	CORE	1821350	1821050	49 11.85N	55 19.11W	76.81	BAY OF EXPLOITS NORTHEAST NEWFOUNDLAND
010	CORE	1821500	1820816	49 16.54N	55 13.24W	207	BAY OF EXPLOITS NORTHEAST NEWFOUNDLAND
011	IKU	1831659	1831241	49 59.29N	55 36.15W	77	TILT COVE NORTHEAST NEWFOUNDLAND
012	IKU	1831800	1831425	49 52.56N	55 37.28W	42	TILT COVE NORTHEAST NEWFOUNDLAND
013	IKU	1831848	1831341	49 52.09N	55 37.21W	77	TILT COVE NORTHEAST NEWFOUNDLAND
014	IKU	1841415	1841307	49 48.40N	55 46.27W	65.8	BETT'S COVE NORTHEAST NEWFOUNDLAND
015	IKU	1841430	1841307	49 48.40N	55 46.26W	65.8	BETT'S COVE NORTHEAST NEWFOUNDLAND
016	IKU	1841438	1841307	49 48.41N	55 46.27W	65.8	BETT'S COVE NORTHEAST NEWFOUNDLAND

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017	IKU	1841609	1831002	49 52.15N	55 34.78W	77.00	TILT COVE NORTHEAST NEWFOUNDLAND
018	IKU	1841616	1841002	49 52.08N	55 34.88W	79.00	TILT COVE NORTHEAST NEWFOUNDLAND
019	IKU	1841622	1831002	49 52.10N	55 34.87W	79.00	TILT COVE NORTHEAST NEWFOUNDLAND
020	IKU	1841644	1831337	49 52.25N	55 37.05W	44.00	TILT COVE NORTHEAST NEWFOUNDLAND
021	IKU	1841707	1831247	49 52.77N	55 35.69W	47.00	TILT COVE NORTHEAST NEWFOUNDLAND
022	IKU	1841750	1831225	49 51.67N	55 37.99W	58.50	TILT COVE NORTHEAST NEWFOUNDLAND
023	IKU	1841837	1831225	49 51.50N	55 37.76W	62.00	TILT COVE NORTHEAST NEWFOUNDLAND
024	IKU	1841904	1831310	49 53.47N	55 34.60W	61.4	TILT COVE NORTHEAST NEWFOUNDLAND
025	IKU	1841939	1831438	49 52.14N	55 35.89W	68.00	TILT COVE NORTHEAST NEWFOUNDLAND
026	IKU	1851325	1850952	49 58.60N	55 37.27W	66.00	LA SCIE HARBOUR NORTHEAST NEWFOUNDLAND
027	IKU	1851345	1850935	49 59.44N	55 36.35W	76.80	LA SCIE HARBOUR NORTHEAST NEWFOUNDLAND
028	IKU	1851407	1850935	49 59.53N	55 36.11W	66.00	LA SCIE HARBOUR NORTHEAST NEWFOUNDLAND
029	IKU	1851412	1850935	49 59.54N	55 35.96W	75.00	LA SCIE HARBOUR NORTHEAST NEWFOUNDLAND
030	IKU	1851426	1850941	49 59.51N	55 36.03W	73.00	LA SCIE HARBOUR NORTHEAST NEWFOUNDLAND
031	IKU	1851440	1850955	49 59.19N	55 36.61W	76.80	LA SCIE HARBOUR NORTHEAST NEWFOUNDLAND
032	CORE	1851705	1851520	49 58.93N	55 37.75W	82.5	NEAR LA SCIE HARBOUR NORTHEAST NEWFOUNDLAND

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SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DAY/TIME	SEISMIC DAY/TIME	LATITUDE	LONGITUDE	DEPTH (M)	GEOGRAPHIC LOCATION
033	IKU	1851801	1851603	50 00.10N	55 36.18W	108.0	LA SCIE HARBOUR NORTHEAST NEWFOUNDLAND
034	IKU	1851812	1851612	50 00.63N	55 36.47W	117.0	LA SCIE HARBOUR NORTHEAST NEWFOUNDLAND
035	IKU	1851947	1690655	49 54.29N	55 22.42W	228.0	GULL ISLAND NORTHEAST NEWFOUNDLAND
036	IKU	1871312	1871121	49 31.45N	54 11.53W	20.00	HAMILTON SOUND NORTHEAST NEWFOUNDLAND
037	IKU	1871325	1871118	49 31.32N	54 11.51W	25.60	HAMILTON SOUND NORTHEAST NEWFOUNDLAND
038	IKU	1871354	1871059	49 30.56N	54 09.10W	55.00	HAMILTON SOUND NORTHEAST NEWFOUNDLAND
039	IKU	1871432	1871158	49 31.48N	54 07.64W	40.00	HAMILTON SOUND NORTHEAST NEWFOUNDLAND
040	IKU	1871437	1871158	49 31.48N	54 07.66W	40.00	HAMILTON SOUND NORTHEAST NEWFOUNDLAND
041	CORE	1871631	1870837	49 36.79N	53 59.41W	68.00	HAMILTON SOUND NORTHEAST NEWFOUNDLAND
042	CORE	1871822	1871059	49 30.69N	54 09.08W	55.00	HAMILTON SOUND NORTHEAST NEWFOUNDLAND
043	IKU	1871943	1871210	49 32.04N	54 06.73W	51.00	HAMILTON SOUND NORTHEAST NEWFOUNDLAND
044	IKU	1881257	1870153	49 29.91N	53 26.93W	293.0	S.E. OF FOGO ISLAND NORTHEAST NEWFOUNDLAND
045	IKU	1881353	1870044	49 29.88N	53 35.45W	62.20	FUNK ISLAND AREA NORTHEAST NEWFOUNDLAND
046	IKU	1881404	1870041	49 29.96N	53 35.59W	62.20	FUNK ISLAND AREA NORTHEAST NEWFOUNDLAND
047	IKU	1881445	1862258	49 25.40N	53 42.34W	38.40	FUNK ISLAND AREA NORTHEAST NEWFOUNDLAND

ATLANTIC GEOSCIENCE CENTRE
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TABLE 1

TOTAL SAMPLE INVENTORY

CRUISE NUMBER - 91026
CHIEF SCIENTIST - DR. JOHN SHAW
PROJECT NUMBER - 900032

SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DAY/TIME	SEISMIC DAY/TIME	LATITUDE	LONGITUDE	DEPTH (M)	GEOGRAPHIC LOCATION
048	IKU	1881613	1861920	49 25.60N	53 28.43W	108.0	PENQUIN ISLANDS NORTHEAST NEWFOUNDLAND
049	IKU	1881642	1861731	49 22.50N	53 27.68W	90.0	NEAR DEADMAN'S BAY NORTHEAST NEWFOUNDLAND
050	IKU	1881713	1861512	49 19.10N	53 30.70W	51.0	OFF LUMSDEN NORTHEAST NEWFOUNDLAND
051	IKU	1881731	1861528	49 19.65N	53 32.14W	49.0	OFF LUMSDEN NORTHEAST NEWFOUNDLAND
052	IKU	1881750	1861548	49 20.33N	53 33.90W	49.0	OFF LUMSDEN NORTHEAST NEWFOUNDLAND

ATLANTIC GEOSCIENCE CENTRE
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TABLE 2

CORE SAMPLES

CRUISE NUMBER - 91026
CHIEF SCIENTIST - DR. JOHN SHAW
PROJECT NUMBER - 900032

SAMPLE NUMBER	SAMPLE TYPE	DAY/TIME (GMT)	LATITUDE LONGITUDE	DEPTH (M)	CORER LENGTH (CM)	APP. PENN (CM)	CORE LENGTH (CM)	NO OF SECT	GEOGRAPHIC LOCATION	NOTES
001	VIBRA	1771248	47 44.60N 58 20.02W	19.00	413	148	41.5	01	HEAD OF LA POILE BAY SOUTH COAST NEWFOUNDLAND	VIBRACORE IN WATER 1245 UCT VIBRACORE ON BOTTOM 1246 UCT HYDRAULIC PROBLEM ON A-FRAME VIBRACORER ON SURFACE 1341 UCT
002	VIBRA	1771830	47 38.15N 57 56.53W	78.6	413	148	65	01	OFF CONNOIRE BAY SOUTH COAST NEWFOUNDLAND	SAND LIKELY CORE CATCHER FAILURE (BENT) SCRATCH ON SIDE OF CORE BARREL SUGGESTS APPARENT PENETRATION OF 50 %. CONSOLE INDICATED COMPLETE RETRACTION, BUT UPON SURFACING RETRACTION NOT COMPLETE
003	BENTHOS PISTON	1781345	47 31.10N 57 12.19W	224	914	914	877	06	EAST OF RAMEA ISLANDS SOUTH COAST NEWFOUNDLAND	CORE CUTTER CONTAINED GRITTY GREY MUD WITH SOME RED MUD. CORE CONTAINED THICK STIFF GREY RED MUD AT BOTTOM OVER THICK GREY MUD
004	BENTHOS PISTON	1781617	47 30.89N 57 08.69W	236	914	1006	881	06	EAST OF RAMEA ISLANDS SOUTH COAST NEWFOUNDLAND	TRIGGER WEIGHT CORE APPARENT PENETRATION 97 CM. TOTAL LENGTH 79 CM. CUTTER SAMPLE RETAINED CORER PENETRATED HALF THE LENGTH OF THE CORER HEAD. GREENISH GREY SEDIMENT AT TOP REDDISH BROWN SEDIMENT IN LOWER TWO BARRELS. CUTTER SAMPLE RETAINED SECTIONS AB,BC,CD,DE,EF,FG
005	BENTHOS PISTON	1781730	47 29.98N 57 05.53W	234	914	1006	866	06	EAST OF RAMEA ISLANDS SOUTH COAST NEWFOUNDLAND	TRIGGER WEIGHT CORE APPARENT PENETRATION 70CM. TOTAL LENGTH 70 CM. 3 BAGS 1 CATCHER 1 TWC 1 CUTTER SECTIONS AB,BC,CD,DE,EF,FG CUTTER WAS DAMAGED
006	BENTHOS PISTON	1791353	47 34.23N 56 23.82W	215.8	914	914	863	06	OFF FACHEUX BAY SOUTH COAST NEWFOUNDLAND	TRIGGER WEIGHT CORE APPARENT PENETRATION 70 CM TOTAL LENGTH 57 CM OLIVE GREEN MUD 1 BAG TWC CUTTER GREY AND GREEN MUD WITH SAND NO CUTTER SAMPLE RETAINED
007	BENTHOS PISTON	1791834	47 40.72N 57 19.03W	190	914	610	876	06	WHITE BEAR BAY NEAR TERRACE SOUTH COAST NEWFOUNDLAND	GRITTY SLATE GREY CLAY MUD ON CORE BARREL GRITTY SOFT SLATE GREY CLAY IN THE CUTTER. CORE CATCHER EMPTY. SANDY CLAY AT BASE OF CORE. TOP OF SECTION DE IS DISTURBED & HAS STYROFOAM SPACER. SECTIONS AB,BC,CD,DE,EF,FG & CUTTER
008	BENTHOS PISTON	1821214	49 16.22N 55 13.15W	194	914	914	81	01	BAY OF EXPLOITS NORTHEAST NEWFOUNDLAND	TRIGGER CORE APPARENT PENETRATION 70 CM TOTAL LENGTH 56 CM GREY BROWN MUD / CUTTER & CATCHER BAGGED NO CUTTER SAMPLE FROM CORE ONE SECTION AB GRITTY GREY CLAY ON BARREL SHATTERED 10-20 FOOT SECTION OF LINER NOTHING IN CUTTER OR CATCHER
009	BENTHOS PISTON	1821350	49 11.85N 55 19.11W	76.81	914	914	543	04	BAY OF EXPLOITS NORTHEAST NEWFOUNDLAND	TRIGGER CORE APPARENT PENETRATION 138 CM TOTAL LENGTH 42 CM CUTTER BAGGED BLACK MUD ON EXTERIOR OF TWC CUTTER BAGGED SECTION AB 152 CM SECTION BC 152 CM SECTION CD 152 CM SECTION DE 86 CM PENETRATION TO TOP OF PC HEAD; BLACK MUD ON EXTERIOR; CUTTER DARK GREY CLAY & SOME SILT. BOTTOM 2 SECTIONS DARK GREY CLAY UPPER 2 SECTIONS BLACK MUD & ORGANICS

