GSC OPEN FILE 2584

CRUISE REPORT

Endeavour Cruise, 92-004
Queen Charlotte Sound

By

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With Contributions From:
W. Hill, G. Standen, T. Vandall

TABLE OF CONTENTS

General Cruise Information .....p. 1 - 5

Table 1: Facts Sheet .....p. 6

Table 2: Data Collected .....p. 7 - 8

Line Location Map .....p. 9

Core Location Map .....p. 10

Table 3: Line Number Start/Stops .....p. 11 -12

Table 4: Line Coordinates .....p. 13 - 14

Table 5A: Line Interruptions
(Huntec External & Internal DTS) .....p. 15 - 16

Table 5B: Line Interruptions
(100 KHz Sidescan & Sleevegun Seismics...p. 17

Table 5C: Line Interruptions
(3.5 & 12 KHz Bathymetry) .....p. 18

Core Descriptions and Tentative
Interpretations .....p. 19

Legend for Core Descriptions .....p. 19

Seismic Overview of Core Sites
(# 10, 12, 13, 16, 17, 25, 26) .....p. 20

Sample Information (FOR EACH CORE)
-- Huntec DTS Profile
-- Bathymetry Profile
-- Core Description
-- Magnetic Susceptibility
vs Depth Plots .....p. 21 - 116

Appendix 1: Huntec DTS Daily Reports .....p. 117 - 123

Appendix 2: Cruise Equipment Diary .....p. 124 - 129

Cruise name: PGC 92-004

Survey vessel: CFAV Endeavour

Study area: Queen Charlotte Sound

Cruise dates: June 22 - July 3/1992

PERSONNEL:

1) Heiner Josenhans (Chief Scientist)
2) Vaughn Barrie (Second Scientist)
3) Kim Conway
4) John Luternauer
5) Jay Stravers
6) Bill Hill
7) Ivan Frydecky
8) Graham Standen
9) Olav Lian
10) Bill Allen
11) Tom Vandall
12) Tim Patterson
13) Michelle Packard
14) Raelyn Crosley
15) Gina L'Esperance

ITINERARY:

Departed Esquimault 0930 June 22/92 en route to Queen Charlotte Sound (Q.C.S.). Proceeded along inside passage and ran 3 hour survey for BC Hyrdro between Vancouver Island and Texada Island. Then proceeded to retrieve turbidity event detector from head of Knight Inlet and then proceeded to Q.C.S. region. Following nearshore reconnaissance surveying and sampling, deployed shore party on Campania Island. Departed Q.C.S. early on the morning of July 2 for arrival at Esquimault on Friday morning July 3/92.

Designated Duties and Personnel

Second Scientist: Vaughn Barrie
Sampling Boss: Kim Conway
Core splitting/description: Olav Lian
Data archiving and cruise data compilation: Michelle Packard
Electronic equipment maintenance: Bill Hill
Navigation: Ivan Frydecky
Magnetic susceptibility: Tom Vandall

Seismic Watches:

1200-0400, 0000-0400 hrs
Ivan Frydecky (watch leader)
Tim Patterson
Raelyn Crosley

0400-0800, 1600-2000 hrs
Graham Standen (watch leader)
Tom Vandall
Gina L'Esperance

0800-1200, 2000-2400 hrs
Vaughn Barrie (watch leader)
John Luternauer
Jay Stravers

CRUISE OBJECTIVES:

The cruise was intended to collect data to address specific questions regarding the glacial history, seafloor stability and paleoenvironment of the Queen Charlotte Sound region.

Over 2000 line kilometres of airgun and high resolution Huntec DTS seismic data have been collected in previous years and complimented by approximately 40 piston and vibro cores. The available data set provides a framework for understanding the regional stratigraphy and glacial history but significant local gaps exist within this data set.

Existing data show evidence of large sand spits throughout the Q.C.S. with steep prograde slopes which have failed repeatedly since their emplacement. One of our major objectives was to determine the composition, stability and age of these former shoreline deposits. These large sand bodies are now found in approximately 110 metres depth and an additional objective of the cruise is to define the amount and local variability of sea level lowering which occured immediately after retreat of the glaciers.

The following specific goals were to be addressed through seismic surveying, piston/vibracoring, bottom photography and spot sampling throughout the Queen Charlotte Sound Region, Southern Queen Charlotte Islands, and nearby coastal exposures:
-Determine regional extent of glacial till.
-Define rate of glacial ice retreat.
-Determine age of local ice marginal deposits.
-Determine start and end of prograde spit deposition.
-Determine geotechnical nature and sedimentary character and stability of prograde spits.
-Determine the overall volume of prograde spits.
-Determine the volume and number of individual slope failure deposits at the foot of prograde spits.
-Determine the frequency of occurrence of these failed deposits.
-Through piston coring, obtain representative samples of all stratigraphic units defined by the seismic data.
-Obtain samples of buried channel deposits on bank tops in order to provide samples for pollen/foram analysis intended to define the paleoenvironment of these formerly dry banks (these samples will help to define the paleoenvironments which are important for understanding global climatic change as well as to determine the suitability of the area for early inhabitants).

RESULTS:

A summary listing of seismic and sample data collected in this cruise is shown in Tables 1-5. Maps showing location of seismic lines and sample positions are shown on page 9 and 10. Preliminary scientific highlights are described in the following section.

The cruise has allowed the imaging of the three dimensional distribution of the glacial and post glacial sediments in the Q.C.S. region. The state of the art data indicate that grounded glaciers flowed all the way to the shelf edge. A smooth unconformity, developed at the base of the advancing glaciers, appears unfaulted since emplacement of the glacial sediments. Piston core samples obtained from glaciogenic sediments at the shelf edge penetrated ice proximal sediments and glacial till. These cores will be subsampled and dated to determine the age of the last glacial advance.

At the edges of the banks in central Q.C.S., and overlying the glacial sediments, we observed steeply dipping (inferred) beach sands and gravels in the form of prograde spits which must have been deposited when sea levels were at least 110 m lower than present.

A closely spaced grid of high resolution seismic data complemented by numerous vibra and piston cores define the lateral extent and volume of several slump deposits observed at the base of these former shoreline deposits. Piston and vibra cores obtained from above and below these slump deposits will be analyzed to determine the age and frequency of these slope failure events. The number of observed slope failures suggest that these depositional settings may be sensitive indicators of seismicity.

Experience gained in studying the three dimensional configuration and frequency of failure of former shoreline deposits has helped us to develop an appropriate methodology for studying the stability of modern high angle prograding spits such as those which are presently found off Comox BC, Port Angeles, and Dungeness spits in the Juan De Fuca Strait. The results of this cruise suggest that the GSC/PGC has the tools and an appropriate strategy for studying the recurrence interval of recent (earthquake induced) shoreline failure events such as those which occured off Comox, BC in 1946. The subbottom resolution of the Huntec DTS coupled with piston and vibra cores should allow us to determine the recurrence interval of seismically induced events from the present, well into the Holocene record.

South-East of Moresby Island, the Huntec and airgun data reveal the approximate areal extent of a unique seismic unit which is interpreted to represent a proglacial lake deposit. The acoustically well stratified sediments occur within a morphologically complex and incised area. The seismic data

indicate that these sediments were deposited as basin fill into the localized depressions formed by the volcanics of the Masset Formation. A regional erosional event has subsequently deeply incised these basin fill deposits resulting in numerous (submerged) cliff sections. Piston cores and vibracores were taken from the flanks of these exposures and 35m of (Quaternary) section were sampled. The samples indicate coarse textured rapidly sedimented, sterile rythmites (possibly proglacial?) at the base of the section. These are overlain by a fining upward sequence of rythmites and massive silty clays. In contrast to the sterile sediments found at the base, the upper part of the section includes marine shells.

A veneer of well sorted, clean sands and gravels < 1-5m thick mantle the (proglacial?) basin fill deposits. These sediments are interpreted to have been deposited during a regression and subsequent transgression which occured after retreat of the glaciers.

Two mechanisms for eroding this regional unconformity are proposed.
1) The regression and transgression may have had sufficient erosive power to produce the incised relief and remove the large volumes of basin fill sediment.
2) A glacier originating from southern Moresby Island advanced over the basin fill sediments and eroded and transported the material. A subsequent regression and transgression merely slightly modified the existing erosional surface to produce the coarse sand and gravel veneer.

A lack of (observed) glacial till below the transgressive sands argues in favour of mechanism #1. However, a surprising lack of transgressive and younger basin fill sediments within the enclosed incised basins which would have resulted from the regression and transgression argues in favour of mechanism #2. Detailed analysis of the core samples to define environments of deposition, provenance, age and degree of compaction are needed to constrain further interpretations.

Acknowledgements:

We thank Captain Ken Butler and the officers and crew of the Endeavour for their willing support and excellent ship handling. Ivan Frydecky provided the technical support which allowed us to obtain state of the art seismic data and core samples.

TABLE 1

ENDEAVOUR 92-004 FACTS SHEET

SAMPLE INVENTORY	NUMBER
PETERSON GRABS	1
BENTHOS PISTON CORES	18
VIBRACORES	5
TOTAL SAMPLES	24

DATA TYPE	KILOMETRES
3.5 KHz BATHYMETRY	180
12 KHz BATHYMETRY	1205
HUNTEC DTS	1301
SLEEVEGUN SEISMICS	1116
100 KHz SIDESCAN	1196
TOTAL LINES (#1-42)	1385

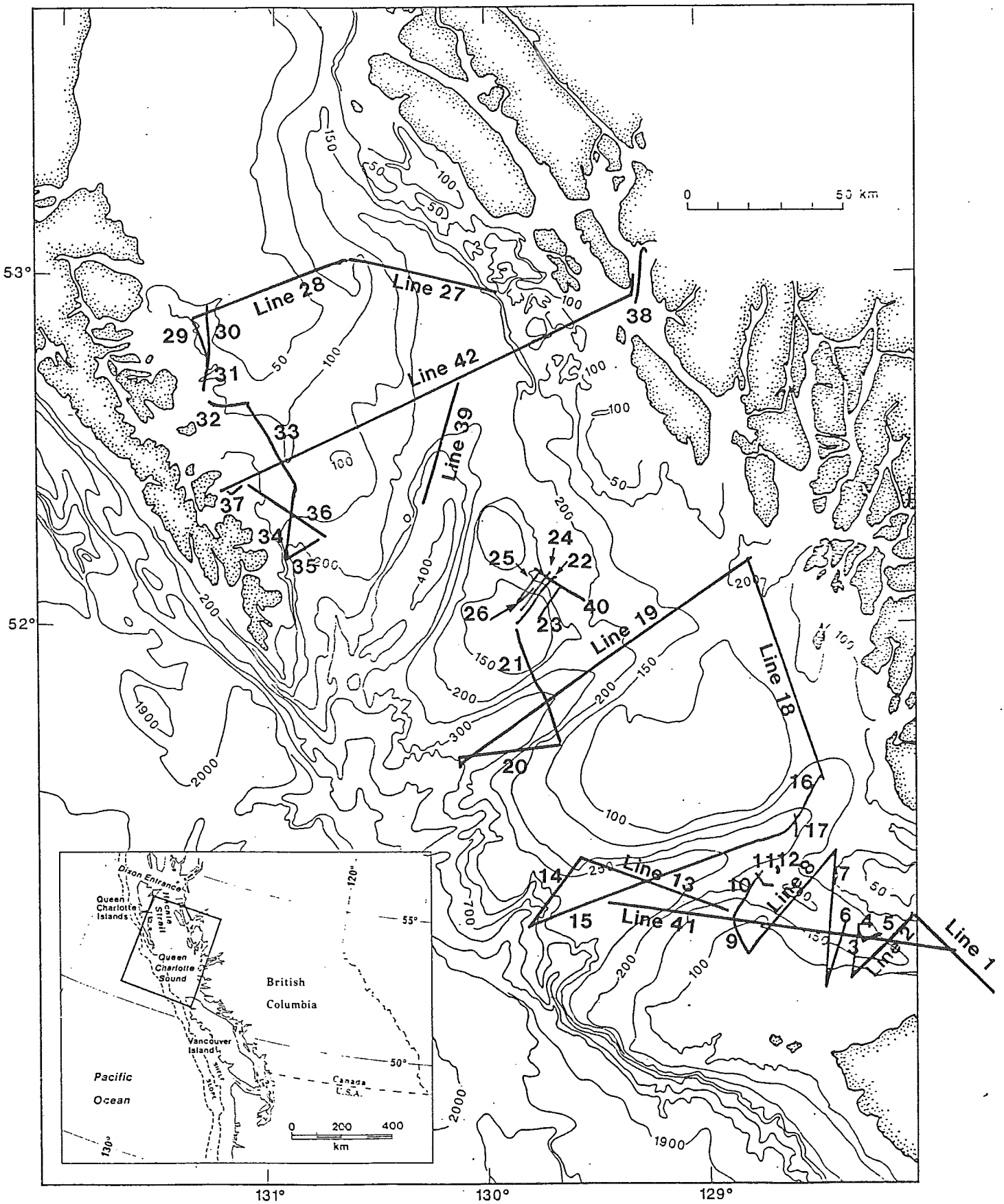
TABLE 2

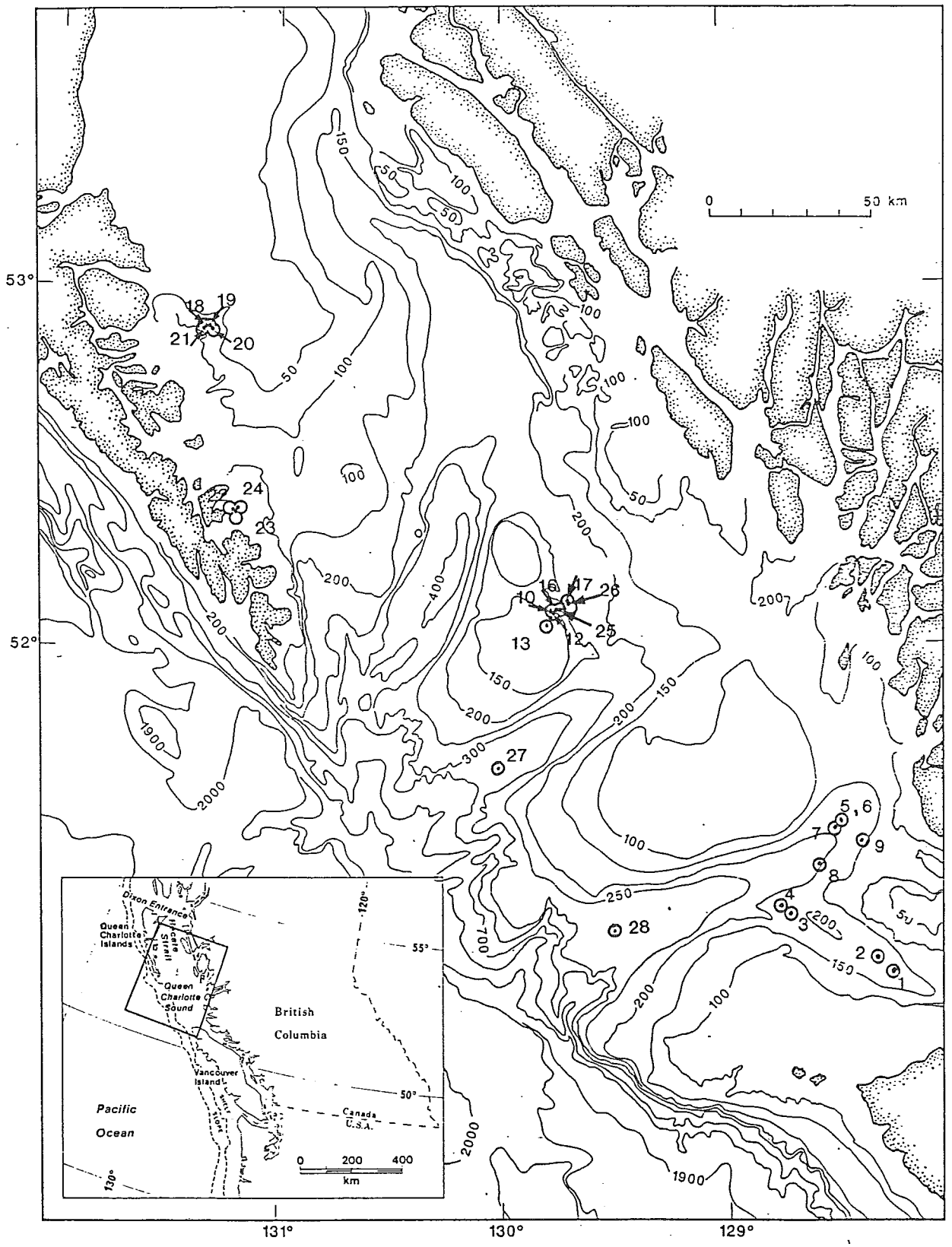
DATA COLLECTED

LINE #	SSS	HUNTEC DTS	SEISMIC NSRF/TELEDYNE/ PGCEEL/BENTHOS	BATHYMETRY 3.5KHz	12KHz	CORE #
1	X	X	P		X	
2	X	X	P		X	
3	X	X	P		X	
4	X	X	P		X	1
5	X	X	P		X	
6	X		N P	X		2
7	X	X	N P	X	X	
8	X	X	N P		X	
9	X	X	N P		X	
10	X	X	N P		X	4
11	X	X	N P		X	
12	X	X	N P		X	3
13	X	X	T P		X	
14	X	X	T P		X	
15	X	X	T P		X	28
16	X	X	T P		X	5, 6, 7
17		X			X	8
18	X	X	T P		X	9
19	X	X	T P		X	27
20	X	X	T P		X	
21	X	X	T P		X	
22	X	X	T P		X	10, 12, 13, 16, 17, 25, 26,
23	X	X	T P		X	
24	X	X	T P		X	

LINE #	SSS	HUNTEC DTS	SEISMIC NSRF/TELEDYNE/ PGCEEL/BENTHOS	BATHYMETRY 3.5KHz	BATHYMETRY 12KHz	CORE #
25	X	X	T P		X	
26	X	X	T P		X	
27	X	X	P B		X	
28	X	X	P B		X	18, 19, 20, 21,
29	X	X	P B		X	
30	X	X	P B		X	
31	X	X	P B		X	
32	X	X	P B		X	
33	X	X	P B		X	
34	X	X	P B		X	
35	X	X	P B		X	
36	X	X	P B		X	
37	X	X	P B		X	22, 23, 24
38		X	P		X	
39	X	X	P		X	
40		X			X	
41	X	X	P B		X	
42				X		

LINE LOCATIONS





CORE LOCATIONS

TABLE 3

LINE NUMBER START/STOPS

LINE NUMBER	START Day/Time	STOP Day/Time
1	176 / 0600	176 / 0937
2	176 / 0945	176 / 1300
3	176 / 1300	176 / 1500
4	176 / 1500	176 / 1537
5	176 / 1537	176 / 1615
6	177 / 0250	177 / 0445
7	177 / 0445	177 / 0940
8	177 / 0940	177 / 1400
9	177 / 1400	177 / 1530
10	177 / 1530	177 / 1721
11	177 / 1731	177 / 1800
12	177 / 1800	177 / 1830
13	177 / 2245	178 / 0400
14	178 / 0400	178 / 0630
15	178 / 0630	178 / 1525
16	178 / 1525	178 / 1732
17	178 / 2130	178 / 2212
18	179 / 0300	179 / 0945
19	179 / 0945	179 / 2000
20	179 / 2045	180 / 0001
21	180 / 0001	180 / 0345
22	180 / 0410	180 / 0615
23	180 / 0645	180 / 0815
24	180 / 0900	180 / 1131
25	180 / 1210	180 / 1335
26	180 / 1440	180 / 1440
27	181 / 0650	181 / 1215

LINE NUMBER	START Day/Time	STOP Day/Time
28	181 / 1220	181 / 1711
29	181 / 1711	181 / 1830
30	181 / 1840	181 / 2000
31	182 / 0100	182 / 0215
32	182 / 0256	182 / 0415
33	182 / 0420	182 / 0740
34	182 / 0745	182 / 1000
35	182 / 1000	182 / 1131
36	182 / 1220	182 / 1530
37	182 / 1540	182 / 1615
38	183 / 0340	183 / 0600
39	183 / 0920	183 / 1324
40	183 / 1708	183 / 1900
41	184 / 0315	184 / 1400
42	182 / 2020	183 / 0325

TABLE 4
LINE COORDINATES

LINE #	START COORDINATES		STOP COORDINATES	
	LATITUDE	LONGITUDE	LATITUDE	LONGITUDE
1	50° 55.3	127° 40.9	51° 08.38	128° 01.36
2	51° 09.44	128° 02.25	50° 58.42	128° 20.03
3	50° 58.42	128° 20.03	51° 08.00	128° 17.20
4	51° 08.00	128° 17.20	51° 05.00	128° 15.57
5	51° 05.00	128° 15.57	51° 05.56	128° 11.35
6	51° 08.20	128° 21.15	50° 58.14	128° 26.55
7	50° 58.14	128° 26.55	51° 20.96	128° 23.11
8	51° 20.96	128° 23.11	51° 03.43	128° 48.72
9	51° 03.43	128° 48.72	51° 09.64	128° 52.84
10	51° 09.64	128° 52.84	51° 17.10	128° 44.89
11	51° 17.28	128° 45.85	51° 15.23	128° 44.10
12	51° 15.23	128° 44.10	51° 15.07	128° 40.53
13	51° 09.91	128° 54.57	51° 20.35	129° 33.98
14	51° 20.35	129° 33.98	51° 09.19	129° 47.94
15	51° 09.19	129° 47.94	51° 33.94	128° 26.61
16	51° 24.58	128° 36.07	51° 32.76	128° 27.81
17	51° 26.50	128° 34.65	51° 22.81	128° 34.41
18	51° 33.43	128° 26.17	52° 10.22	128° 46.09
19	52° 10.22	128° 46.09	51° 35.85	130° 08.29
20	51° 37.48	130° 06.07	51° 39.18	129° 38.91
21	51° 39.18	129° 38.91	51° 59.06	129° 51.41
22	52° 00.07	129° 51.29	52° 08.11	129° 40.05
23	52° 06.48	129° 39.19	52° 00.77	129° 46.22
24	52° 02.11	129° 49.75	52° 08.75	129° 41.26
25	52° 09.36	129° 43.49	52° 03.72	129° 51.16
26	52° 03.72	129° 51.16	52° 06.03	129° 46.47
27	52° 57.46	129° 57.52	53° 02.98	130° 39.38
28	53° 02.92	130° 40.20	52° 51.68	131° 23.86

LINE #	START COORDINATES		STOP COORDINATES	
	LATITUDE	LONGITUDE	LATITUDE	LONGITUDE
29	52° 51.68	131° 23.86	52° 45.59	131° 19.08
30	52° 45.80	131° 18.43	52° 53.94	131° 19.18
31	52° 45.98	131° 18.55	52° 39.56	131° 19.99
32	52° 37.70	131° 18.41	52° 37.68	131° 08.07
33	52° 37.53	131° 07.58	52° 23.57	130° 54.59
34	52° 23.18	130° 54.22	52° 10.93	130° 57.09
35	52° 10.93	130° 57.09	52° 14.81	130° 47.00
36	52° 15.33	130° 45.92	52° 23.96	131° 07.38
37	52° 23.92	131° 08.80	52° 22.63	131° 13.30
38	53° 04.71	129° 13.97	52° 54.65	129° 16.71
39	52° 41.21	130° 07.35	52° 21.36	130° 17.81
40	52° 08.05	129° 42.88	52° 04.47	129° 32.96
41	51° 12.58	129° 25.86	51° 02.91	127° 53.13
42	52° 22.1	131° 13.5	52° 59.5	129° 16.8

TABLE 5A
LINE INTERRUPTIONS

HUNTEC EXTERNAL DTS		HUNTEC INTERNAL DTS	
Start	Stop	Start	Stop
176/0600	176/1632	176/0635	176/1058
177/0600	177/1845	176/1102	176/1521
177/2223	178/0706	176/1527	176/1632
178/0818	178/1358	177/0600	177/0833
178/1401	178/1732	177/0837	177/1104
178/2135	178/2212	177/1107	177/1301
179/0150	179/2005	177/1339	177/1400
179/2020	180/0815	177/1441	177/1845
180/0847	180/1440	177/2230	178/0049
181/0642	181/1333	178/0053	178/0243
181/1341	181/1752	178/0247	178/0416
181/1755	181/2003	178/0430	178/0525
182/0035	182/0227	178/0610	178/0625
182/0246	182/1614	178/0819	178/1352
183/0335	183/0600	178/1403	178/1732
183/0918	183/1324	178/2135	178/2212
183/1734	184/1859	179/0155	179/0923
184/0223	184/1400	179/1015	179/1657
		179/1702	179/1714
		179/1718	179/1758
		179/1824	179/1950
		179/1954	179/2002
		179/2045	179/2228
		179/2249	180/0011
		180/0030	180/0214
		180/0217	180/0350
		180/0356	180/0912
		180/0922	180/0940

HUNTEC EXTERNAL DTS	
Start	Stop

HUNTEC INTERNAL DTS	
Start	Stop
180/0944	180/1241
180/1245	180/1410
180/1417	180/1440
181/0645	181/1330
181/1341	181/1853
181/1900	181/2003
182/0035	182/0226
182/0248	182/0950
182/0959	182/1507
182/1517	182/1610
183/0335	183/0340
183/0405	183/0600
183/0920	183/1324
183/1725	183/1900
184/0225	184/0455
184/0503	184/0914
184/0917	184/1400

TABLE 5B
LINE INTERRUPTIONS

100 KHz SIDESCAN		SLEEVEGUN SEISMICS	
Start	Stop	Start	Stop
176/0600	176/1640	176/0630	176/1400
177/0050	177/1835	176/1500	176/1647
177/2210	178/1732	177/0150	177/1450
179/0200	180/1430	177/1500	177/1723
181/0640	181/2000	177/1734	177/1850
182/0040	182/1615	177/2228	177/0220
183/0920	183/1324	177/0230	178/1735
184/0220	184/1400	179/0255	179/0443
		179/0448	179/0818
		179/0847	179/0852
		179/1048	180/1121
		180/1130	180/1336
		180/1341	180/1449
		181/0704	181/1552
		181/1607	181/2005
		182/0034	182/0230
		182/0250	182/1615
		183/0400	183/0605
		183/0931	183/0951
		183/0958	183/1011
		183/1020	183/1324
		184/0235	184/1410

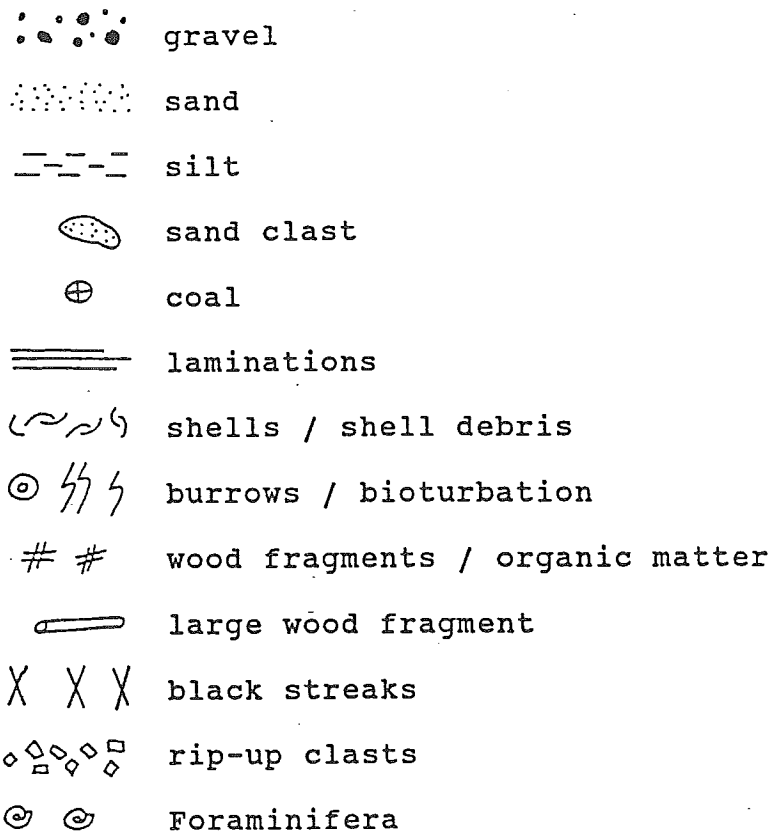
TABLE 5C
LINE INTERRUPTIONS

3.5 KHz BATHYMETRY		12 KHz BATHYMETRY	
Start	Stop	Start	Stop
176/1640	177/0050	176/0547	176/1640
177/0124	177/0603	177/0050	177/0124
177/1920	177/2209	177/0603	177/1917
178/1900	178/2132	177/2212	178/1900
178/2242	179/0146	178/2132	178/2242
180/1455	180/2135	179/0146	180/1455
180/2202	180/2351	181/0615	181/2010
181/0040	181/0347	182/0030	182/1630
181/0352	181/0615	183/0330	183/1342
181/2015	182/0025	183/1700	183/1927
182/1635	182/1905	184/0215	184/1320
182/1933	182/1940		
182/2020	183/0100		
183/0140	183/0302		
183/0314	183/0325		
183/1342	183/1700		
183/1927	184/0215		

CORE DESCRIPTIONS AND TENTATIVE INTERPRETATIONS

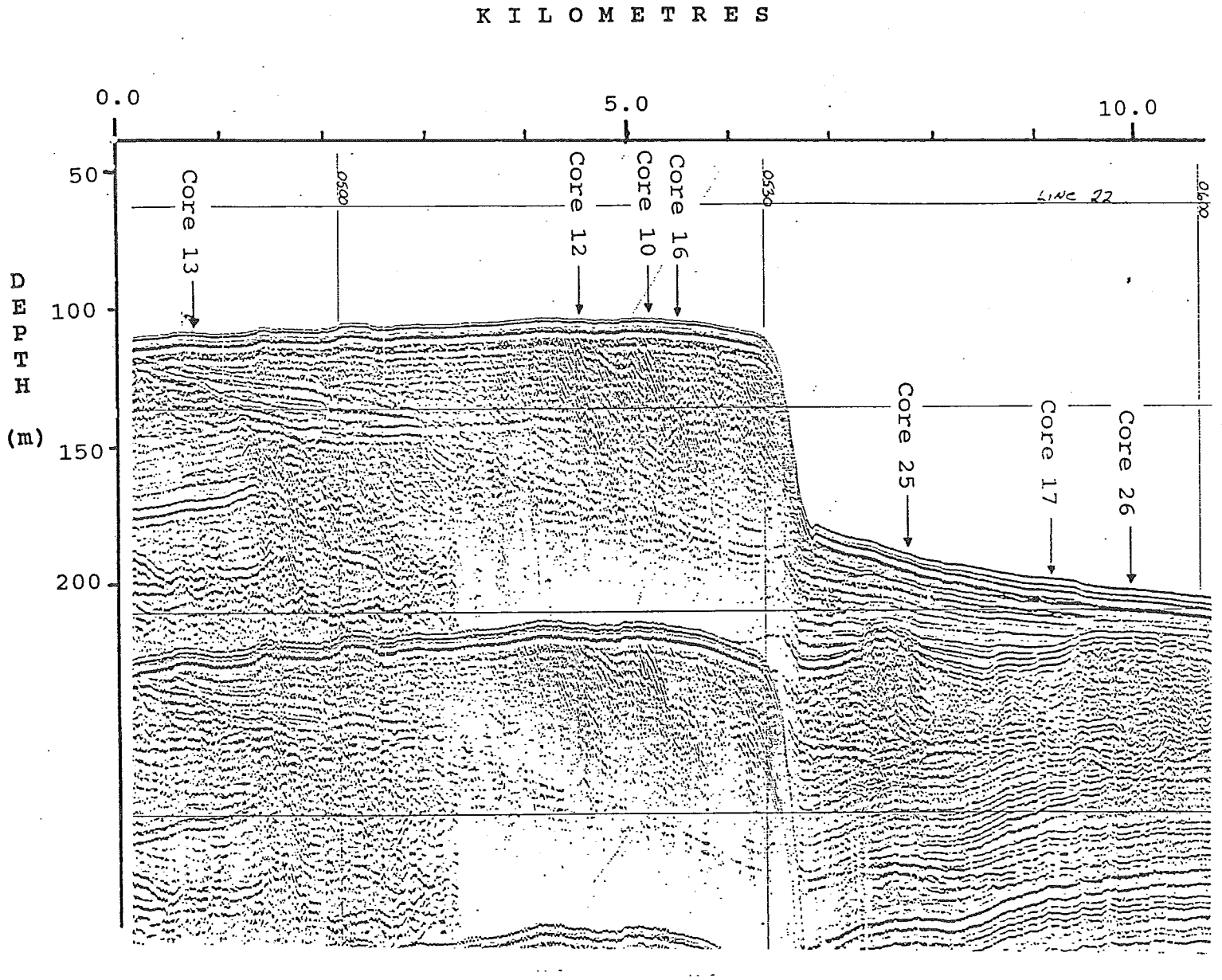
Cores collected during PGC 92-004 were measured for magnetic susceptibility using a Sapphire Instruments SI-2 susceptibility meter aboard ship. Subsequent processing of the cores involved splitting, photography, visual description of sedimentary structures and units, and subsampling for microfauna and other analyses. The tentative interpretations provided with the lithologic columns were prepared by the examination of the Huntec DTS records collected at core sites, together with core photographs and lithologic columns. Tentative assignment of stages (Holocene, Late Wisconsinan) to lighologic units was done based on lithologic similarity to radiocarbon dated units and facies relationships established through previous work, both published and unpublished, on central British Columbia continental shelf sediments.

LEGEND



OVERVIEW OF CORE SITES:
10, 12, 13, 16, 17, 25, & 26

Geographic Location: Middle Bank



PGC 100 EEL SEISMIC PROFILE

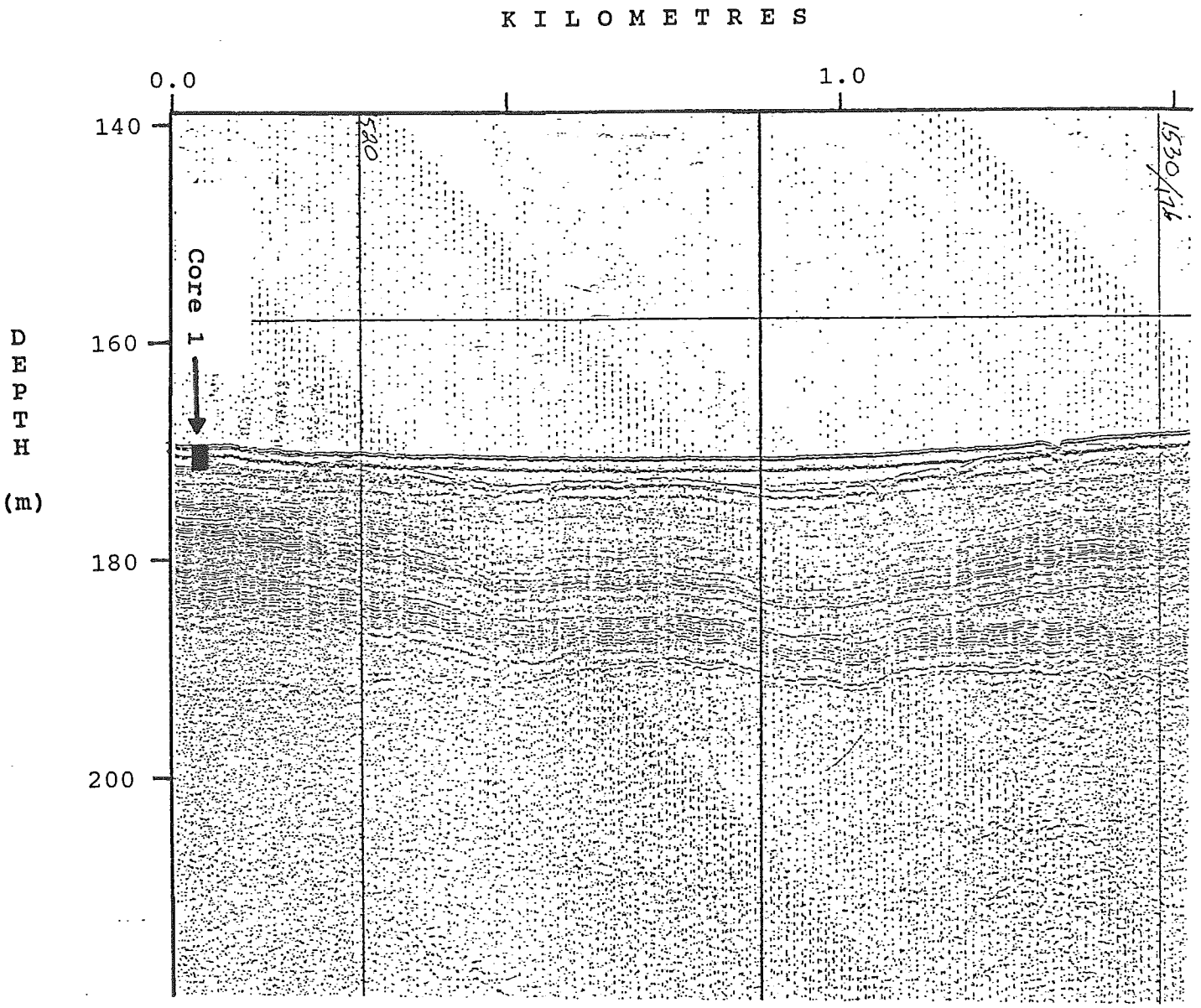
92-004-01: B-Piston Core

Julian Day: 176 GMT Time: 2032

Latitude: 51° 06.1493 N Longitude: 128° 16.5725 W

Depth: 169.5 m Core Length: 227 cm

Geographic Location: Cooks Trough

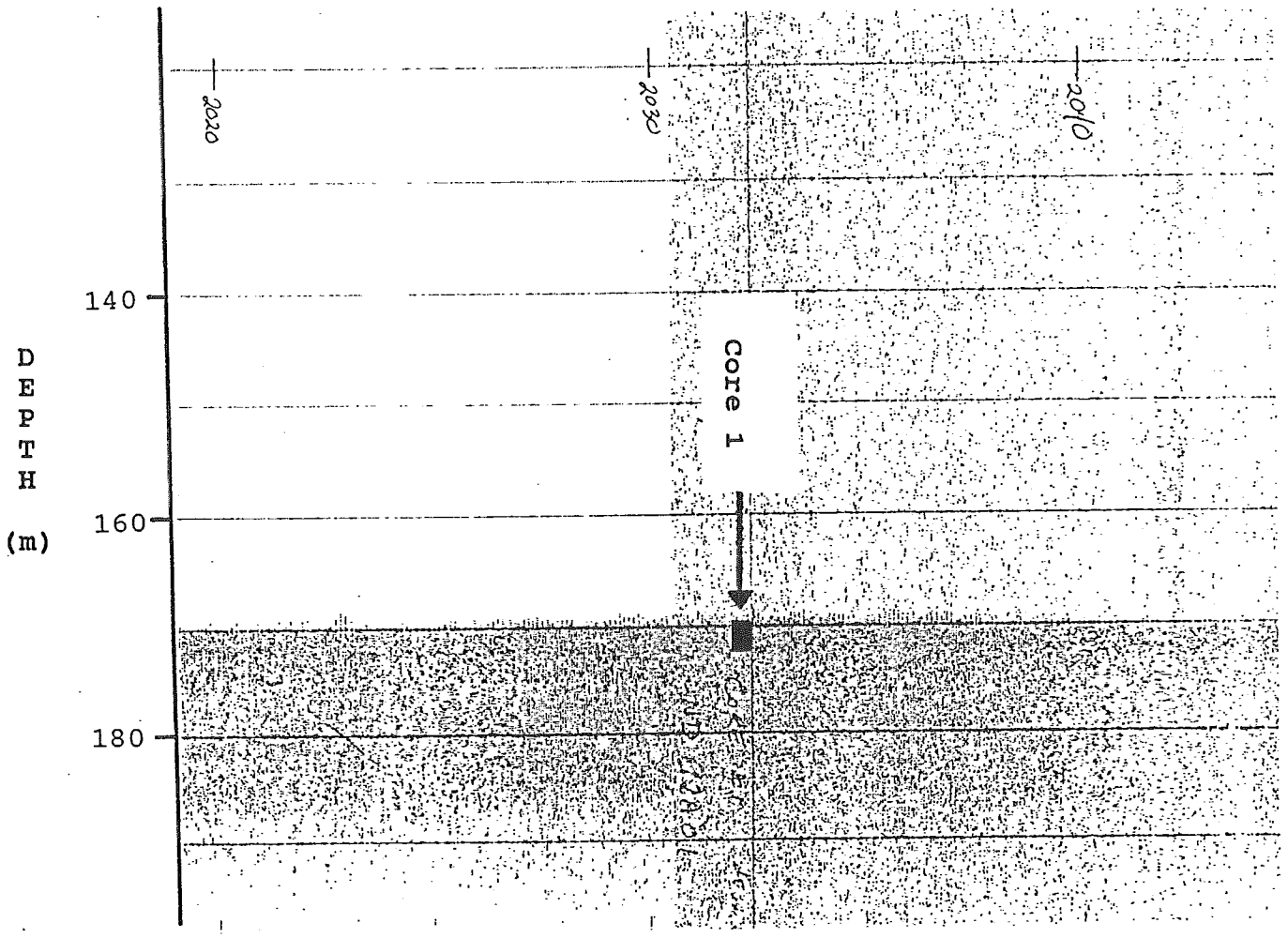


HUNTEC DTS profile

92-004-01: B-Piston Core

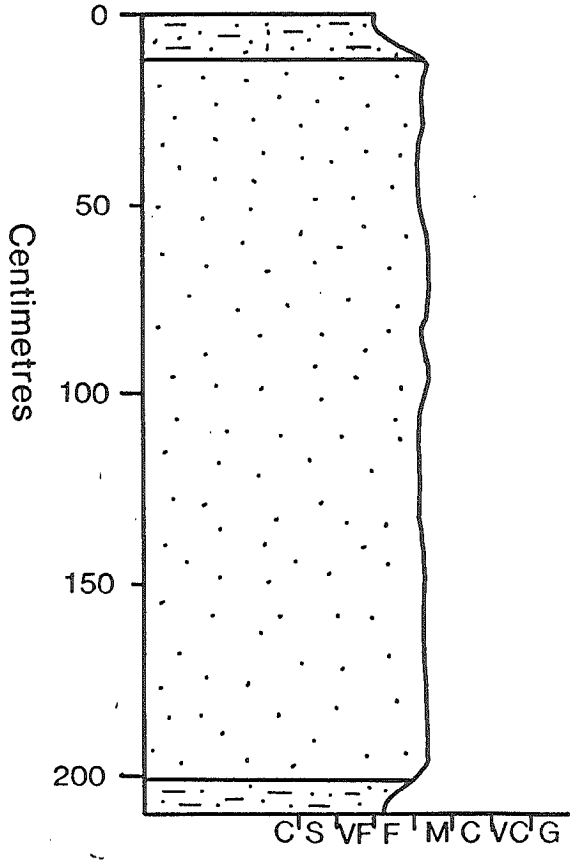
Julian Day: 176
GMT Time: 2032
Latitude: 51° 06.1493 N
Longitude: 128° 16.5725 W
Depth: 169.5 m
Core Length: 227 cm