ATLANTIC GEOSCIENCE CENTRE
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TABLE 2

CORE SAMPLES

CRUISE NUMBER = 91026
CHIEF SCIENTIST = DR. JOHN SHAW
PROJECT NUMBER = 900032

SAMPLE NUMBER	SAMPLE TYPE	DAY/TIME (GMT)	LATITUDE LONGITUDE	DEPTH (M)	CORER LENGTH (CM)	APP. PENN (CM)	CORE LENGTH (CM)	NO OF SECT	GEOGRAPHIC LOCATION	NOTES
010	BENTHOS PISTON	1821500	49 16.54N 55 13.24W	207	914	914	278	02	BAY OF EXPLOITS NORTHEAST NEWFOUNDLAND	TRIGGER CORE TOTAL LENGTH 23 CM CUTTER DAMAGED DARK GREY SILTY CLAY AT BOTTOM SECTIONS AB & BC PISTON SPLIT AT TOP OF FIRST BARREL
032	VIBRA	1851705	49 58.93N 55 37.75W	82.5			0	0	NEAR LA SCIE HARBOUR NORTHEAST NEWFOUNDLAND	VIBRACORER DEPLOYED TO SEABED MOTOR DRAWING TOO MUCH POWER (25 AMP) BROUGHT BACK TO DECK, NOT OPERATING SITE ABANDONED
041	VIBRA	1871631	49 36.79N 53 59.41W	68.00	412	160	160	01	HAMILTON SOUND NORTHEAST NEWFOUNDLAND	ONE SECTION 160 CM GREY BROWN FINE SAND
042	VIBRA	1871822	49 30.69N 54 09.08W	55.00	412	?	342	03	HAMILTON SOUND NORTHEAST NEWFOUNDLAND	THREE SECTIONS MEDIUM GREY AND OLIVE MUDDY SAND

ATLANTIC GEOSCIENCE CENTRE
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TABLE 3

IKU SAMPLES

CRUISE NUMBER = 91026
CHIEF SCIENTIST= DR. JOHN SHAW
PROJECT NUMBER = 900032

SAMPLE NUMBER	TYPE OF IKU	JULIAN DAY/TIME	LATITUDE LONGITUDE	DEPTH (M)	NO OF ATMTS	NO OF SUBS	NO OF CORES	PHOTOS TAKEN	GEOGRAPHIC LOCATION	NOTES
011	IKU	1831659	49 59.29N 55 36.15W	77	01	06	01	Y	TILT COVE NORTHEAST NEWFOUNDLAND	OLIVE GREY/REDDISH BROWN MUD ON SURF. DARK OLIVE GREY-BLACK SILTY CLAY DARK GREY MUDDY FINE SAND AT BASE COMPACTION ON CORE 260 TO 175 MM SS 1XSURF.; 2XTOP 10 CM; 2X 10-15 CM PUSH CORE 17.5 CM COMPACTION 260 MM TO 175 MM A VERY SURFACE B & C TOP 10 CM D & E BOTTOM 10-15 CM
012	IKU	1831800	49 52.56N 55 37.28W	42	01	06	01	Y	TILT COVE NORTHEAST NEWFOUNDLAND	DARK GREY COMPACT COHESIVE MUD WITH HIGH WATER CONTENT. 1 LIVING MOLLUSC (BIVALVE) & SURFACE WORM CORE MEASURES 260 MM ORIGINAL SEDIMENT THICKNESS 815 MM PUSH CORE IS SUBSAMPLE G SS A SURFACE VIAL B & C SURFACE 10 CM D & E MIDDLE F BOTTOM OOZE OUT (AVOIDING MATERIAL IN CONTACT WITH DECK)
013	IKU	1831848	49 52.09N 55 37.21W	77	01	02	0	N	TILT COVE NORTHEAST NEWFOUNDLAND	DARK GREY SILTY CLAY ONLY 4-5 IN OF SEDIMENT IN BOTTOM. HYDRAULIC HOSE BROKE AS SAMPLER REACHED BOTTOM. REPAIR PERIOD MAY HAVE CONTRIB. TO POOR SAMPLE RECOVERY. 2 BAGS OF SAMPLE COLLECTED
014	IKU	1841415	49 48.40N 55 46.27W	65.8	01	0	0	N	BETT'S COVE NORTHEAST NEWFOUNDLAND	GRAVELLY SAND OLIVE BROWN WITH PEBBLES, COBBLES AND BOULDERS AND SHELLS JAWS OPEN
015	IKU	1841430	49 48.40N 55 46.26W	65.8	02	0	0	N	BETT'S COVE NORTHEAST NEWFOUNDLAND	2 BOULDERS IN JAWS 1 BUCKET OF ANGULAR BOULDERS
016	IKU	1841438	49 48.41N 55 46.27W	65.8	01	0	0	N	BETT'S COVE NORTHEAST NEWFOUNDLAND	JAWS PARTLY OPEN DUE TO COBBLES ANGULAR PEBBLES IN SAND, MUD AND SHELLS 4 BUCKETS OLIVE BROWN GRAVELLY SAND 2 LIVING GASTROPODS
017	IKU	1841609	49 52.15N 55 34.78W	77.00	01	0	0	Y	TILT COVE NORTHEAST NEWFOUNDLAND	SANDY PEBBLE COBBLE GRAVEL (ANGULAR) 2 BUCKETS JAWS SLIGHTLY OPEN
018	IKU	1841616	49 52.08N 55 34.88W	79.00	01	0	0	Y	TILT COVE NORTHEAST NEWFOUNDLAND	FEW ANGULAR PEBBLES WITH TRACE OF SAND 1 BUCKET JAWS OPEN
019	IKU	1841622	49 52.10N 55 34.87W	79.00	01	0	0	Y	TILT COVE NORTHEAST NEWFOUNDLAND	MUDDY GRAVELLY SAND, PEBBLES MAINLY ANGULAR CLASTS, SOME ROUNDED COBBLES HAVE RED CORAL(?) ENCRUSTATION ON SOME SIDES ALSO BRANCHING SPONGE ROCKS IN JAWS 1 BUCKET
020	IKU	1841644	49 52.25N 55 37.05W	44.00	01	0	0	Y	TILT COVE NORTHEAST NEWFOUNDLAND	MUDDY PEBBLY SAND WITH HIGH PROP. OF SHELL HASH, REL. LITTLE MUD, GRAVEL PRIMARILY ON SURFACE. ANGULAR PEBBLES. BARNACLE, SCALLOPS, WORMS & BIVALVES JAWS SLIGHTLY OPEN 3 BUCKETS #1 MOSTLY SURFACE MATERIAL #2 & 3 THE REST
021	IKU	1841707	49 52.77N 55 35.69W	47.00	01	02	0	Y	TILT COVE NORTHEAST NEWFOUNDLAND	SAND AND GRAVEL, SOME BLACK MOTTLING IN SAND. MOST GRAVEL AT OR NEAR SURFACE, MUCH WITH PINK LITHOTHAMNION. ANGULAR TO SUB-ROUNDED; WORMS SHELL FRAGS BRITTLE STARS; JAWS AJAR 3 BUCKETS A MOSTLY SAND FROM SUBSURFACE B1 & B2 THE REST
022	IKU	1841750	49 51.67N 55 37.99W	58.50	03	0	0	Y	TILT COVE NORTHEAST NEWFOUNDLAND	1ST ATTEMPT EMPTY 2ND ATTEMPT SAND, SHELL HASH, ANGULAR GRAVEL 3RD ATTEMPT 1 COBBLE IN JAWS 1 BUCKET

ATLANTIC GEOSCIENCE CENTRE
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TABLE 3

IKU SAMPLES

CRUISE NUMBER - 91026
CHIEF SCIENTIST- DR. JOHN SHAW
PROJECT NUMBER - 900032

SAMPLE NUMBER	TYPE OF IKU	JULIAN DAY/TIME	LATITUDE LONGITUDE	DEPTH (M)	NO OF ATMTS	NO OF SUBS	NO OF CORES	PHOTOS TAKEN	GEOGRAPHIC LOCATION	NOTES
023	IKU	1841837	49 51.50N 55 37.76W	62.00	01	0	0	Y	TILT COVE NORTHEAST NEWFOUNDLAND	SAND, SHELL HASH, ANGULAR GRAVEL SCALLOP 3 BUCKETS
024	IKU	1841904	49 53.47N 55 34.60W		01	02	0	Y	TILT COVE NORTHEAST NEWFOUNDLAND	MUDDY SAND AND ANGULAR GRAVEL LITTLE OR NO LITHOTHAMNION GRAVEL CONCENTRATED ON SURFACE CRAB JAWS AJAR A 5 GAL BUCKET SURFACE, ETC. B 1 5 GAL & 1 2 GAL SUBSURFACE SAND
025	IKU	1841939	49 52.14N 55 35.89W	68.00	01	02	0	Y	TILT COVE NORTHEAST NEWFOUNDLAND	SAND AND GRAVEL WITH SHELL HASH. GRAVEL ON SURFACE SUBROUNDED AND COATED WITH LITHOTHAMNION GROWTH JAWS AJAR 3 5 GAL BUCKETS A 2 BUCKETS SURFACE & OTHER MATERIAL B SUBSURFACE MATERIAL
026	IKU	1851325	49 58.60N 55 37.27W	66.00	01	03	0	Y	LA SCIE HARBOUR NORTHEAST NEWFOUNDLAND	SURFACE = ANGULAR TO SUBROUNDED COBBLES & PEBBLES SUBSURFACE GRAVELLY SAND WITH SHELLS, MOLLUSCA, SEA URCHIN, BRITTLE STAR & LITHOTHAMNION ON ONE SIDE COARSE GRAVEL JAWS SLIGHTLY AJAR A = BAG GRAVELLY SAND SUBSURFACE B = BAG COBBLES & PEBBLES SURFACE C = 2 BUCKETS REMAINDER
027	IKU	1851345	49 59.44N 55 36.35W	76.80	01	04	0	Y	LA SCIE HARBOUR NORTHEAST NEWFOUNDLAND	FINE SAND WITH SHELLS A = 3 BAGS FINE SAND B = VIAL FINE SAND BAGS INTO 1 LARGE & 1 SMALL BUCKET
028	IKU	1851407	49 59.53N 55 36.11W	66.00	01	0	0	Y	LA SCIE HARBOUR NORTHEAST NEWFOUNDLAND	1 BOULDER & FEW COBBLES & PEBBLES ANGULAR BOULDER MEASURES 390X260X240 MM 1 BUCKET ALL BUT BOULDER
029	IKU	1851412	49 59.54N 55 35.96W	75.00	01	02	0	Y	LA SCIE HARBOUR NORTHEAST NEWFOUNDLAND	GRAVELLY SAND & ANGULAR TO SUBROUNDED PEBBLES & COBBLES A = BAG GRAVELLY SAND B = BAG PEBBLES & COBBLES
030	IKU	1851426	49 59.51N 55 36.03W	73.00	01	02	0	Y	LA SCIE HARBOUR NORTHEAST NEWFOUNDLAND	SURFACE = GRAVEL OF ANGULAR COBBLES AND PEBBLES SUBSURFACE = GRAVELLY SAND A = BAG SUBSURFACE GRAVELLY SAND B = BAG SURFACE GRAVEL
031	IKU	1851440	49 59.19N 55 36.61W	76.80	01	03	0	Y	LA SCIE HARBOUR NORTHEAST NEWFOUNDLAND	COBBLE IN JAWS COBBLES & FINE SAND, BIVALVES, SAND DOLLARS SURFACE = FINE SAND WITH SHELL & PEBBLES ON SURF.;SUBSURF = SUBROUNDED COBBLES A = 2 BAGS SAND B = VIAL SAND C = BAG COBBLES & PEBBLES
033	IKU	1851801	50 00.10N 55 36.18W	108.0	01			Y	LA SCIE HARBOUR NORTHEAST NEWFOUNDLAND	MEDIUM - FINE SAND (BROWN) DID NOT CLOSE COMPLETELY, USED SLEDGE HAMMER TO CLOSE 1 LARGE BAG IN 2 GAL BUCKET
034	IKU	1851812	50 00.63N 55 36.47W	117.0	01	01	0	Y	LA SCIE HARBOUR NORTHEAST NEWFOUNDLAND	FINE - MEDIUM BROWN SAND WORMS & A FEW SHELLS 3 BIG BAGS IN 1X5 GAL AND 1X2 GAL BUCKET B = VIAL
035	IKU	1851947	49 54.29N 55 22.42W	228.0	01	03	0	Y	GULL ISLAND NORTHEAST NEWFOUNDLAND	SEISMIC TIME FROM 1990 HUDSON CRUISE SAND & GRAVEL WITH SOME RED MUD APPARENTLY AT BOTTOM OF SAMPLE WIDE RANGE OF LITHOLOGIES IN GRAVEL CLASTS (ANGULAR TO ROUNDED) A = GENERAL SAMPLE 2X5GAL BUCKETS B = GRAVEL 1 2GAL BUCKET C = BAG RED MUD