Geographic Location: Cooks Trough

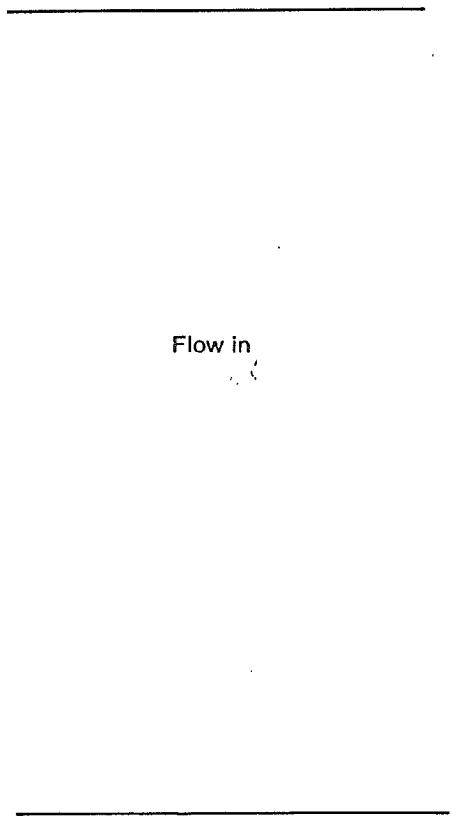


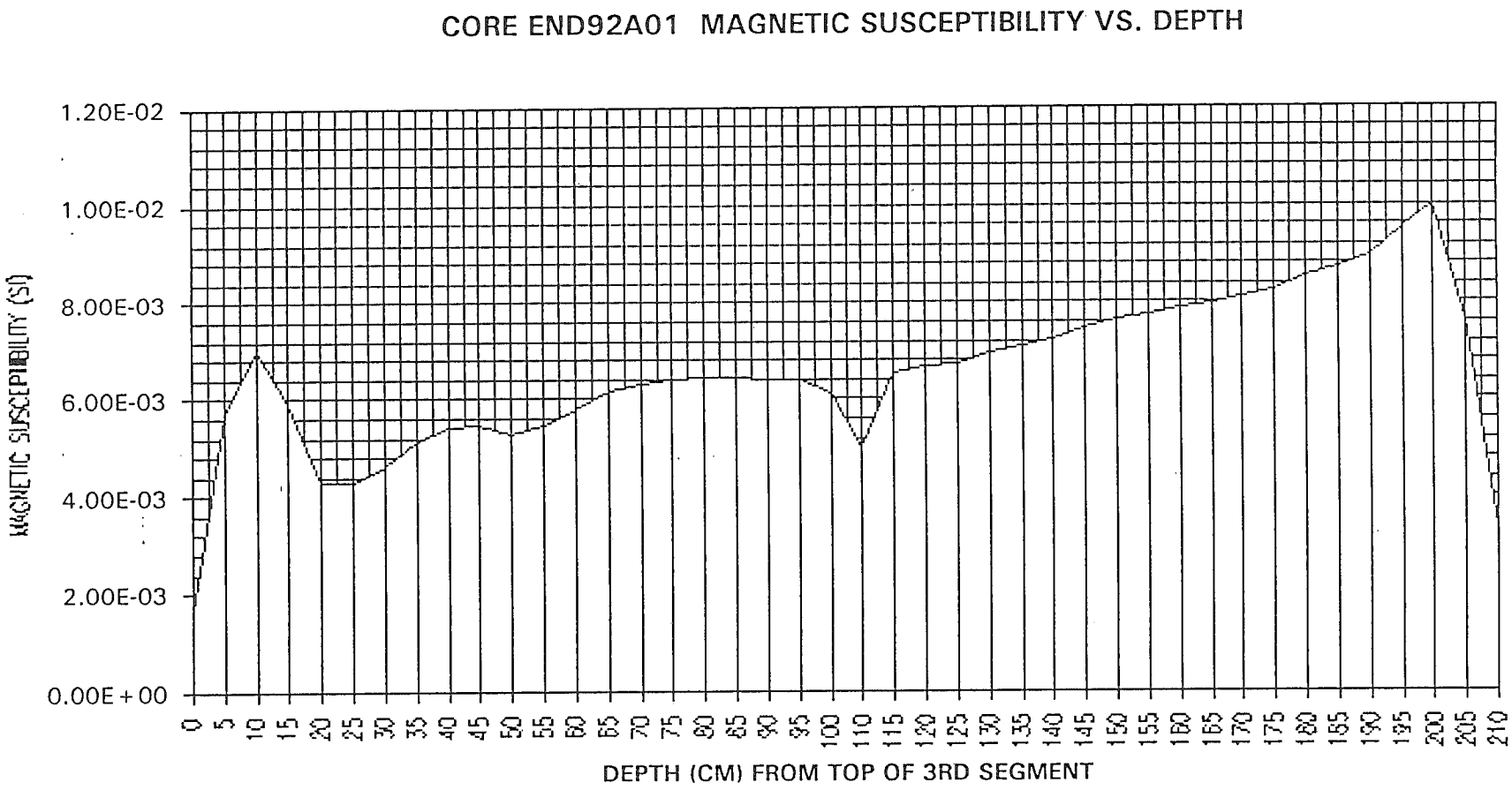
3.5 KHz BATHYMETRY profile

END 92A001
169 M



TENTATIVE INTERPRETATION




CORE END92A01 MAGNETIC SUSCEPTIBILITY VS. DEPTH
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1.00E-02
8.00E-03
6.00E-03
4.00E-03
2.00E-03
0.00E+00
MAGNETIC SUSCEPTIBILITY (SI)
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100 110 115 120 125 130 135 140 145 150 155 160 165 170 175 180 185 190 195 200 205 210
DEPTH (CM) FROM TOP OF 3RD SEGMENT

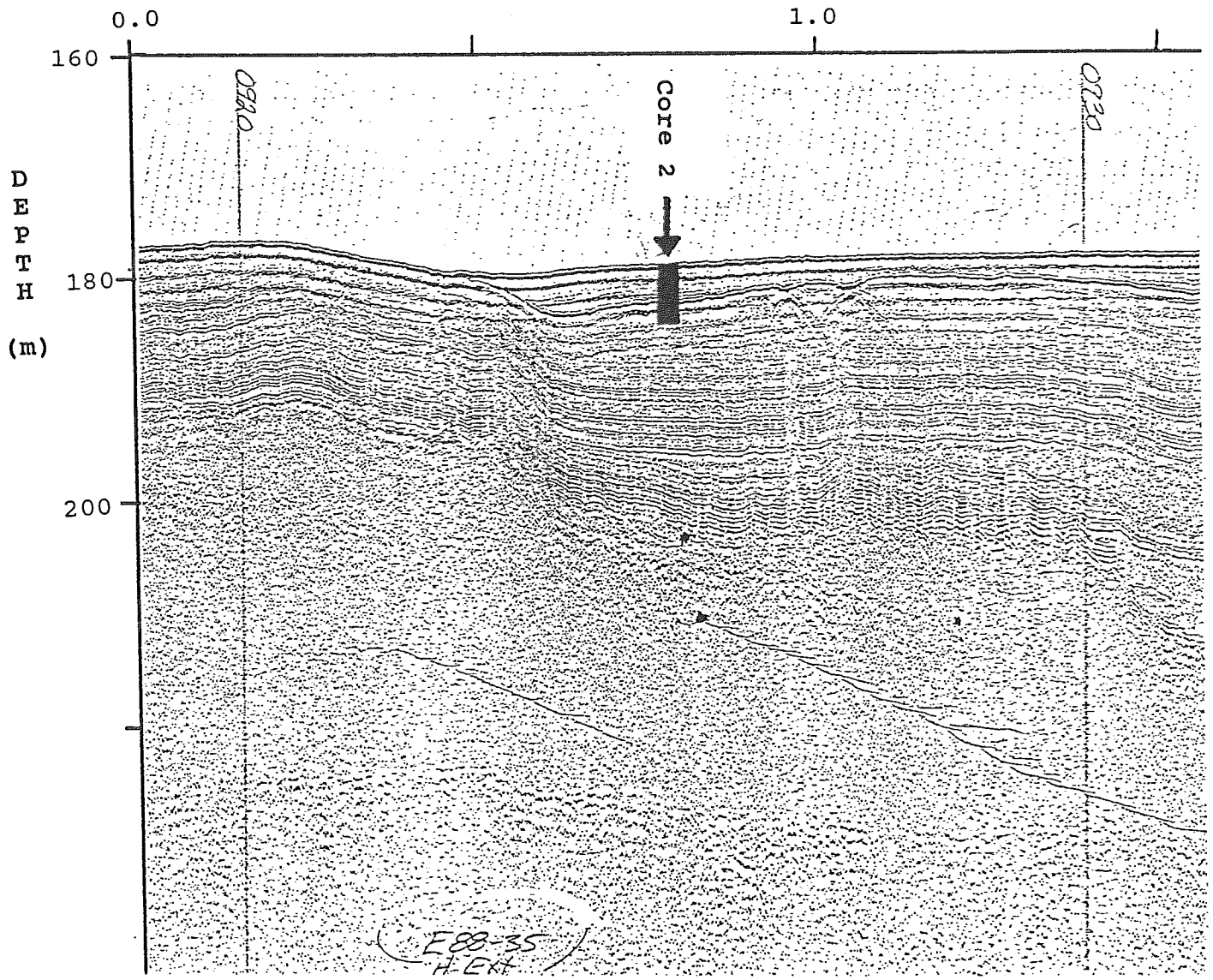
92-004-02: B-Piston Core

Julian Day: 176 GMT Time: 2328

Latitude: 51° 08.4173 N Longitude: 128° 20.4714 W

Depth: 179 m Core Length: 559 cm

Geographic Location: Cooks Trough



HUNTEC DTS profile

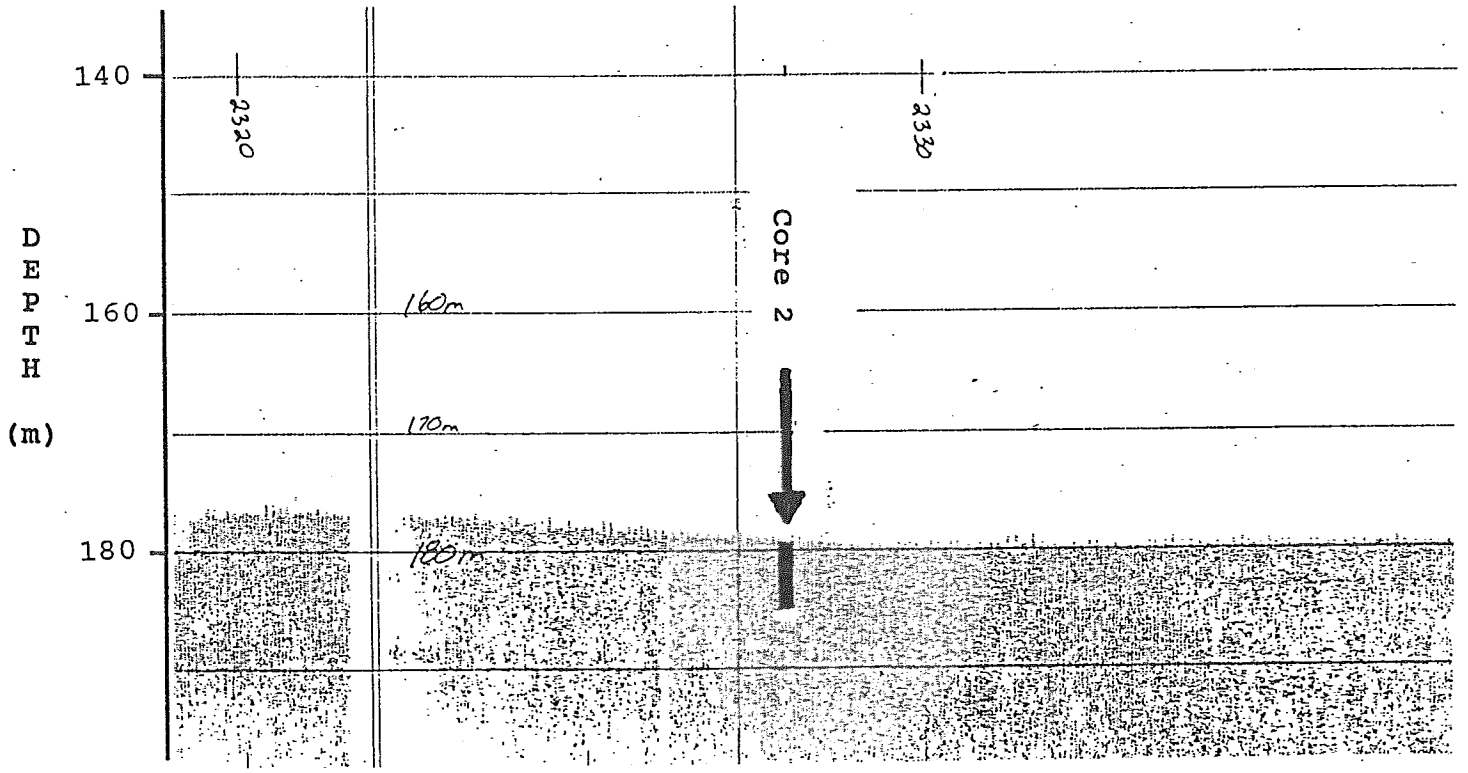
92-004-02: B-Piston Core

Julian Day: 176 GMT Time: 2328

Latitude: 51° 08.4173 N Longitude: 128° 20.4714 W

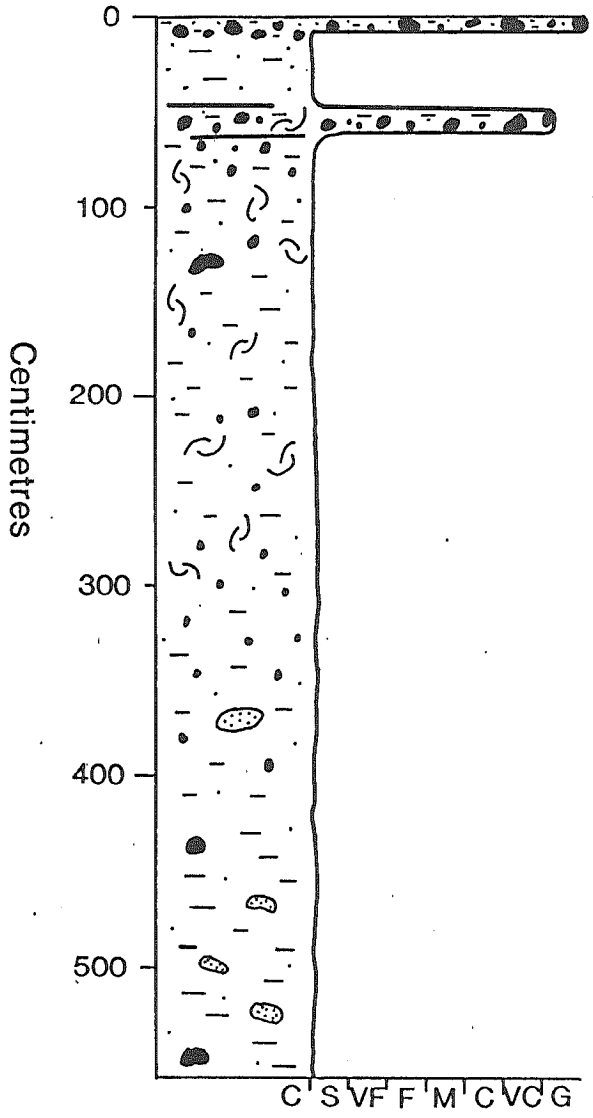
Depth: 179 m Core Length: 559 cm

Geographic Location: Cooks Trough



3.5 KHz BATHYMETRY profile

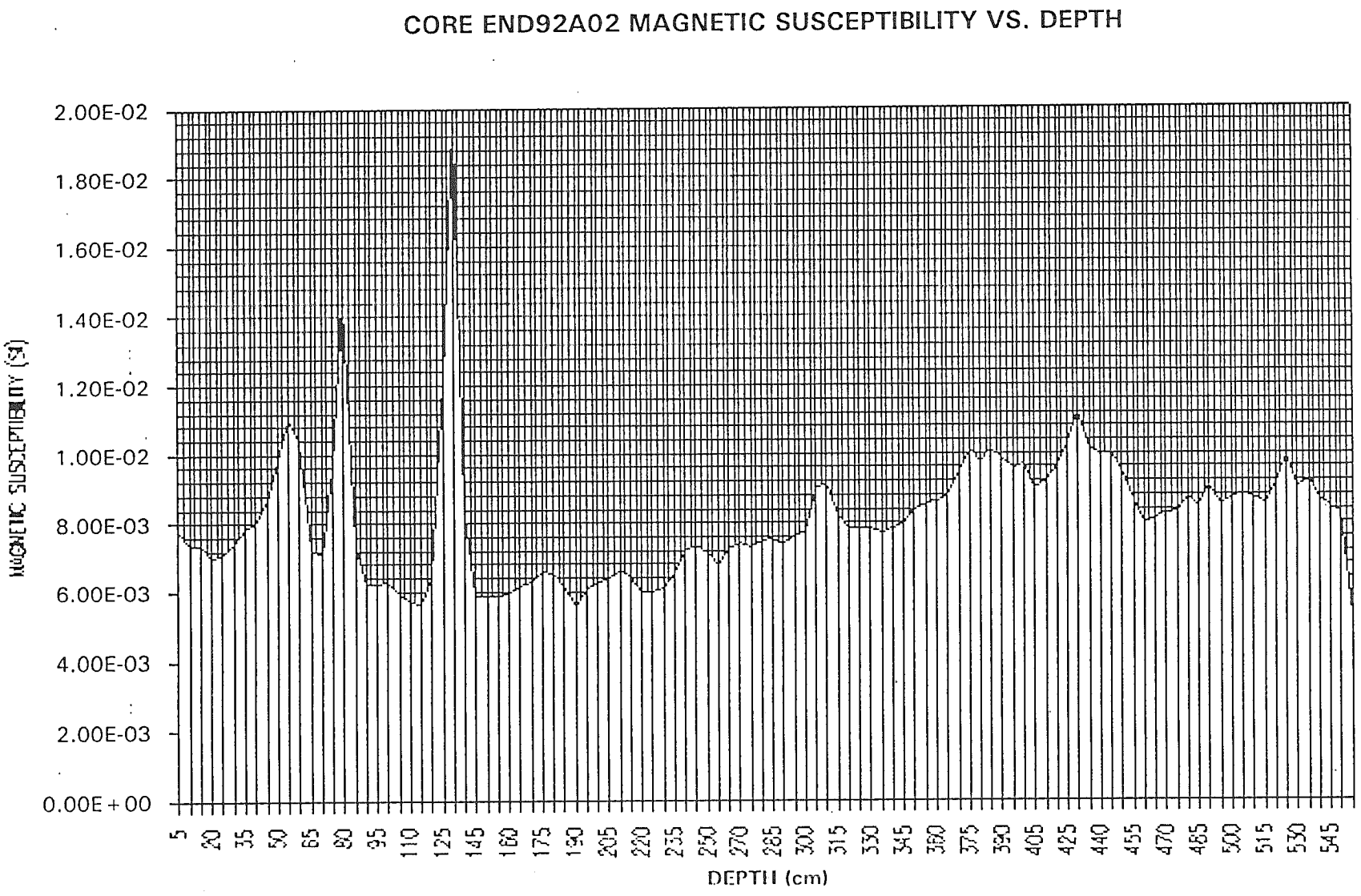
END 92A002
179m



TENTATIVE INTERPRETATION

Late Wisconsinan gravel lags associated with lowstand of sea level.

Late Wisconsinan glaciomarine mud with ice rafted debris (IRD).


CORE END92A02 MAGNETIC SUSCEPTIBILITY VS. DEPTH
2.00E-02
1.80E-02
1.60E-02
1.40E-02
1.20E-02
1.00E-02
8.00E-03
6.00E-03
4.00E-03
2.00E-03
0.00E+00
5
20
35
50
65
80
95
110
125
145
160
175
190
205
220
235
250
270
285
300
315
330
345
360
375
390
405
425
440
455
470
485
500
515
530
545
DEPTH (cm)

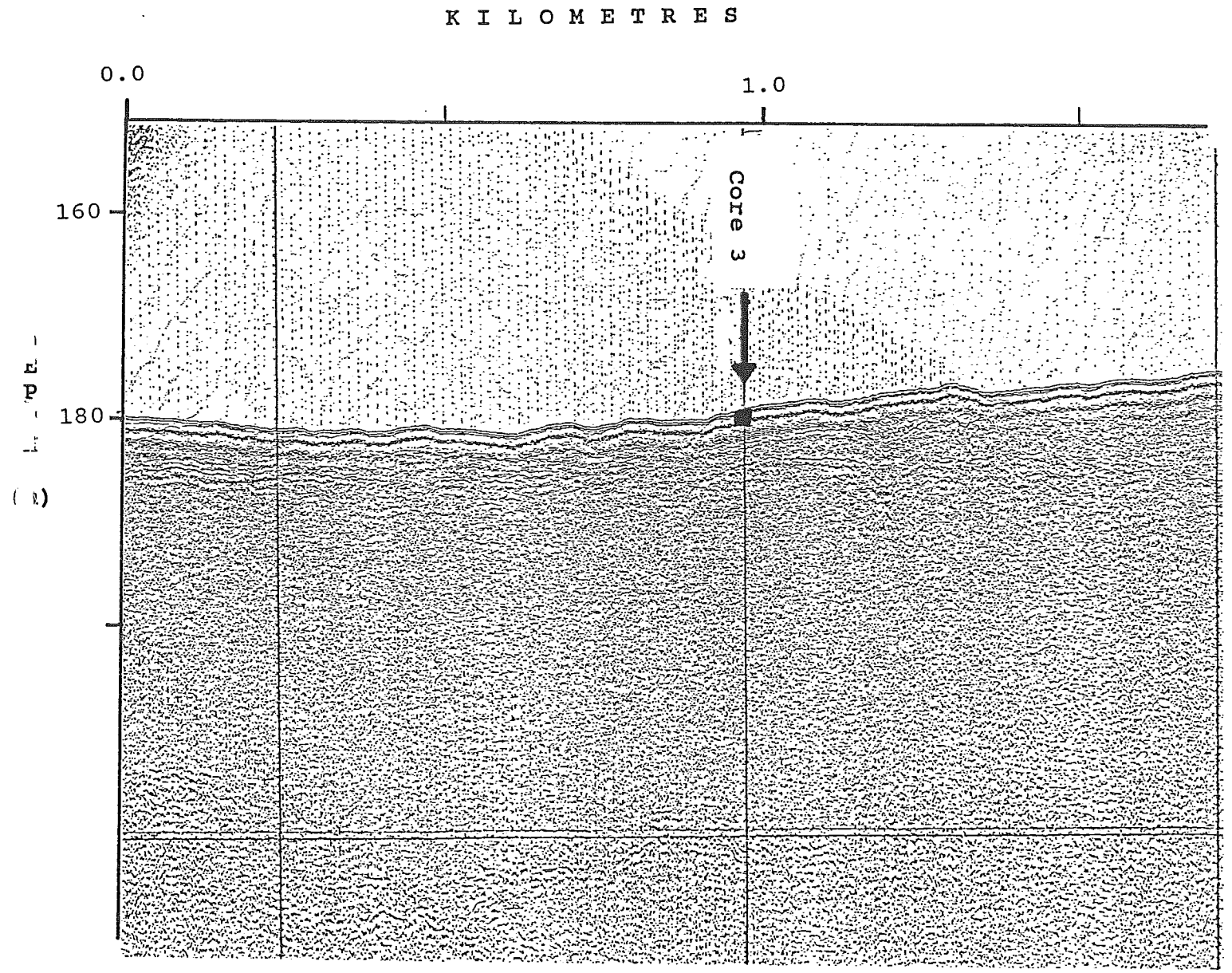
92-004-03: B-Piston Core

Julian Day: 177 GMT Time: 2001

Latitude: 51° 14.893 N Longitude: 128° 42.983 W

Depth: 179.5 m Core Length: 173 cm

Geographic Location: Cooks Trough



HUNTEC DTS profile

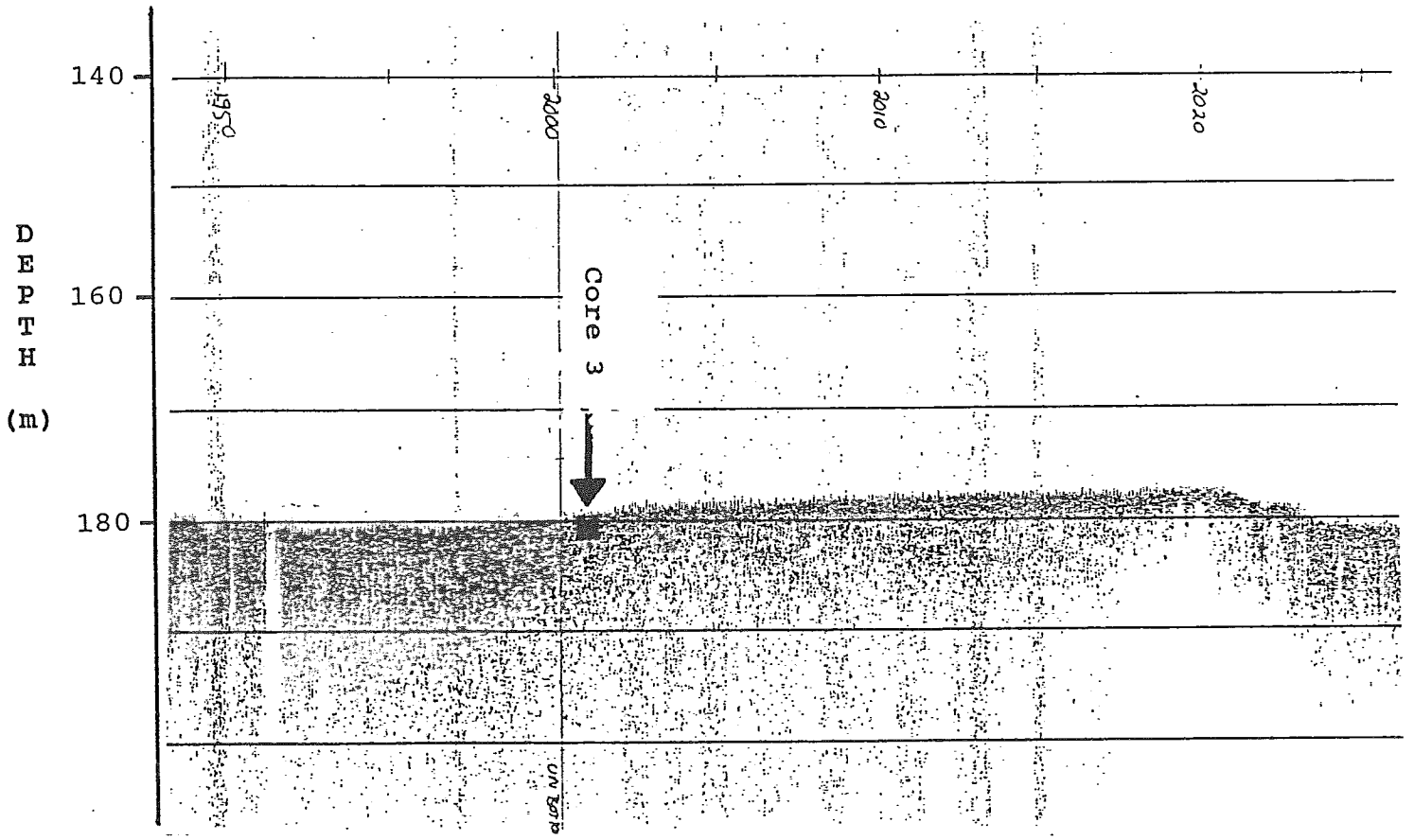
92-004-03: B-Piston Core

Julian Day: 177 GMT Time: 2001

Latitude: 51° 14.893 N Longitude: 128° 42.983 W

Depth: 179.5 m Core Length: 173 cm

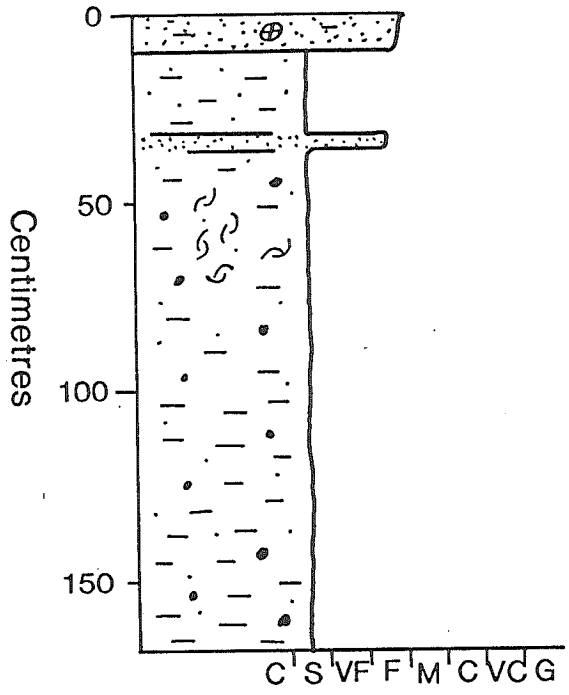
Geographic Location: Cooks Trough



3.5 KHz BATYMETRY profile

END 92A003

179m

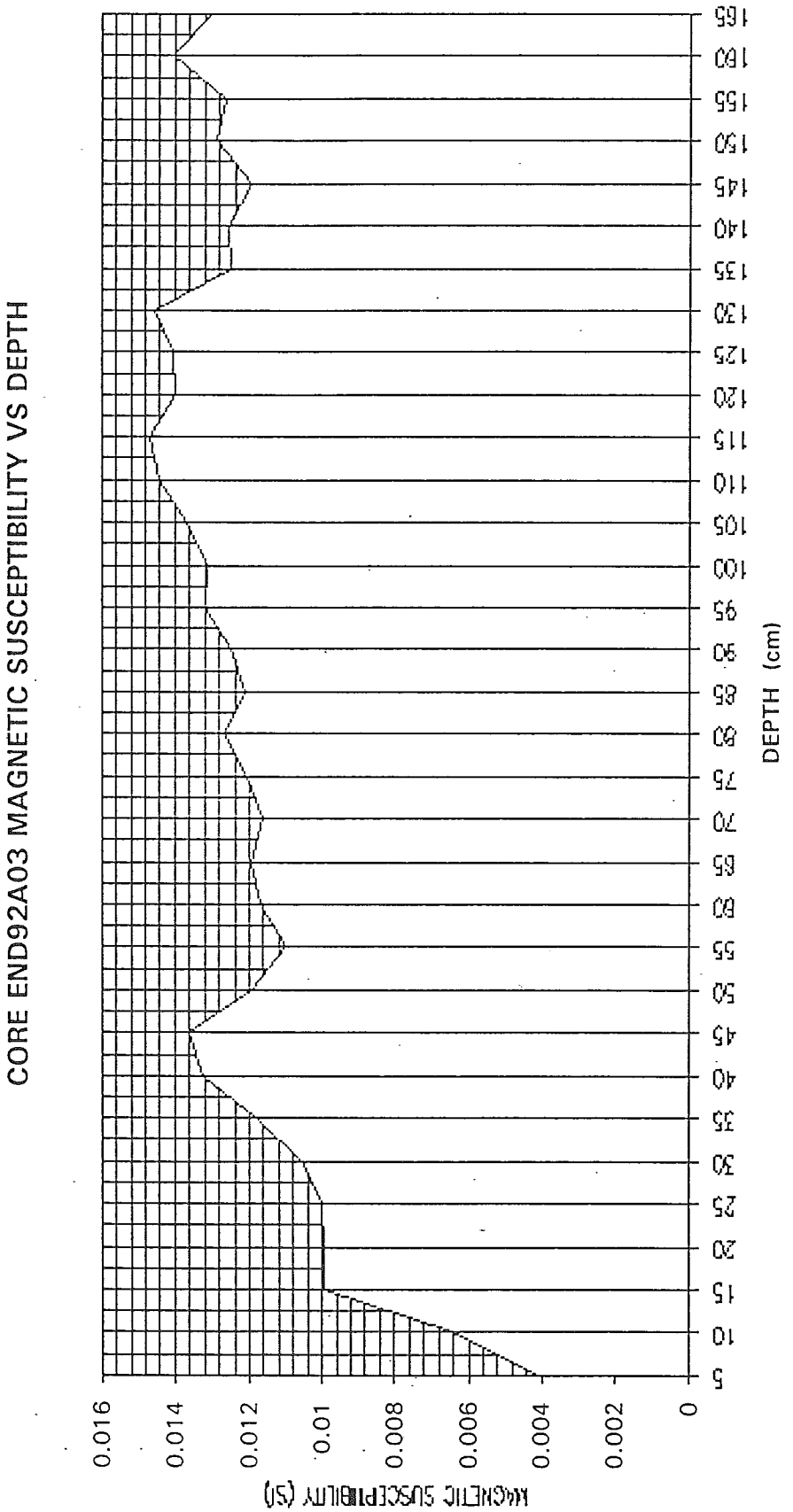


TENTATIVE INTERPRETATION

Holocene sand.

Late Wisconsinan glaciomarine mud with IRD.

E92A03.XLC


CORE END92A03 MAGNETIC SUSCEPTIBILITY VS DEPTH
MAGNETIC SUSCEPTIBILITY (SI)
0.016
0.014
0.012
0.01
0.008
0.006
0.004
0.002
0
DEPTH (cm)
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
105
110
115
120
125
130
135
140
145
150
155
160
165

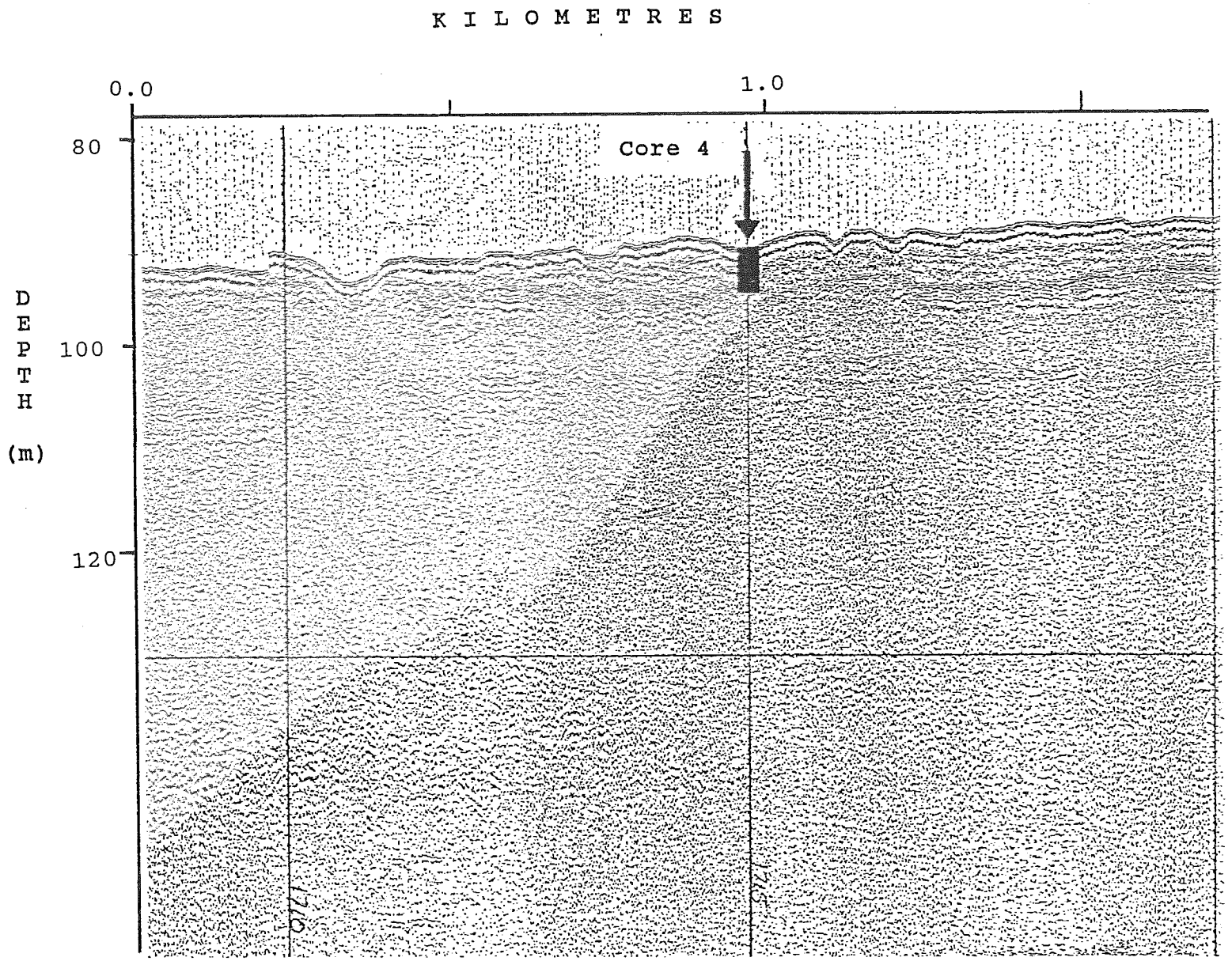
92-004-04: B-Piston Core

Julian Day: 177 GMT Time: 2108

Latitude: 51° 16.6796 N Longitude: 128° 45.5016 W

Depth: 191 m Core Length: 463 cm

Geographic Location: Cooks Trough



HUNTEC DTS profile

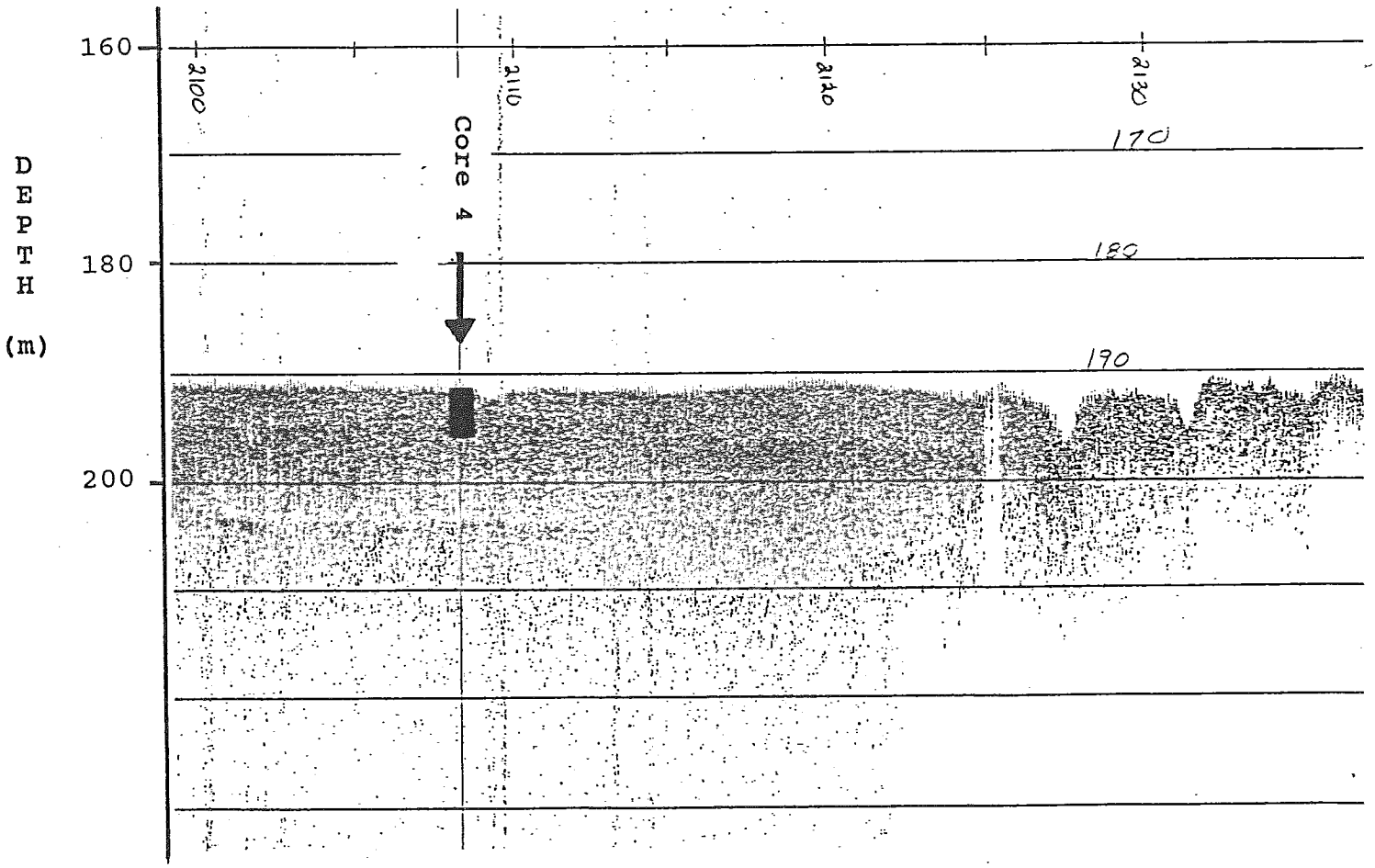
92-004-04: B-Piston Core

Julian Day: 177 GMT Time: 2108

Latitude: 51° 16.6796 N Longitude: 128° 45.5016 W

Depth: 191 m Core Length: 463 cm

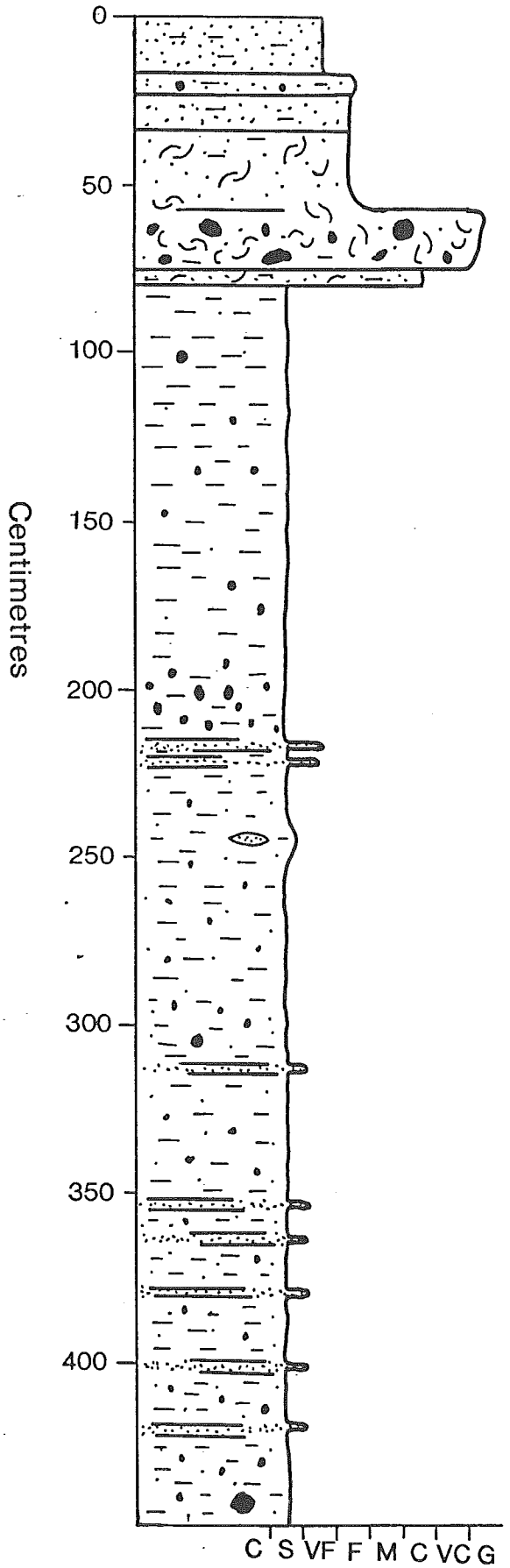
Geographic Location: Cooks Trough



3.5 KHz BATHYMETRY profile

END 92A004
191m

TENTATIVE INTERPRETATION



Holocene muddy sands.

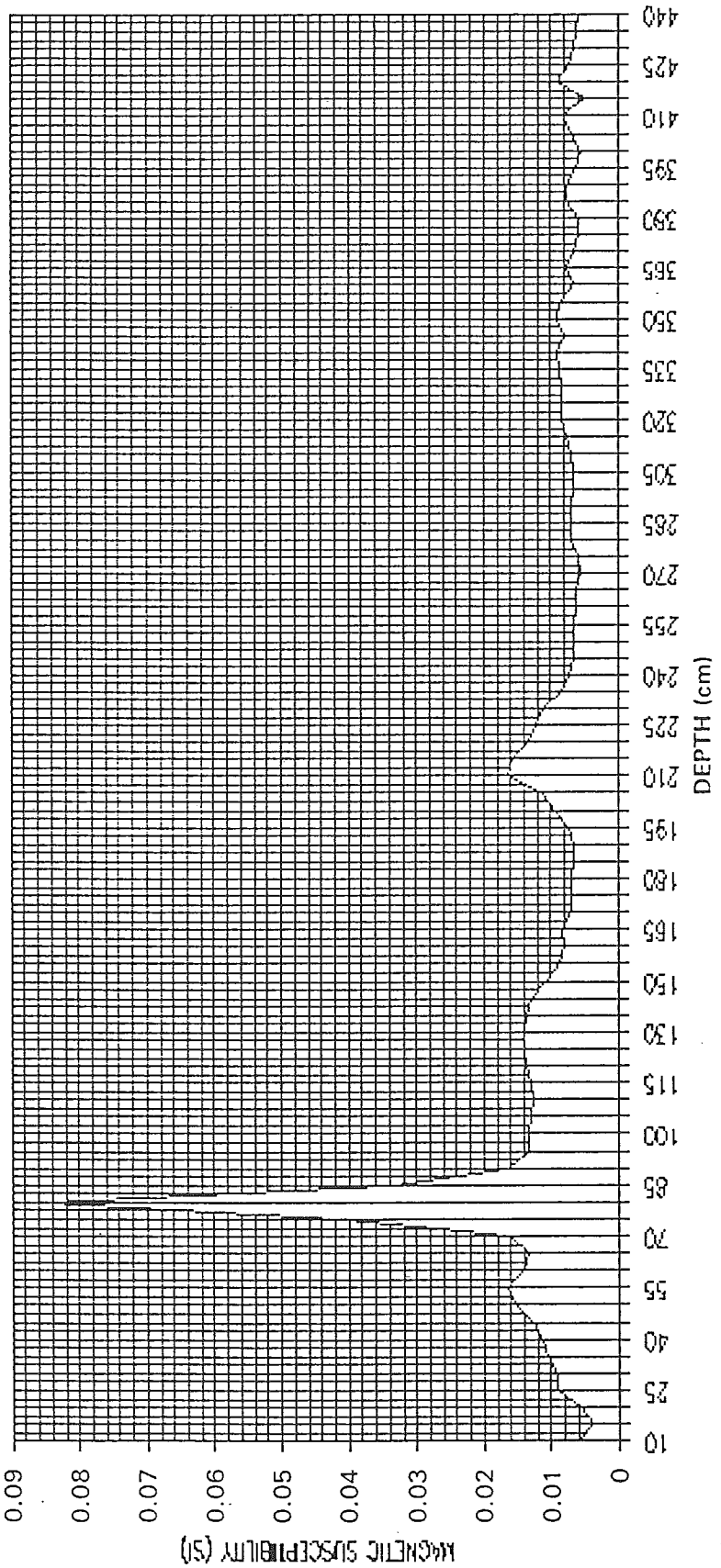
Late Wisconsinan shelly gravel lag associated with lowstand of sea level.

Ice distal Late Wisconsinan glaciomarine mud with IRD.

Ice proximal Late Wisconsinan glaciomarine with abundant IRD.

E92A04.XLC

CORE END92A04 MAGNETIC SUSCEPTIBILITY VS DEPTH



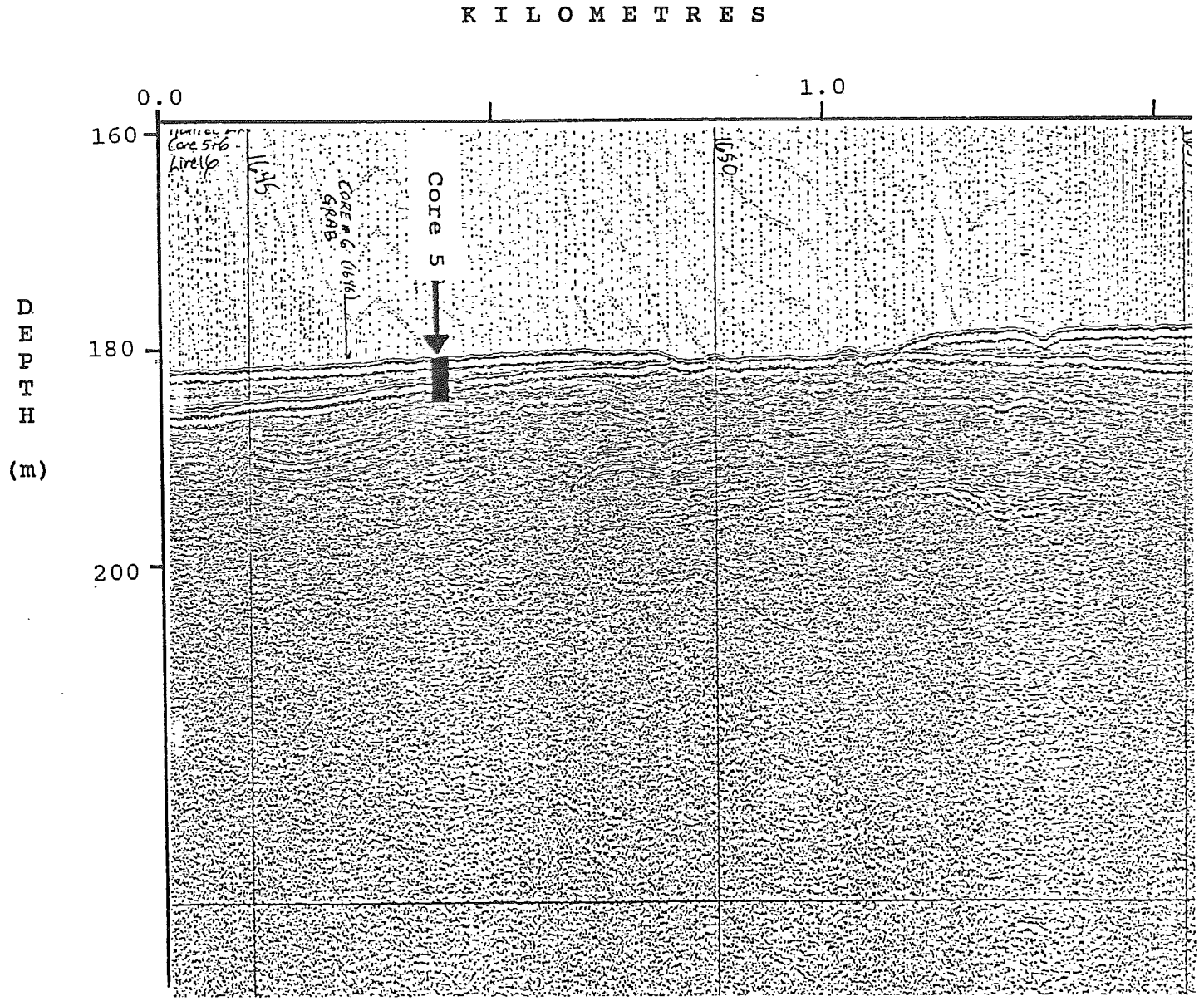
92-004-05: B-Piston Core

Julian Day: 178 GMT Time: 1819

Latitude: 51° 30.9974 N Longitude: 128° 29.5293 W

Depth: 181 m Core Length: 418 cm

Geographic Location: Inner Goose Island Trough



HUNTEC DTS profile

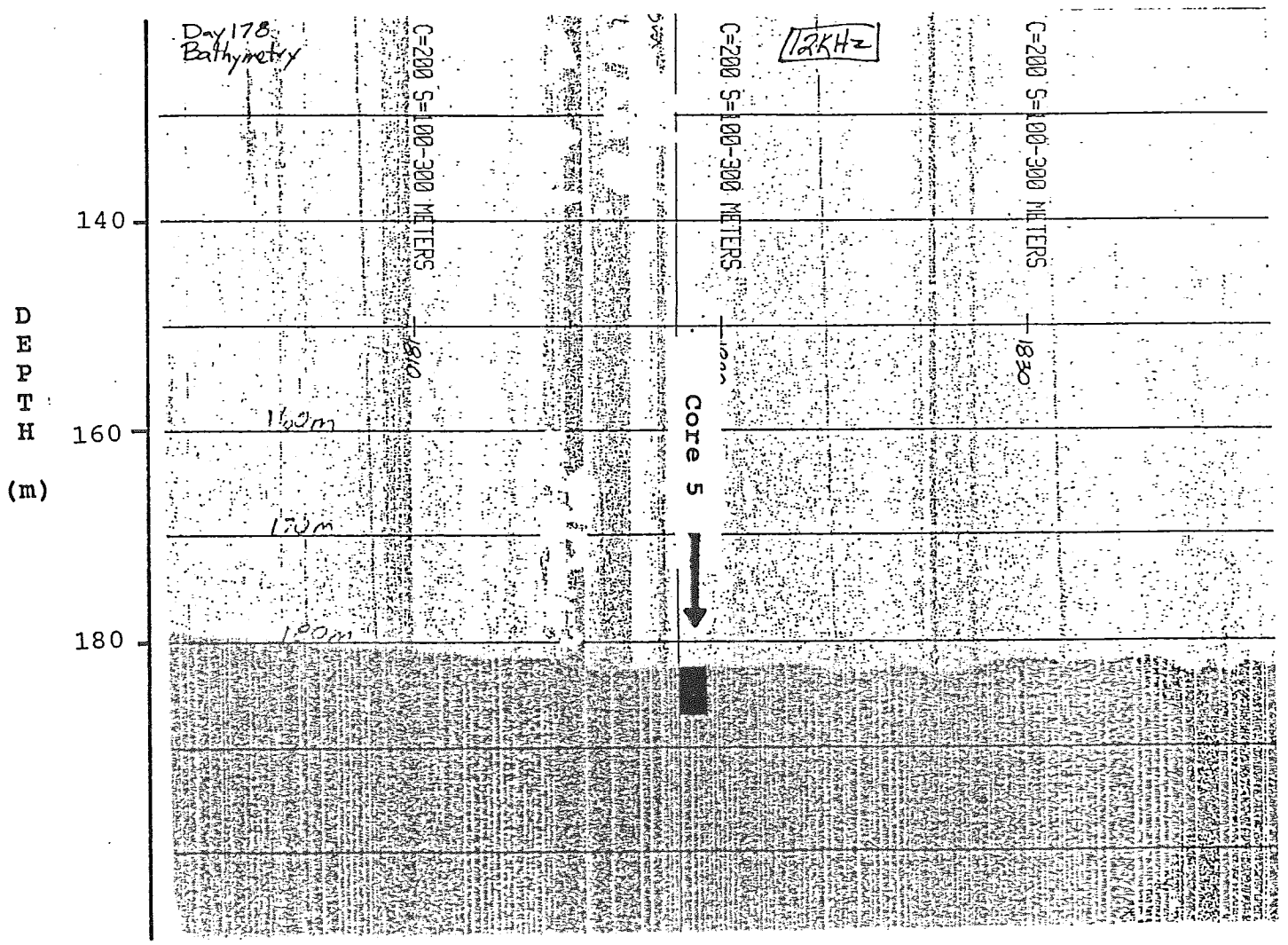
92-004-05: B-Piston Core

Julian Day: 178 GMT Time: 1819

Latitude: 51° 30.9974 N Longitude: 128° 29.5293 W

Depth: 181 m Core Length: 418 cm

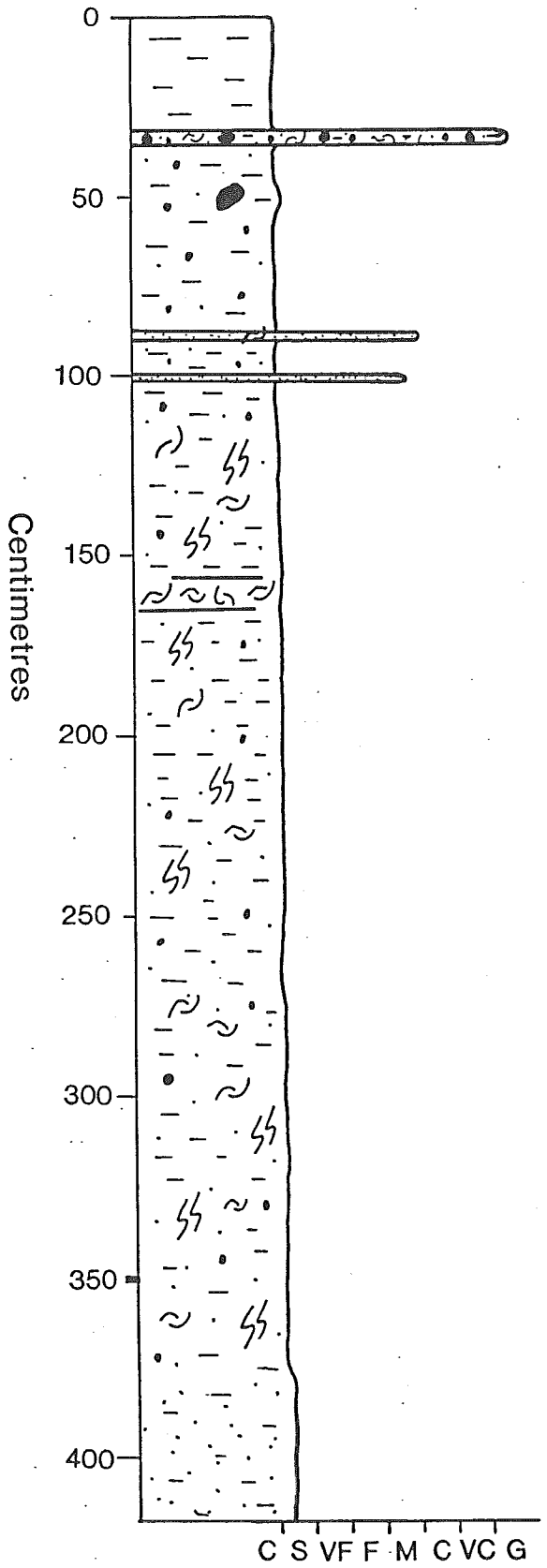
Geographic Location: Inner Goose Island Trough



12 KHz BATHYMETRY profile

END 92A005

181m



TENTATIVE INTERPRETATION

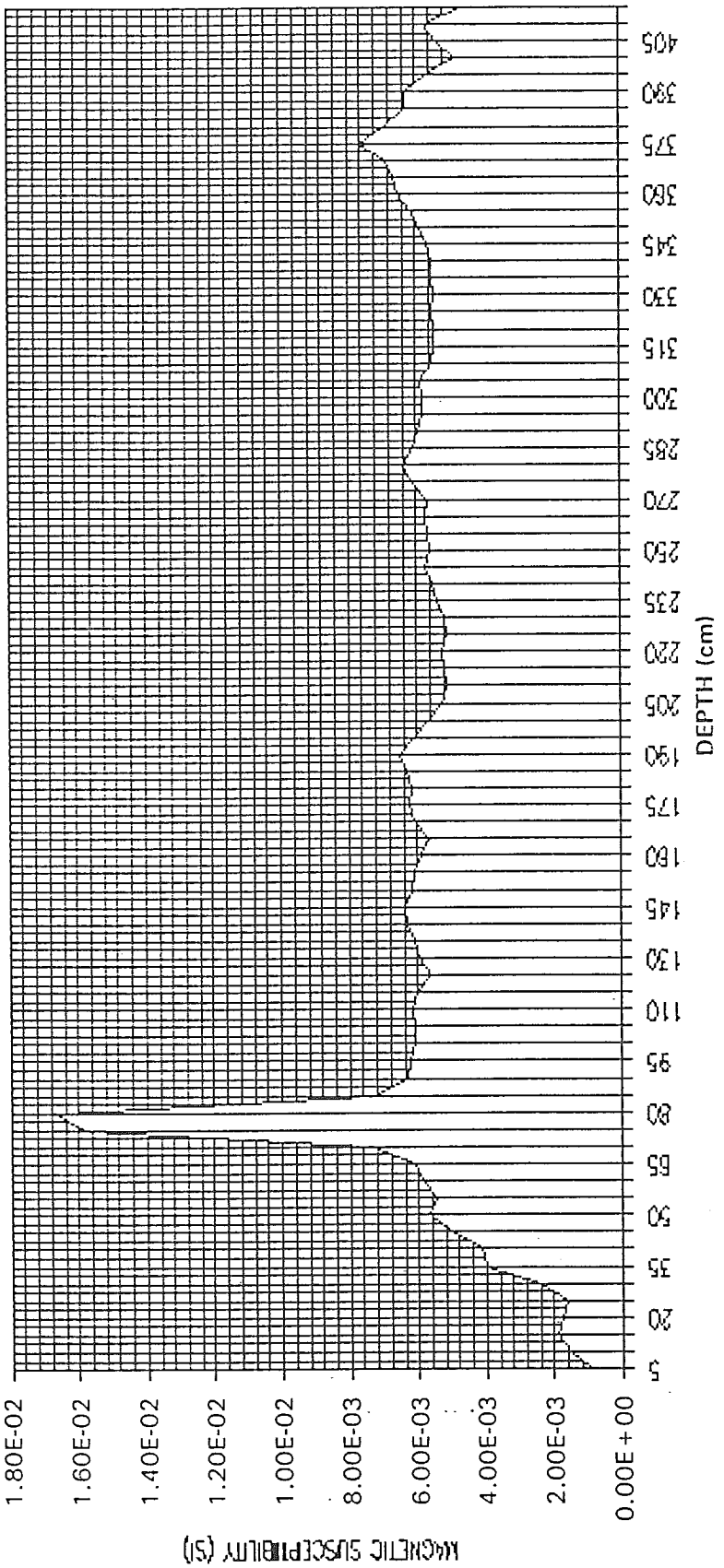
Holocene mud.

Late Wisconsinan glaciomarine mud with gravel and sand interbeds deposited during sea level lowstand.

Late Wisconsinan bioturbated ice distal glaciomarine mud with minor IRD.

E92A05.XLC

CORE END92A05 MAGNETIC SUSCEPTIBILITY VS. DEPTH



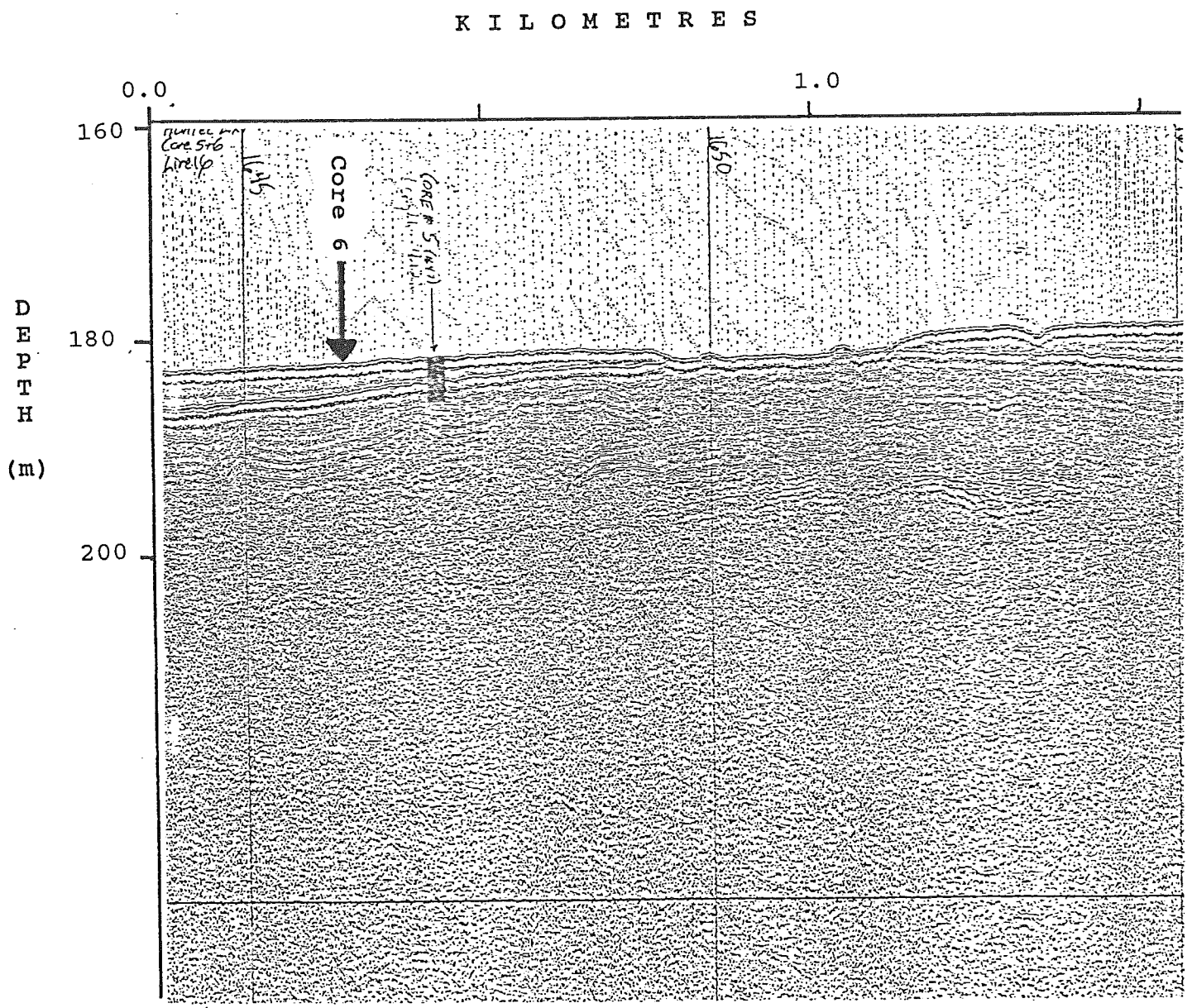
92-004-06: Peterson Grab

Julian Day: 178 GMT Time: 1847

Latitude: 51° 31.006 N Longitude: 128° 29.5833 W

Depth: 181.5 m Core Length: -

Geographic Location: Inner Goose Island Trough



HUNTEC DTS profile

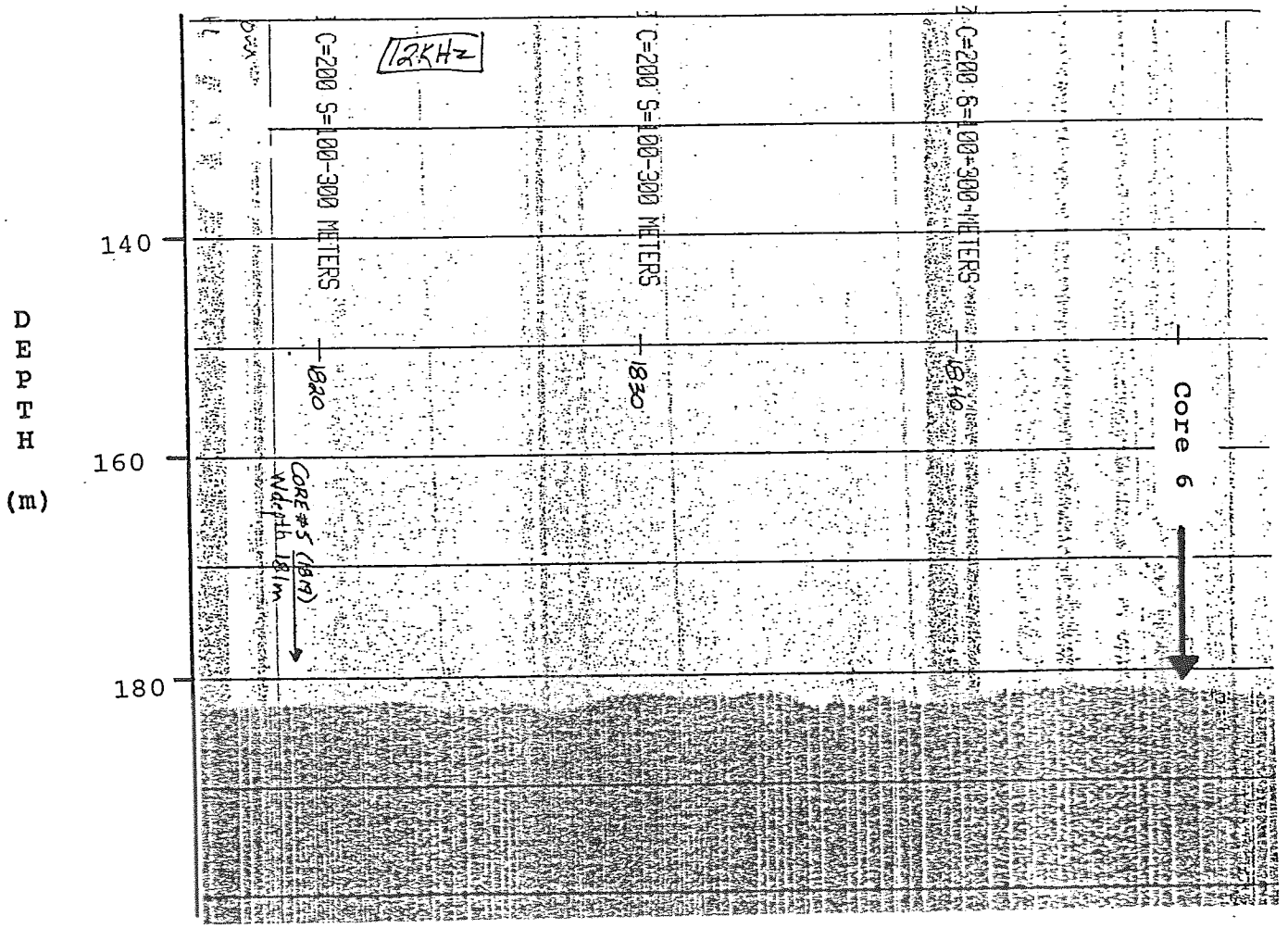
92-004-06: Peterson Grab

Julian Day: 178 GMT Time: 1847

Latitude: 51° 31.006 N Longitude: 128° 29.5833 W

Depth: 181.5 m Core Length: -

Geographic Location: Inner Goose Island Trough



12 KHz BATYMETRY profile

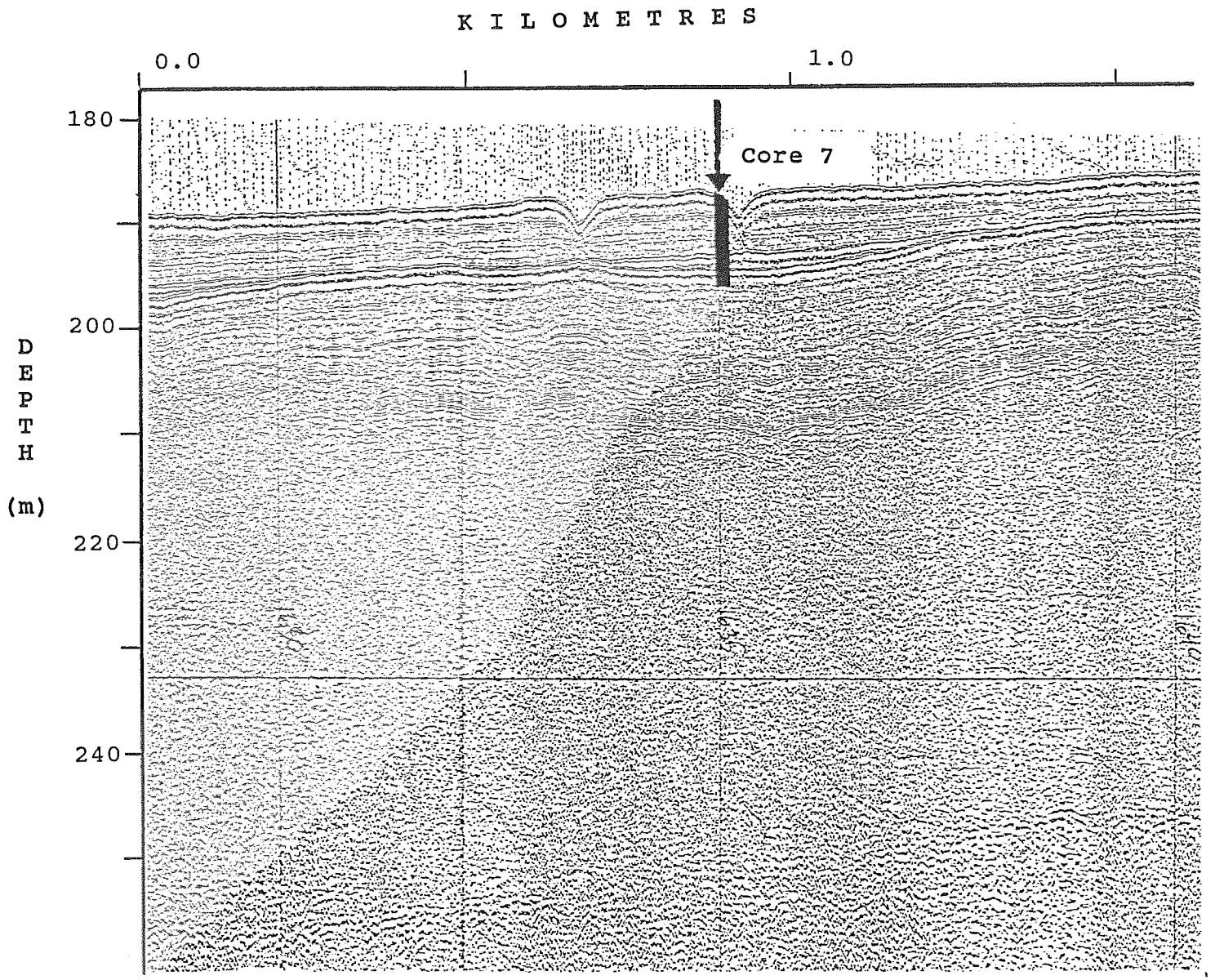
92-004-07: B-Piston Core

Julian Day: 178 GMT Time: 2051

Latitude: 51° 29.6902 N Longitude: 128° 30.8261 W

Depth: 187.5 m Core Length: 870 cm

Geographic Location: Inner Goose Island Trough



HUNTEC DTS profile

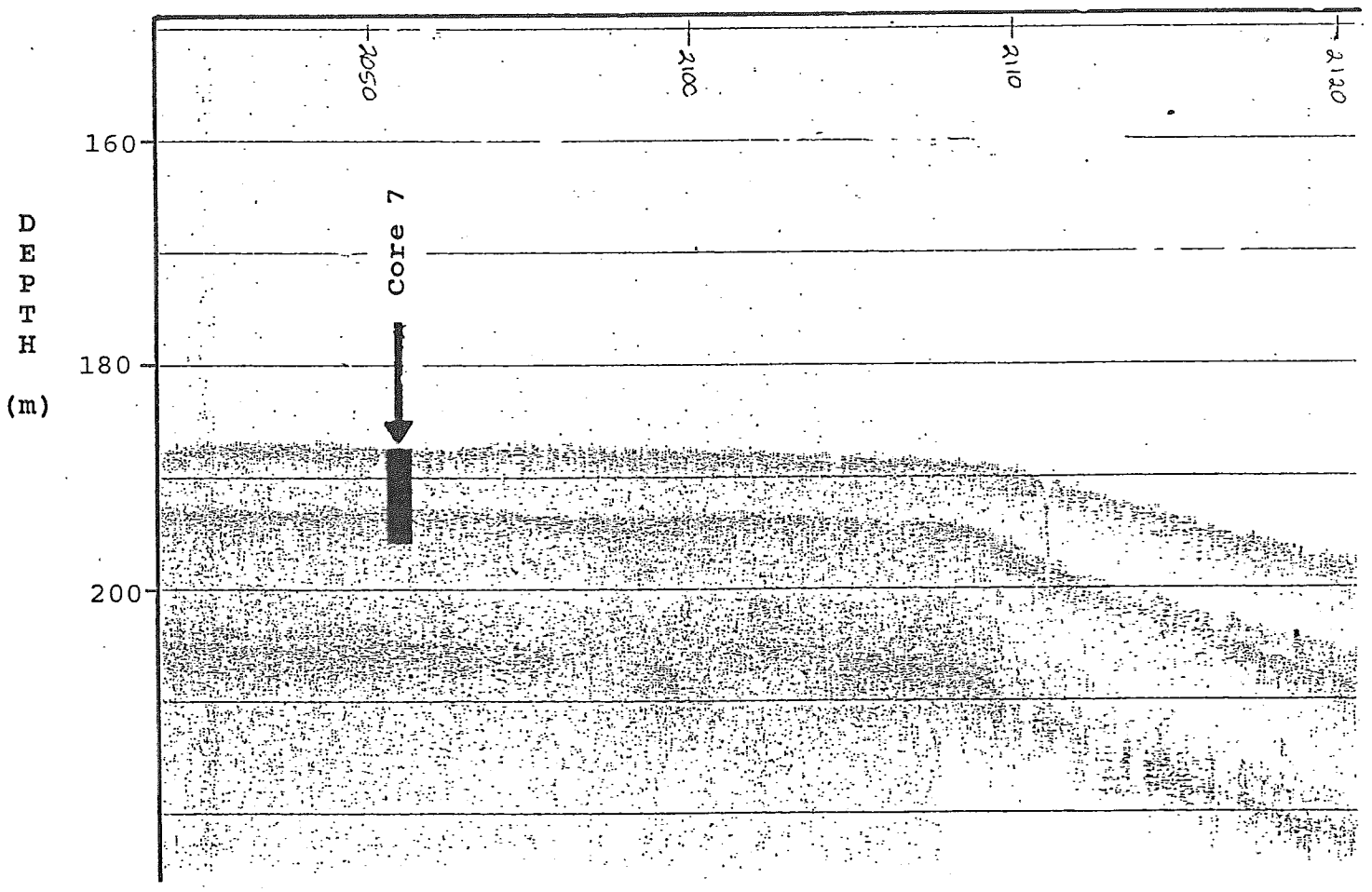
92-004-07: B-Piston Core

Julian Day: 178 GMT Time: 2051

Latitude: 51° 29.6902 N Longitude: 128° 30.8261 W

Depth: 187.5 m Core Length: 870 cm

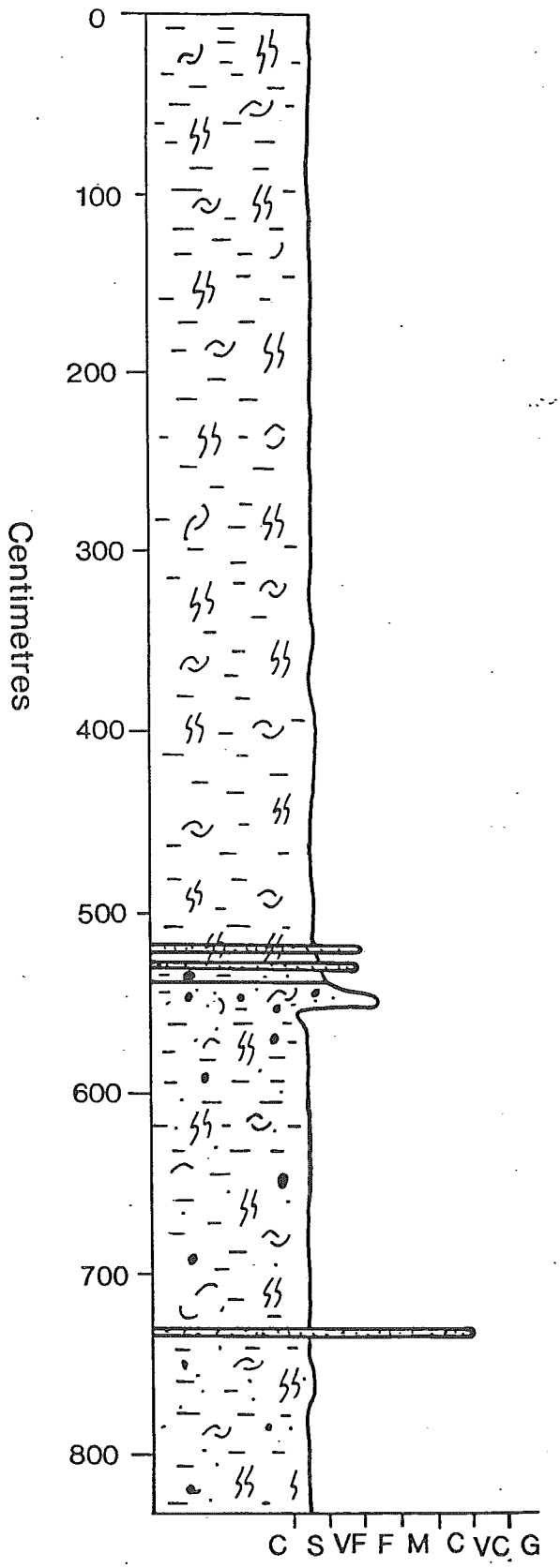
Geographic Location: Inner Goose Island Trough