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TABLE 3

IKU SAMPLES

CRUISE NUMBER = 91026
CHIEF SCIENTIST= DR. JOHN SHAW
PROJECT NUMBER = 900032

SAMPLE NUMBER	TYPE OF IKU	JULIAN DAY/TIME	LATITUDE LONGITUDE	DEPTH (M)	NO OF ATMTS	NO OF SUBS	NO OF CORES	PHOTOS TAKEN	GEOGRAPHIC LOCATION	NOTES
036	IKU	1871312	49 31.45N 54 11.53W	20.00	02	04	0		HAMILTON SOUND NORTHEAST NEWFOUNDLAND	1ST ATTEMPT - 1 SUBROUND BOULDER, COARSE SHELLY SAND, BOULDER 270X200X150MM 2ND ATTEMPT - GRAVELLY SAND WITH CORAL COVERED COBBLES; COBBLES ON SURFACE OVER MED. SAND & PEBBLES LARGEST BOULDER 2ND ATTEMPT 190X160X115 A - 1 BAG SAND B - 1 VIAL SAND C - REMAINDER 5 GAL BUCKET D - COBBLES 5 GAL BUCKET
037	IKU	1871325	49 31.32N 54 11.51W	25.60	01	04	0		HAMILTON SOUND NORTHEAST NEWFOUNDLAND	COARSE BROWNISH GREY SAND WITH PEBBLES A - BAG OF SAND FROM SURFACE B - VIAL C - 2 GAL BUCKET REMAINDER D - BAG OF PEBBLES & COBBLES
038	IKU	1871354	49 30.56N 54 09.10W	55.00	07	03	01	Y	HAMILTON SOUND NORTHEAST NEWFOUNDLAND	SILTY MUD WITH WORMS SANDIER TOWARDS BOTTOM FIRST 6 TRIES DIDN'T TRIP 7TH TRY; OVERFLOWING BUCKET PUSH CORE IS 510 MM LONG SUBSAMPLE D A - BAG FROM NEAR SURFACE B - BAG FROM DEEPER C - VIAL FROM SURFACE
039	IKU	1871432	49 31.48N 54 07.64W	40.00	01	02		Y	HAMILTON SOUND NORTHEAST NEWFOUNDLAND	COBBLES AND PEBBLES WITH SAND A - BAG OF SAND B - BUCKET PEBBLES & COBBLES
040	IKU	1871437	49 31.48N 54 07.66W	40.00	01	03	00	Y	HAMILTON SOUND NORTHEAST NEWFOUNDLAND	ANGULAR COBBLES & BOULDERS WITH RED CORAL OVER MEDIUM TO COARSE SAND & PEBBLES STARFISH, SEA URCHIN A - BAG OF SAND B - BUCKET OF COBBLES C - VIAL OF SAND
043	IKU	1871943	49 32.04N 54 06.73W	51.00	01	05	01	Y	HAMILTON SOUND NORTHEAST NEWFOUNDLAND	OLIVE GREY SAND, SOME SHELL HASH WITH LT-MED GREY MUDDY SAND AT BOTTOM. GRAVEL FRAGMENTS PEBBLE-COBBLE SIZE WITH RED STAINING
044	IKU	1881257	49 29.91N 53 26.93W	293.0	01	04	00	Y	S.E. OF FOGO ISLAND NORTHEAST NEWFOUNDLAND	SAND WITH GRAVEL, PEBBLES, COBBLES. MOSTLY ANGULAR PEBBLES & COBBLES, SHELLS WELL SORTED MEDIUM SAND, CORAL A - BAG OF SAND B - BAG OF GRAVEL, COBBLES & PEBBLES C - VIAL OF SAND D - BUCKET OF REMAINDER
045	IKU	1881353	49 29.88N 53 35.45W	62.20	01	03	00	Y	FUNK ISLAND AREA NORTHEAST NEWFOUNDLAND	WELL SORTED MEDIUM SAND WITH LIVING SHELLS, MANY CLAMS & SAND DOLLARS SIDESCAN TIME 0046 A - BAG B - VIAL C - 5 GAL BUCKET
046	IKU	1881404	49 29.96N 53 35.59W	62.20	01	05	00	Y	FUNK ISLAND AREA NORTHEAST NEWFOUNDLAND	FINE GRAVEL (MOSTLY PEA SIZE) GRANITIC WITH A FEW PEBBLES AND COBBLES AND SOME FINE SAND. A - BAG OF GRAVEL & PEBBLES B - BAG OF FINE GRAVEL C - VIAL OF FINE GRAVEL D - BUCKET OF MIXED REMAINDER E - VIAL OF SAND
047	IKU	1881445	49 25.40N 53 42.34W	38.40	01	03	00	Y	FUNK ISLAND AREA NORTHEAST NEWFOUNDLAND	SAND & PEBBLES, COBBLES & BOULDERS MED TO COARSE SAND, PEBBLES & COBBLES COVERED WITH PINK CORAL; COBBLES OVER SAND; SAND GRAVELLY, MANY BRITTLE STARS, SEA URCHINS A - BAG OF SAND B - VIAL C - 5 GAL BUCKET REMAINDER
048	IKU	1881613	49 25.60N 53 28.43W	108.0	01			Y	PENGUIN ISLANDS NORTHEAST NEWFOUNDLAND	SIDESCAN TIME 186 1922 OLIVE BROWN FINE-MED SAND WITH FEW PEBBLES, ROUNDED, GRANITIC & OTHER LITHOLOGIES. A FEW LIVING BIVALVES.

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TABLE 3

IKU SAMPLES

CRUISE NUMBER - 91026
CHIEF SCIENTIST- DR. JOHN SHAW
PROJECT NUMBER - 900032

SAMPLE NUMBER	TYPE OF IKU	JULIAN DAY/TIME	LATITUDE LONGITUDE	DEPTH (M)	NO OF ATMTS	NO OF SUBS	NO OF CORES	PHOTOS TAKEN	GEOGRAPHIC LOCATION	NOTES
049	IKU	1881642	49 22.50N 53 27.68W	90.0	01	04	00	Y	NEAR DEADMAN'S BAY NORTHEAST NEWFOUNDLAND	OLIVE BROWN MEDIUM COARSE SAND AND FINE GRAVEL; SOME COARSER GRAVEL (GRANITE CLASTS); VARIOUS BIVALVES, POLYCHAETE WORMS; BARNACLE ON CLAST A & B BAGS IN A 5 GAL BUCKET 1 5GAL BUCKET D = VIAL FINE GRAVEL C = VIAL OF SAND
050	IKU	1881713	49 19.10N 53 30.70W	51.0	03			Y	OFF LUMSDEN NORTHEAST NEWFOUNDLAND	WELL SORTED FINE GRAVEL WITH A FEW COARSE PEBBLES FROM RIPPLED BOTTOM (PHOTO) BIVALVES LARGE SAMPLE
051	IKU	1881731	49 19.65N 53 32.14W	49.0	01	03	00	Y	OFF LUMSDEN NORTHEAST NEWFOUNDLAND	SANDY FINE GRAVEL WITH SHELL HASH FROM RIPPLED BOTTOM A & B 2 BAGS IN ONE 5 GAL BUCKET C = 5 GAL BUCKET
052	IKU	1881750	49 20.33N 53 33.90W	49.0	02	04	00	Y	OFF LUMSDEN NORTHEAST NEWFOUNDLAND	SANDY GRAVEL LESS WELL SORTED AND MORE LITHOLOGICALLY DIVERSE WITH MANY SHELLS NO LIVING FAUNA BLACK ORGANIC MATERIAL WITH SAND IN PART A & B 2 BAGS (ONE WITH RIP) IN 5 GAL BUCKET WITH VIAL C D = 5 GAL BUCKET

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TABLE 4

CRUISE NUMBER - 91026
CHIEF SCIENTIST - DR. JOHN SHAW
PROJECT NUMBER - 900032

SEISMIC RECORDS

ROLL NUMBERS	START DAY/TIME	STOP DAY/TIME	HYDROPHONE	LINE NUMBERS	RECORD TYPE	GEOGRAPHIC LOCATION	RECORDER	SYSTEM / SOUND SOURCE
1	1770300	1771034	NSRF 25 FT		SINGLE	CONNOIRE BAY & LA POILE BAY, NFLD.	EPC 3200	AGC SEISMICS SLEEVE GUN 40 CU IN
1	1762158	1780630	NSRF 25 FT		COMBINED	CONNOIRE,LA POILE & WHITE BEAR BAYS,NFLD	EPC 4800	AGC SEISMICS SLEEVE GUN 40 CU IN
2	1772112	1781120	NSRF 25 FT		SINGLE	CONNOIRE BAY & LA POILE BAY, NFLD.	EPC 3200	AGC SEISMICS SLEEVE GUN 40 CU IN
2	1790400	1791130	NSRF 25 FT		COMBINED	BAY D'ESPOIR NFLD.	EPC 4800	AGC SEISMICS SLEEVE GUN 40 CU IN
3	1782100	1791214	NSRF 25 FT		SINGLE	WHITE BEAR BAY & BAY D'ESPOIR, NFLD.	EPC 3200	AGC SEISMICS SLEEVE GUN 40 CU IN
3	1820230	1821050	NSRF 25 FT		COMBINED	BAY OF EXPLOITS NFLD.	EPC 4800	AGC SEISMICS SLEEVE GUN 40 CU IN
4	1820251	1820825	NSRF 25 FT		SINGLE	BAY OF EXPLOITS NFLD	EPC 3200	AGC SEISMICS SLEEVE GUN 40 CU IN
4	1821825	1831230	NSRF 25 FT		COMBINED	BAY OF EXPLOITS,N.D. BAY,TILT COVE,NFLD.	EPC 4800	AGC SEISMICS SLEEVE GUN 40 CU IN
5	1820830	1821050	NSRF 25 FT		SINGLE	BAY OF EXPLOITS NFLD	EPC 3200	AGC SEISMICS SLEEVE GUN 40 CU IN
5	1831930	1841040	NSRF 25 FT		COMBINED	GREEN BAY,NOTRE DAME BAY, NFLD.	EPC 4800	AGC SEISMICS SLEEVE GUN 40 CU IN
6	1821715	1841340	NSRF 25 FT		SINGLE	BAY OF EXPLOITS,N.D. BAY,TILT C., GREEN B	EPC 3200	AGC SEISMICS SLEEVE GUN 40 CU IN
6	1842200	1850740	NSRF 25 FT		COMBINED	N. E. GULL IS. NFLD.	EPC 4800	AGC SEISMICS SLEEVE GUN 40 CU IN
7	1850024	1851210	NSRF 25 FT		SINGLE	N.E. GULL IS., LA SCIE & CONFUSION BAY	EPC 3200	AGC SEISMICS SLEEVE GUN 40 CU IN
7	1850730	1851200	NSRF 25 FT		COMBINED	LA SCIE HARBOUR & CONFUSION BAY, NFLD.	EPC 4800	AGC SEISMICS SLEEVE GUN 40 CU IN
8	1852205	1860735	NSRF 25 FT		SINGLE	N.E. GULL IS & 50 N LINE TO FUNK IS.	EPC 3200	AGC SEISMICS SLEEVE GUN 40 CU IN
8	1860130	1870750	NSRF 25 FT		COMBINED	50 N LINE TO FUNK IS PENGUIN / WADHAM IS.	EPC 4800	AGC SEISMICS SLEEVE GUN 40 CU IN
9	1860740	1871150	NSRF 25 FT		SINGLE	50 N LINE TO FUNK IS PENGUIN / WADHAM IS.	EPC 3200	AGC SEISMICS SLEEVE GUN 40 CU IN
9	1870750	1871225	NSRF 25 FT		COMBINED	WADHAM IS. & HAMILTON SOUND, NFLD	EPC 4800	AGC SEISMICS SLEEVE GUN 40 CU IN
10	1880005	1881150	NSRF 25 FT		SINGLE	AROUND FUNK IS. NFLD.	EPC 3200	AGC SEISMICS SLEEVE GUN 40 CU IN
10	1880050	1881150	NSRF 25 FT		COMBINED	AROUND FUNK IS. NFLD.	EPC 4800	AGC SEISMICS SLEEVE GUN 40 CU IN