3.5 KHz BATYMETRY profile

END 92A007

187m



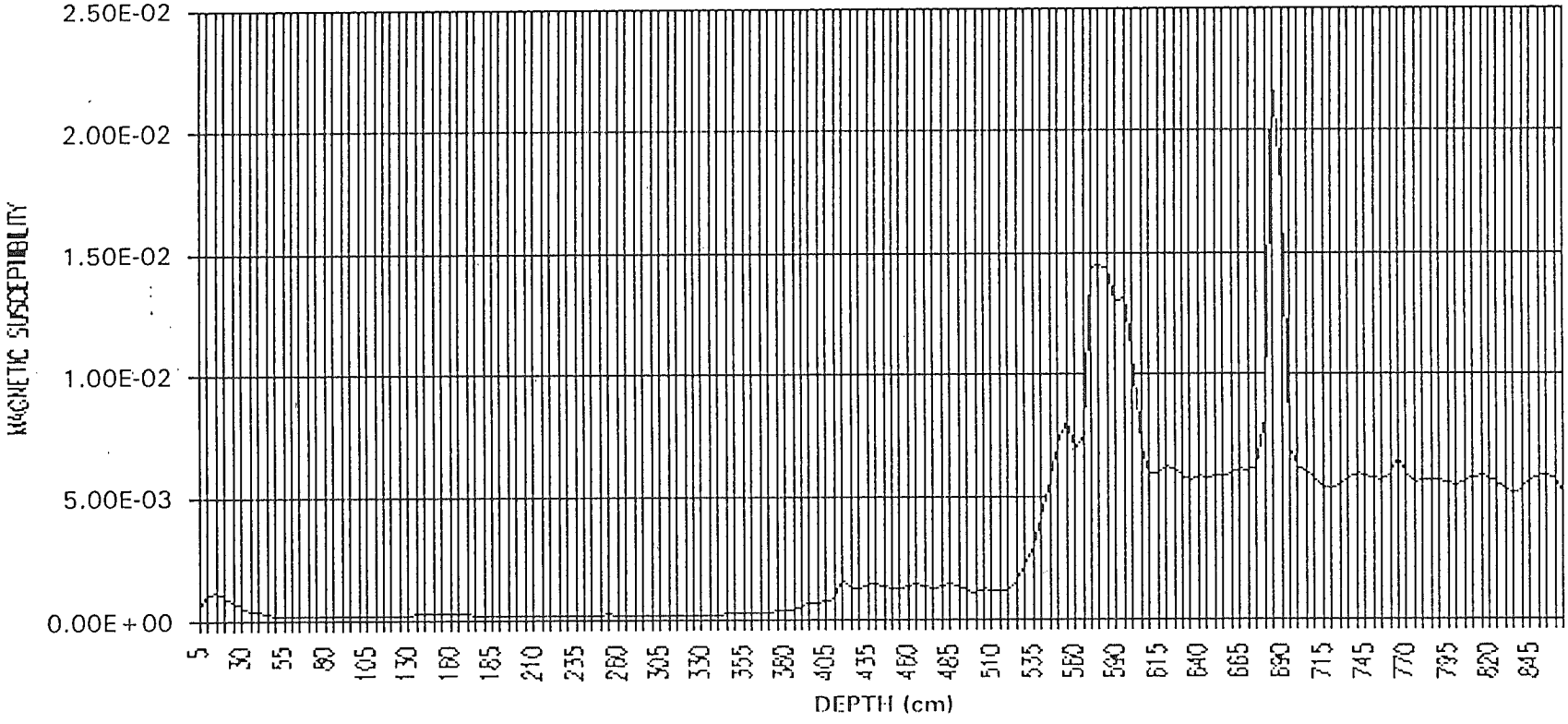
TENTATIVE INTERPRETATION

Holocene mud.

Late Wisconsinan shelly gravelly lag associated with sea level lowstand.

Late Wisconsinan ice distal glaciomarine mud with IRD.

CORE END92A07 MAGNETIC SUSCEPTIBILITY VS. DEPTH



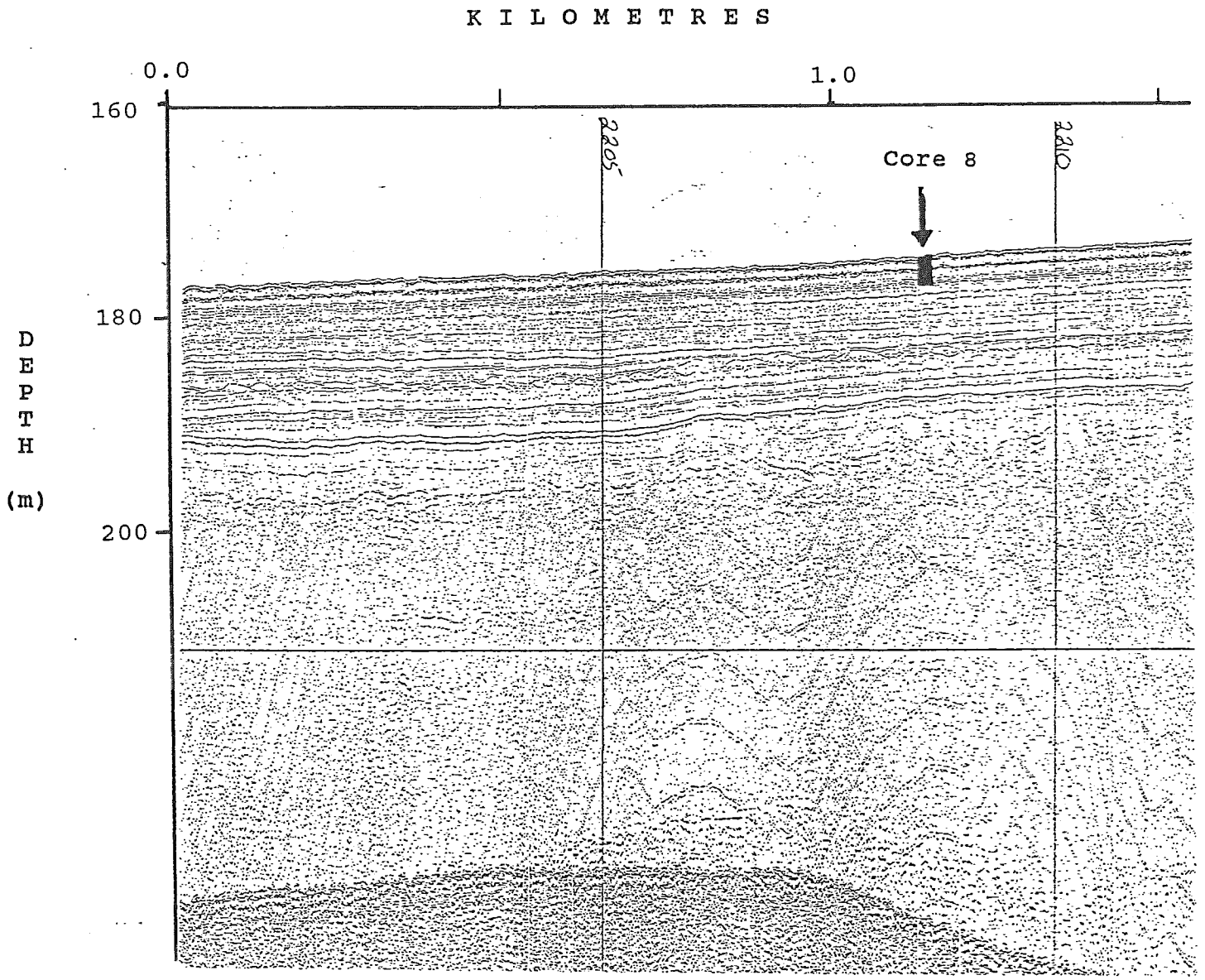
92-004-08: B-Piston Core

Julian Day: 178 GMT Time: 2245

Latitude: 51° 23.0961 N Longitude: 128° 34.4702 W

Depth: 195 m Core Length: 290 cm

Geographic Location: Inner Goose Island Trough



HUNTEC DTS profile

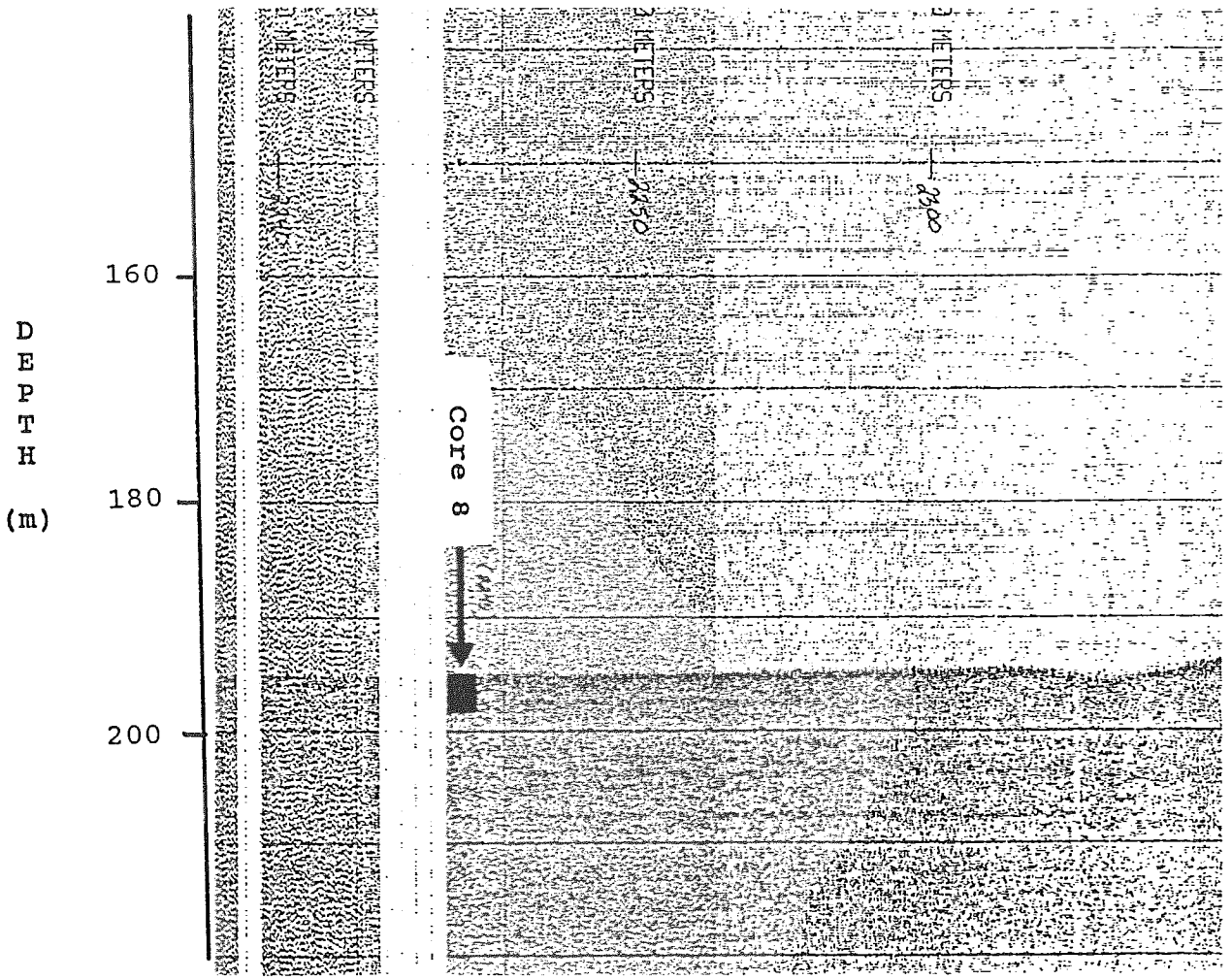
92-004-08: B-Piston Core

Julian Day: 178 GMT Time: 2245

Latitude: 51° 23.0961 N Longitude: 128° 34.4702 W

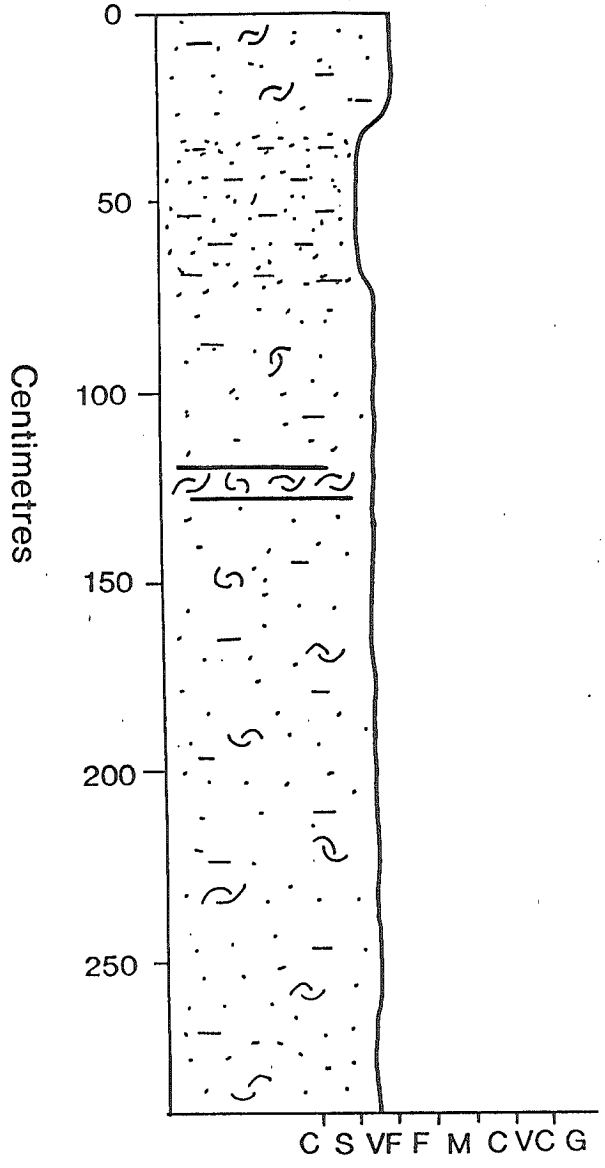
Depth: 195 m Core Length: 290 cm

Geographic Location: Inner Goose Island Trough



3.5 KHz BATHYMETRY profile

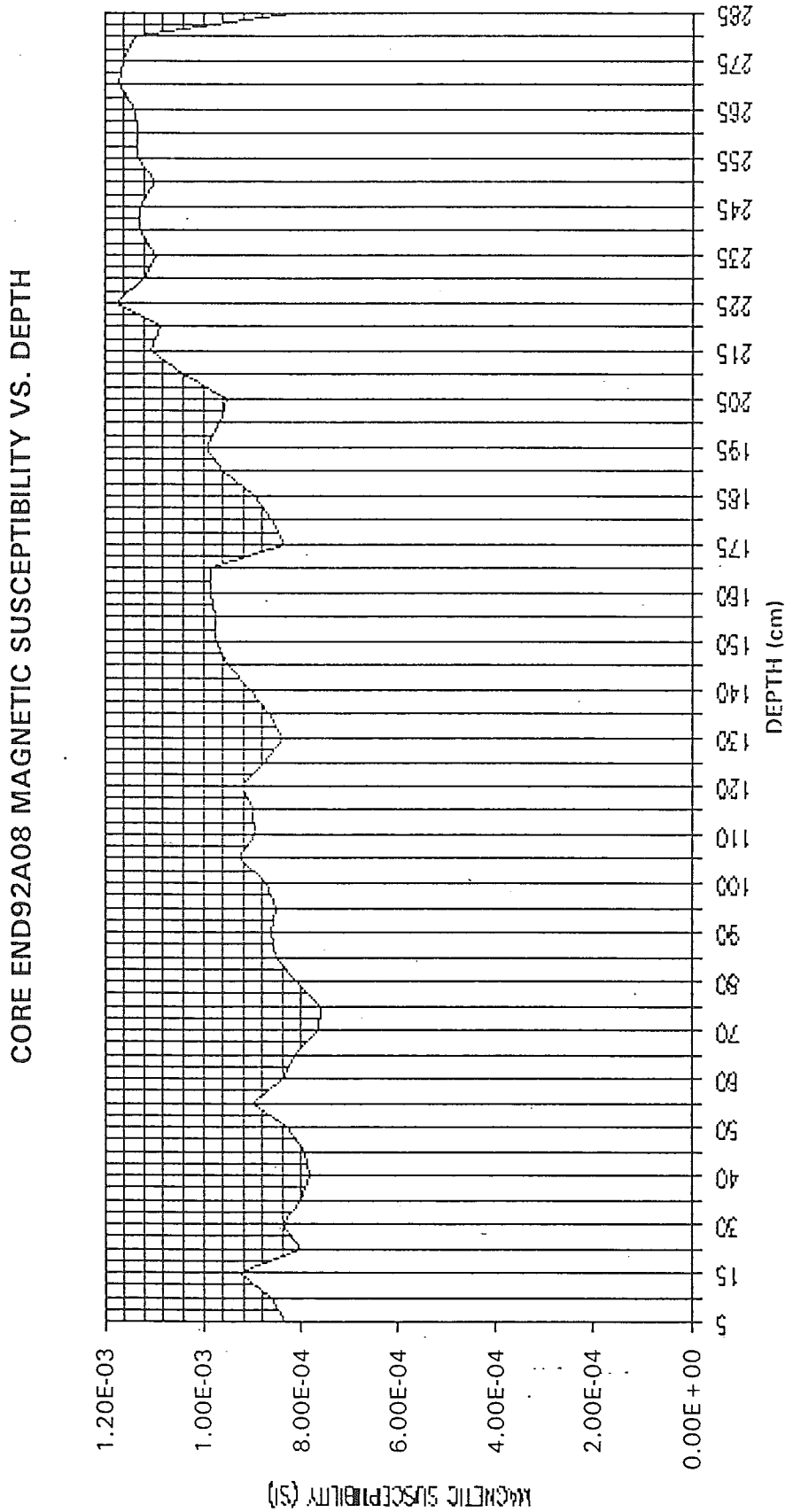
END 92A008
195m



TENTATIVE INTERPRETATION

Holocene sandy mud and muddy sand.

E92A08.XLC


CORE END92A08 MAGNETIC SUSCEPTIBILITY VS. DEPTH
MAGNETIC SUSCEPTIBILITY (SI)
1.20E-03
1.00E-03
8.00E-04
6.00E-04
4.00E-04
2.00E-04
0.00E+00
DEPTH (cm)
5
15
30
40
50
60
70
80
90
100
110
120
130
140
150
160
175
185
195
205
215
225
235
245
255
265
275
285

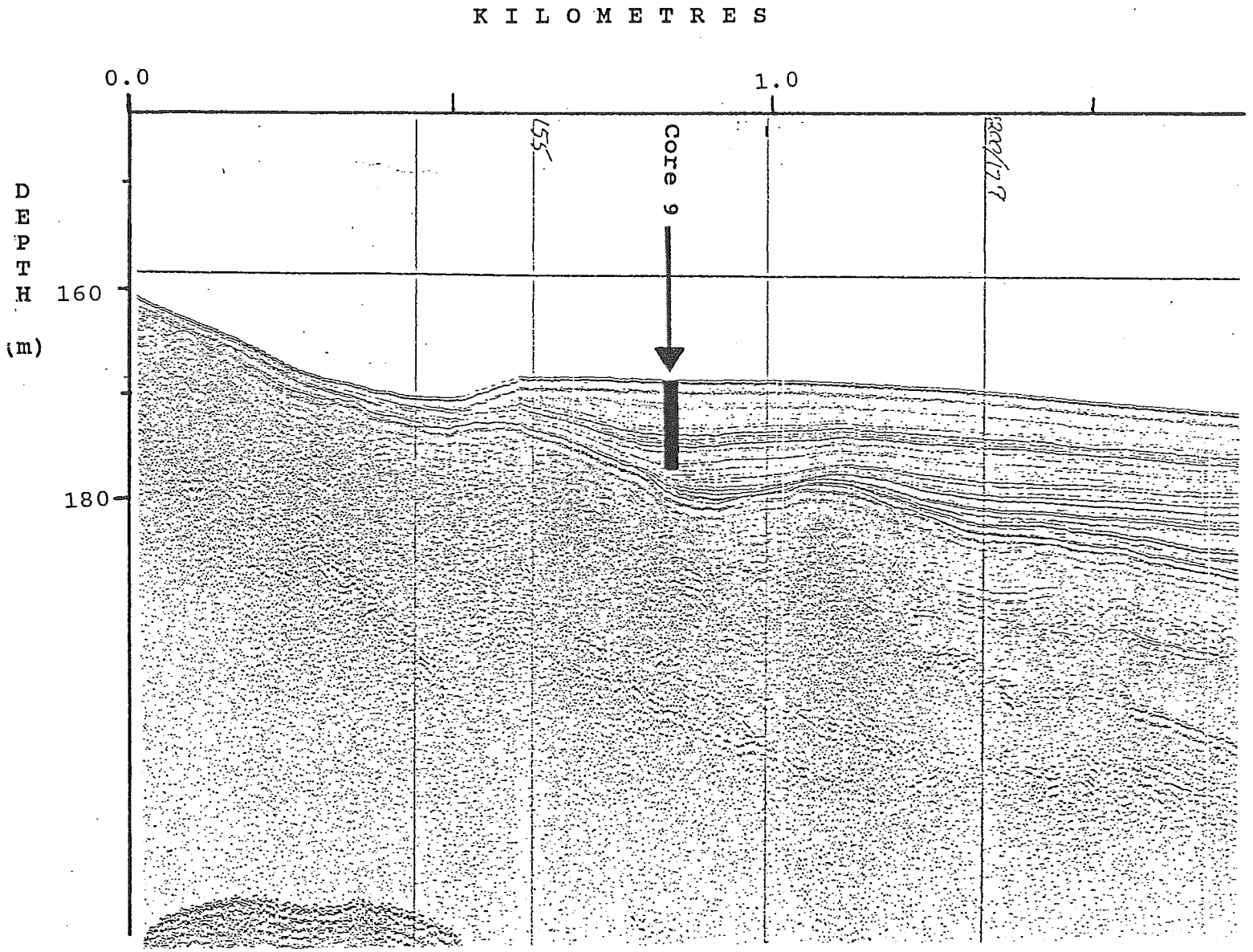
92-004-09: B-Piston Core

Julian Day: 179 GMT Time: 0113

Latitude: 51° 27.4616 N Longitude: 128° 22.9542 W

Depth: 168.5 m Core Length: 865 cm

Geographic Location: Inner Goose Island Trough



HUNTEC DTS profile

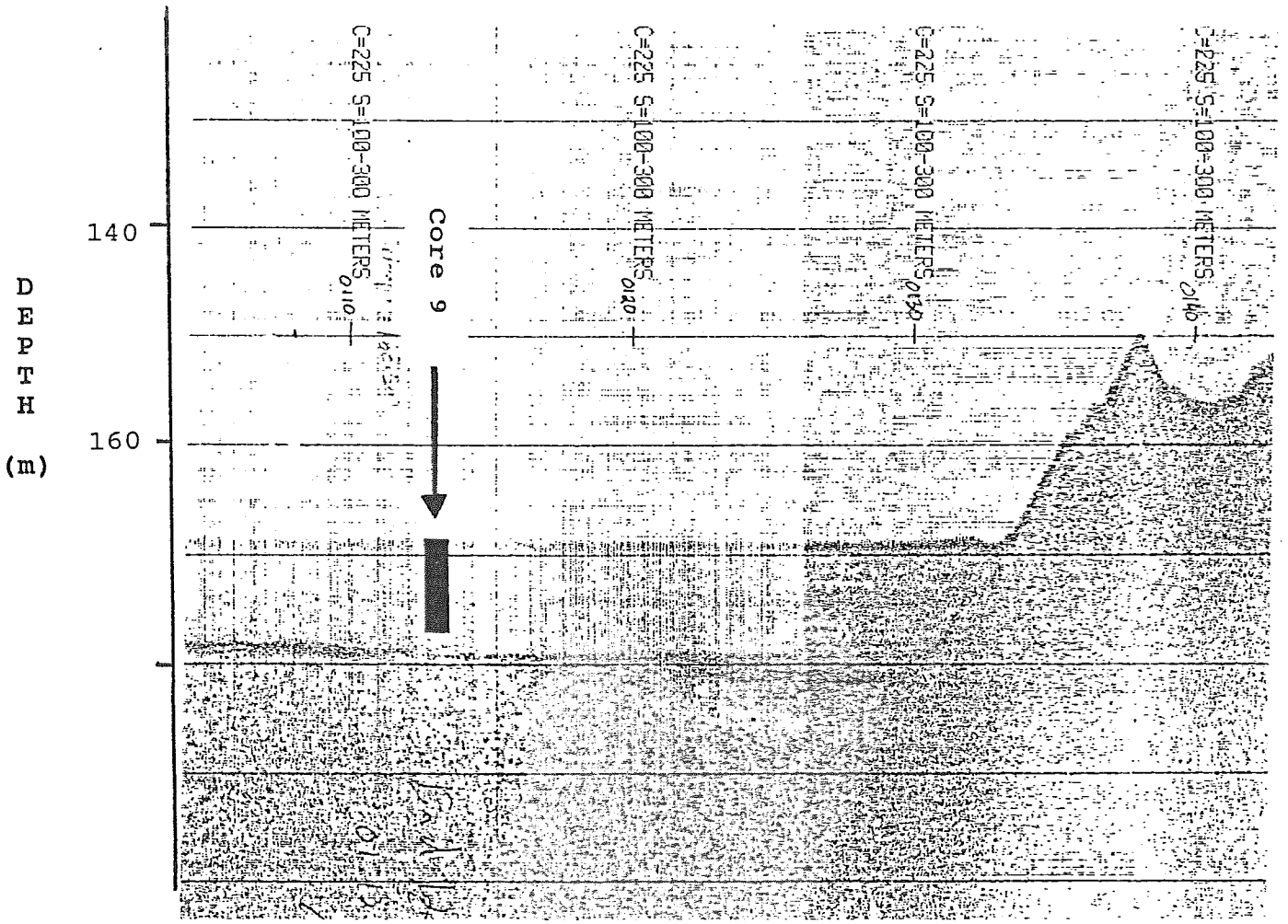
92-004-09: B-Piston Core

Julian Day: 179 GMT Time: 0113

Latitude: 51° 27.4616 N Longitude: 128° 22.9542 W

Depth: 168.5 m Core Length: 865 cm

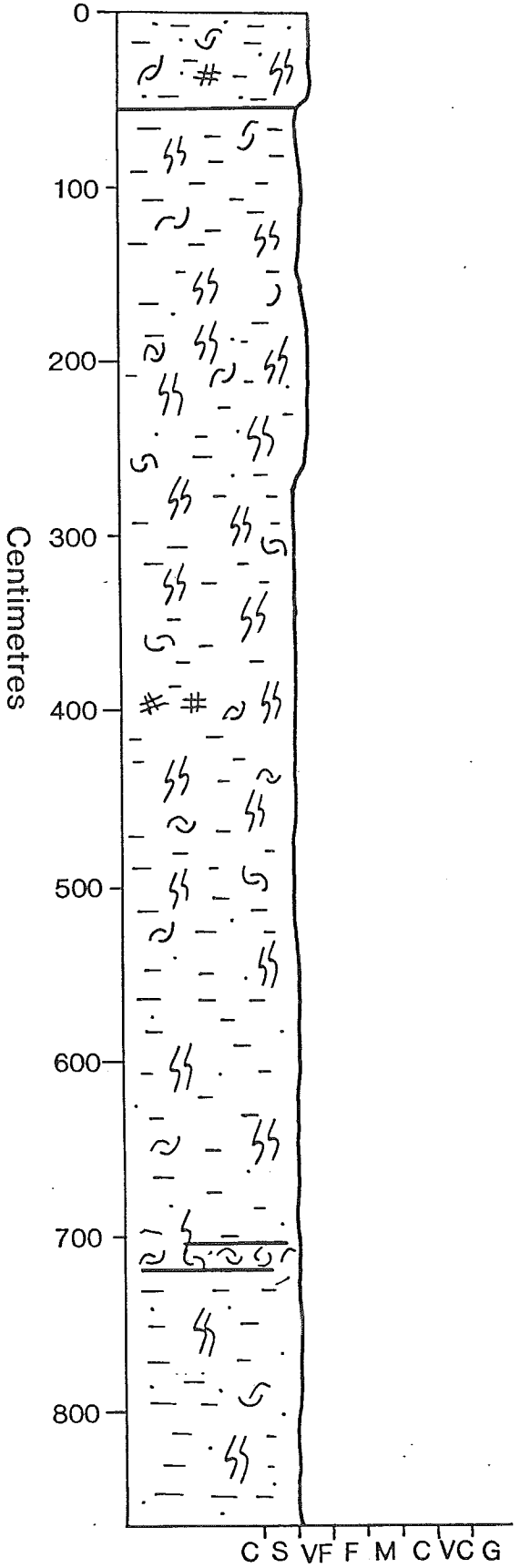
Geographic Location: Inner Goose Island Trough



3.5 KHz BATHYMETRY profile

END 92A009

168m



TENTATIVE INTERPRETATION

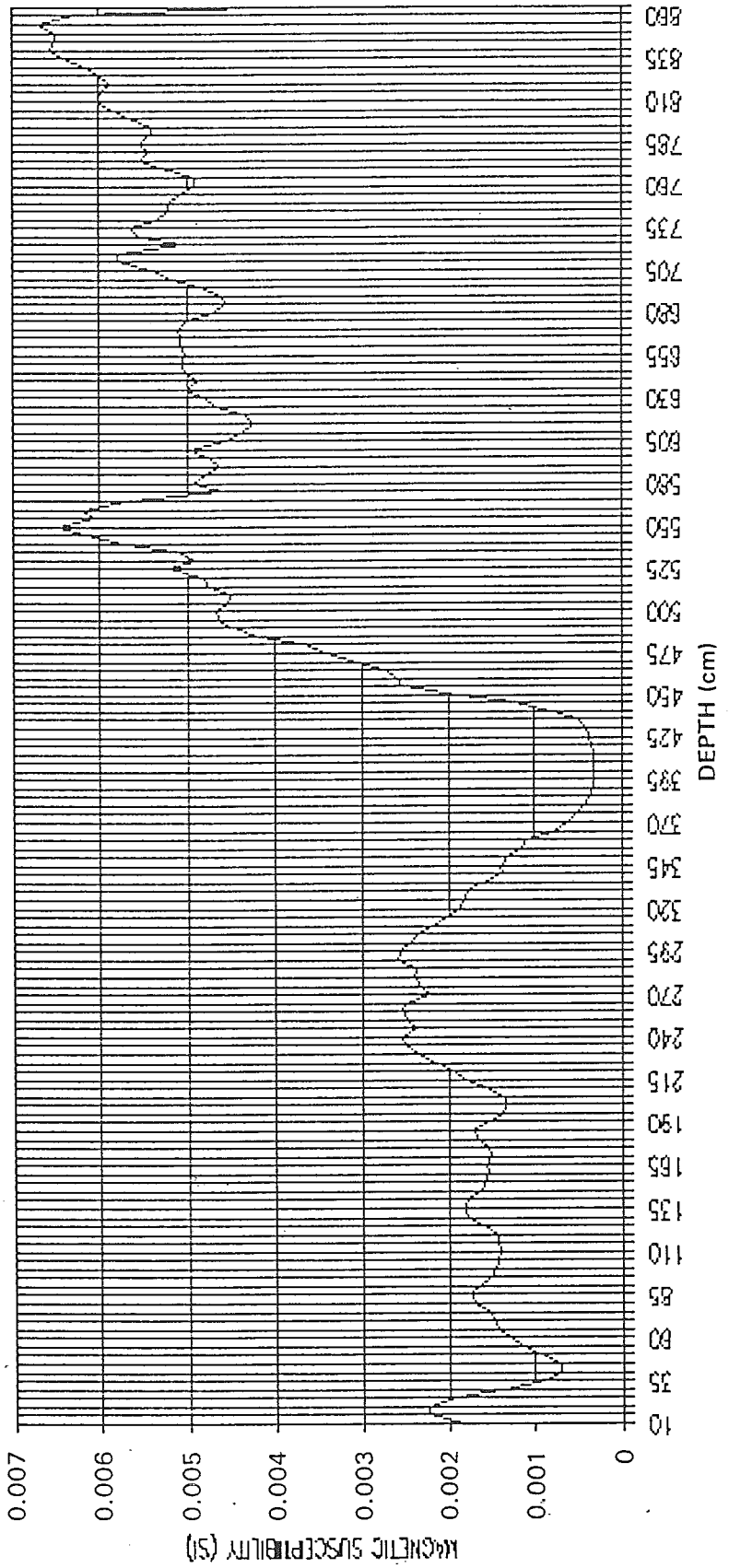
Holocene mud.

Shelly lag associated with lowstand.

Unit B1 mud (deposited prior to maximum lowstand of sea level.