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TABLE 5

CRUISE NUMBER - 91026
CHIEF SCIENTIST - DR. JOHN SHAW
PROJECT NUMBER - 900032

HUNTEC RECORDS

ROLL NUMBERS	START DAY/TIME	STOP DAY/TIME	HYDROPHONE	LINE NUMBERS	RECORD TYPE	GEOGRAPHIC LOCATION	RECORDER	HUNTEC SYSTEM
1	1762158	1770346	EXTERNAL		SINGLE	CONNOIRE BAY, NFLD.	EPC 4600	HUNTEC DTS (AGC 3)
2	1770346	1771139	EXTERNAL		SINGLE	LA POILE BAY, NFLD.	EPC 4600	HUNTEC DTS (AGC 3)
3	1772108	1780630	EXTERNAL		SINGLE	WHITE BEAR BAY, NFLD	EPC 4600	HUNTEC DTS (AGC 3)
4	1820230	1821050	EXTERNAL		SINGLE	BAY OF EXPLOITS,NFLD	EPC 4100	HUNTEC DTS (AGC 3)
5	1822045	1830503	EXTERNAL		SINGLE	NOTRE DAME BAY ,NFLD	EPC 4600	HUNTEC DTS (AGC 3)
6	1842200	1840740	EXTERNAL		COMBINED	N.E. GULL ISLAND NFLD	EPC 4800	HUNTEC DTS (AGC 3)
6	1830505	1831523	EXTERNAL		SINGLE	NOTRE DAME BAY ,NFLD & TILT COVE	EPC 4600	HUNTEC DTS (AGC 3)
7	1850730	1851200	EXTERNAL		COMBINED	LA SCIE HARBOUR & CONFUSION BAY, NFLD.	EPC 4800	HUNTEC DTS (AGC 3)
7	1832307	1840745	EXTERNAL		SINGLE	GREEN BAY & NOTRE DAME BAY, NFLD.	EPC 4600	HUNTEC DTS (AGC 3)
8	1860130	1870750	EXTERNAL		COMBINED	50 N LINE TO FUNK IS PENGUIN / WADHAM IS.	EPC 4800	HUNTEC DTS (AGC 3)
8	1840748	1841340	EXTERNAL		SINGLE	NOTRE DAME BAY & BETT'S COVE, NFLD.	EPC 4600	HUNTEC DTS (AGC 3)
9	1870750	1871225	EXTERNAL		COMBINED	WADHAM ISLAND & HAMILTON SOUND, NFLD	EPC 4800	HUNTEC DTS (AGC 3)
9	1850024	1851207	EXTERNAL		SINGLE	N.E. OF GULL IS. & LA SCIE & CONFUSION	EPC 4600	HUNTEC DTS (AGC 3)
10	1880050	1881150	EXTERNAL		COMBINED	AROUND FUNK ISLAND NFLD.	EPC 4800	HUNTEC DTS (AGC 3)
10	1852205	1861103	EXTERNAL		SINGLE	N.E. GULL IS. & 50 N TO FUNK IS.	EPC 4600	HUNTEC DTS (AGC 3)
11	1862010	1870208	EXTERNAL		SINGLE	PENGUIN ISLANDS NFLD.	EPC 4600	HUNTEC DTS (AGC 3)
12	1870208	1871224	EXTERNAL		SINGLE	PENGUIN ISLANDS & HAMILTON SOUND, NFLD	EPC 4600	HUNTEC DTS (AGC 3)
13	1880005	1880723	EXTERNAL		SINGLE	AROUND FUNK IS. NFLD.	EPC 4600	HUNTEC DTS (AGC 3)
14	1880735	1881150	EXTERNAL		SINGLE	AROUND FUNK IS. NFLD.	EPC 4600	HUNTEC DTS (AGC 3)
1	1762158	1770241	INTERNAL		SINGLE	CONNOIRE BAY, NFLD.	EPC 4100	HUNTEC DTS (AGC 3)
1	1762158	1780630	INTERNAL?		COMBINED	CONNOIRE,LA POILE & WHITE BEAR BAYS,NFLD	EPC 4800	HUNTEC DTS (AGC 3)
2	1770241	1771139	INTERNAL		SINGLE	CONNOIRE BAY, NFLD. & LA POILE BAY, NFLD	EPC 4100	HUNTEC DTS (AGC 3)
3	1772108	1780500	INTERNAL		SINGLE	WHITE BEAR BAY, NFLD	EPC 4100	HUNTEC DTS (AGC 3)
3	1820230	1821050	INTERNAL?		COMBINED	BAY OF EXPLOITS NFLD	EPC 4800	HUNTEC DTS (AGC 3)
4	1780500	1780630	INTERNAL		SINGLE	WHITE BEAR BAY, NFLD	EPC 4100	HUNTEC DTS (AGC 3)
4	1822100	1831230	INTERNAL?		COMBINED	NOTRE DAME BAY & TILT COVE, NFLD	EPC 4800	HUNTEC DTS (AGC 3)
5	1820230	1821050	INTERNAL		SINGLE	BAY OF EXPLOITS,NFLD	EPC 4100	HUNTEC DTS (AGC 3)
5	1831230	1841040	INTERNAL?		COMBINED	TILT COVE, GREEN &	EPC 4800	HUNTEC DTS (AGC 3)
6	1822045	1830340	INTERNAL		SINGLE	NOTRE DAME BAY NFLD.	EPC 4100	HUNTEC DTS (AGC 3)
7	1830340	1831523	INTERNAL		SINGLE	NOTRE DAME BAY & TILT COVE , NFLD.	EPC 4100	HUNTEC DTS (AGC 3)
8	1832310	1840430	INTERNAL		SINGLE	GREEN BAY & NOTRE DAME BAY , NFLD.	EPC 4100	HUNTEC DTS (AGC 3)
9	1840430	1841340	INTERNAL		SINGLE	NOTRE DAME BAY &	EPC 4100	HUNTEC DTS (AGC 3)

ATLANTIC GEOSCIENCE CENTRE
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TABLE 5

CRUISE NUMBER - 91026
CHIEF SCIENTIST - DR. JOHN SHAW
PROJECT NUMBER - 900032

HUNTEC RECORDS

ROLL NUMBERS	START DAY/TIME	STOP DAY/TIME	HYDROPHONE	LINE NUMBERS	RECORD TYPE	GEOGRAPHIC LOCATION	RECORDER	HUNTEC SYSTEM
						BETT'S COVE , NFLD.		
10	1850024	1850810	INTERNAL		SINGLE	N.E. OF GULL IS. N.E. NEWFOUNDLAND	EPC 4100	HUNTEC DTS (AGC 3)
11	1850810	1851207	INTERNAL		SINGLE	LA SCIE HARBOUR & CONFUSION BAY, NFLD.	EPC 4100	HUNTEC DTS (AGC 3)
12	1852205	1861103	INTERNAL		SINGLE	N.E. GULL IS. & 50 N TO FUNK IS.	EPC 4100	HUNTEC DTS (AGC 3)
13	1862010	1871224	INTERNAL		SINGLE	PENGUIN ISLANDS & HAMILTON SOUND, NFLD	EPC 4100	HUNTEC DTS (AGC 3)
14	1880005	1881150	INTERNAL		SINGLE	AROUND FUNK IS. NFLD.	EPC 4100	HUNTEC DTS (AGC 3)

ATLANTIC GEOSCIENCE CENTRE
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TABLE 6

CRUISE NUMBER - 91026
CHIEF SCIENTIST - DR. JOHN SHAW
PROJECT NUMBER - 900032

SIDESCAN RECORDS

ROLL NUMBERS	START DAY/TIME	STOP DAY/TIME	LINE NUMBERS	RECORD TYPE	GEOGRAPHIC LOCATION	RECORDER	SIDESCAN SYSTEM
1	1762158	1771055		COMBINED	CONNOIRRE BAY & LA POILE BAY, NFLD.	KLEIN 595	KLEIN (100 & 500 KHZ
1	1762158	1780630		COMBINED	CONNOIRE, LA POILE & WHITE BEAR BAYS, NFLD.	EPC 4800	KLEIN (100 & 500 KHZ
2	1771906	1790705		COMBINED	WHITE BEAR BAY TO BAY D'ESPOIR, NFLD.	KLEIN 595	KLEIN (100 & 500 KHZ
2	1790400	1790705		COMBINED	BAY D'ESPOIR, NFLD	EPC 4800	KLEIN (100 & 500 KHZ
3	1820845	1821050		COMBINED	BAY OF EXPLOITS NFLD.	KLEIN 595	KLEIN (100 & 500 KHZ
3	1820950	1821050		COMBINED	BAY OF EXPLOITS NFLD	EPC 4800	KLEIN (100 & 500 KHZ
4	1830930	1831525		COMBINED	TILT COVE NFLD.	KLEIN 595	KLEIN (100 & 500 KHZ
4	1830945	1831230		COMBINED	TILT COVE NFLD	EPC 4800	KLEIN (100 & 500 KHZ
5	1831230	1831450		COMBINED	TILT COVE NFLD	EPC 4800	KLEIN (100 & 500 KHZ
5	1841245	1841315		COMBINED	BETT'S COVE NFLD.	KLEIN 595	KLEIN (100 & 500 KHZ
7	1850730	1851200		COMBINED	LA SCIE HARBOUR & CONFUSION BAY, NFLD.	EPC 4800	KLEIN (100 & 500 KHZ
6	1850835	1851145		COMBINED	LA SCIE HARBOUR & CONFUSION BAY, NFLD.	KLEIN 595	KLEIN (100 & 500 KHZ
7	1851145	1851615		COMBINED	LA SCIE HARBOUR NFLD.	KLEIN 595	KLEIN (100 & 500 KHZ
8	1861429	1862025		COMBINED	PENGUIN ISLANDS NFLD.	KLEIN 595	KLEIN (100 & 500 KHZ
9	1862025	1870700		COMBINED	PENGUIN ISLANDS & WADHAM ISLANDS, NFLD	KLEIN 595	KLEIN (100 & 500 KHZ

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TABLE 7

CRUISE NUMBER - 91026
CHIEF SCIENTIST - DR. JOHN SHAW
PROJECT NUMBER - 900032

3.5 KHZ RECORDS

ROLL NUMBERS	START DAY/TIME	STOP DAY/TIME	LINE NUMBERS	GEOGRAPHIC LOCATION	RECORDER	SYSTEM / SOUND SOURCE
1	1761530	1791220		LAURENTIAN CH. & SOUTH COAST NFLD.	LSR 1811	HULL MOUNTED
2	1791220	1792259		BAY D'ESPOIR & WHITE BEAR BAY, NFLD	LSR 1811	HULL MOUNTED
3	1812331	1822150		BAY OF EXPLOITS NFLD	LSR 1811	HULL MOUNTED
4	1822210	1831613		NOTRE DAME BAY & TILT COVE, NFLD	LSR 1811	HULL MOUNTED
5	1831620	1852040		GREEN, N.D. BAY, LA SCIE, CONFUSION BAY	LSR 1811	HULL MOUNTED
6	1852040	1881201		50 N LINE TO FUNK IS PENGUIN HAMILTON SND	LSR 1811	HULL MOUNTED
7	1881211	1890000		NORTHEAST NEWFOUNDLAND	LSR 1811	HULL MOUNTED

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TABLE 8

CRUISE NUMBER - 91026
CHIEF SCIENTIST - DR. JOHN SHAW
PROJECT NUMBER - 900032

SEISMICS/SIDESCAN COMBINED ON-LINE DATA TAPES

TAPE NUMBERS	START DAY/TIME	STOP DAY/TIME	GEOGRAPHIC LOCATION	CHANNEL INFORMATION
1	1762158	1770131	CONNOIRE BAY SOUTH COAST, NFLD.	SEE CHANNEL INFORMATION NOTES BELOW
2	1770132	1770428	CONNOIRE BAY SOUTH COAST, NFLD.	SEE CHANNEL INFORMATION NOTES BELOW
3	1770428	1770723	CONNOIRE BAY SOUTH COAST, NFLD.	SEE CHANNEL INFORMATION NOTES BELOW
4	1770723	1771020	LA POILE BAY SOUTH COAST, NFLD.	SEE CHANNEL INFORMATION NOTES BELOW
5	1771021	1771211	LA POILE BAY SOUTH COAST, NFLD.	SEE CHANNEL INFORMATION NOTES BELOW
6	1772112	1780005	WHITE BEAR BAY SOUTH COAST, NFLD.	SEE CHANNEL INFORMATION NOTES BELOW
7	1780005	1780258	WHITE BEAR BAY SOUTH COAST, NFLD.	SEE CHANNEL INFORMATION NOTES BELOW
8	1780258	1780559	WHITE BEAR BAY SOUTH COAST, NFLD.	SEE CHANNEL INFORMATION NOTES BELOW
9	1780600	1780850	WHITE BEAR BAY SOUTH COAST, NFLD.	SEE CHANNEL INFORMATION NOTES BELOW
10	1780850	1781126	WHITE BEAR BAY SOUTH COAST, NFLD.	SEE CHANNEL INFORMATION NOTES BELOW
11	1782059	1792300	WHITE BEAR BAY SOUTH COAST, NFLD.	SEE CHANNEL INFORMATION NOTES BELOW
12	1790350	1790651	TO BAY D'ESPOIR SOUTH COAST, NFLD.	SEE CHANNEL INFORMATION NOTES BELOW
13	1790630	1790954	HERMITAGE BAY SOUTH COAST, NFLD.	SEE CHANNEL INFORMATION NOTES BELOW
14	1790954	1791207	BAY D'ESPOIR SOUTH COAST, NFLD.	SEE CHANNEL INFORMATION NOTES BELOW
15	1820230	1820526	BAY OF EXPLOITS NFLD.	SEE CHANNEL INFORMATION NOTES BELOW
16	1820526	1820817	BAY OF EXPLOITS NFLD.	SEE CHANNEL INFORMATION NOTES BELOW
17	1820817	1821100	BAY OF EXPLOITS NFLD.	SEE CHANNEL INFORMATION NOTES BELOW
18	1821716	1822100	BAY OF EXPLOITS NFLD.	SEE CHANNEL INFORMATION NOTES BELOW
19	1822100	1822355	BAY OF EXPLOITS & NOTRE DAME BAY, NFLD	SEE CHANNEL INFORMATION NOTES BELOW
20	1822356	1830247	BAY OF EXPLOITS & NOTRE DAME BAY, NFLD	SEE CHANNEL INFORMATION NOTES BELOW
21	1830248	1830544	NOTRE DAME BAY, NFLD	SEE CHANNEL INFORMATION NOTES BELOW
22	1830544	1830838	NOTRE DAME BAY, NFLD	SEE CHANNEL INFORMATION NOTES BELOW
23	1830838	1831133	NOTRE DAME BAY & TILT COVE, NFLD.	SEE CHANNEL INFORMATION NOTES BELOW
24	1831140	1831434	NOTRE DAME BAY & TILT COVE, NFLD.	SEE CHANNEL INFORMATION NOTES BELOW
25	1831435	1831531	TILT COVE, NFLD.	SEE CHANNEL INFORMATION NOTES BELOW
26	1832207	1830100	GREEN BAY, NFLD.	SEE CHANNEL INFORMATION NOTES BELOW
27	1840101	1840357	NOTRE DAME BAY, NFLD	SEE CHANNEL INFORMATION NOTES BELOW
28	1840400	1840655	NOTRE DAME BAY, NFLD	SEE CHANNEL INFORMATION NOTES BELOW
29	1840655	1840948	NOTRE DAME BAY, NFLD	SEE CHANNEL INFORMATION NOTES BELOW

ATLANTIC GEOSCIENCE CENTRE
DATA SECTION
-SHIP- REPORTING PACKAGE

TABLE 8

CRUISE NUMBER - 91026
CHIEF SCIENTIST - DR. JOHN SHAW
PROJECT NUMBER - 900032

SEISMICS/SIDESCAN COMBINED ON-LINE DATA TAPES

TAPE NUMBERS	START DAY/TIME	STOP DAY/TIME	GEOGRAPHIC LOCATION	CHANNEL INFORMATION
31	1841246	1841359	BETT'S COVE, NFLD.	SEE CHANNEL INFORMATION NOTES BELOW
32	1850021	1850313	NORTH COAST NFLD.	SEE CHANNEL INFORMATION NOTES BELOW
33	1850313	1850624	NORTH COAST NFLD.	SEE CHANNEL INFORMATION NOTES BELOW
34	1850627	1850915	NORTH COAST NFLD.	SEE CHANNEL INFORMATION NOTES BELOW
35	1850915	1851208	LA SCIE HARBOUR & CONFUSION BAY, NFLD	SEE CHANNEL INFORMATION NOTES BELOW
36	1851514	1851619	LA SCIE HARBOUR & CONFUSION BAY, NFLD	SEE CHANNEL INFORMATION NOTES BELOW
37	1852206	1852233	NOTRE DAME BAY NFLD	SEE CHANNEL INFORMATION NOTES BELOW
38	1860045	1860331	50 N LINE TO FUNK IS NFLD	SEE CHANNEL INFORMATION NOTES BELOW
39	1860332	1860630	50 N LINE TO FUNK IS NFLD	SEE CHANNEL INFORMATION NOTES BELOW
40	1860632	1860931	50 N LINE TO FUNK IS NFLD	SEE CHANNEL INFORMATION NOTES BELOW
41	1860931	1861104	50 N LINE TO FUNK IS NFLD	SEE CHANNEL INFORMATION NOTES BELOW
42	1861429	1861725	PENGUIN ISLANDS NFLD	SEE CHANNEL INFORMATION NOTES BELOW
43	1861725	1862016	PENGUIN ISLANDS NFLD	SEE CHANNEL INFORMATION NOTES BELOW
44	1862016	1862309	PENGUIN ISLANDS NFLD	SEE CHANNEL INFORMATION NOTES BELOW
45	1862310	1870202	PENGUIN ISLANDS NFLD	SEE CHANNEL INFORMATION NOTES BELOW
46	1870203	1870458	PENGUIN ISLANDS NFLD	SEE CHANNEL INFORMATION NOTES BELOW
47	1870458	1870750	PENGUIN ISLANDS NFLD	SEE CHANNEL INFORMATION NOTES BELOW
48	1870750	1871047	PENGUIN ISLANDS & WADHAM IS., NFLD	SEE CHANNEL INFORMATION NOTES BELOW
49	1871047	1871224	WADHAM IS., NFLD	SEE CHANNEL INFORMATION NOTES BELOW
50	1880004	1880300	AROUND FUNK ISLAND NFLD	SEE CHANNEL INFORMATION NOTES BELOW
51	1880300	1880600	AROUND FUNK ISLAND NFLD	SEE CHANNEL INFORMATION NOTES BELOW
52	1880600	1880902	AROUND FUNK ISLAND NFLD	SEE CHANNEL INFORMATION NOTES BELOW
53	1880902	1881150	AROUND FUNK ISLAND NFLD	SEE CHANNEL INFORMATION NOTES BELOW

* NOTES ON CHANNEL INFORMATION

CHANNEL 1	AGC SEISMIC REFLECTION RAW SIGNAL
CHANNEL 2	AGC SEISMIC REFLECTION TRIGGER PULSE
CHANNEL 3	AGC SEISMIC REFLECTION PROCESSED SIGNAL
CHANNEL 4	HUNTEC INTERNAL HYDROPHONE SIGNAL
CHANNEL 5	HUNTEC TRIGGER PULSE
CHANNEL 6	HUNTEC EXTERNAL HYDROPHONE SIGNAL
CHANNEL 7	KLEIN SIDESCAN PORT SIDE 100 KHZ SIGNAL
CHANNEL 8	KLEIN SIDESCAN 100 KHZ TRIGGER PULSE
CHANNEL 9	KLEIN SIDESCAN STARBOARD SIDE 100 KHZ SIGNAL
CHANNEL 10	KLEIN SIDESCAN PORT SIDE 500 KHZ SIGNAL
CHANNEL 11	HUNTEC DTS PAGE PULSE
CHANNEL 12	KLEIN SIDESCAN STARBOARD SIDE 500 KHZ SIGNAL
CHANNEL 14	KLEIN SIDESCAN TRIGGER PULSE