E92A09.XLC

CORE END92A09 MAGNETIC SUSCEPTIBILITY VS. DEPTH



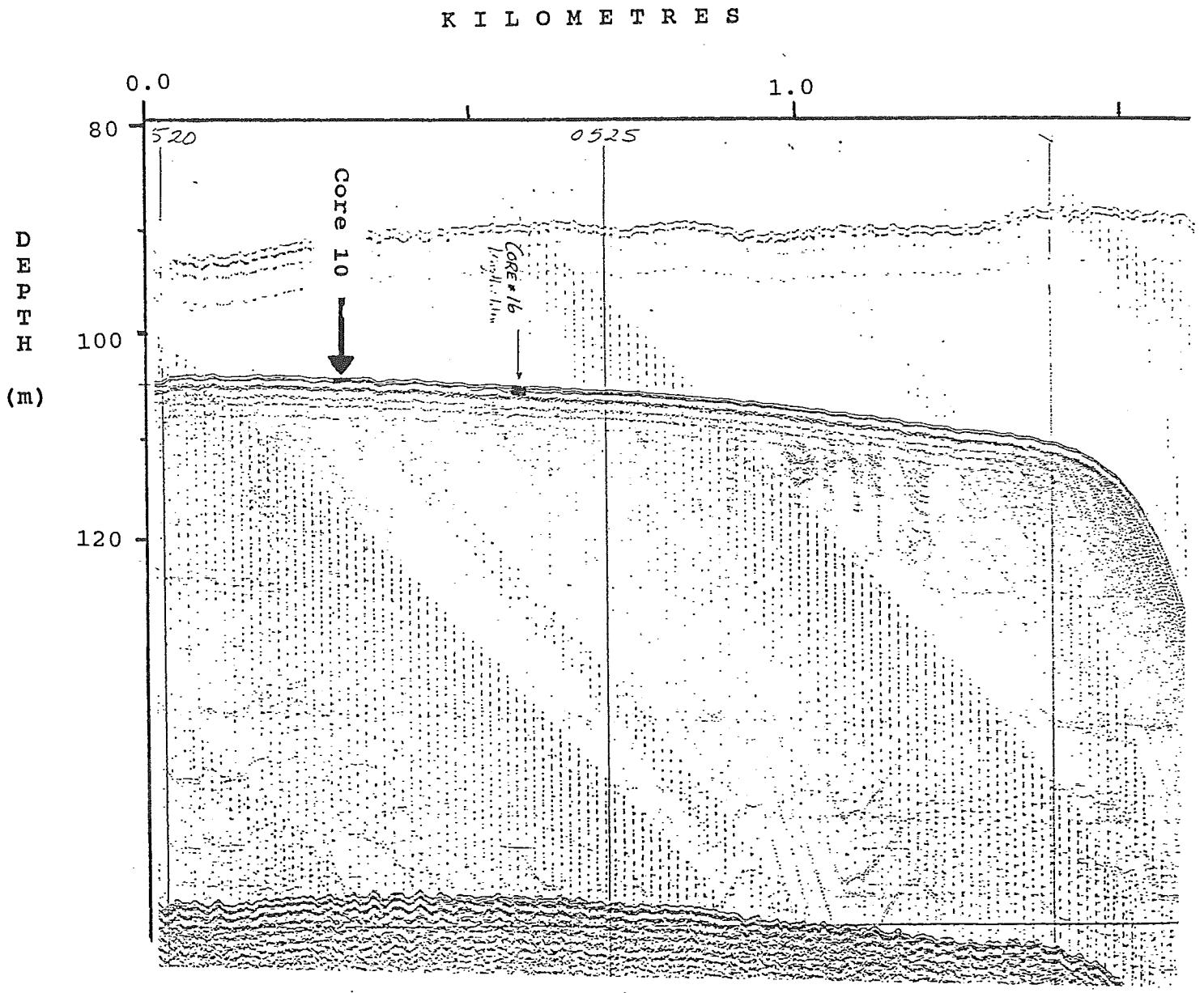
92-004-10: Vibracore

Julian Day: 180 GMT Time: 1632

Latitude: 52° 05.2769 N Longitude: 129° 46.0634 W

Depth: 105 m Core Length: 20 cm

Geographic Location: Middle Bank



HUNTEC DTS profile

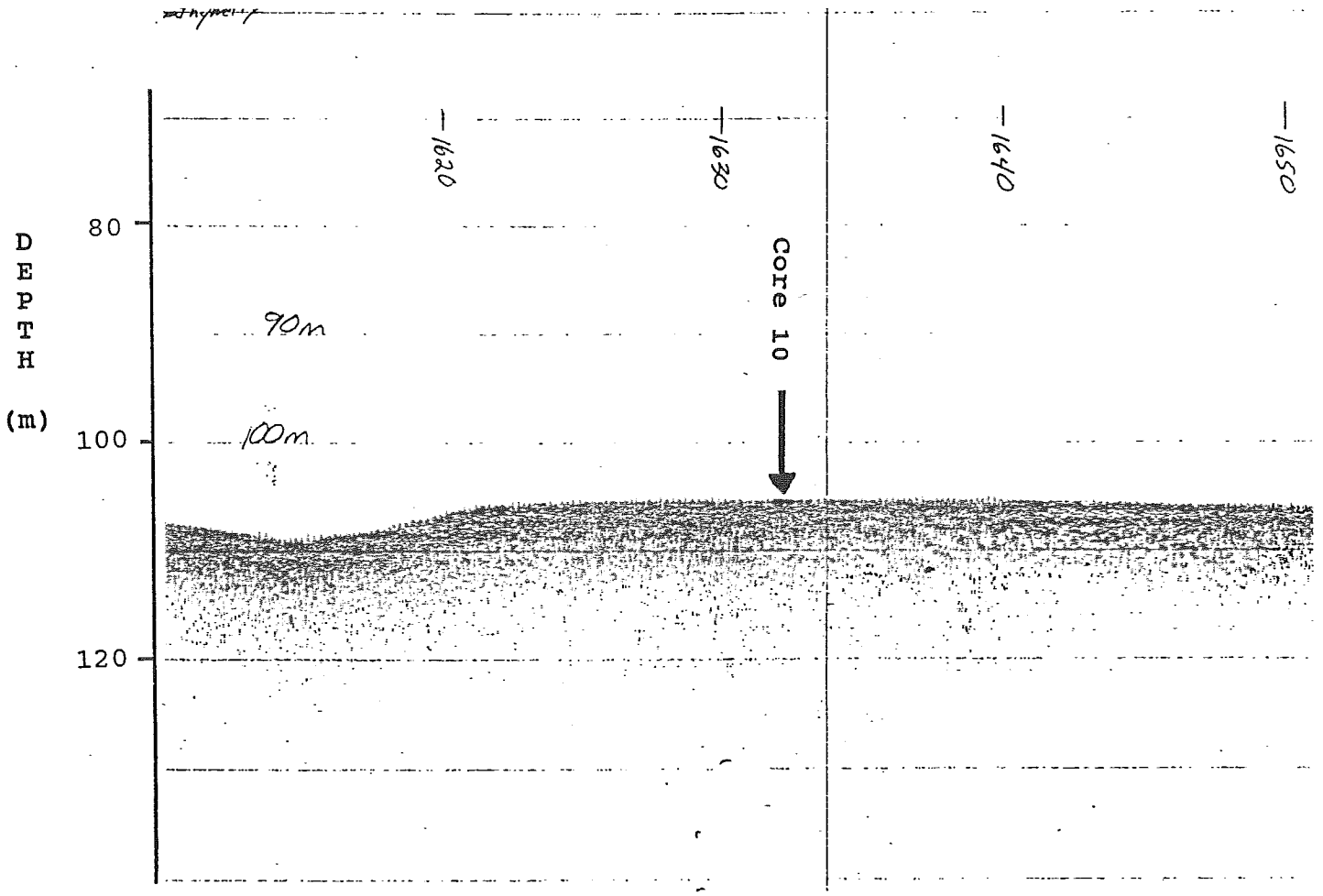
92-004-10: Vibracore

Julian Day: 180 GMT Time: 1632

Latitude: 52° 05.2769 N Longitude: 129° 46.0634 W

Depth: 105 m Core Length: 20 cm

Geographic Location: Middle Bank

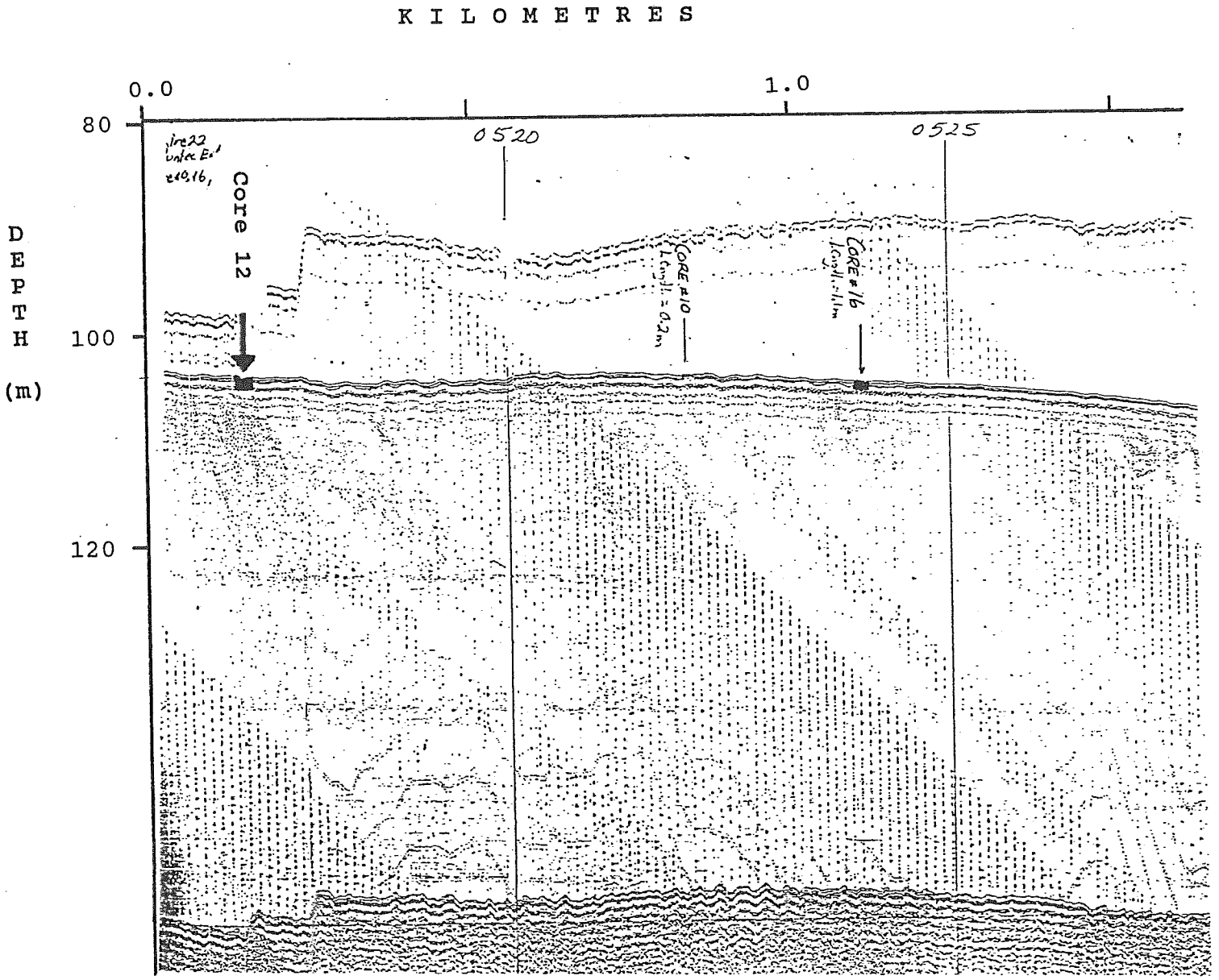


3.5 KHz BATHYMETRY profile

92-004-12: Vibracore

Julian Day: 180
GMT Time: 1810
Latitude: 52° 04.8296 N
Longitude: 129° 45.3260 W
Depth: 104 m
Core Length: 128 cm

Geographic Location: Middle Bank



HUNTEC DTS profile

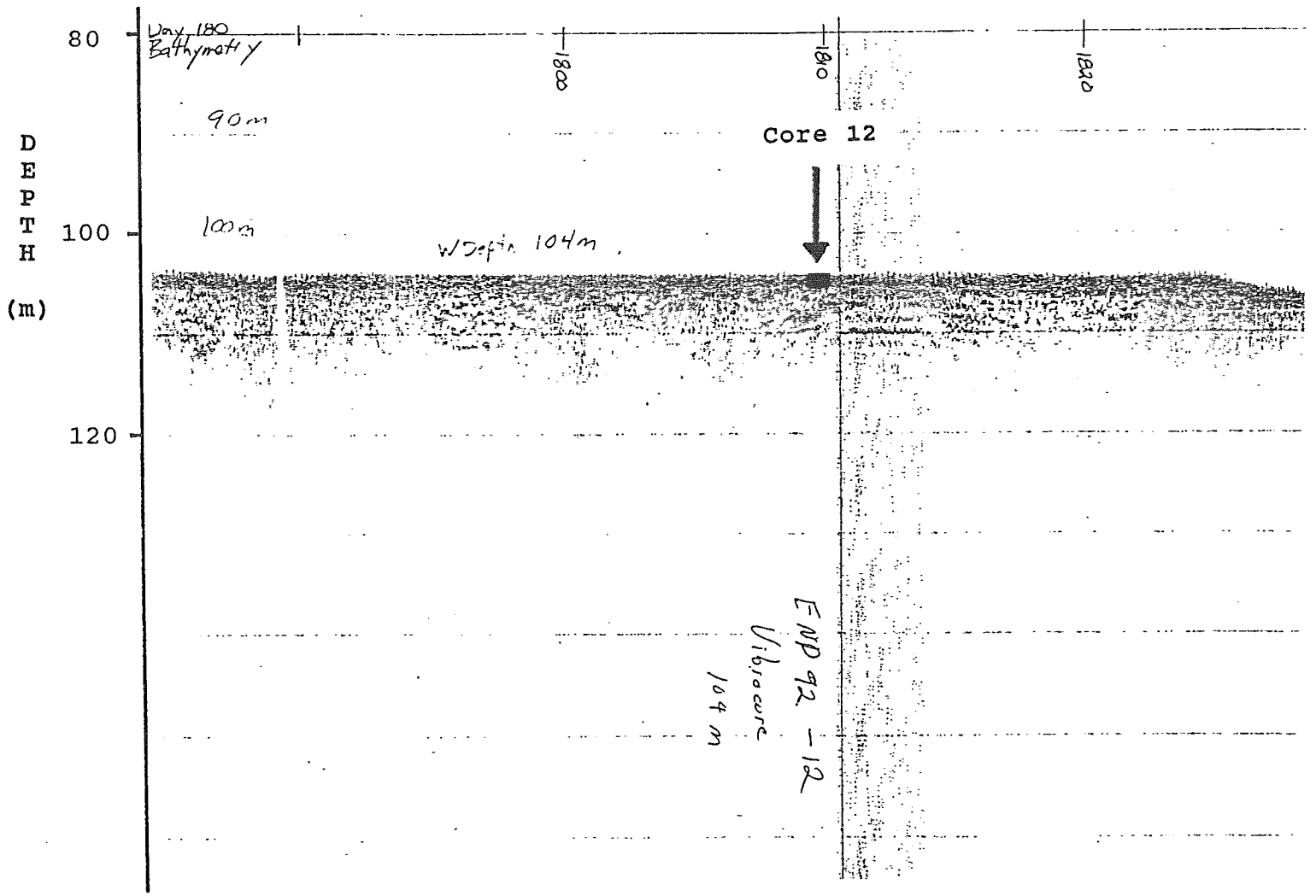
92-004-12: Vibracore

Julian Day: 180 GMT Time: 1810

Latitude: 52° 04.8296 N Longitude: 129° 45.3260 W

Depth: 104 m Core Length: 128 cm

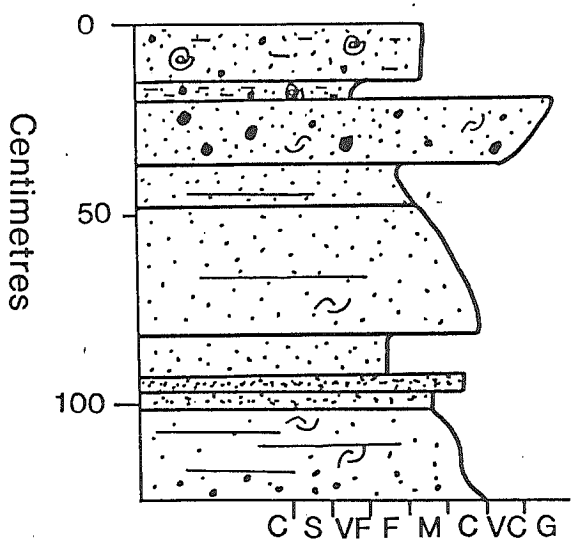
Geographic Location: Middle Bank



3.5 KHz BATHYMETRY profile

END 92A012

104m



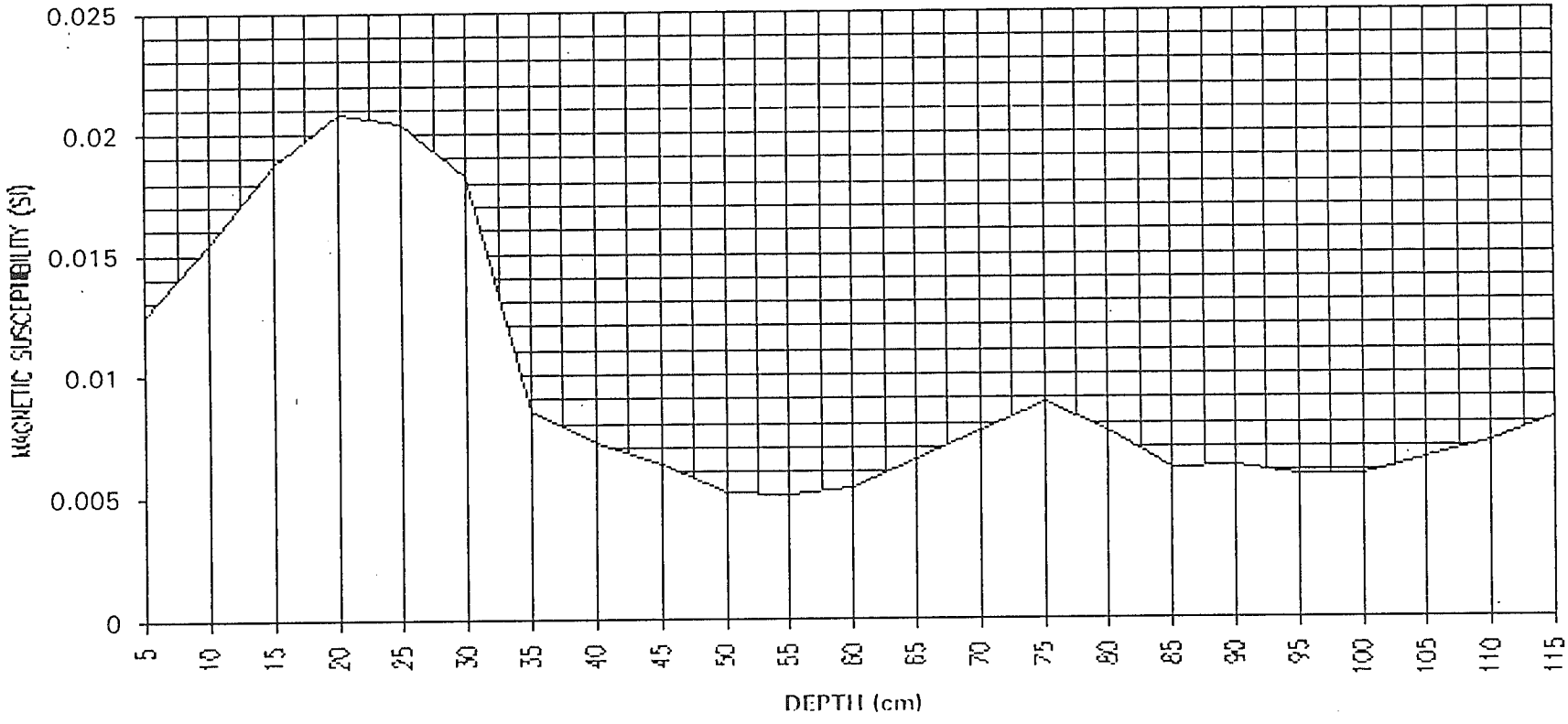
TENTATIVE INTERPRETATION

Holocene sand.

Late Wisconsinan gravel lag associated with transgression.

Late Wisconsinan interbedded sands deposited during period of lowered sea level.

CORE END92A12 MAGNETIC SUSCEPTIBILITY



92-004-13: Vibracore

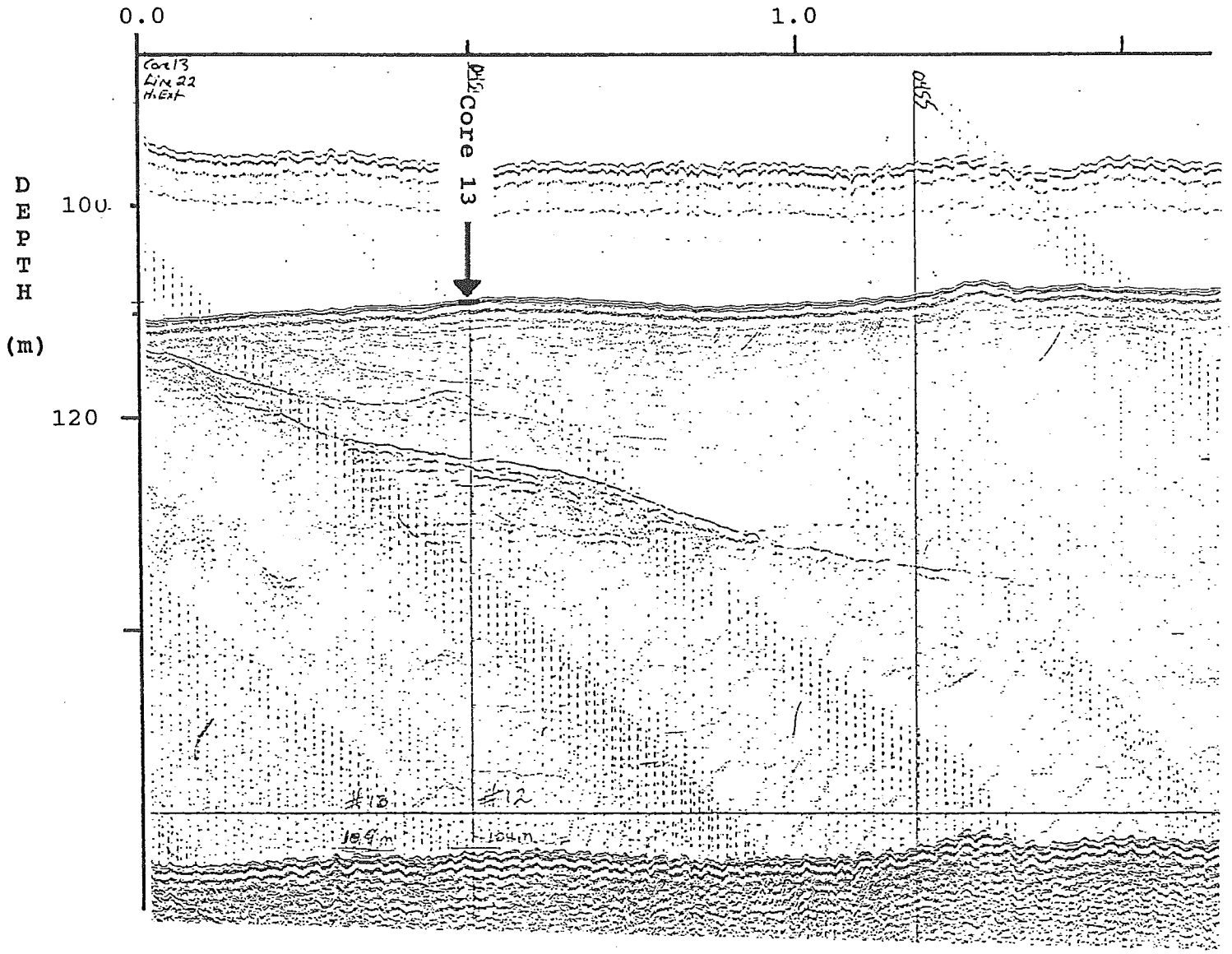
Julian Day: 180 GMT Time: 1853

Latitude: 52° 02.9145 N Longitude: 129° 47.5972 W

Depth: 109 m Core Length: 55 cm

Geographic Location: Middle Bank

K I L O M E T R E S



HUNTEC DTS profile

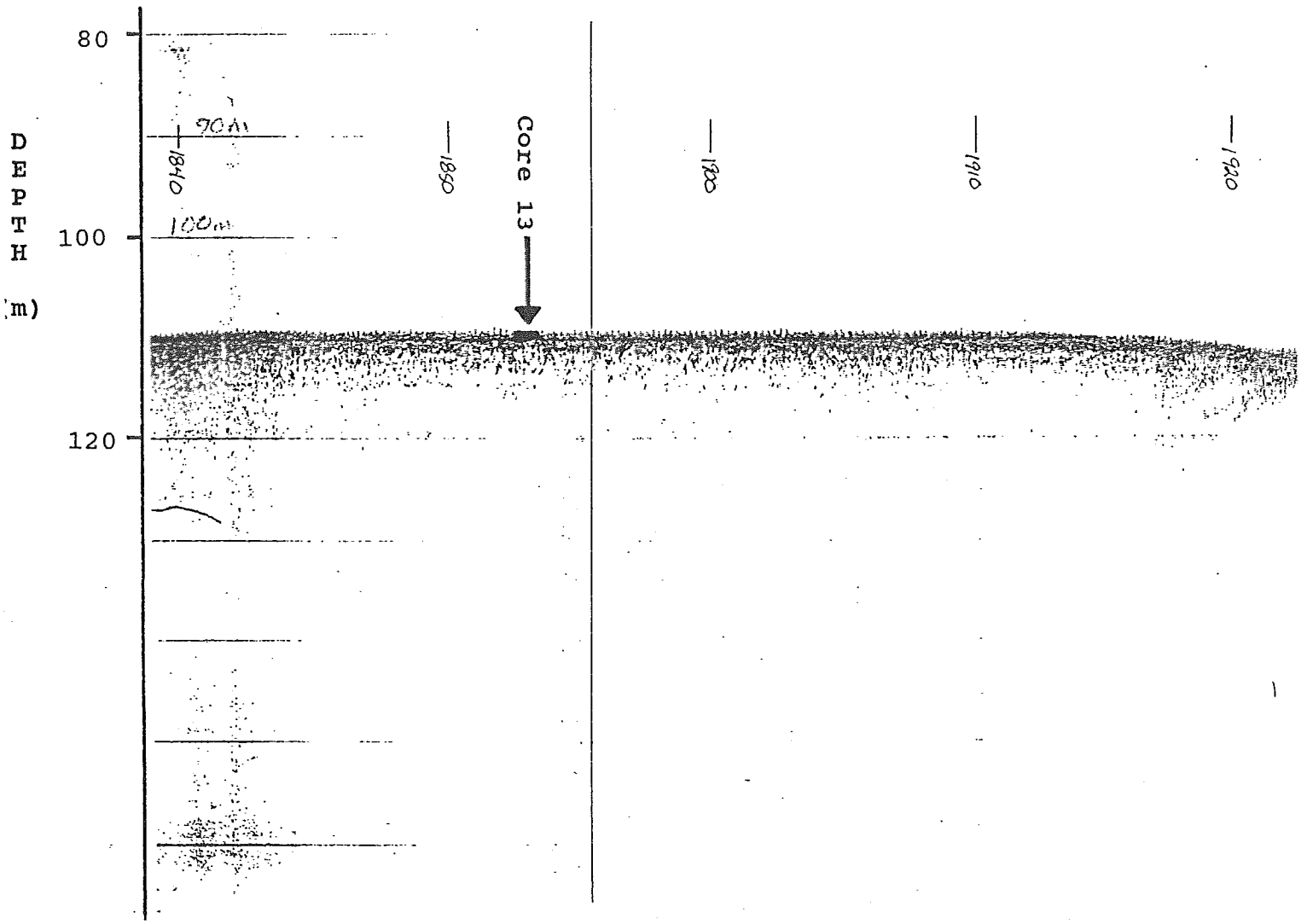
92-004-13: Vibracore

Julian Day: 180 GMT Time: 1853

Latitude: 52° 02.9145 N Longitude: 129° 47.5972 W

Depth: 109 m Core Length: 55 cm

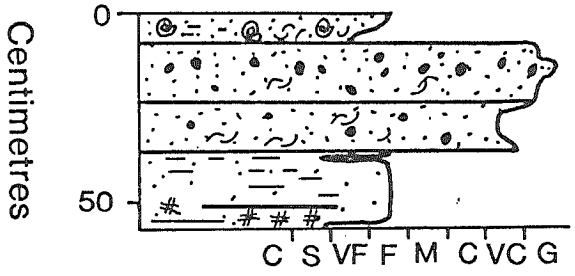
Geographic Location: Middle Bank



3.5 KHz BATHYMETRY profile

END 92A013

109m



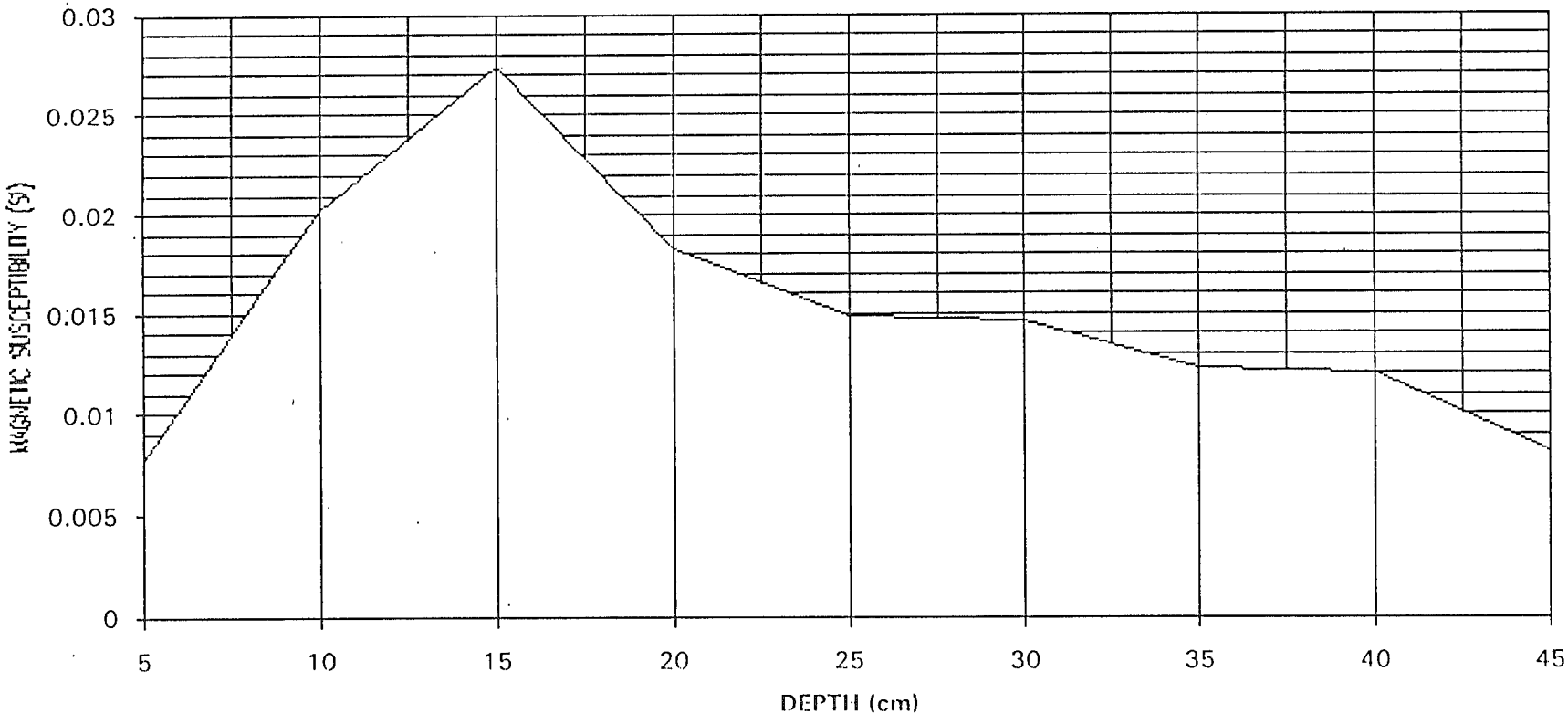
TENTATIVE INTERPRETATION

Holocene sand.

Late Wisconsinan gravelly shelly lag associated with transgression.

Late Wisconsinan interbedded silts and sands deposited during low sea level stand (low energy sediments suggestive of a paralic environment such as a lagoon).

CORE END92A13 MAGNETIC SUSCEPTIBILITY



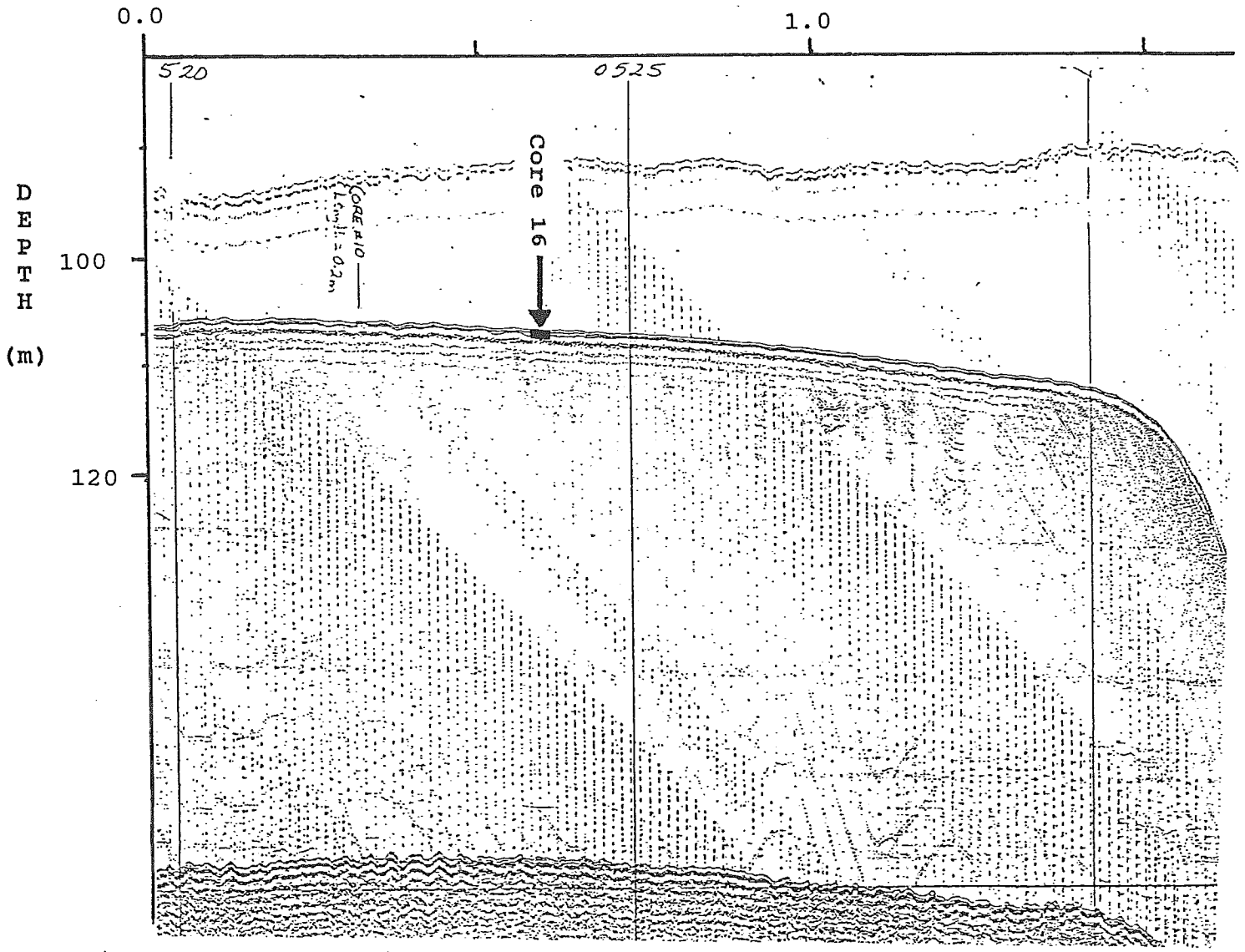
92-004-16: Vibracore

Julian Day: 180 GMT Time: 2151

Latitude: 52° 05.4152 N Longitude: 129° 45.6433 W

Depth: 107 m Core Length: 110 cm

Geographic Location: Middle Bank



HUNTEC DTS profile

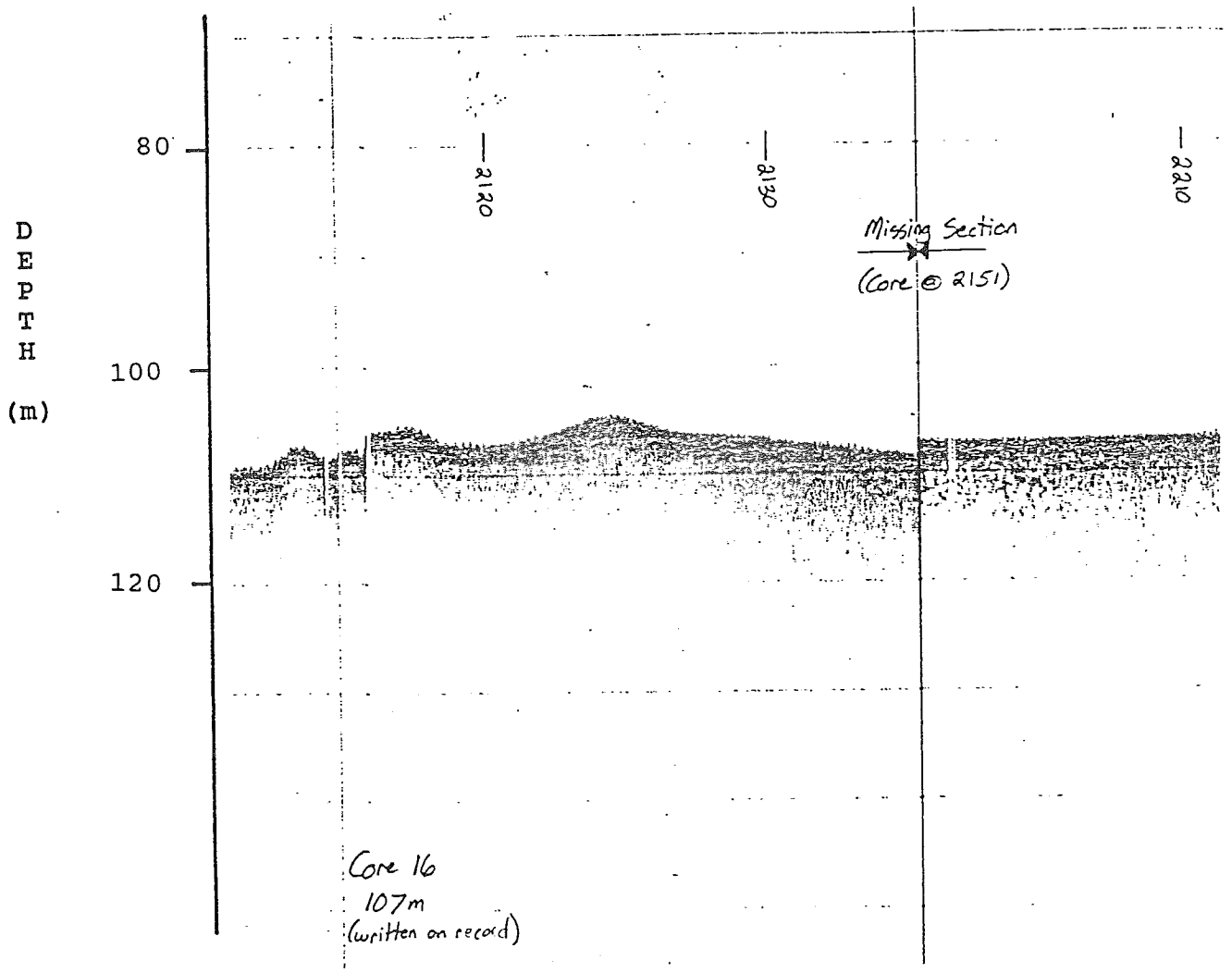
92-004-16: Vibracore

Julian Day: 180 GMT Time: 2151

Latitude: 52° 05.4152 N Longitude: 129° 45.6433 W

Depth: 107 m Core Length: 110 cm

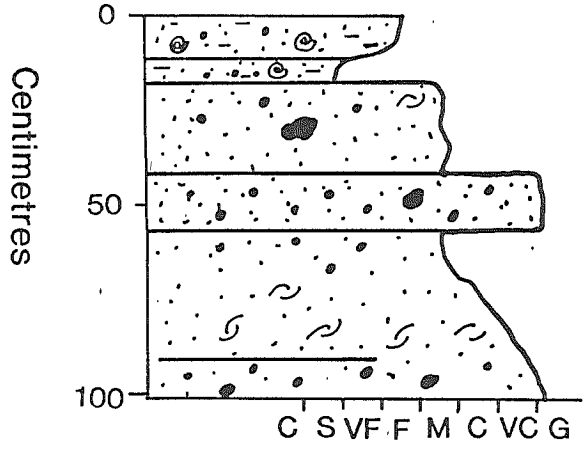
Geographic Location: Middle Bank



3.5 KHz BATHYMETRY profile

END 92A016

107m

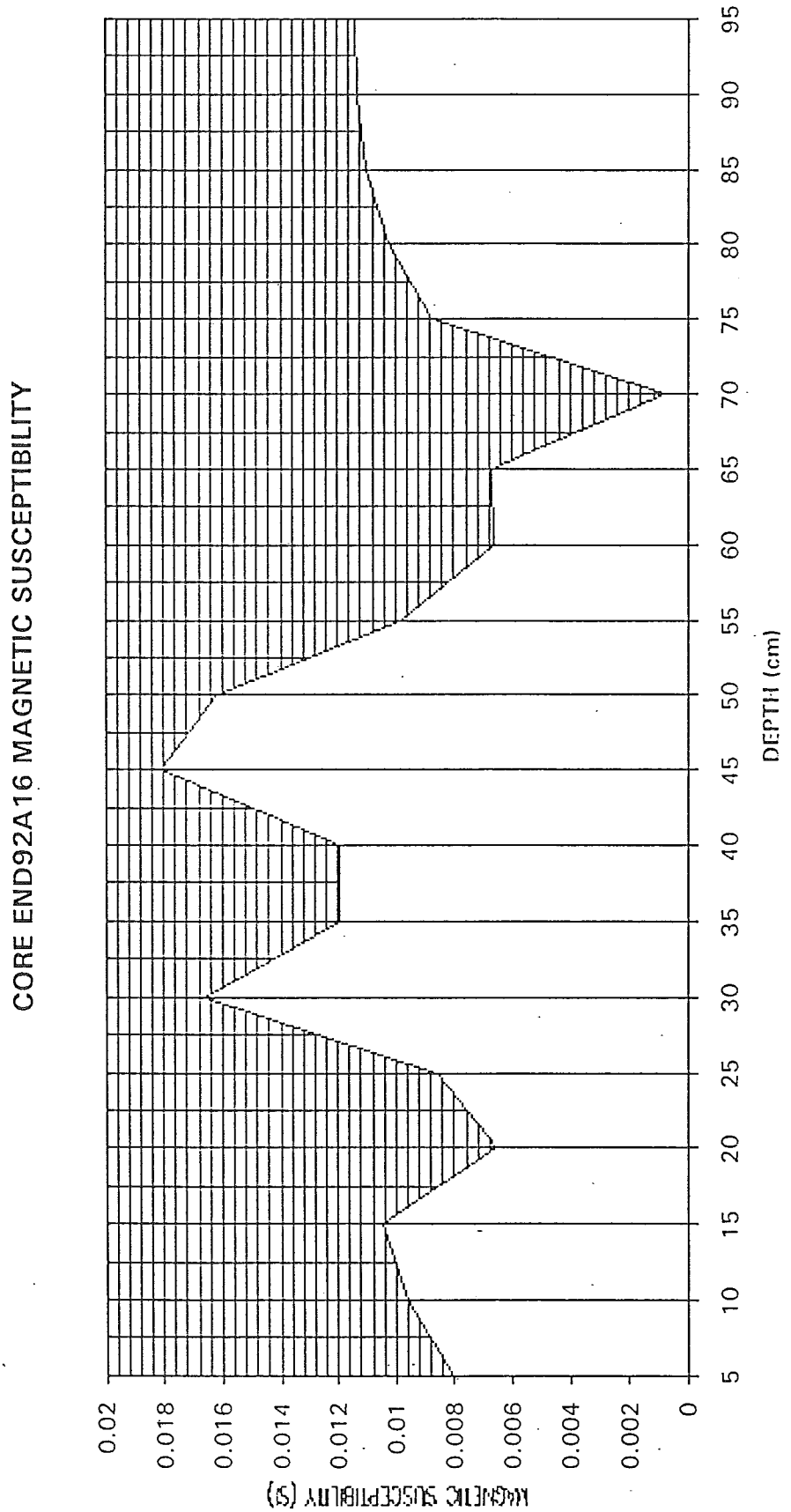


TENTATIVE INTERPRETATION

Holocene sand.

Late Wisconsinan interbedded sands and gravels deposited during lowstand and/or transgression (large rounded cobbles suggest beach environment).

E92A16.XLC


CORE END92A16 MAGNETIC SUSCEPTIBILITY
MAGNETIC SUSCEPTIBILITY (SI)
0.02
0.018
0.016
0.014
0.012
0.01
0.008
0.006
0.004
0.002
0
DEPTH (cm)
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95

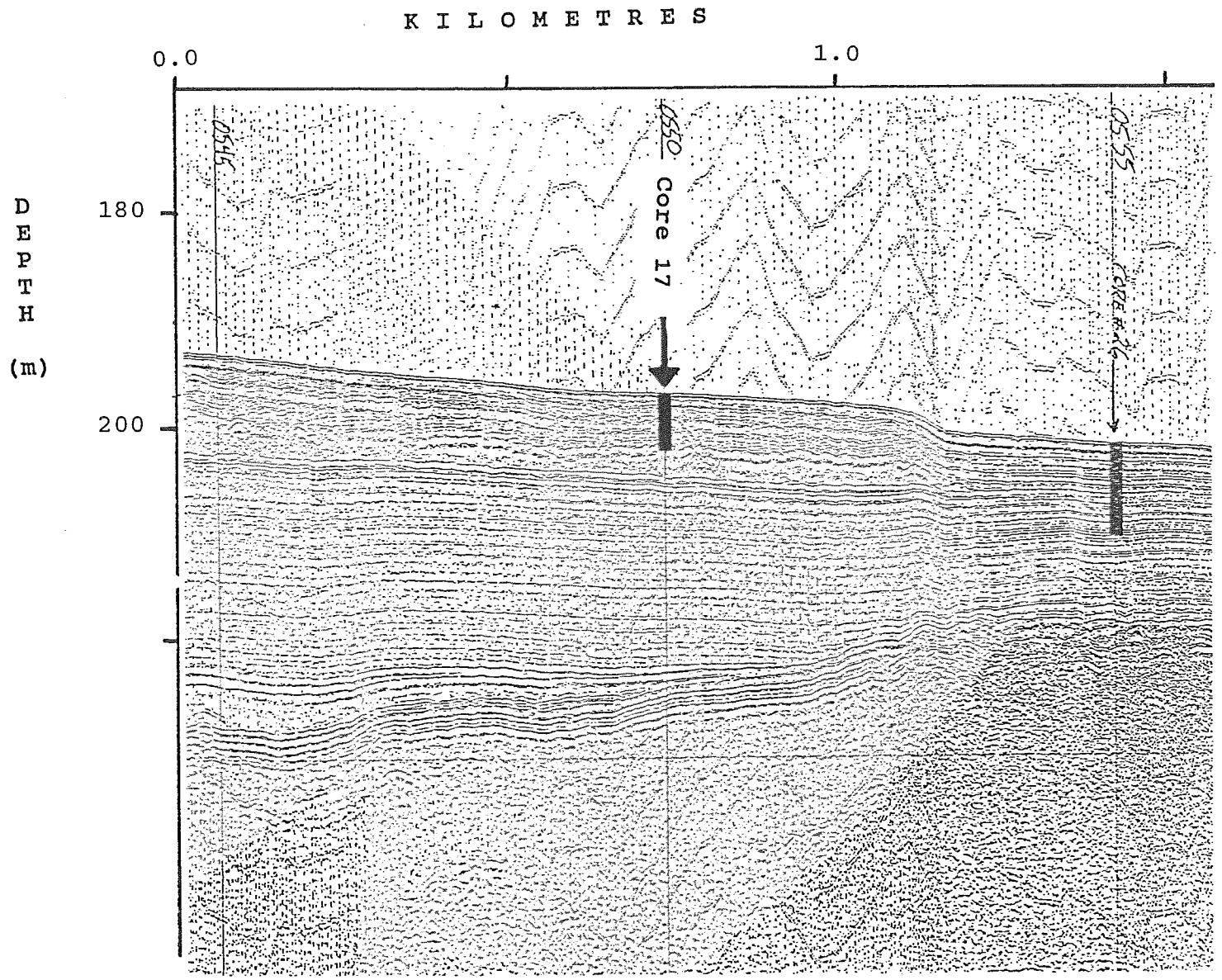
92-004-17: B-Piston

Julian Day: 180 GMT Time: 2311

Latitude: 52° 06.9963 N Longitude: 129° 42.4557 W

Depth: 197 m Core Length: 518 cm

Geographic Location: Middle Bank



HUNTEC DTS profile

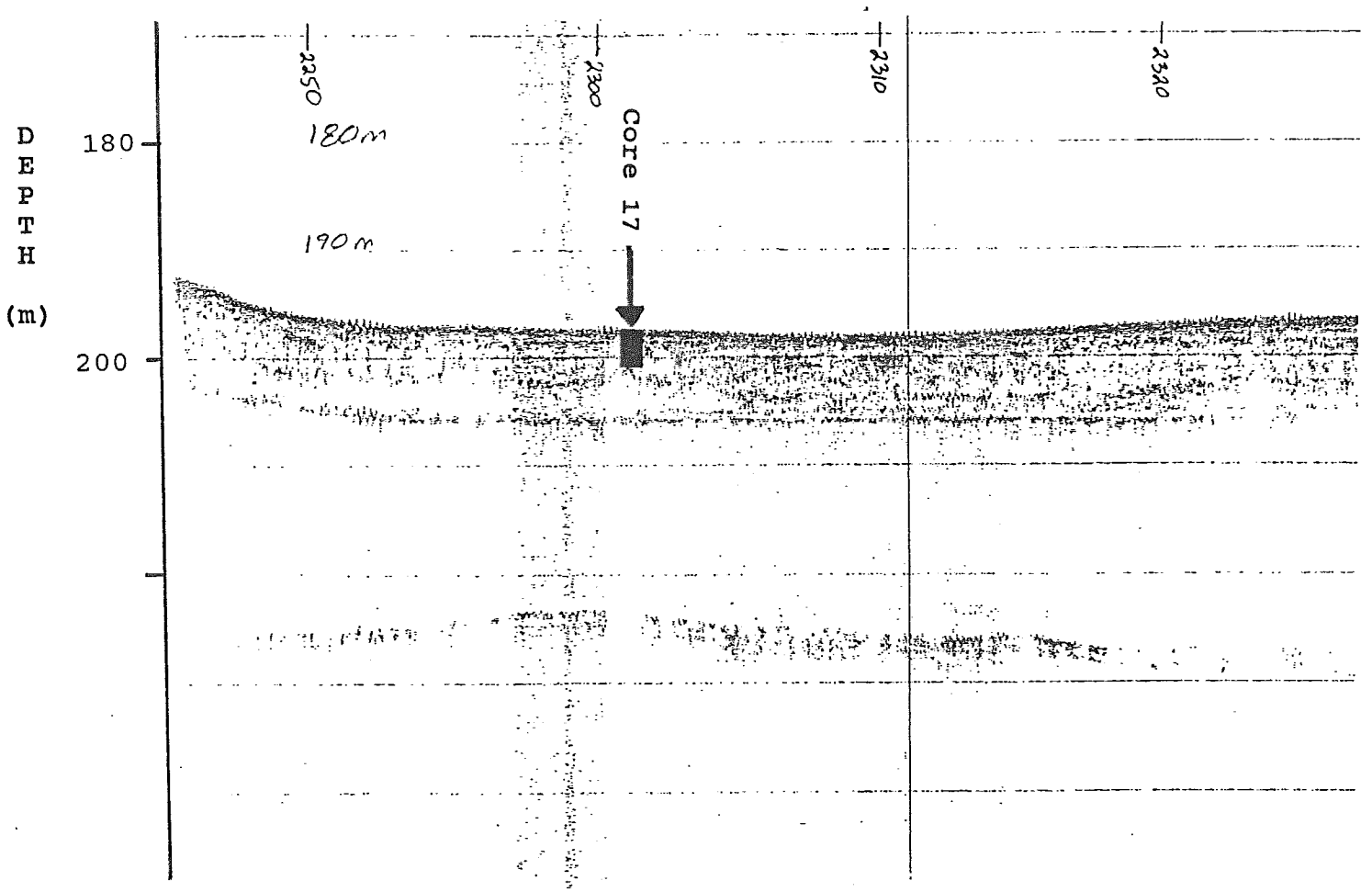
92-004-17: B-Piston

Julian Day: 180 GMT Time: 2311

Latitude: 52° 06.9963 N Longitude: 129° 42.4557 W

Depth: 197 m Core Length: 518 cm

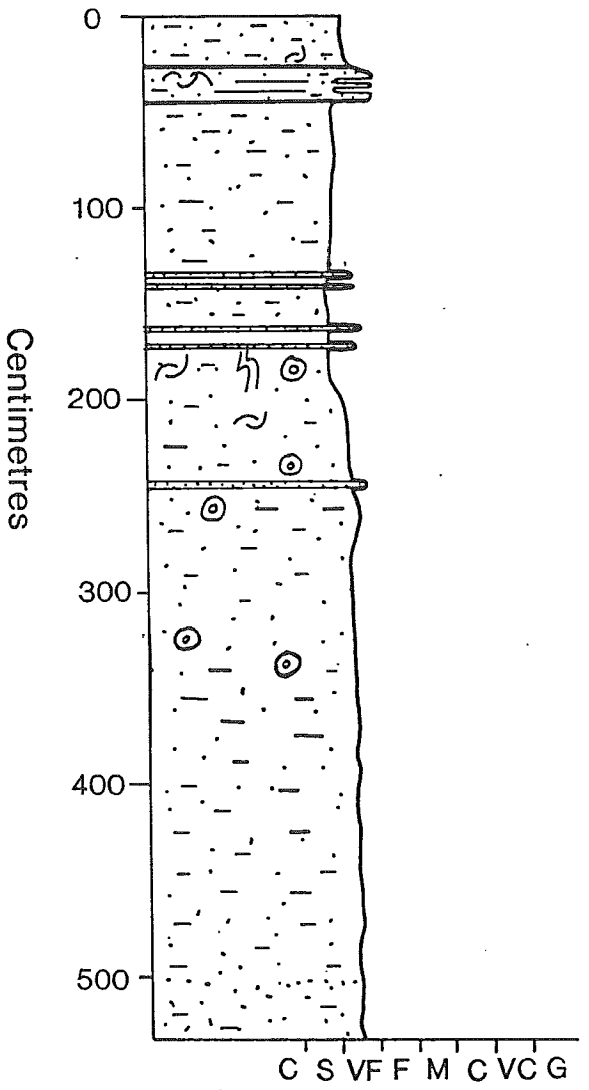
Geographic Location: Middle Bank



3.5 KHz BATYMETRY profile

END 92A017

197m

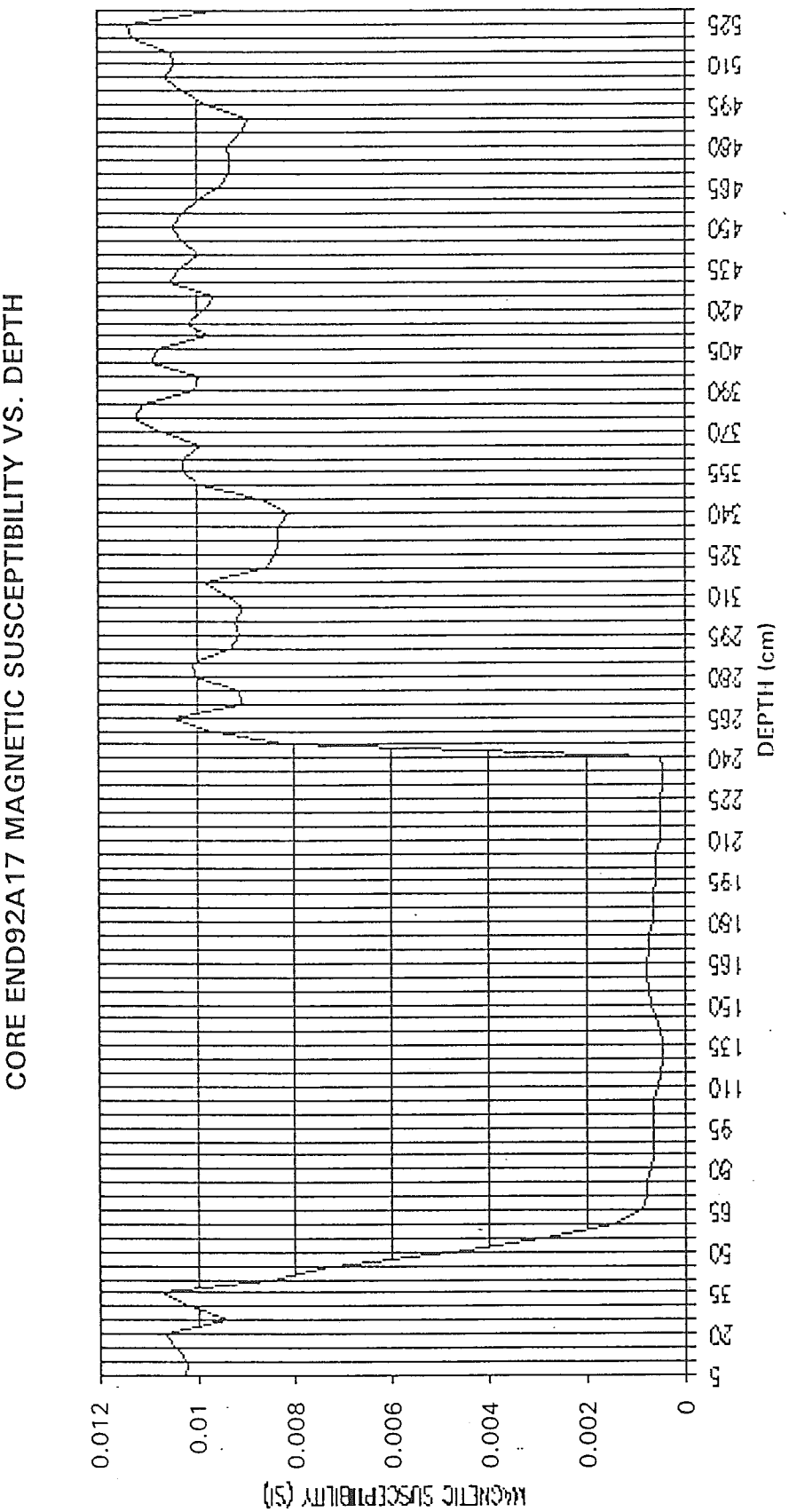


TENTATIVE INTERPRETATION

Holocene muddy sand.

Late Wisconsinan muddy sands and sandy muds deposited during sea level lowstand and transgression.

E92A17.XLC


CORE END92A17 MAGNETIC SUSCEPTIBILITY VS. DEPTH
MAGNETIC SUSCEPTIBILITY (SI)
0.012
0.01
0.008
0.006
0.004
0.002
0
DEPTH (cm)
5
20
35
50
65
80
95
110
135
150
165
180
195
210
225
240
265
280
295
310
325
340
355
370
390
405
420
435
450
465
480
495
510
525

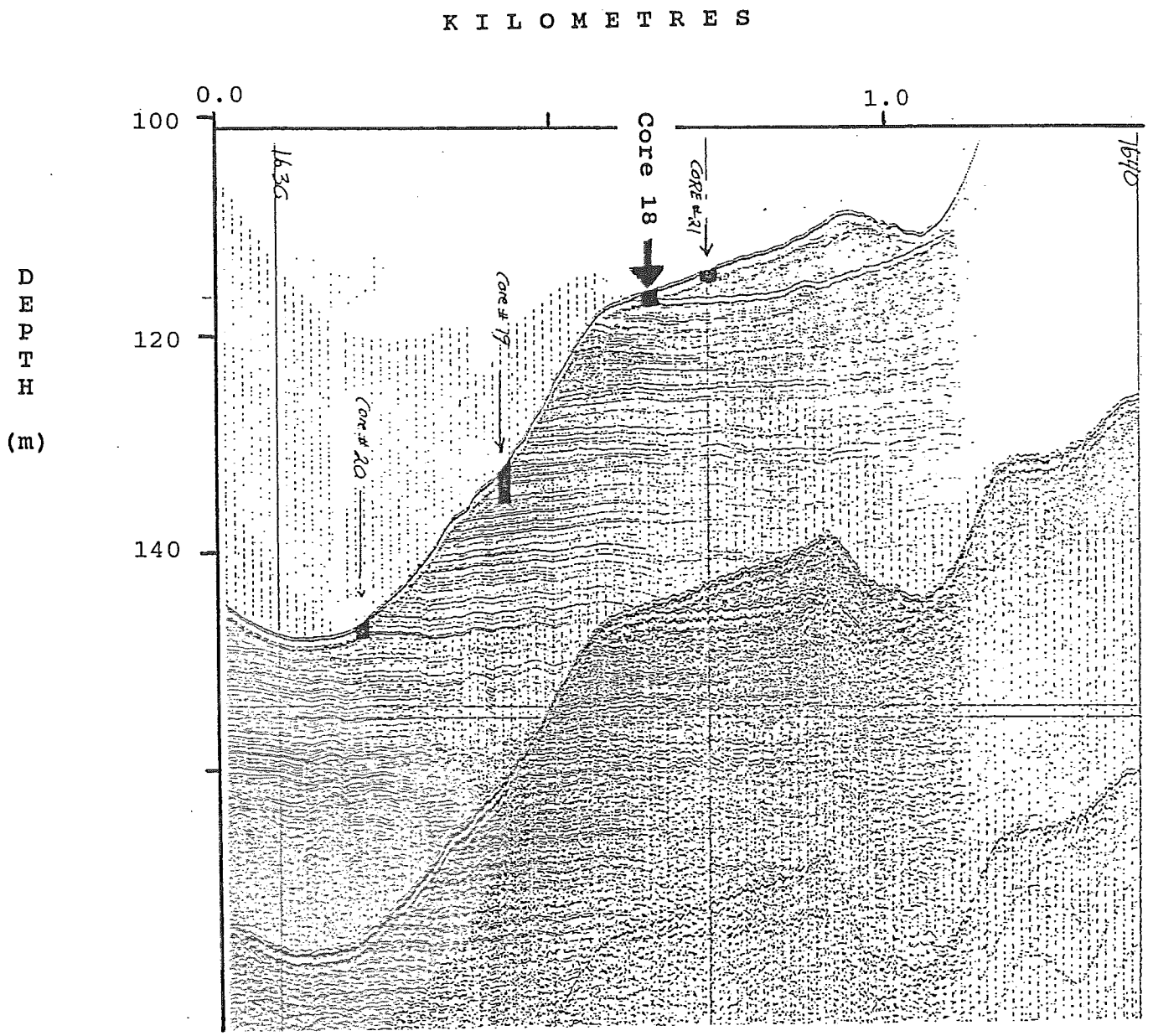
92-004-18: B-Piston

Julian Day: 181 GMT Time: 2037

Latitude: 52° 53.2271 N Longitude: 131° 19.3054 W

Depth: 117 m Core Length: 130 cm

Geographic Location: Laskeek Bank



HUNTEC DTS profile

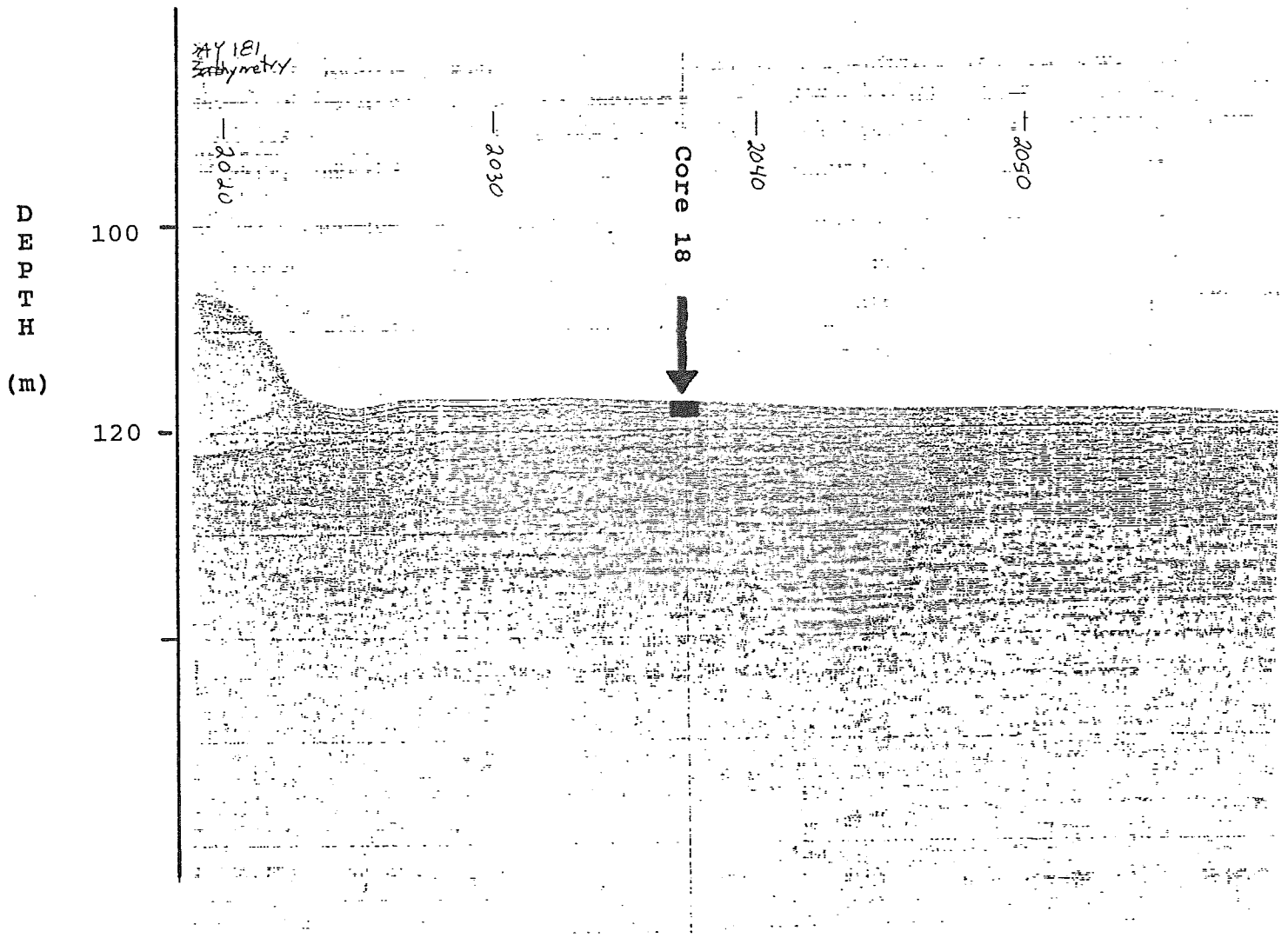
92-004-18: B-Piston

Julian Day: 181 GMT Time: 2037

Latitude: 52° 53.2271 N Longitude: 131° 19.3054 W

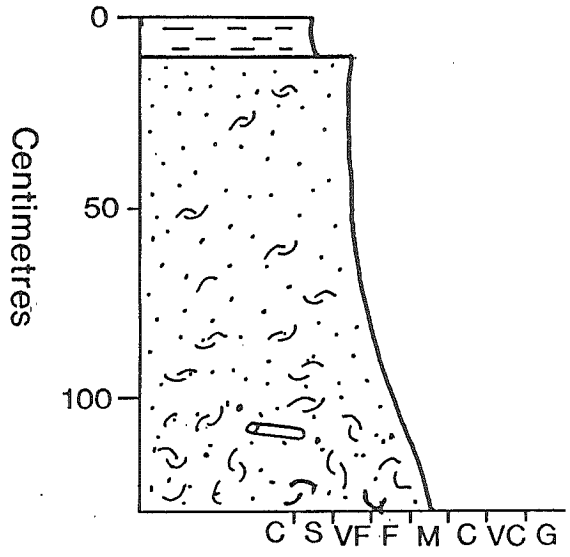
Depth: 117 m Core Length: 130 cm

Geographic Location: Laskeek Bank



3.5 KHz BATYMETRY profile

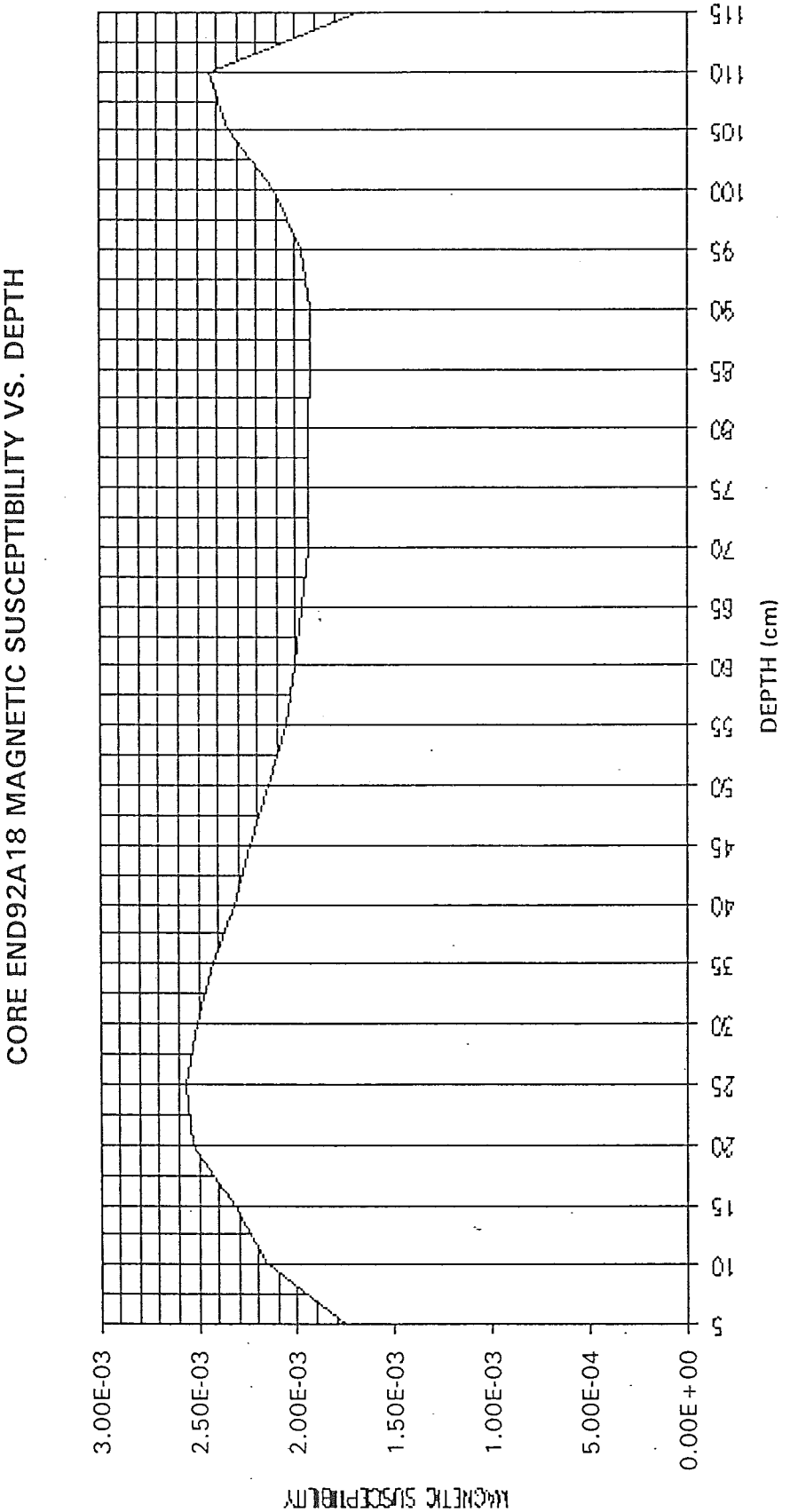
END 92A018
117m



TENTATIVE INTERPRETATION

Holocene muds and sands.

E92A18.XLC


CORE END92A18 MAGNETIC SUSCEPTIBILITY VS. DEPTH
MAGNETIC SUSCEPTIBILITY
3.00E-03
2.50E-03
2.00E-03
1.50E-03
1.00E-03
5.00E-04
0.00E+00
DEPTH (cm)
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
105
110
115

92-004-19: B-Piston

Julian Day: 181

GMT Time: 2151

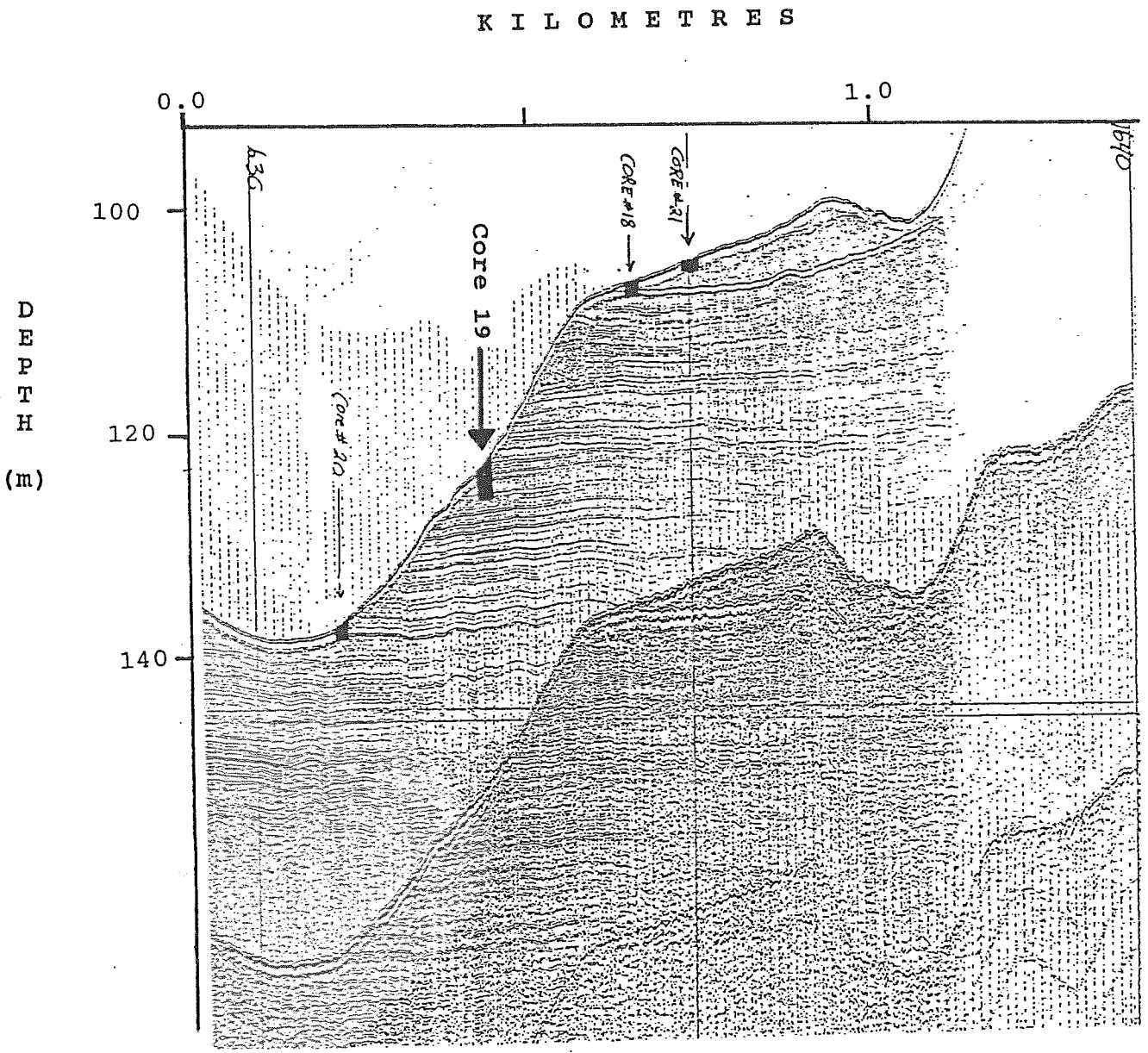
Latitude: 52° 53.3811 N

Longitude: 131° 19.0119 W

Depth: 123 m

Core Length: 316 cm

Geographic Location: Laskeek Bank

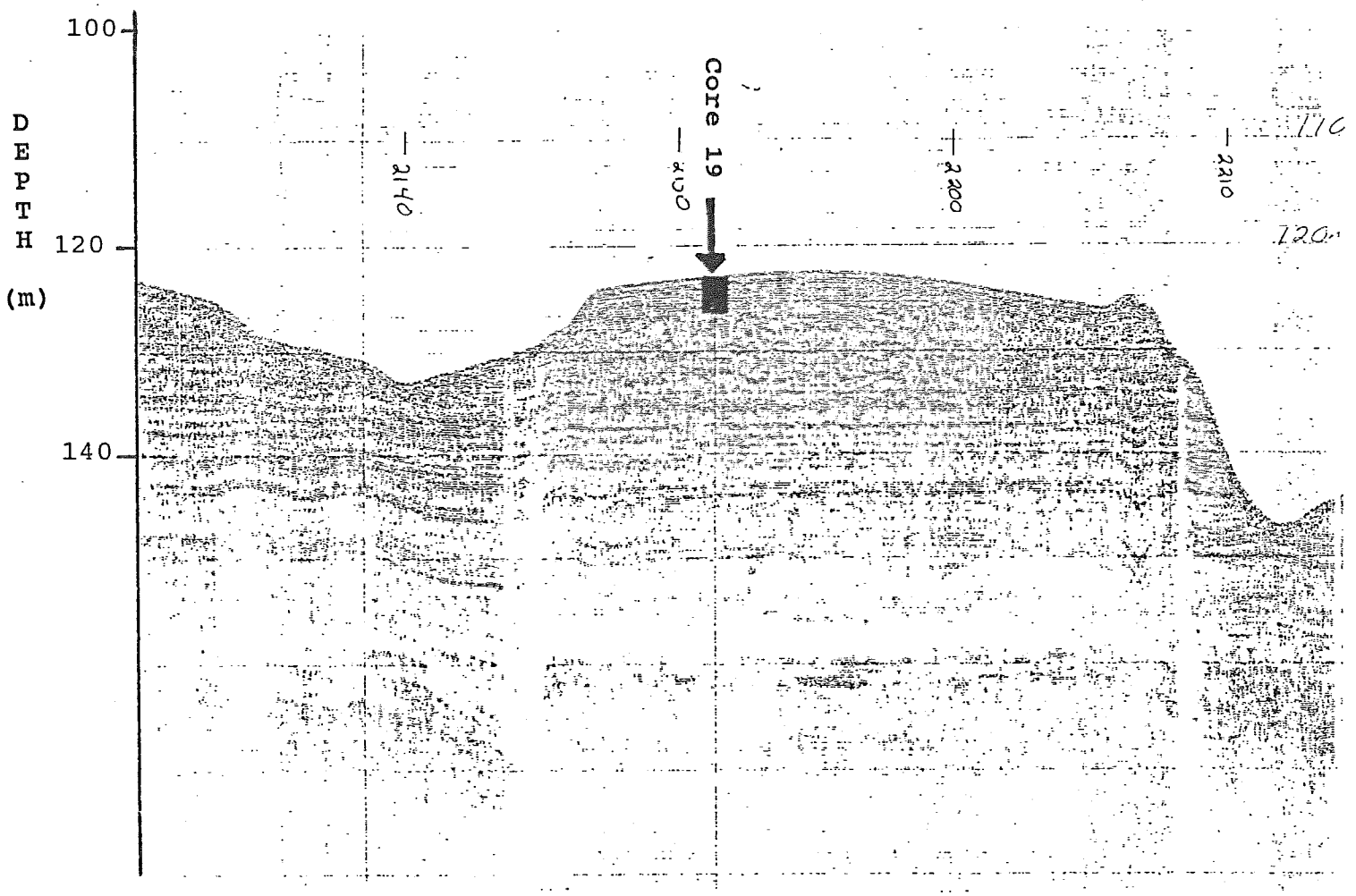


HUNTEC DTS profile

92-004-19: B-Piston

Julian Day: 181
GMT Time: 2151
Latitude: 52° 53.3811 N
Longitude: 131° 19.0119 W
Depth: 123 m
Core Length: 316 cm