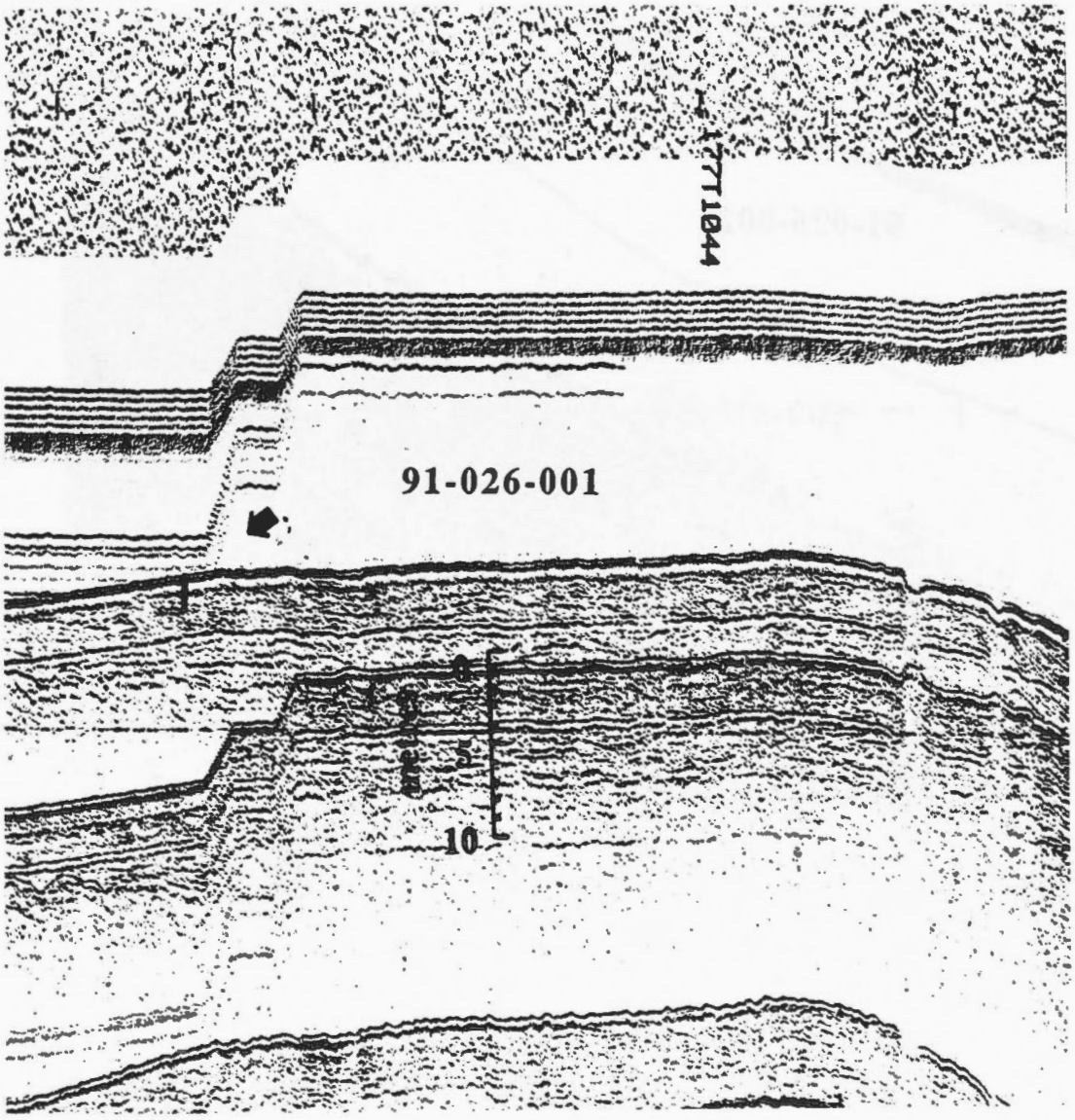
Appendix 2

Seismic Profiles in the Vicinity of Core Sites, with Core Locations Indicated

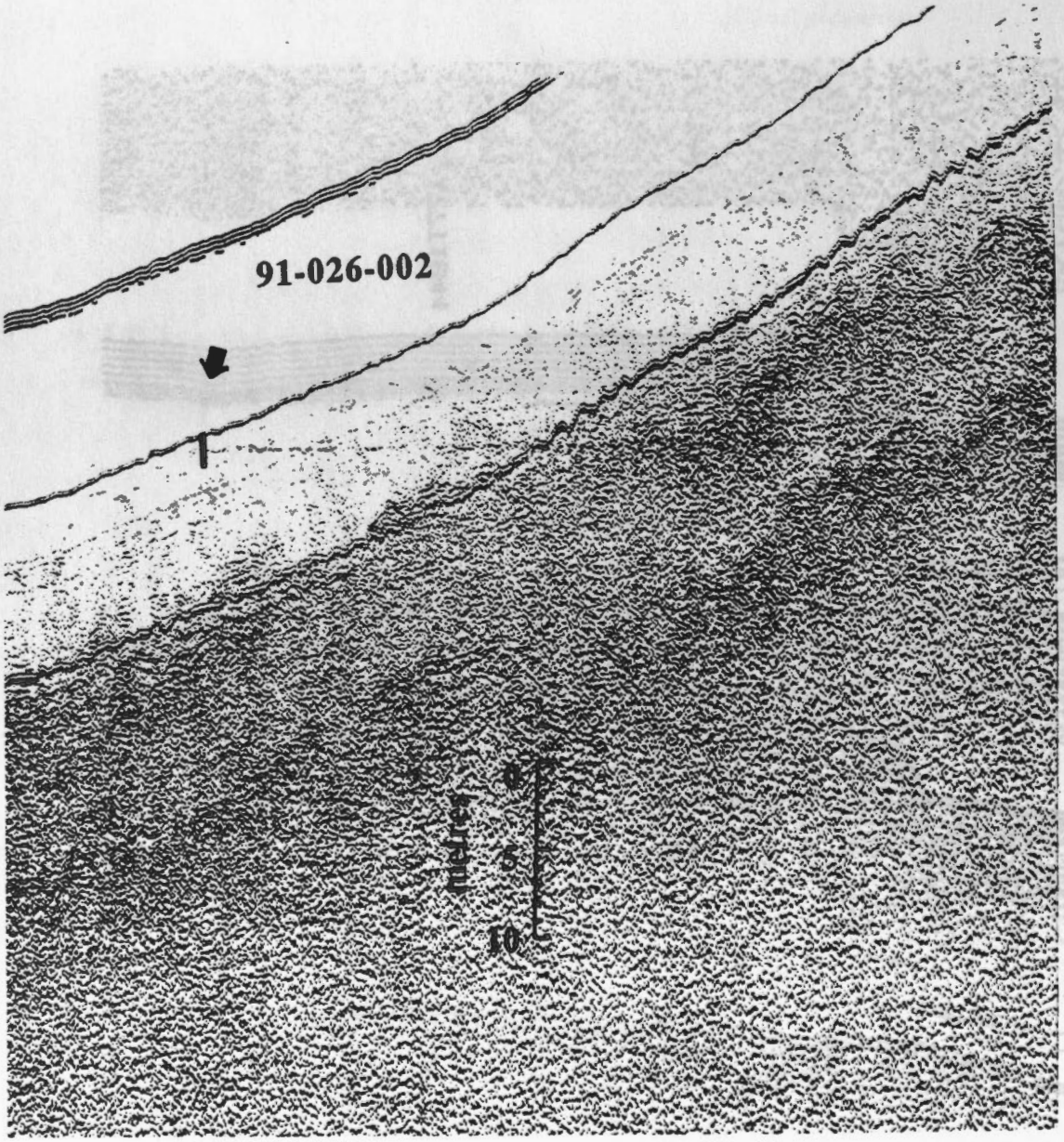
C.S.S. Dawson, Cruise 91-026

Note: Core profiles are based on apparent penetration, actual recovered length may be significantly less.

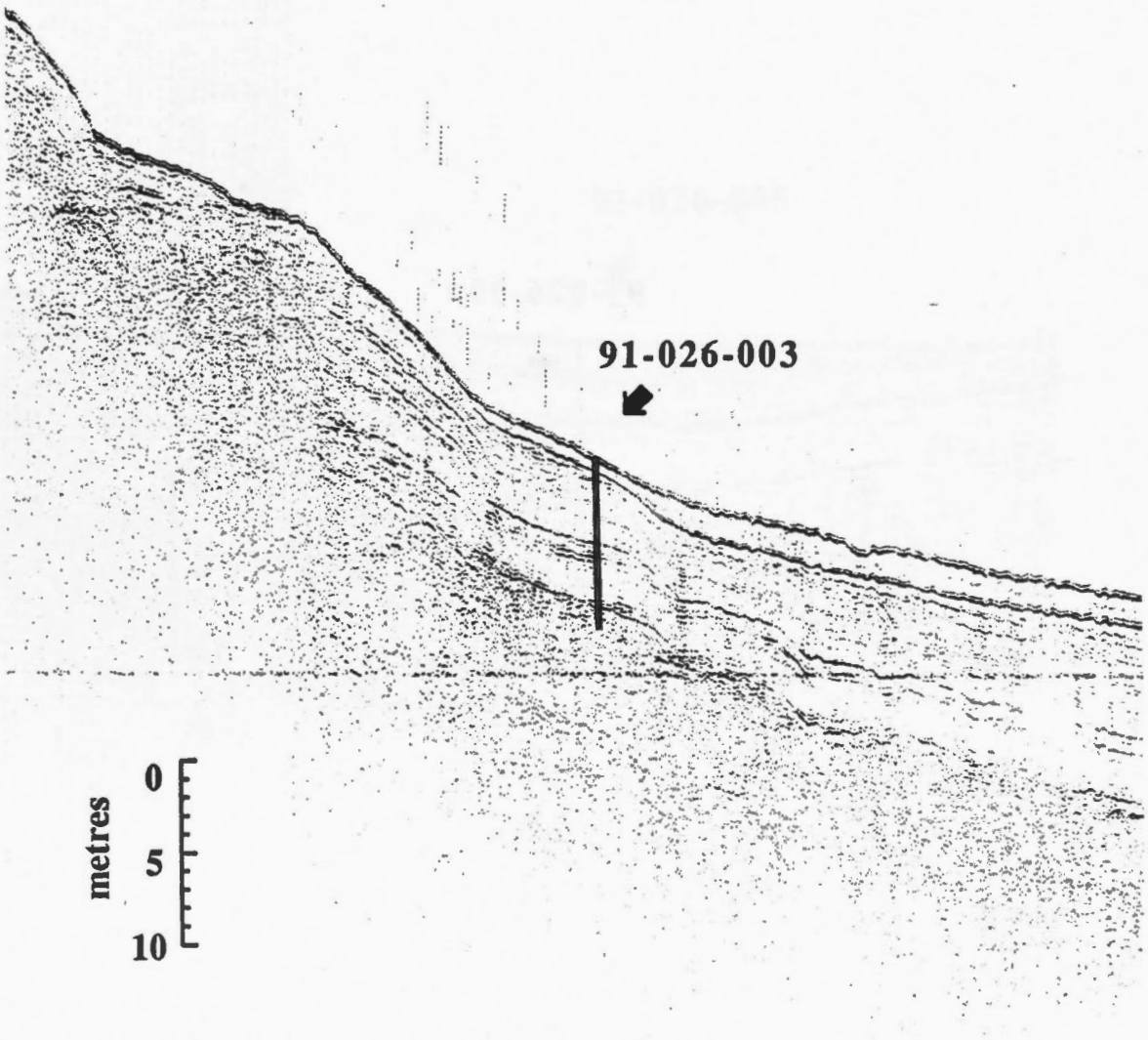
Vertical scale as indicated.



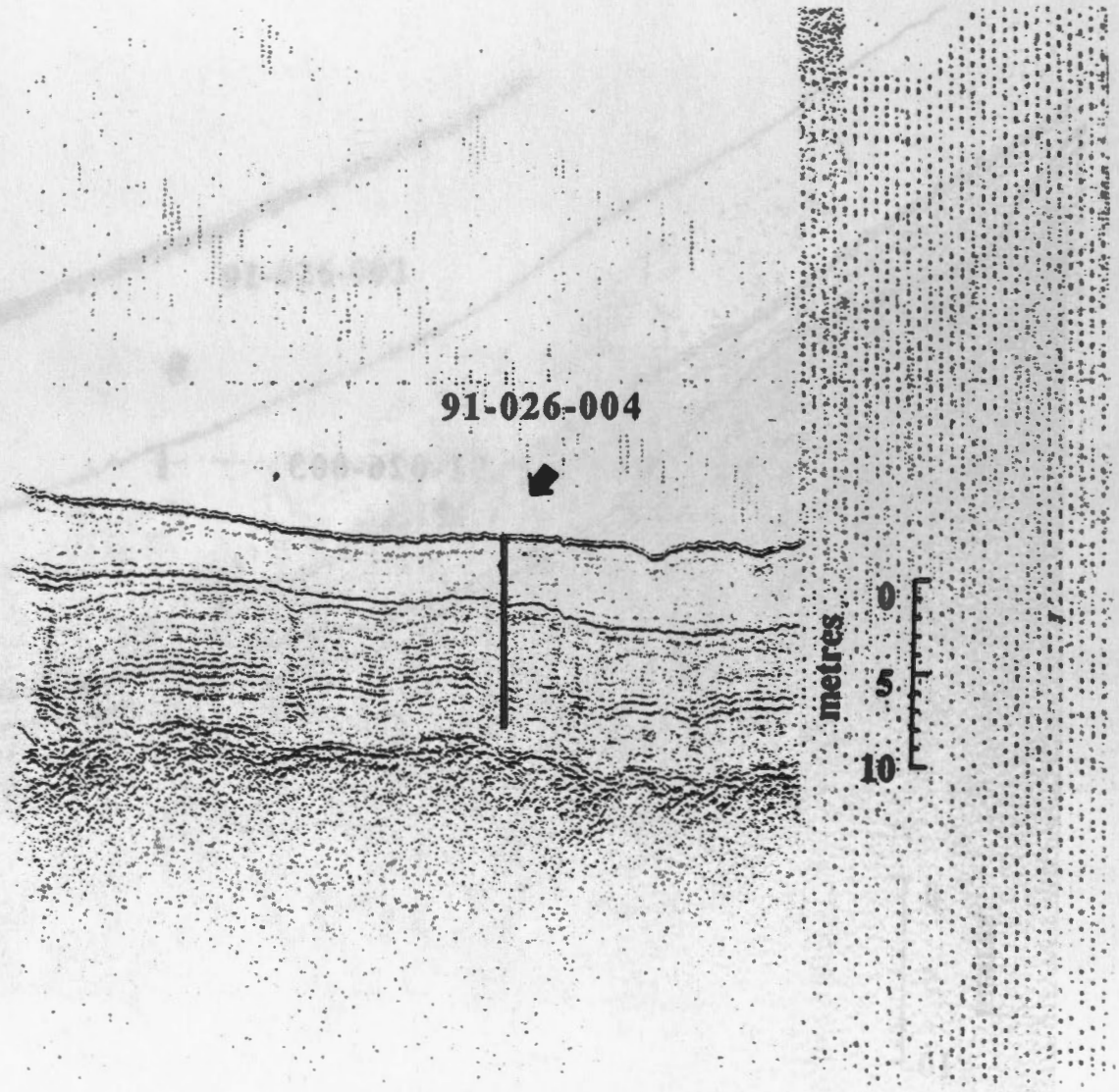
Huntec profile at the location of vibracore 91-026-001; seismic daytime 1771040