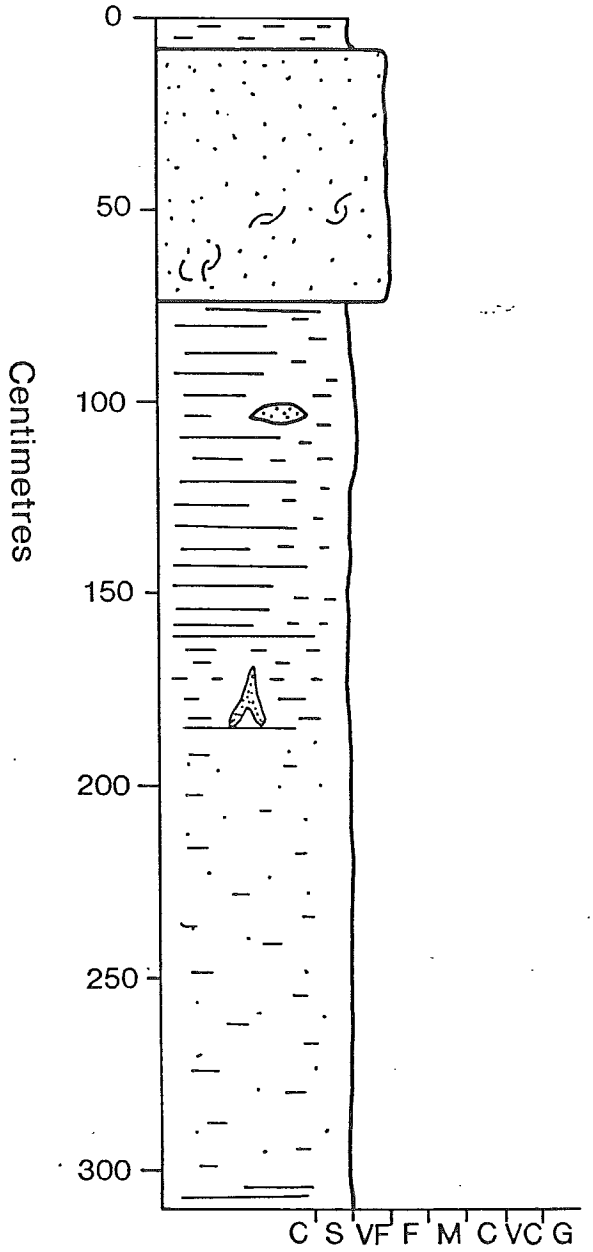
Geographic Location: Laskeek Bank



3.5 KHz BATHYMETRY profile

END 92A019

123m



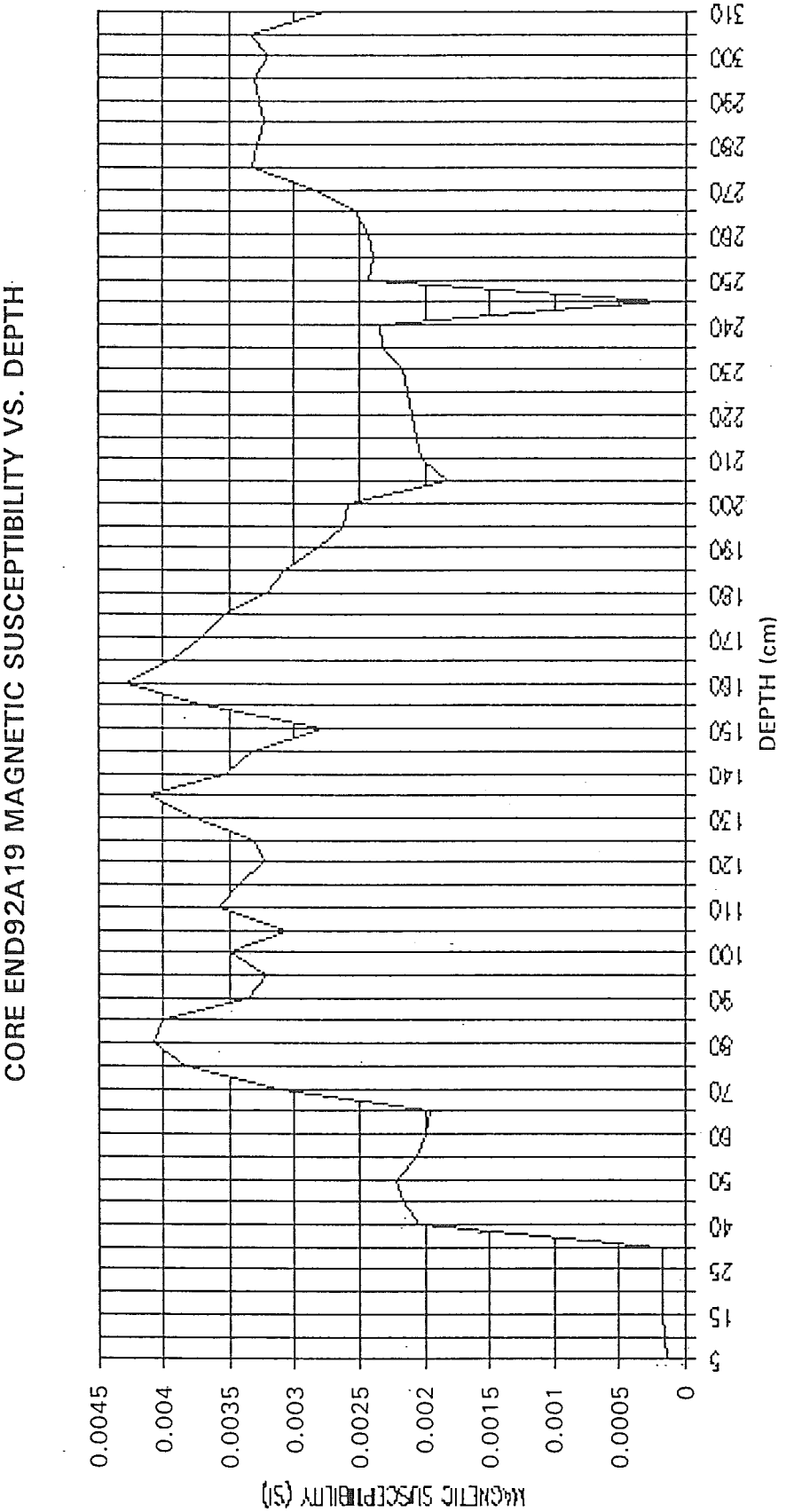
TENTATIVE INTERPRETATION

Holocene sand.

Late Wisconsinan glaciolacustrine (?) silty clay (laminations strongly suggestive of a varve-type depositional process).

Highly disturbed Late Wisconsinan glaciolacustrine (?) clay.

E92A19.XLC


CORE END92A19 MAGNETIC SUSCEPTIBILITY VS. DEPTH
MAGNETIC SUSCEPTIBILITY (SI)
0.0045
0.004
0.0035
0.003
0.0025
0.002
0.0015
0.001
0.0005
0
DEPTH (cm)
5
15
25
40
50
60
70
80
90
100
110
120
130
140
150
160
170
180
190
200
210
220
230
240
250
260
270
280
290
300
310

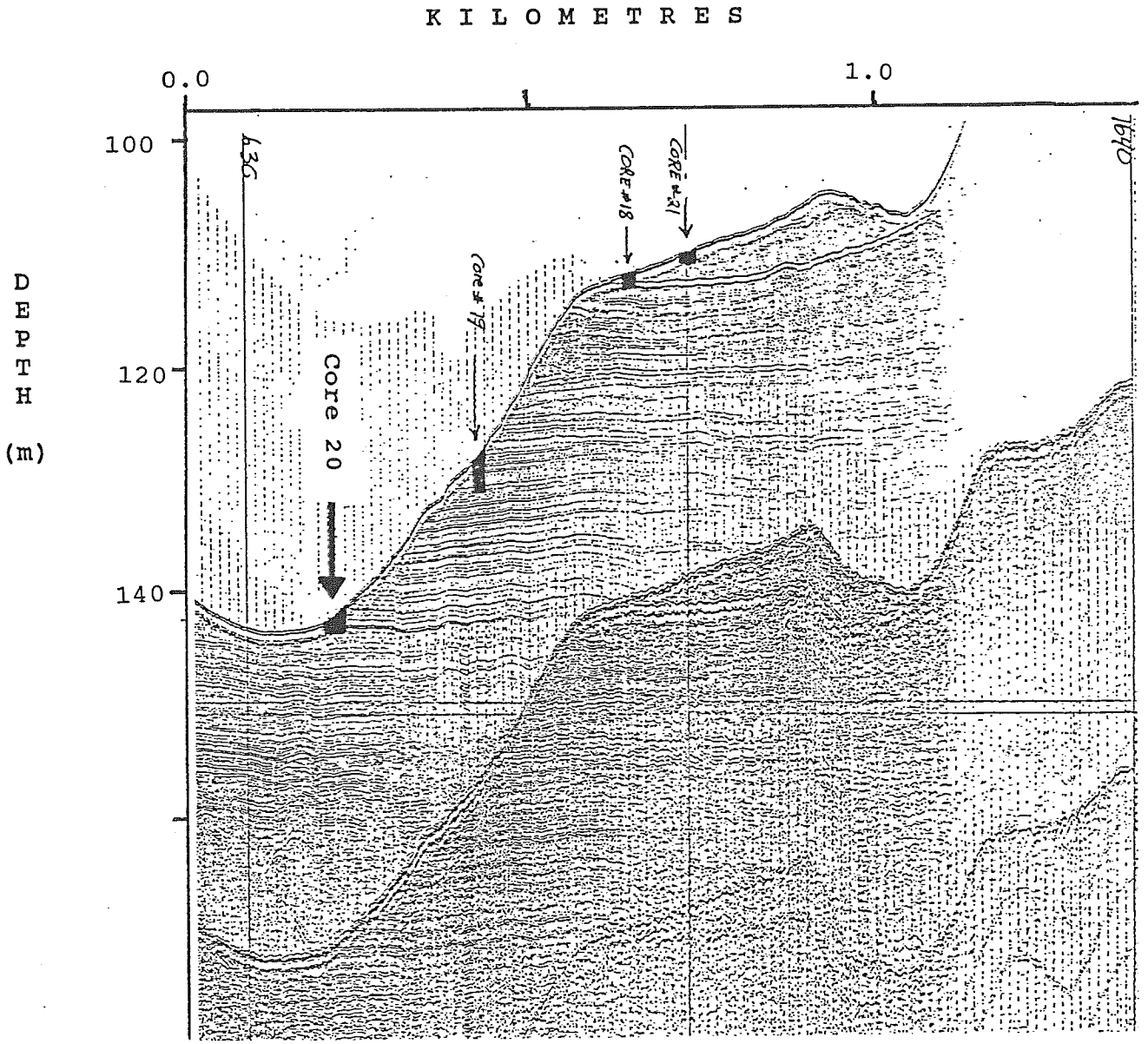
92-004-20: B-Piston

Julian Day: 181 GMT Time: 2249

Latitude: 52° 53.2760 N Longitude: 131° 18.7373 W

Depth: 142.5 m Core Length: 160 cm

Geographic Location: Laskeek Bank



HUNTEC DTS profile

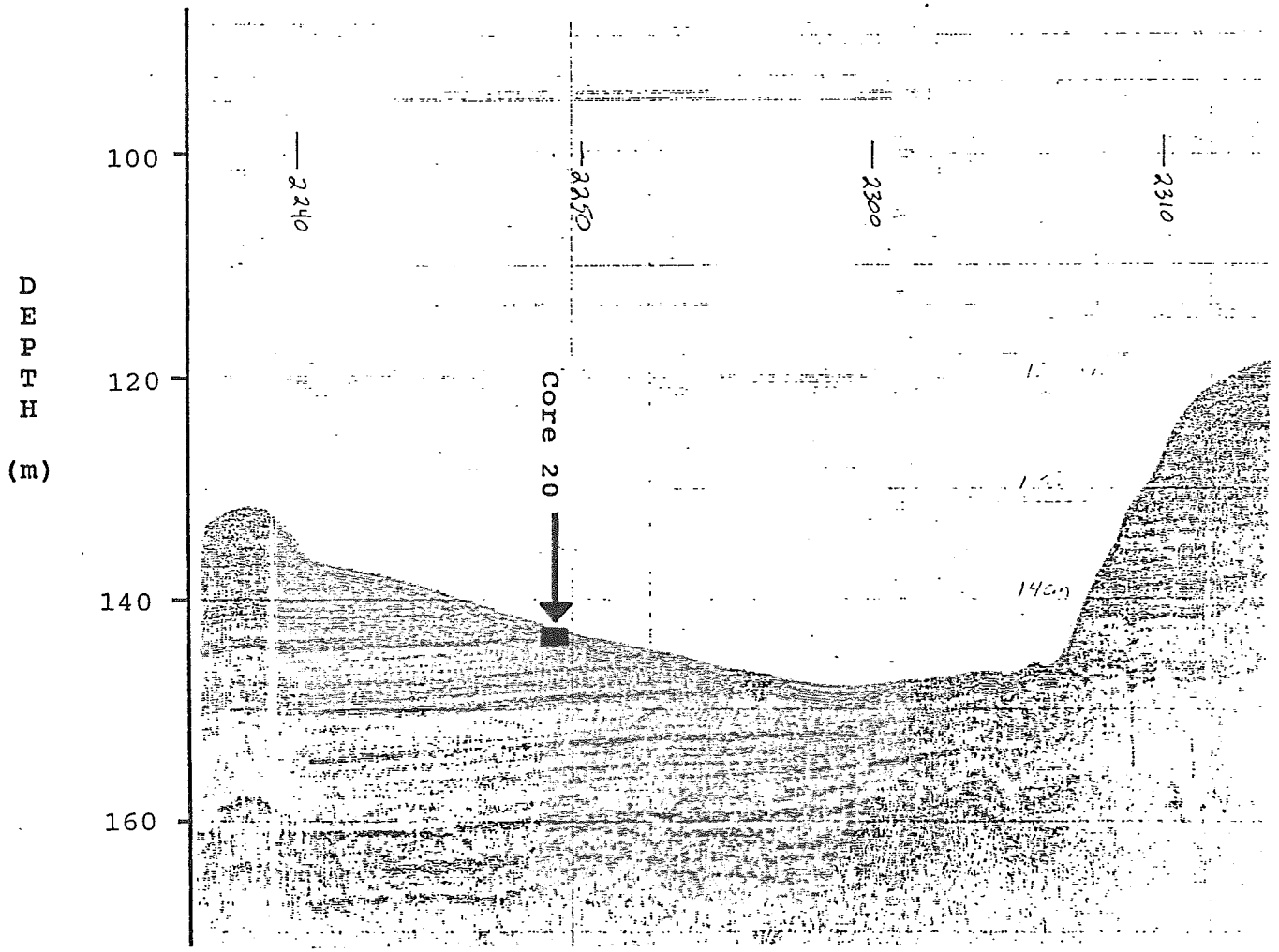
92-004-20: B-Piston

Julian Day: 181 GMT Time: 2249

Latitude: 52° 53.2760 N Longitude: 131° 18.7373 W

Depth: 142.5 m Core Length: 160 cm

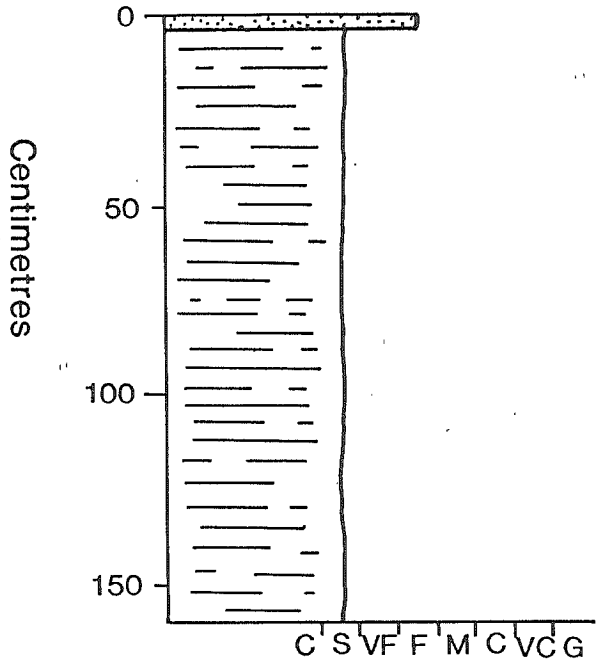
Geographic Location: Laskeek Bank



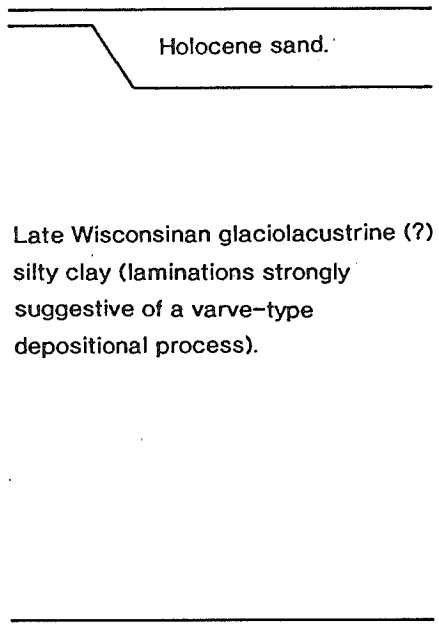
3.5 KHz BATHYMETRY profile

END 92A020

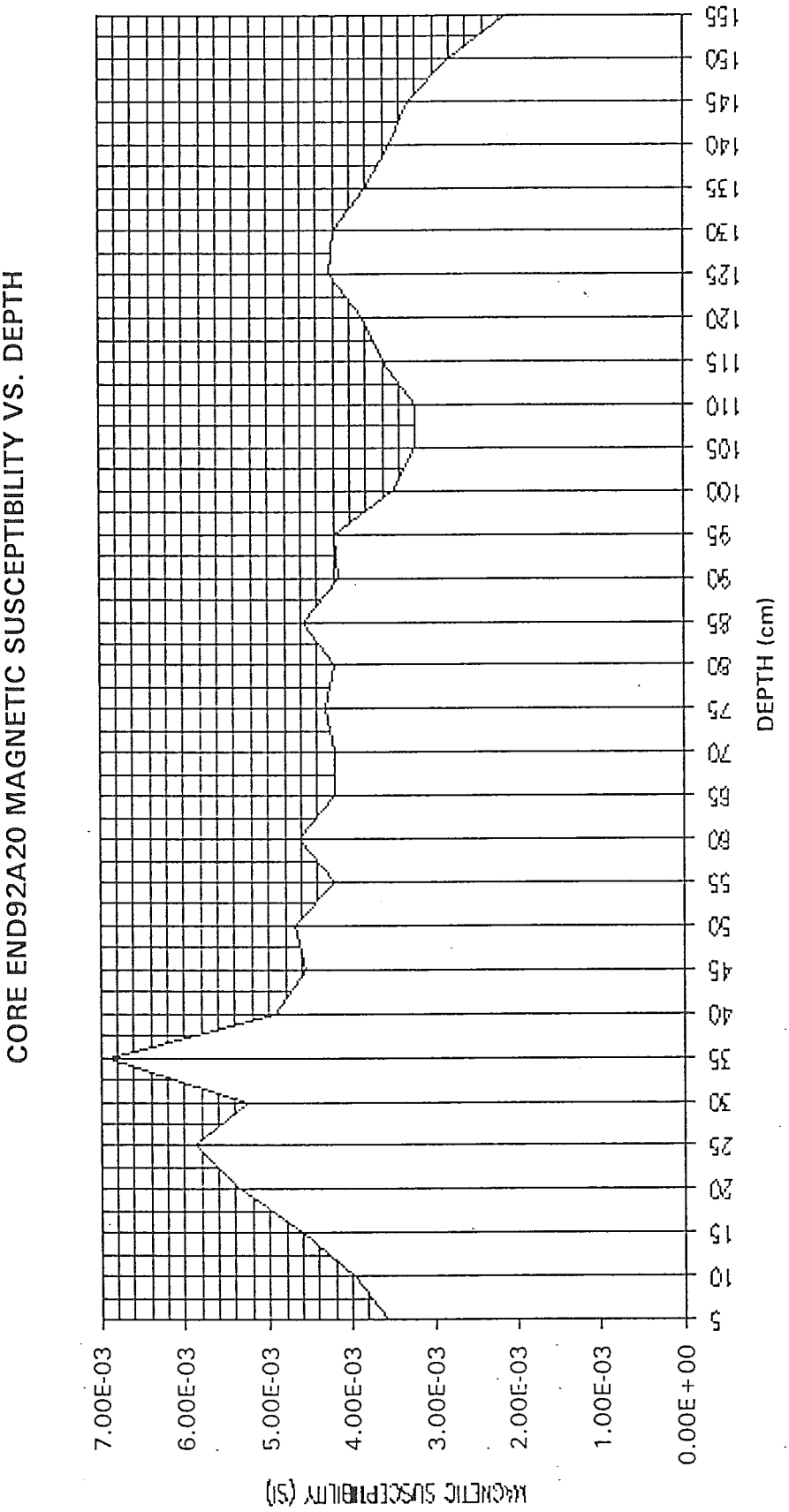
142m



TENTATIVE INTERPRETATION



E92A20.XLC


CORE END92A20 MAGNETIC SUSCEPTIBILITY VS. DEPTH
DEPTH (cm)
MAGNETIC SUSCEPTIBILITY (SI)
7.00E-03
6.00E-03
5.00E-03
4.00E-03
3.00E-03
2.00E-03
1.00E-03
0.00E+00
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
105
110
115
120
125
130
135
140
145
150
155

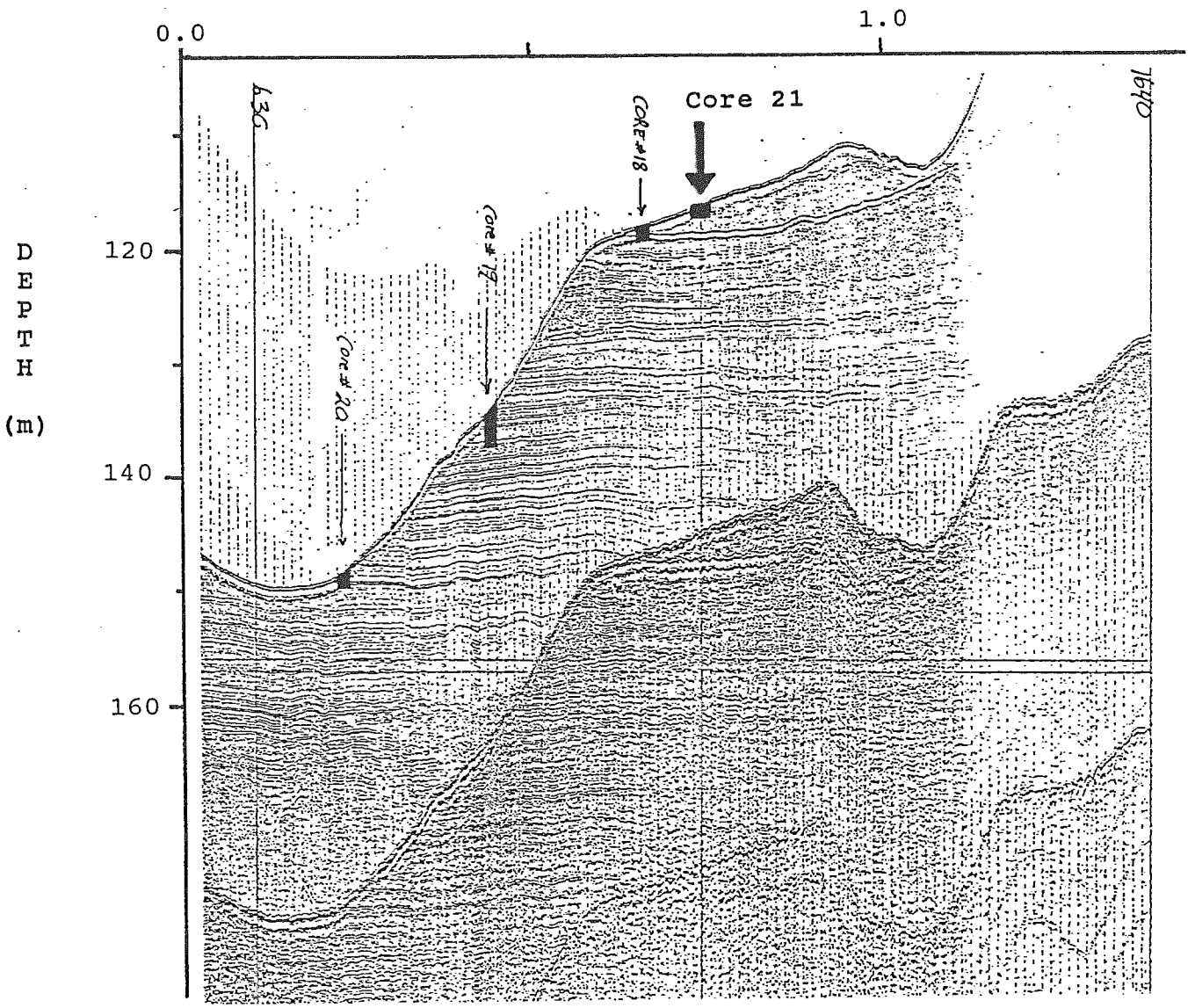
92-004-21: Vibracore

Julian Day: 181 GMT Time: 2330

Latitude: 52° 53.1352 N Longitude: 131° 19.2835 W

Depth: 116.5 m Core Length: 292 cm

Geographic Location: Laskeek Bank



HUNTEC DTS profile

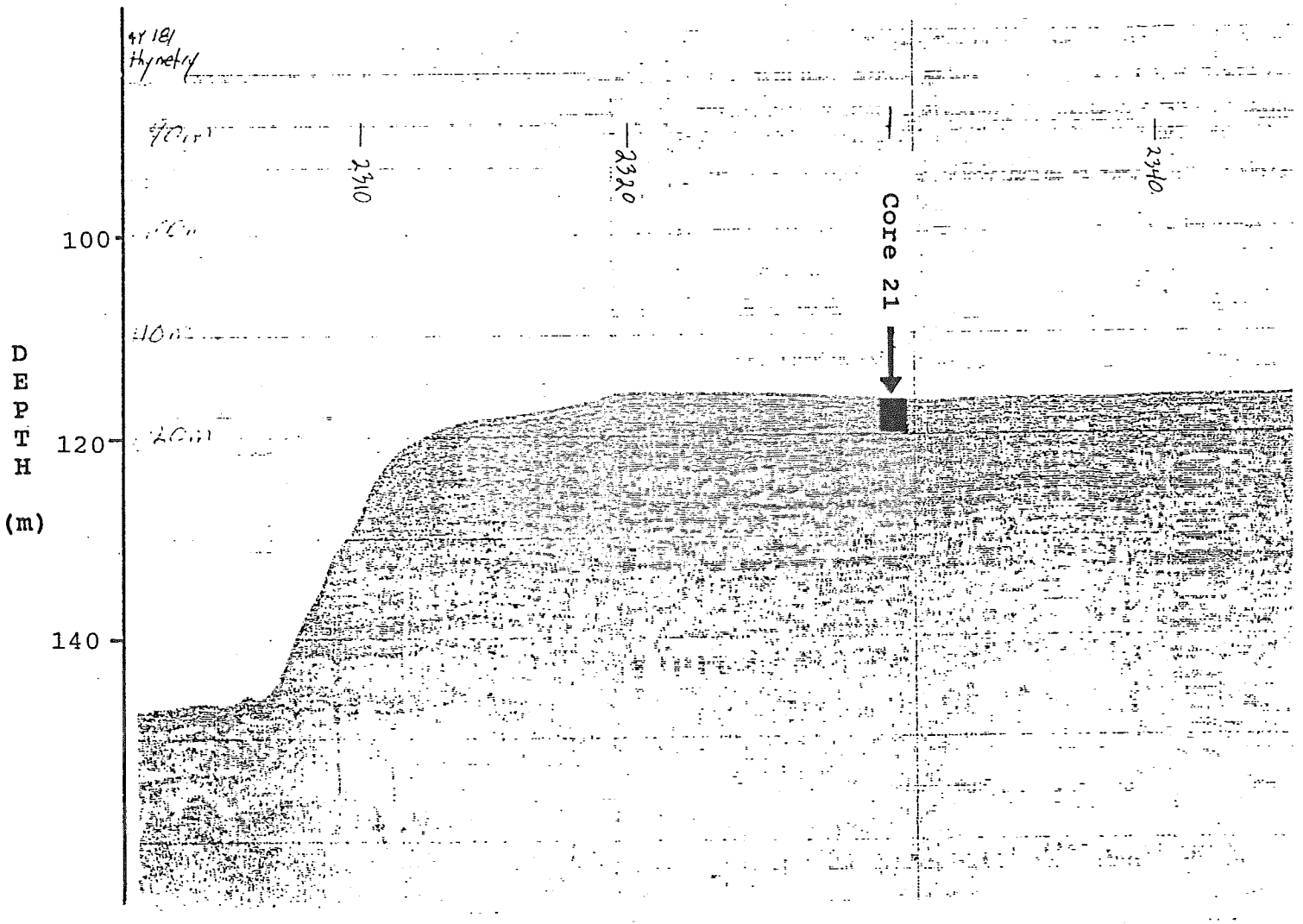
92-004-21: Vibracore

Julian Day: 181 GMT Time: 2330

Latitude: 52° 53.1352 N Longitude: 131° 19.2835 W

Depth: 116.5 m Core Length: 292 cm

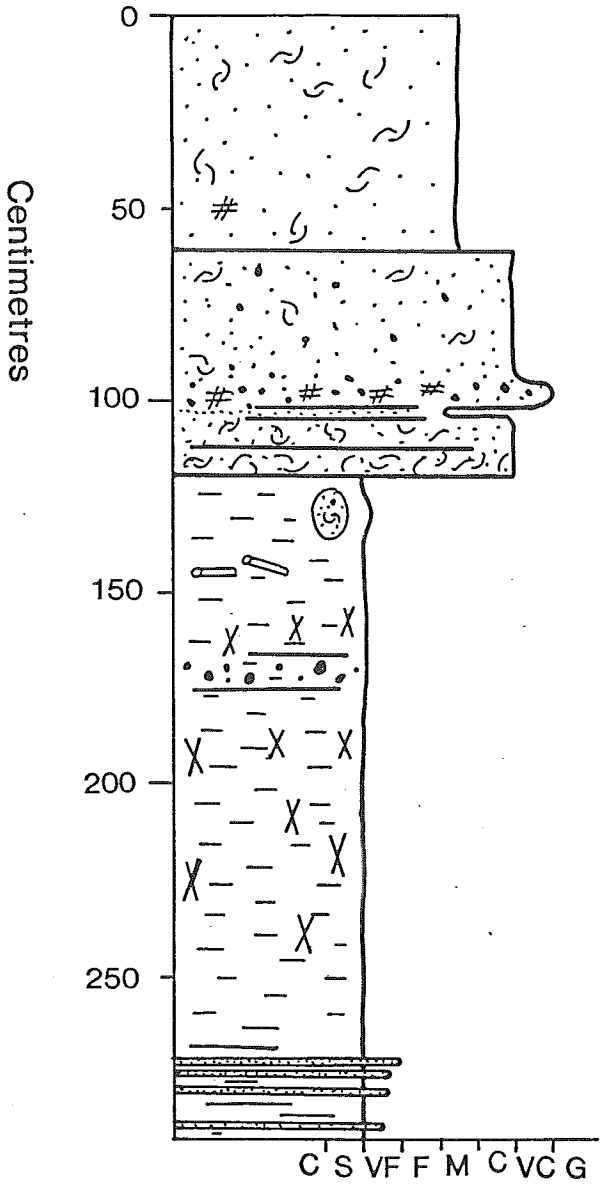
Geographic Location: Laskeek Bank



3.5 KHz BATHYMETRY profile

END 92A021

116m



TENTATIVE INTERPRETATION

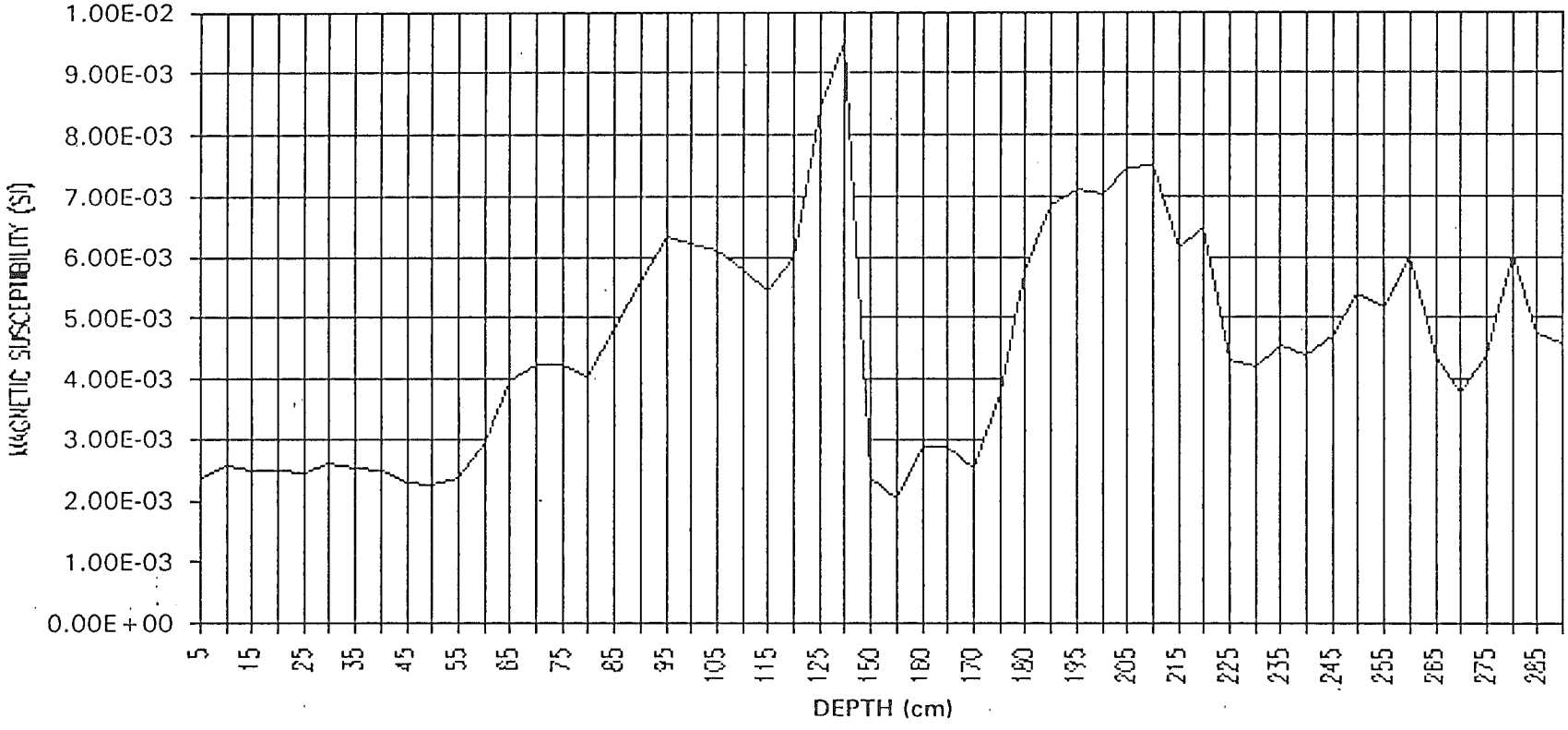
Holocene sand.

Late Wisconsinan interbedded shelly sands deposited during transgression.

Late Wisconsinan nearshore organic matter rich, lacustrine (?) muds.

Late Wisconsinan glaciolacustrine (?) sandy mud.