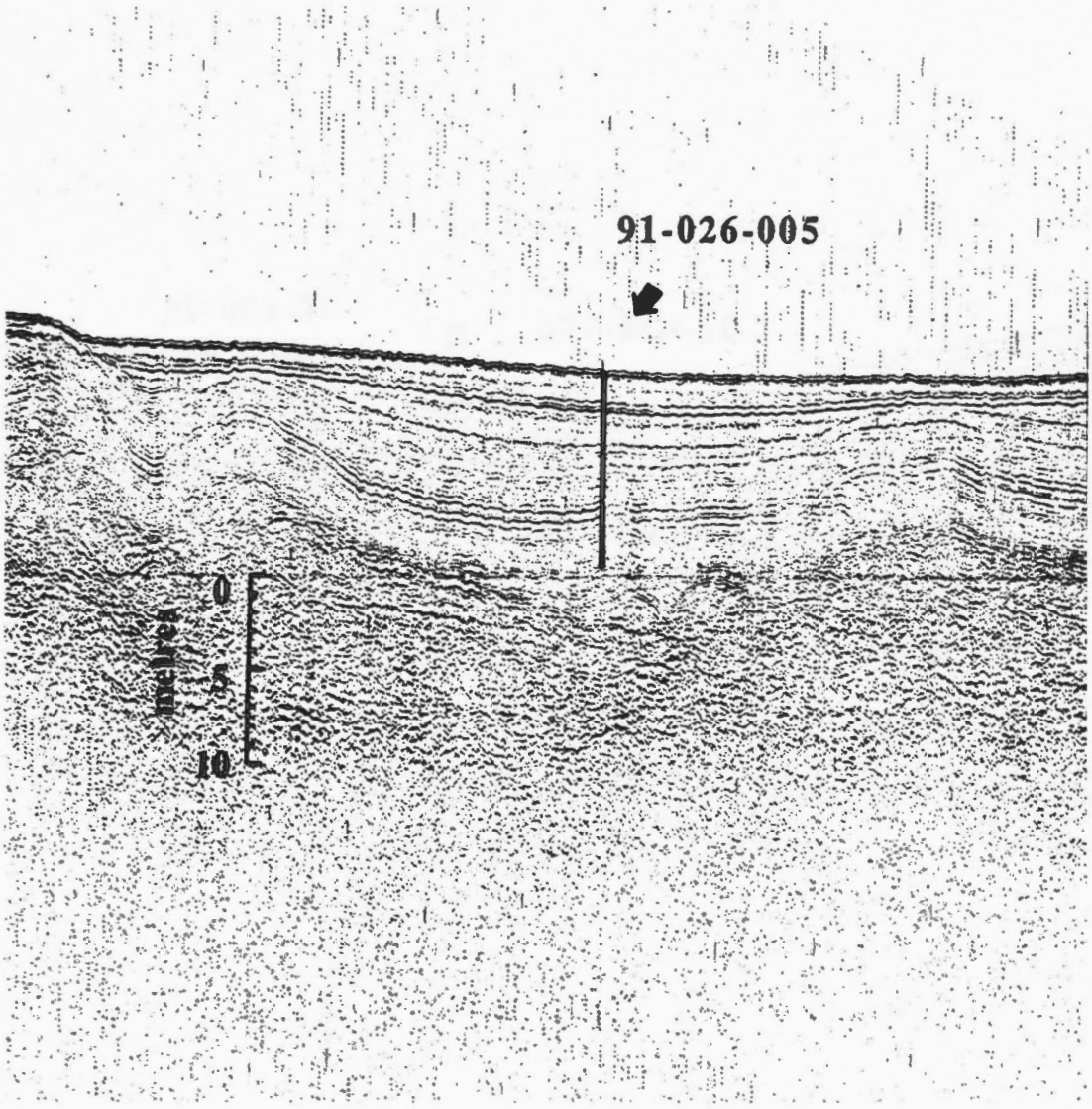
Huntec profile at the location of vibracore 91-026-002; seismic daytime 1770005



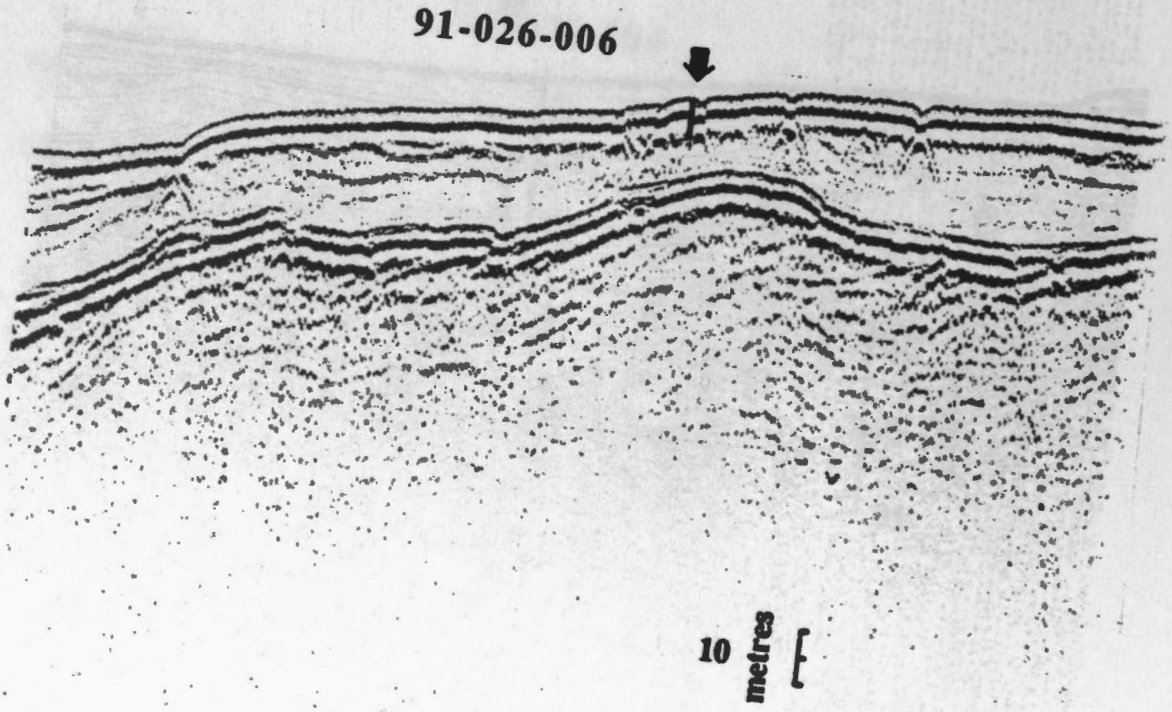
Huntec profile at the location of Benthos core 91-026-003; seismic daytime 1780135



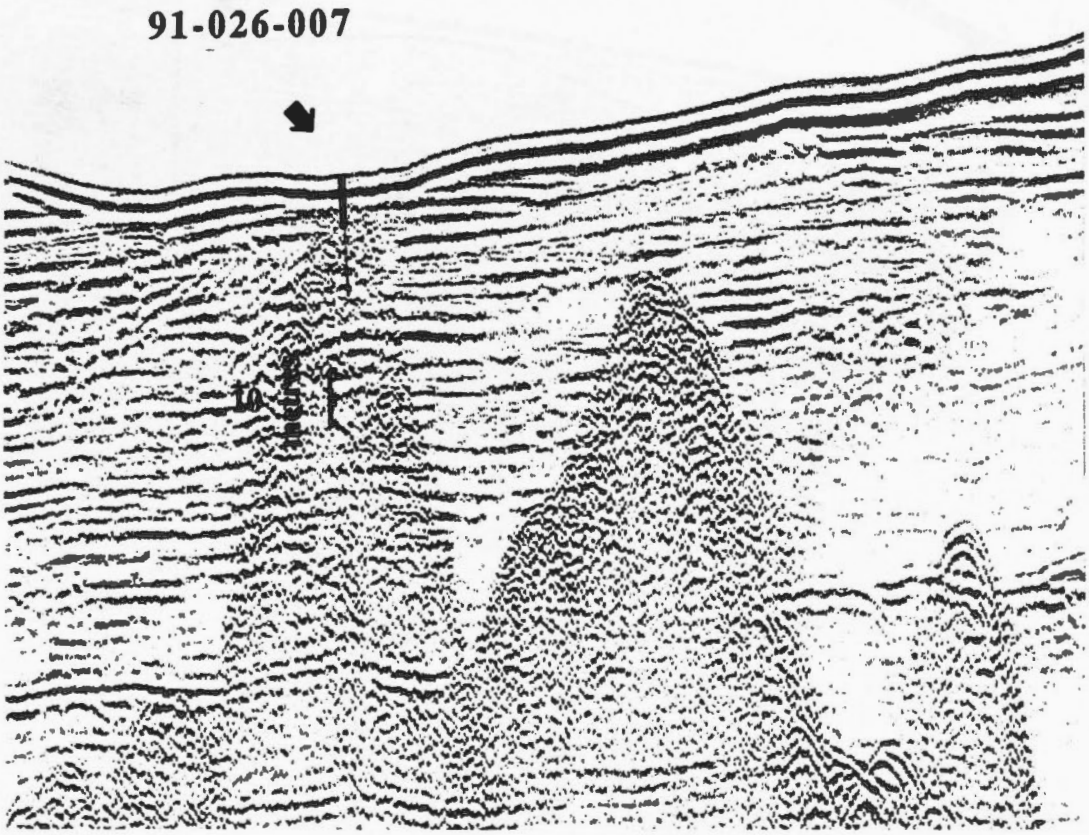
Huntec profile at the location of Benthos core 91-026-004; seismic daytime 1780630



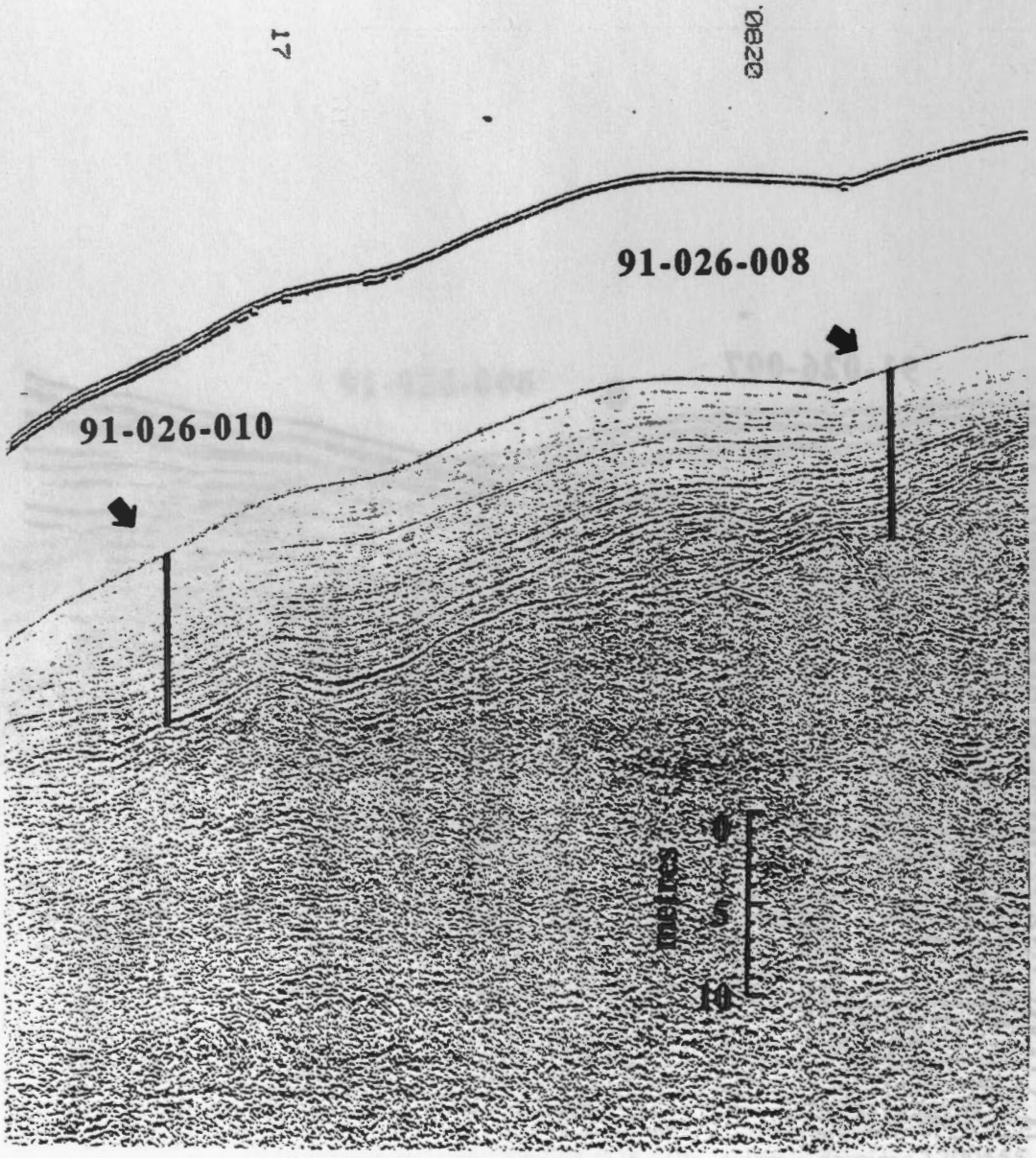
Huntec profile at the location of Benthos core 91-026-005; seismic daytime 1780305



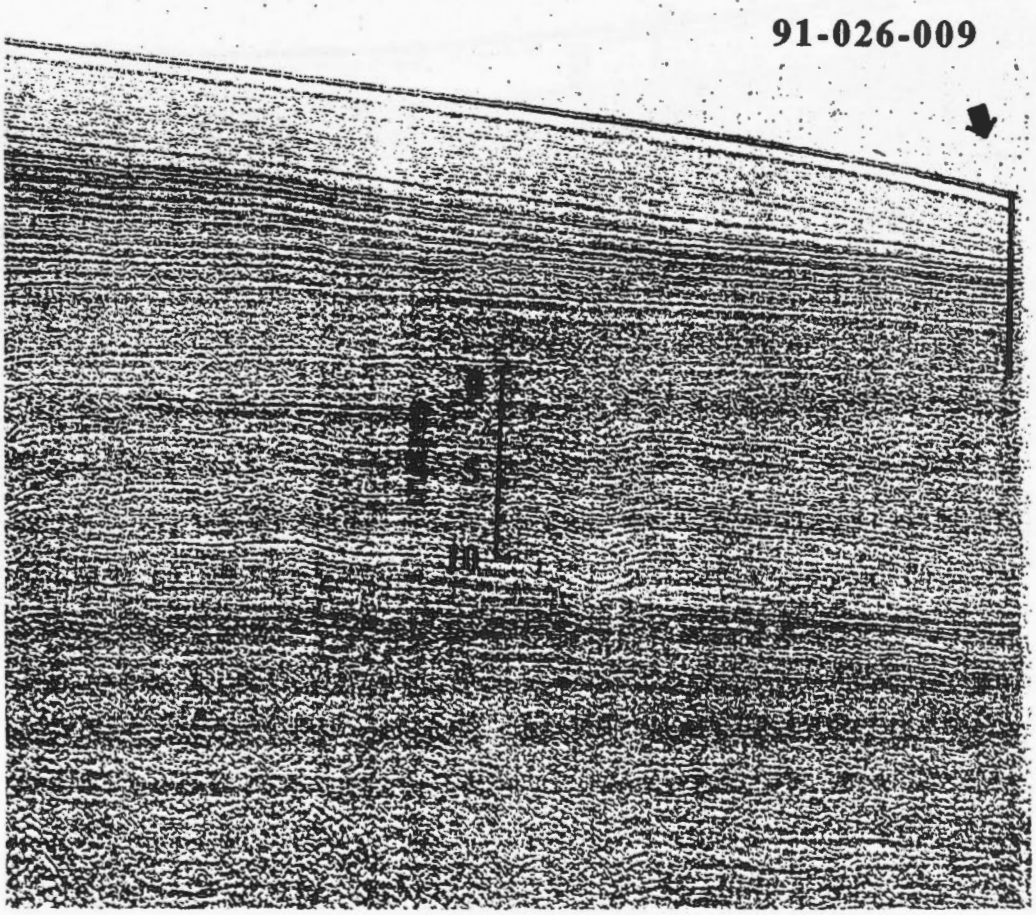
Air-gun profile at the location of Benthos core 91-026-006; seismic daytime 1790555.



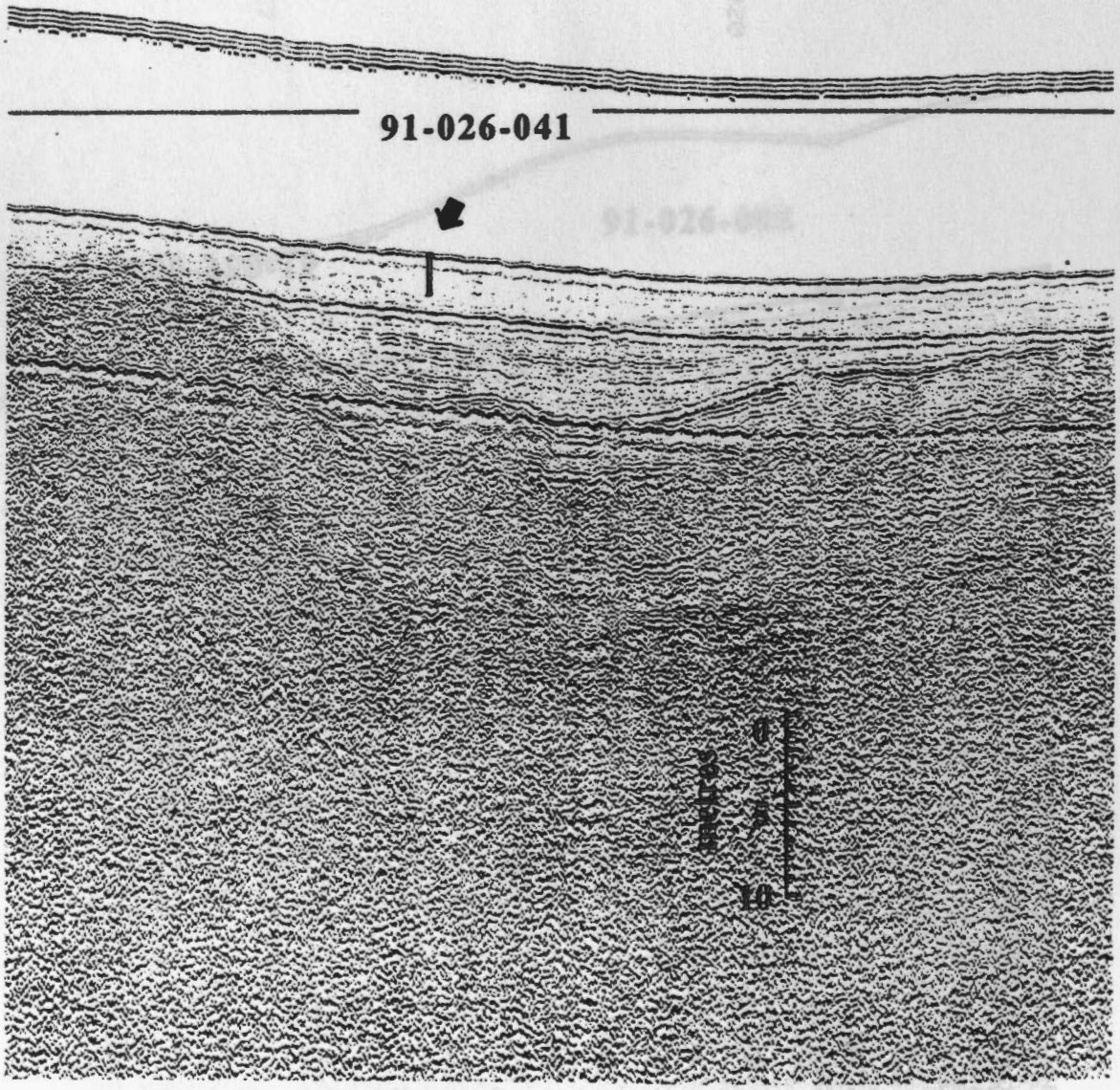
Air-gun profile at the location of Benthos core 91-026-007; seismic daytime 1782222.



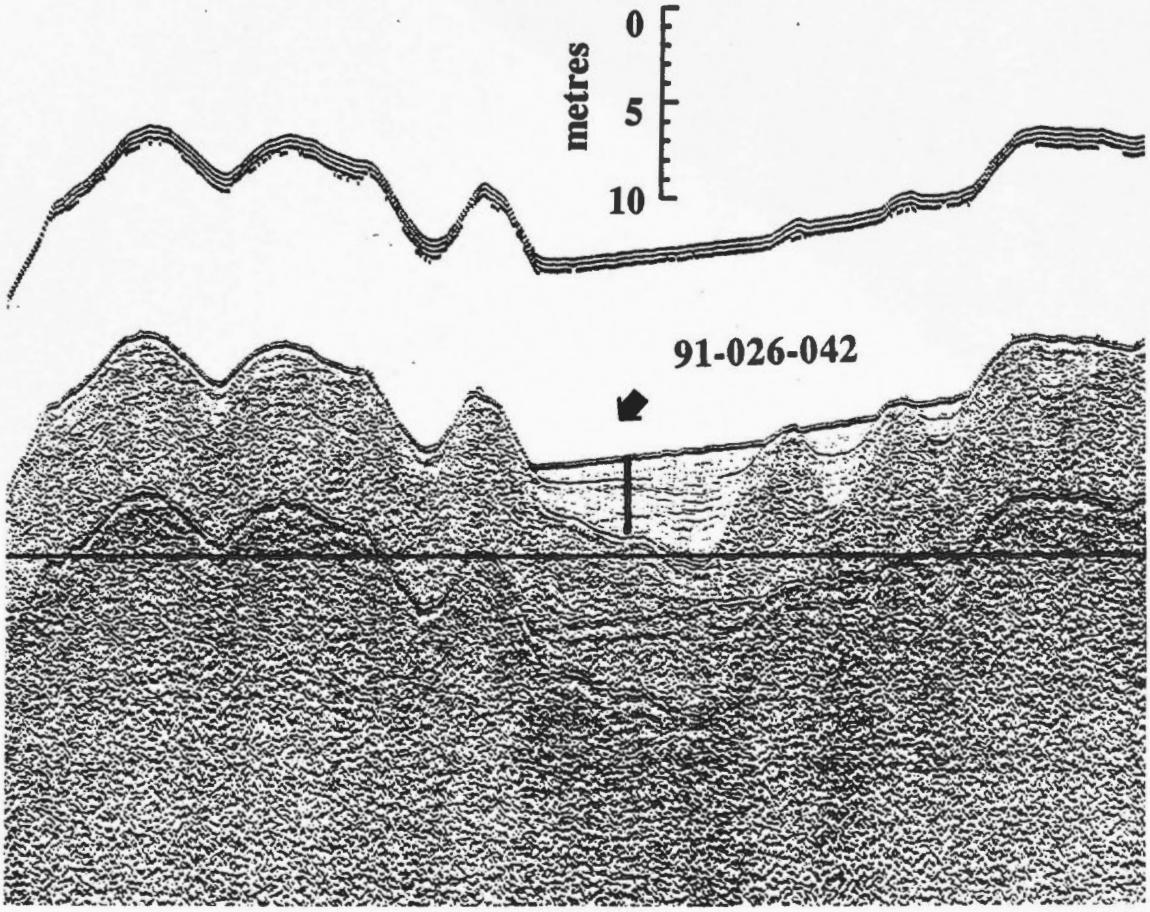
Huntec profile at the location of Benthos cores 91-026-008 (seismic daytime 1820821) and 91-026-010 (seismic daytime 1820816), Bay of Exploits.



Huntec profile at the location of Benthos core 91-026-009 (seismic daytime 1821050), Bay of Exploits.



Huntec profile at the location of vibracore 91-026-041 (seismic daytime 1870837), Hamilton Sound.



Huntec profile at the location of vibracore 91-026-042 (seismic daytime 1871059), Hamilton Sound.