CORE END92A21 MAGNETIC SUSCEPTIBILITY



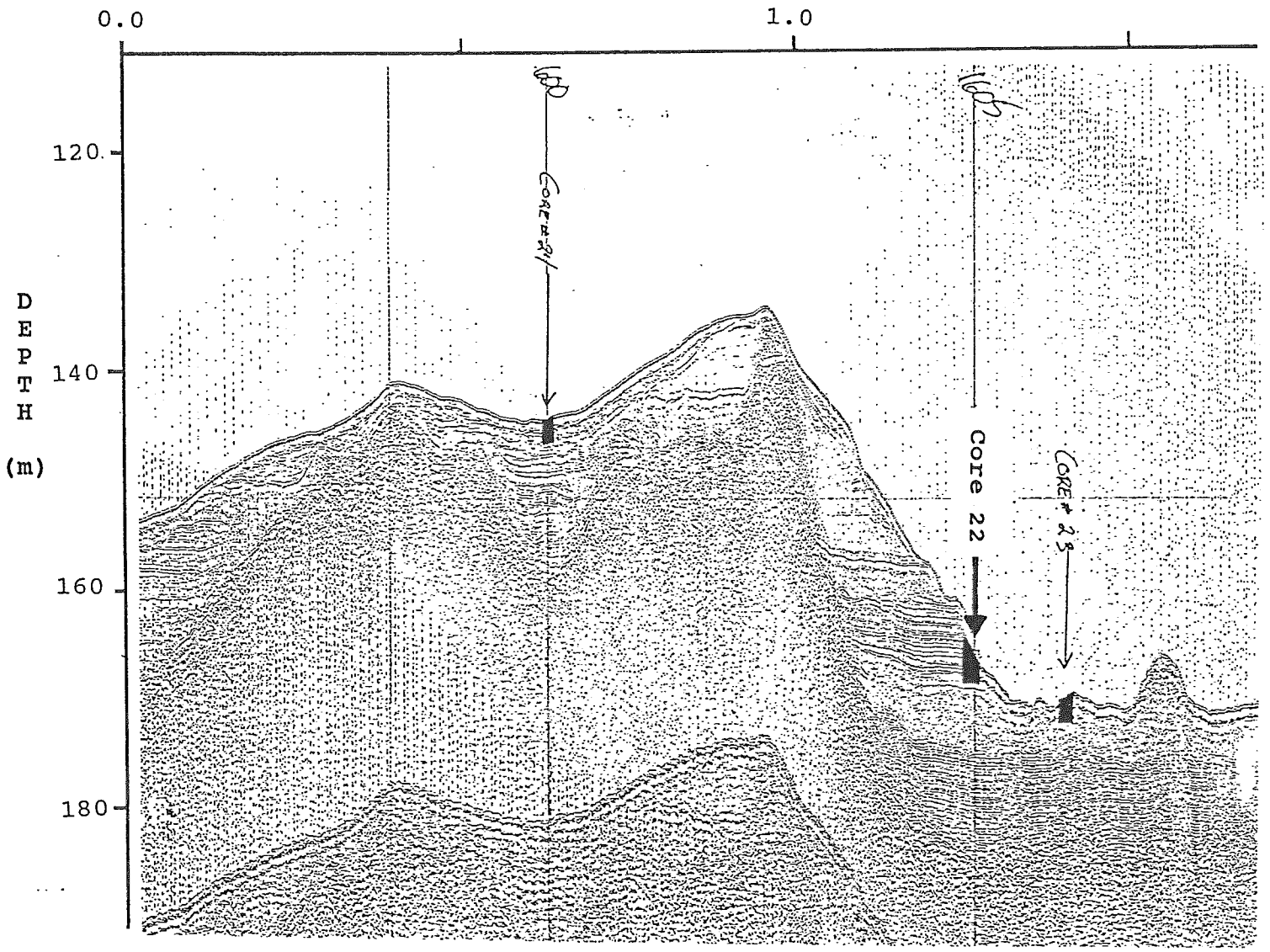
92-004-22: B-Piston

Julian Day: 182 GMT Time: 1709

Latitude: 52° 22.5168 N Longitude: 131° 12.3834 W

Depth: 166 m Core Length: 313 cm

Geographic Location: Western Laskeek Bank



HUNTEC DTS profile

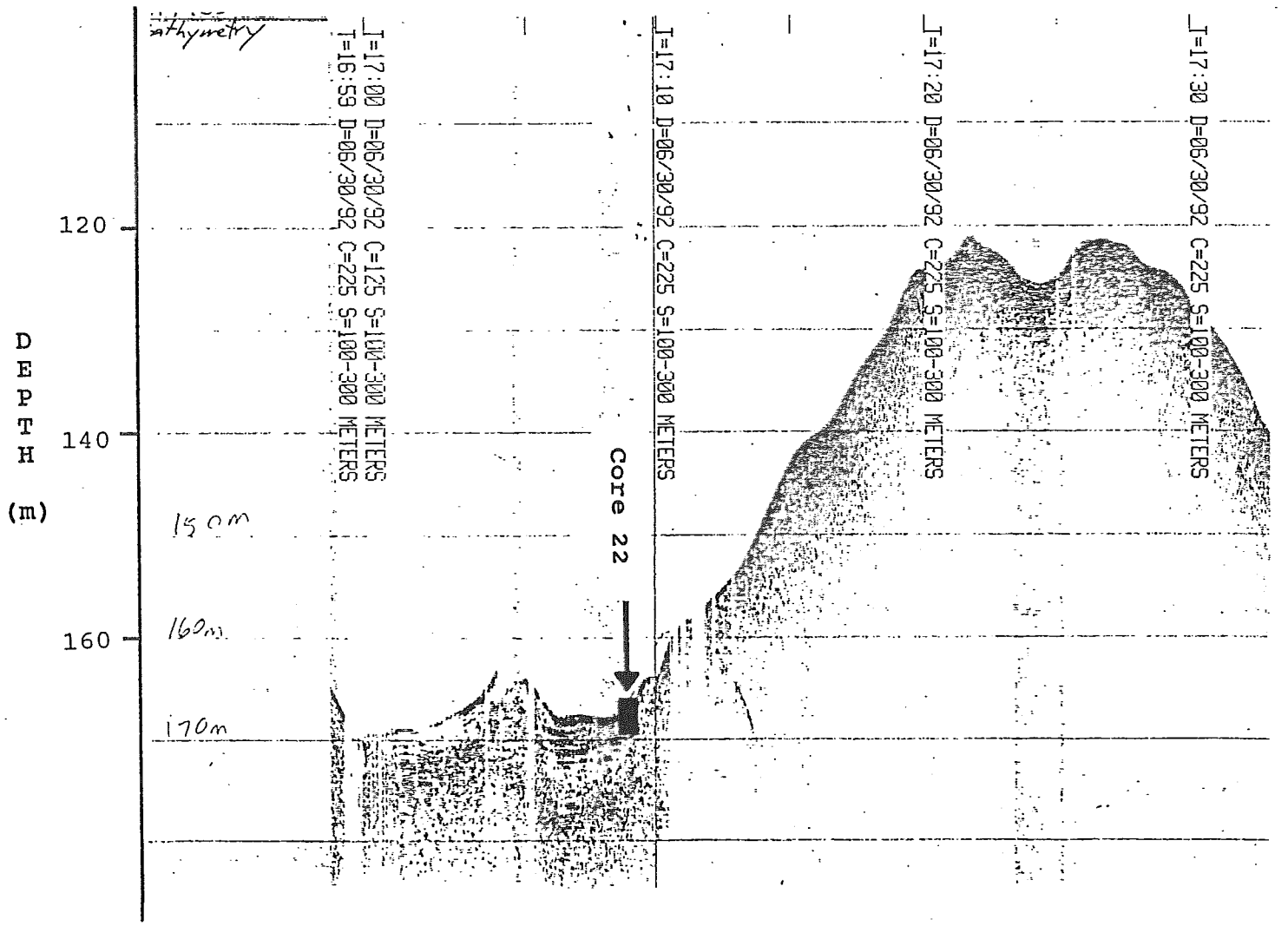
92-004-22: B-Piston

Julian Day: 182 GMT Time: 1709

Latitude: 52° 22.5168 N Longitude: 131° 12.3834 W

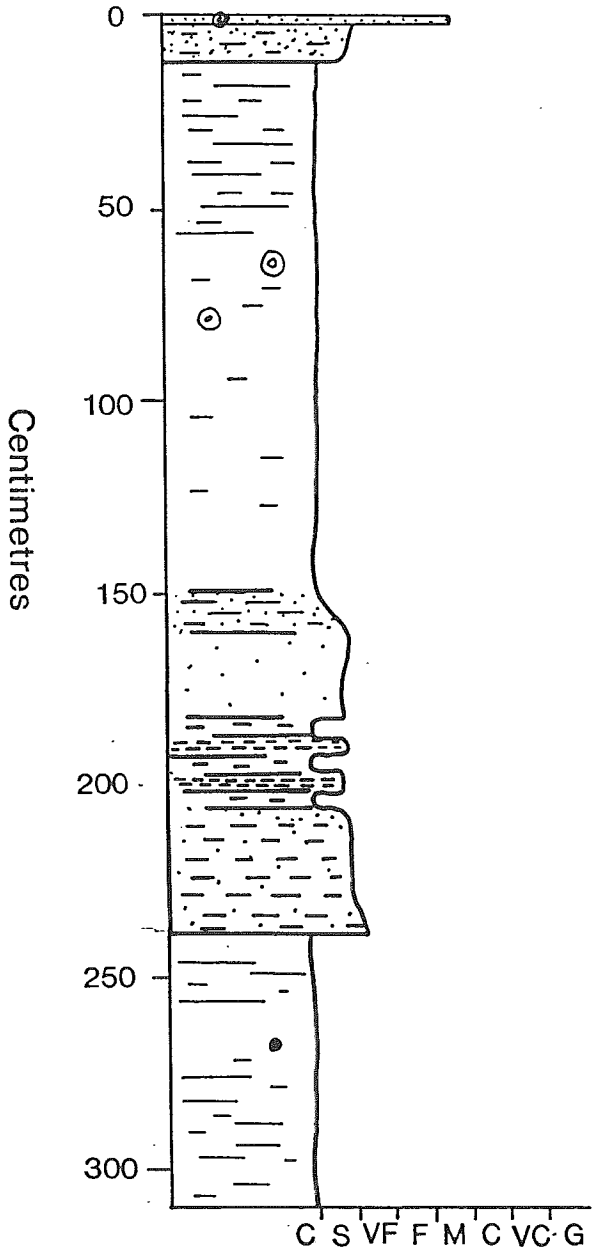
Depth: 166 m Core Length: 313 cm

Geographic Location: Western Laskeek Bank



3.5 KHz BATYMETRY profile

END 92A022
166m



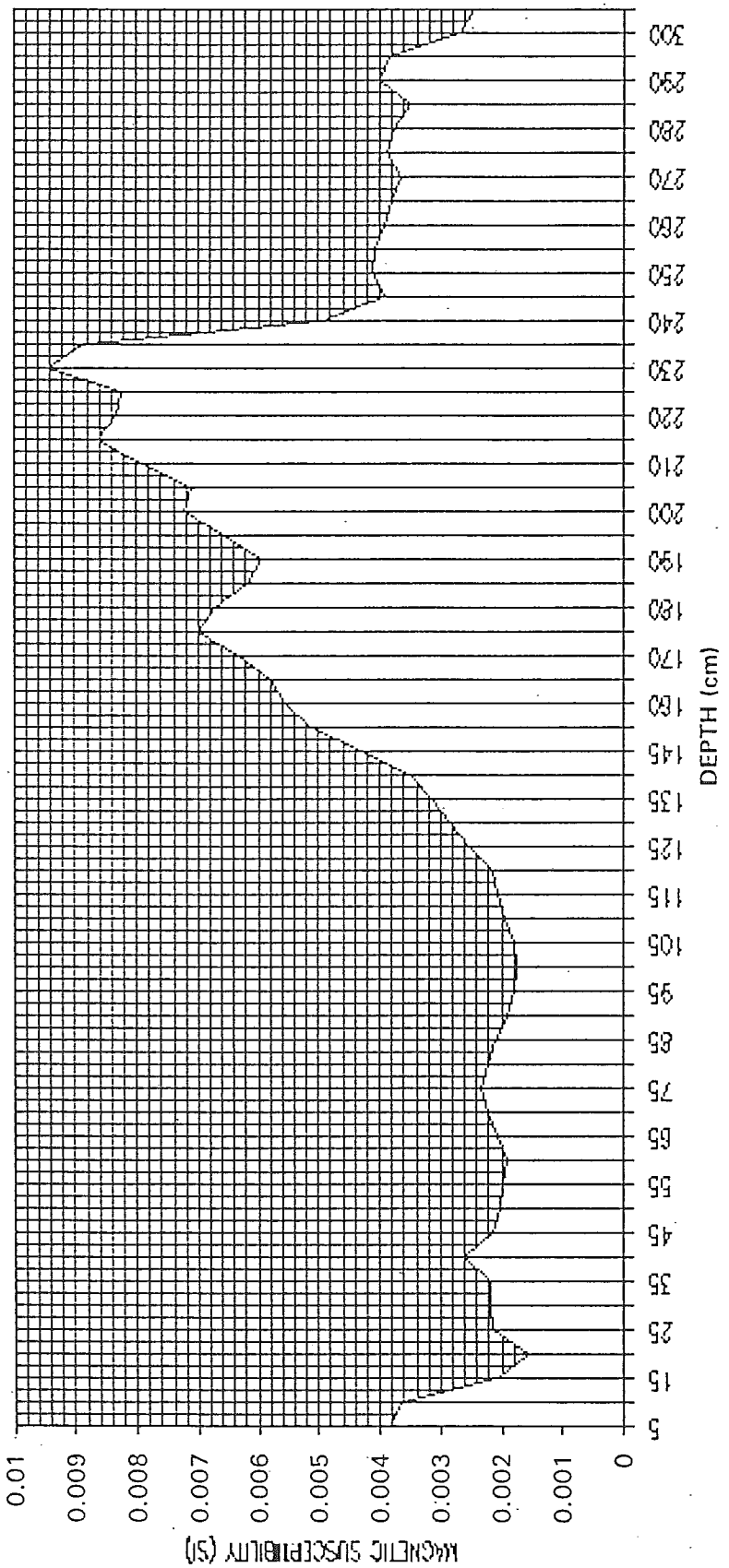
TENTATIVE INTERPRETATION

Holocene muddy sand.

Late Wisconsinan glacial sediments.

E92A22.XLC

CORE END92A22 MAGNETIC SUSCEPTIBILITY



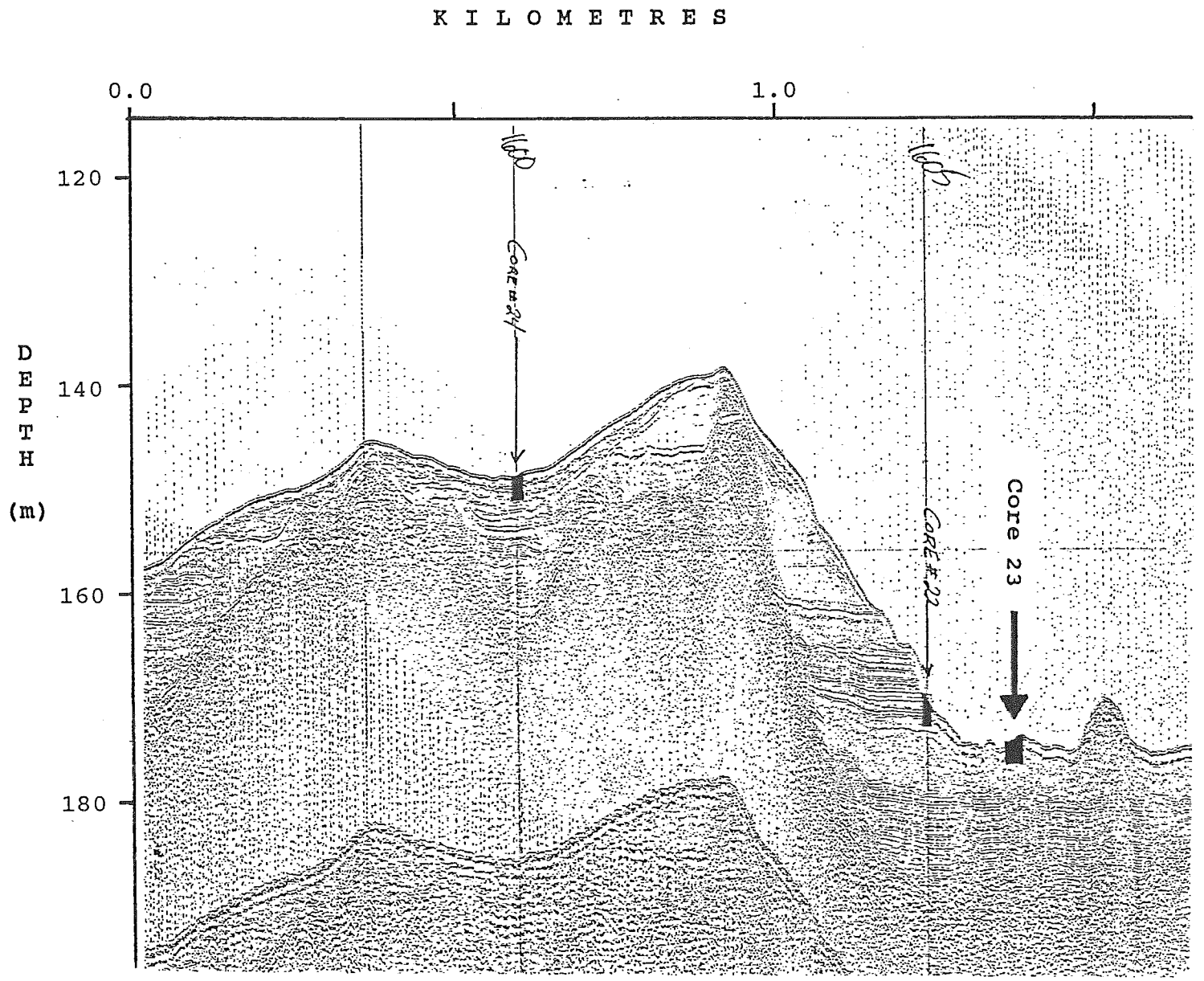
92-004-23: B-Piston

Julian Day: 182 GMT Time: 1749

Latitude: 52° 22.4832 N Longitude: 131° 12.3685 W

Depth: 174 m Core Length: 238 cm

Geographic Location: Western Laskeek Bank



HUNTEC DTS profile

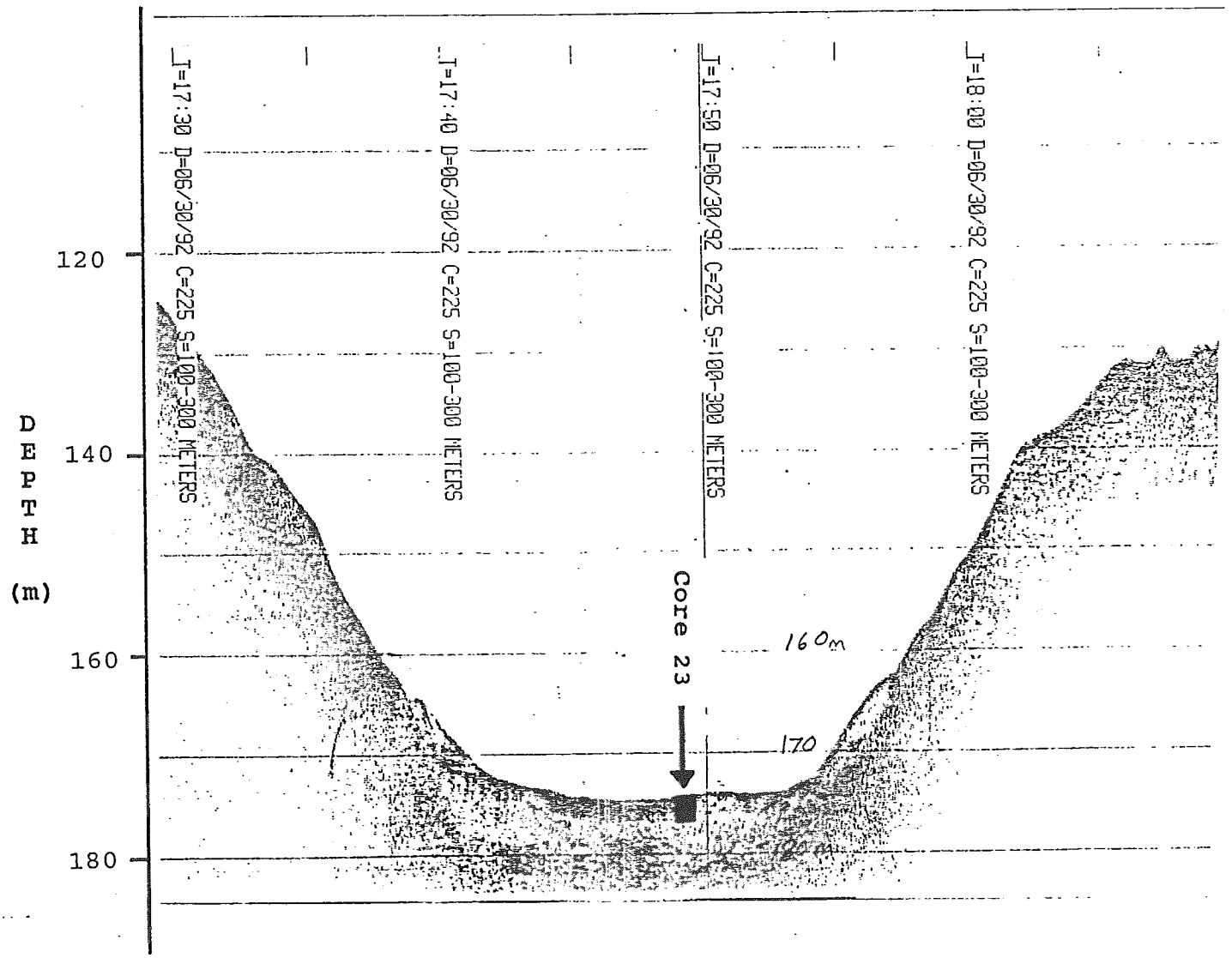
92-004-23: B-Piston

Julian Day: 182 GMT Time: 1749

Latitude: 52° 22.4832 N Longitude: 131° 12.3685 W

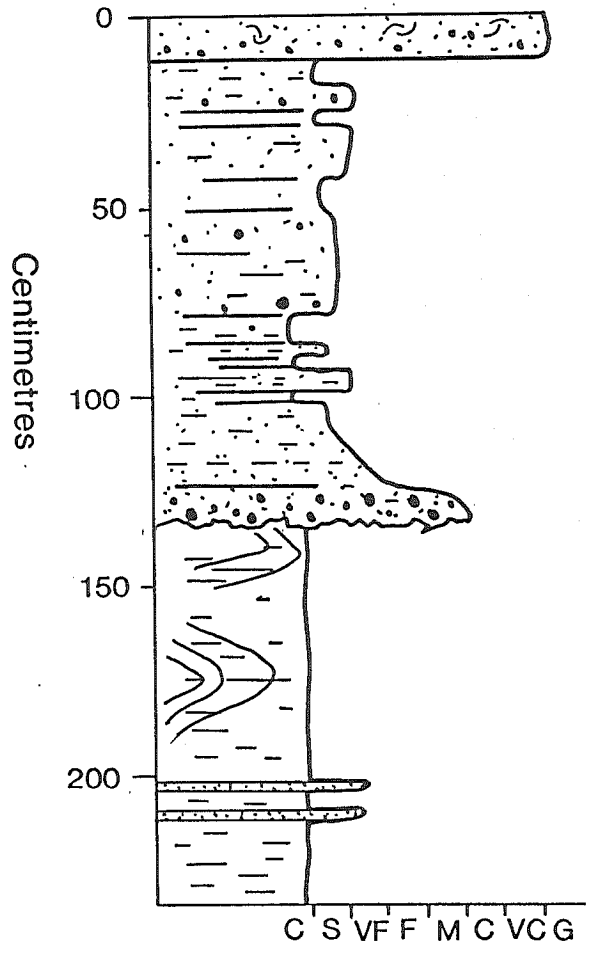
Depth: 174 m Core Length: 238 cm

Geographic Location: Western Laskeek Bank



3.5 KHz BATHYMETRY profile

END 92A023
174m



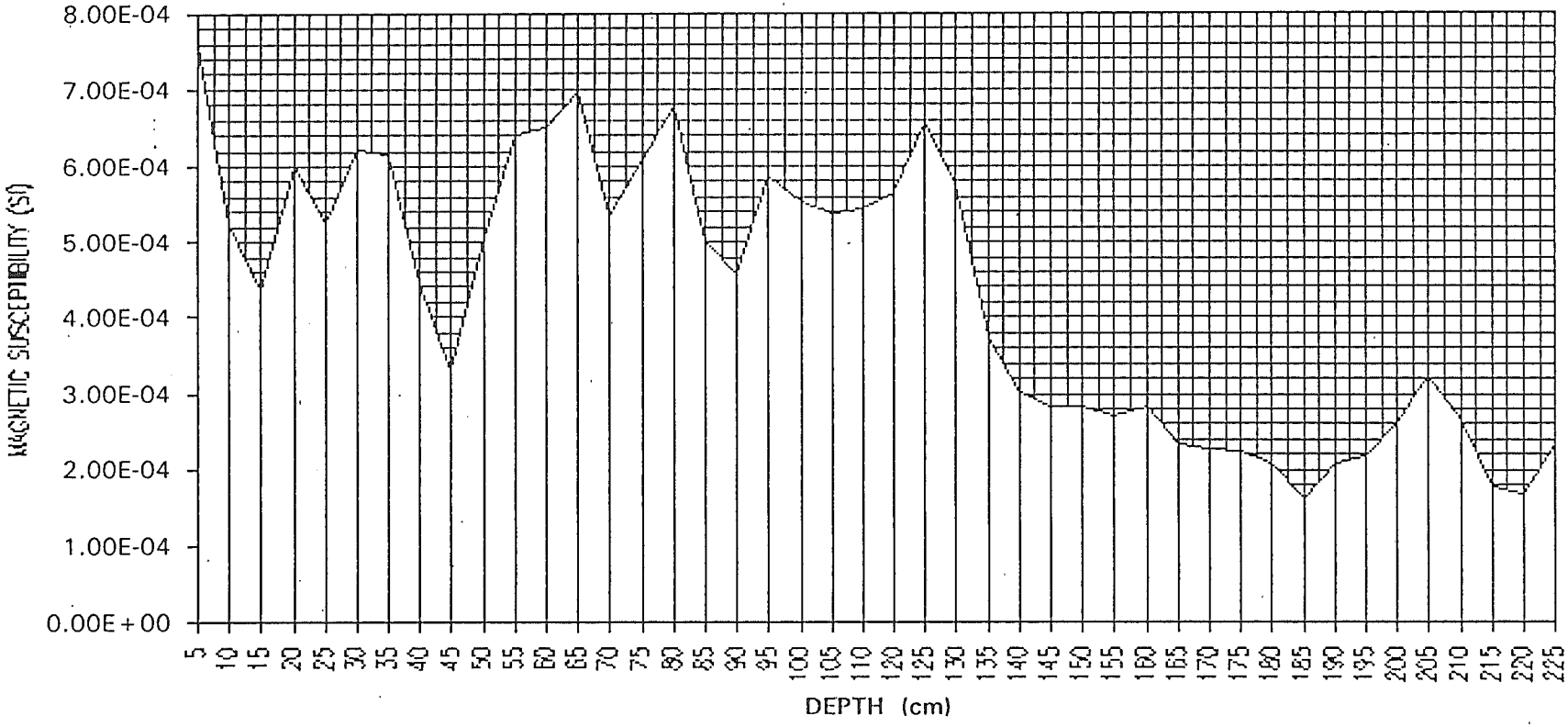
TENTATIVE INTERPRETATION

Holocene sandy gravel.

Late Wisconsinan ice proximal, stratified glacial sediments.

Late Wisconsinan, ice distal, glacial sediments with load or flow structures, possibly formed by failure of overlying gravel bed.

CORE END92A23 MAGNETIC SUSCEPTIBILITY



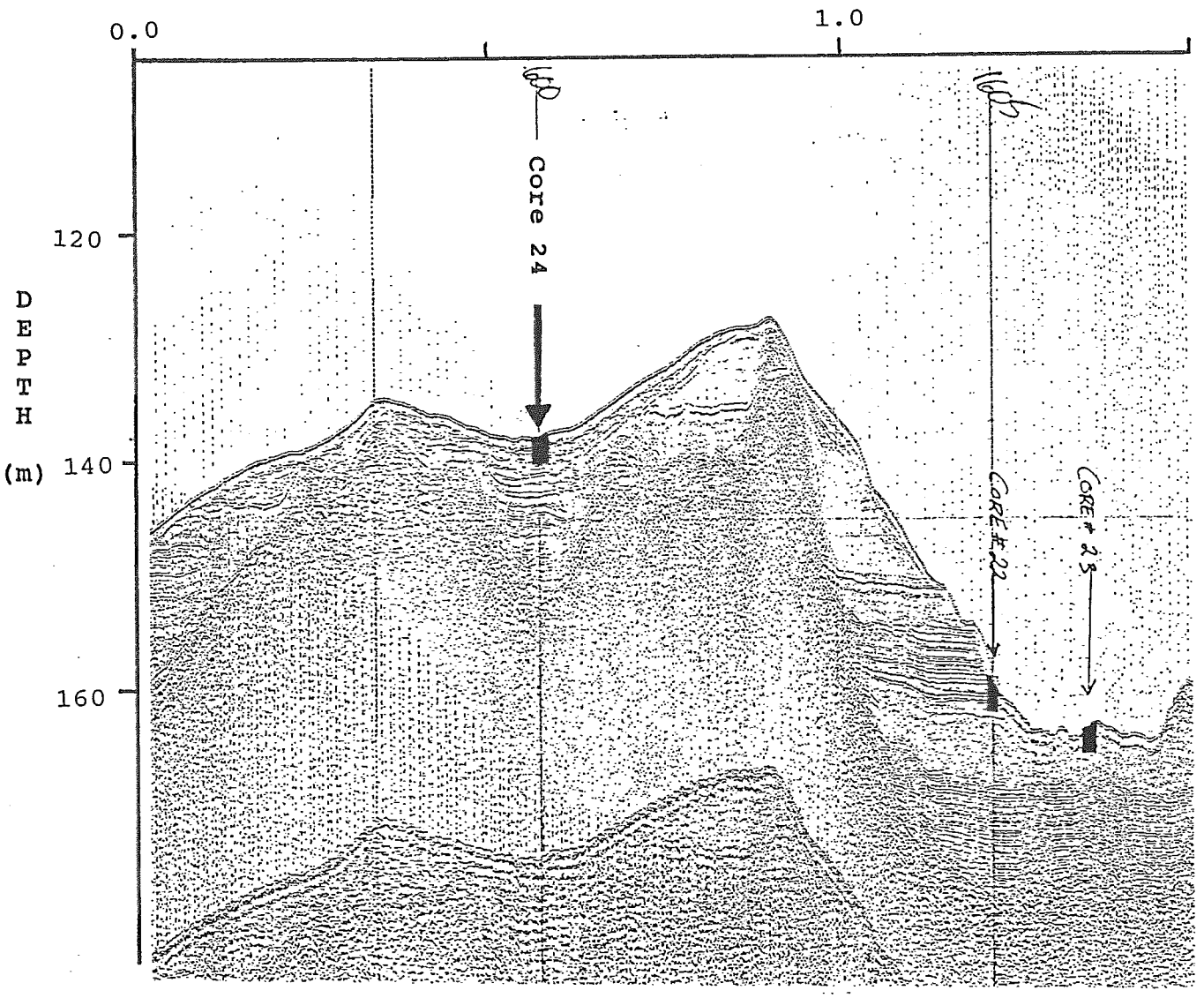
92-004-24: Vibracore

Julian Day: 182 GMT Time: 1831

Latitude: 52° 22.8415 N Longitude: 131° 12.0858 W

Depth: 138 m Core Length: 224 cm

Geographic Location: Western Laskeek Bank



HUNTEC DTS profile

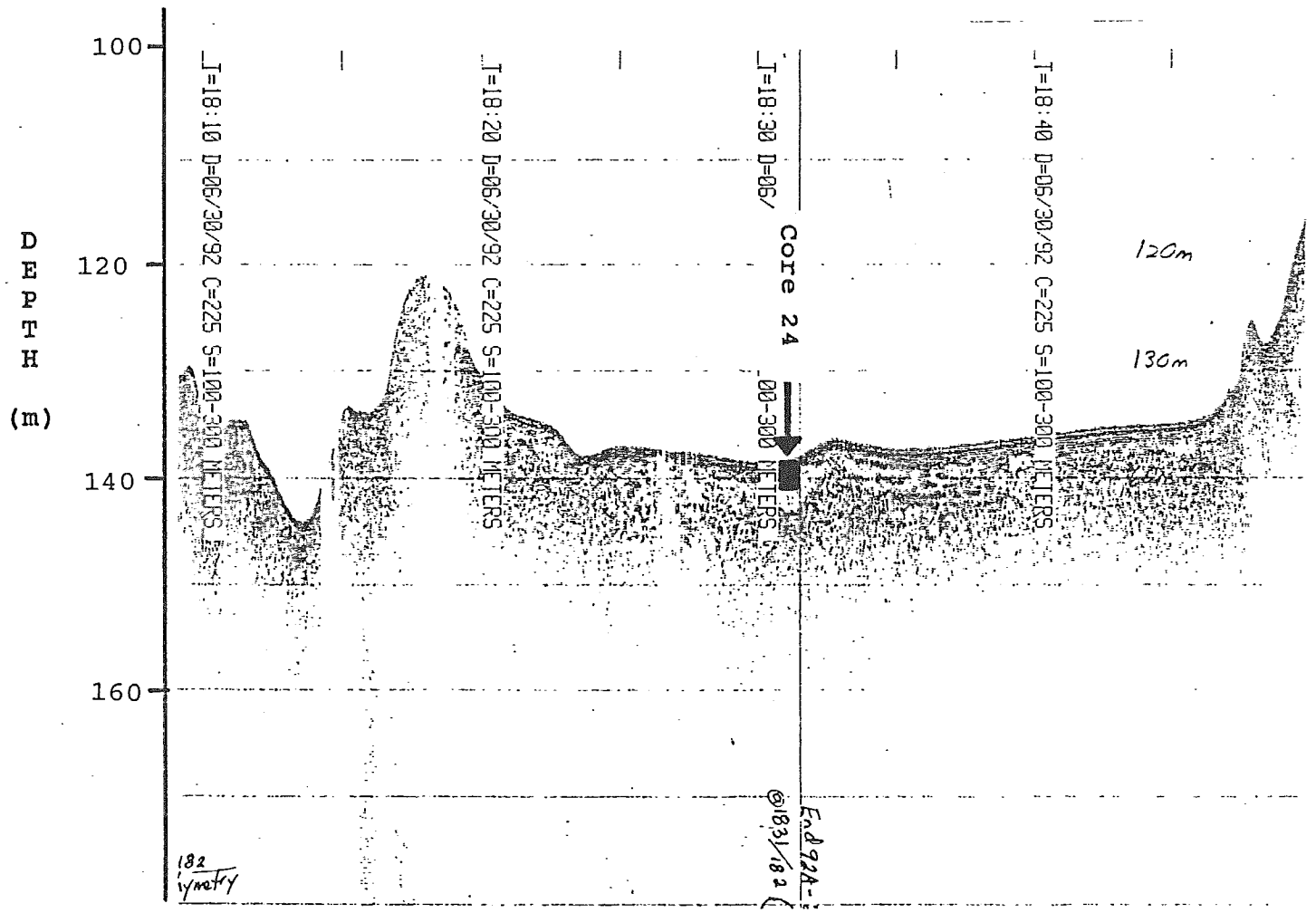
92-004-24: Vibracore

Julian Day: 182 GMT Time: 1831

Latitude: 52° 22.8415 N Longitude: 131° 12.0858 W

Depth: 138 m Core Length: 224 cm

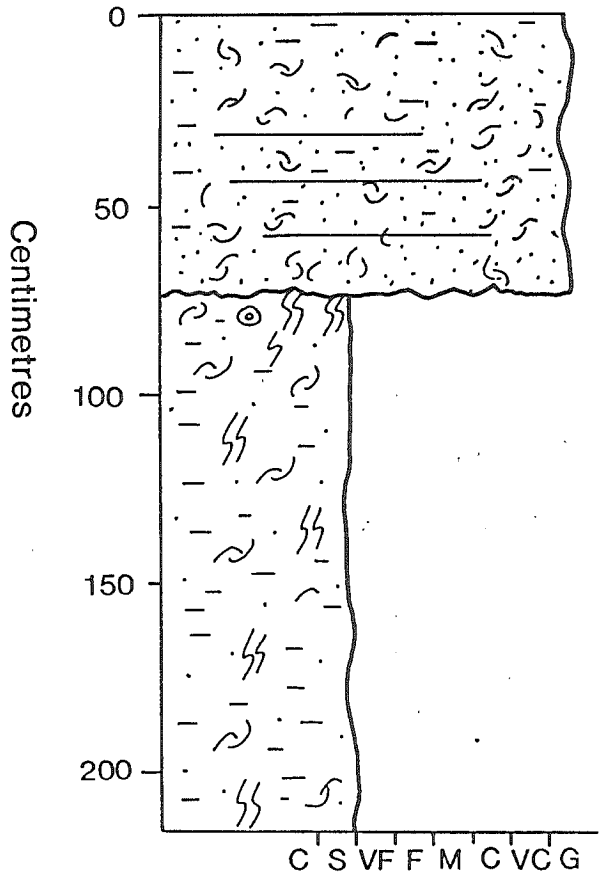
Geographic Location: Western Laskeek Bank



3.5 KHz BATHYMETRY profile

END 92A024

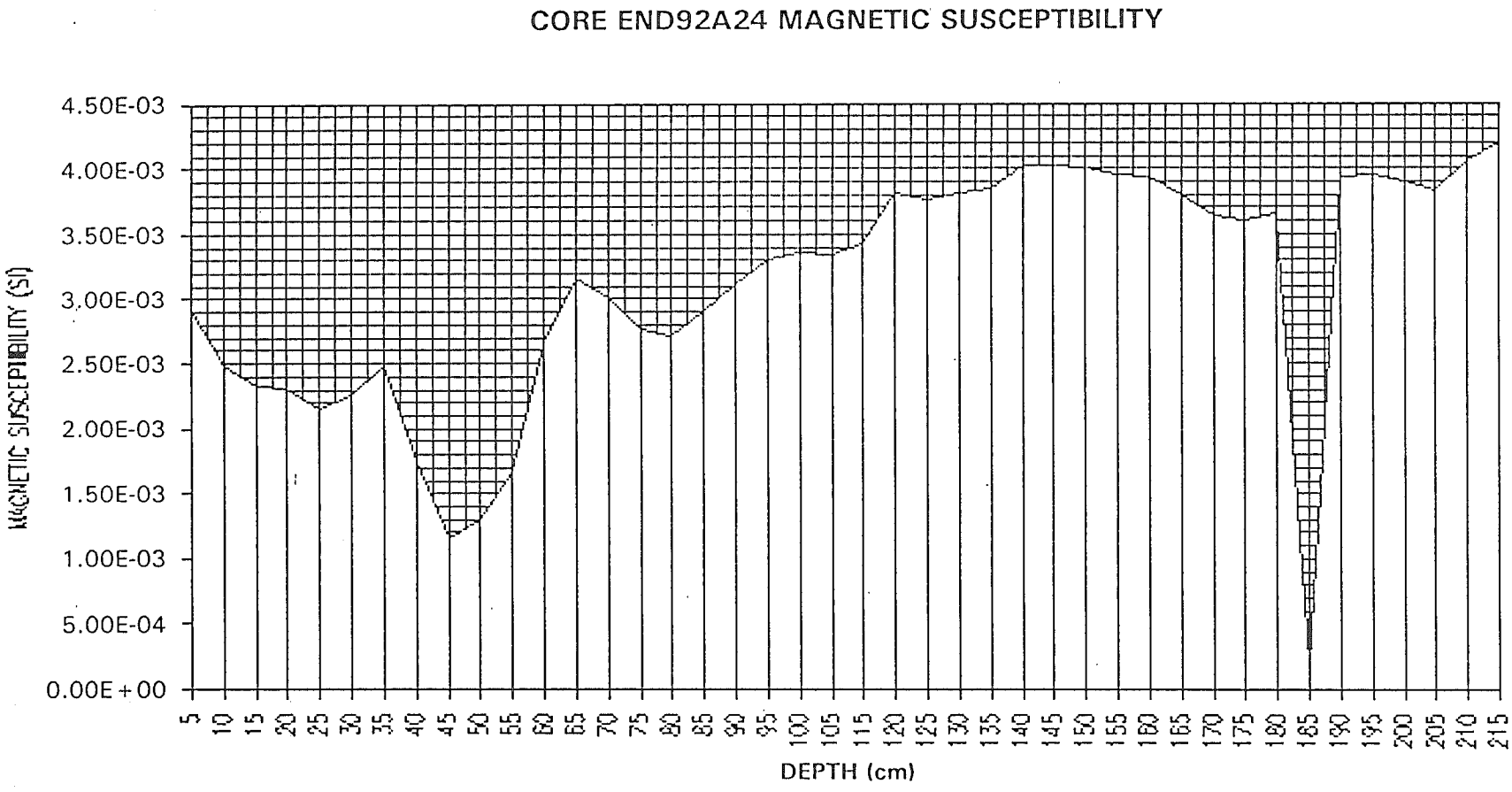
138m



TENTATIVE INTERPRETATION

Holocene sandy muddy shell hash.

Late Wisconsinan bioburbated mud deposited during sea level recovery.


CORE END92A24 MAGNETIC SUSCEPTIBILITY
MAGNETIC SUSCEPTIBILITY (SI)
4.50E-03
4.00E-03
3.50E-03
3.00E-03
2.50E-03
2.00E-03
1.50E-03
1.00E-03
5.00E-04
0.00E+00
5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100 105 115 120 125 130 135 140 145 150 155 160 165 170 175 180 185 190 195 200 205 210 215
DEPTH (cm)

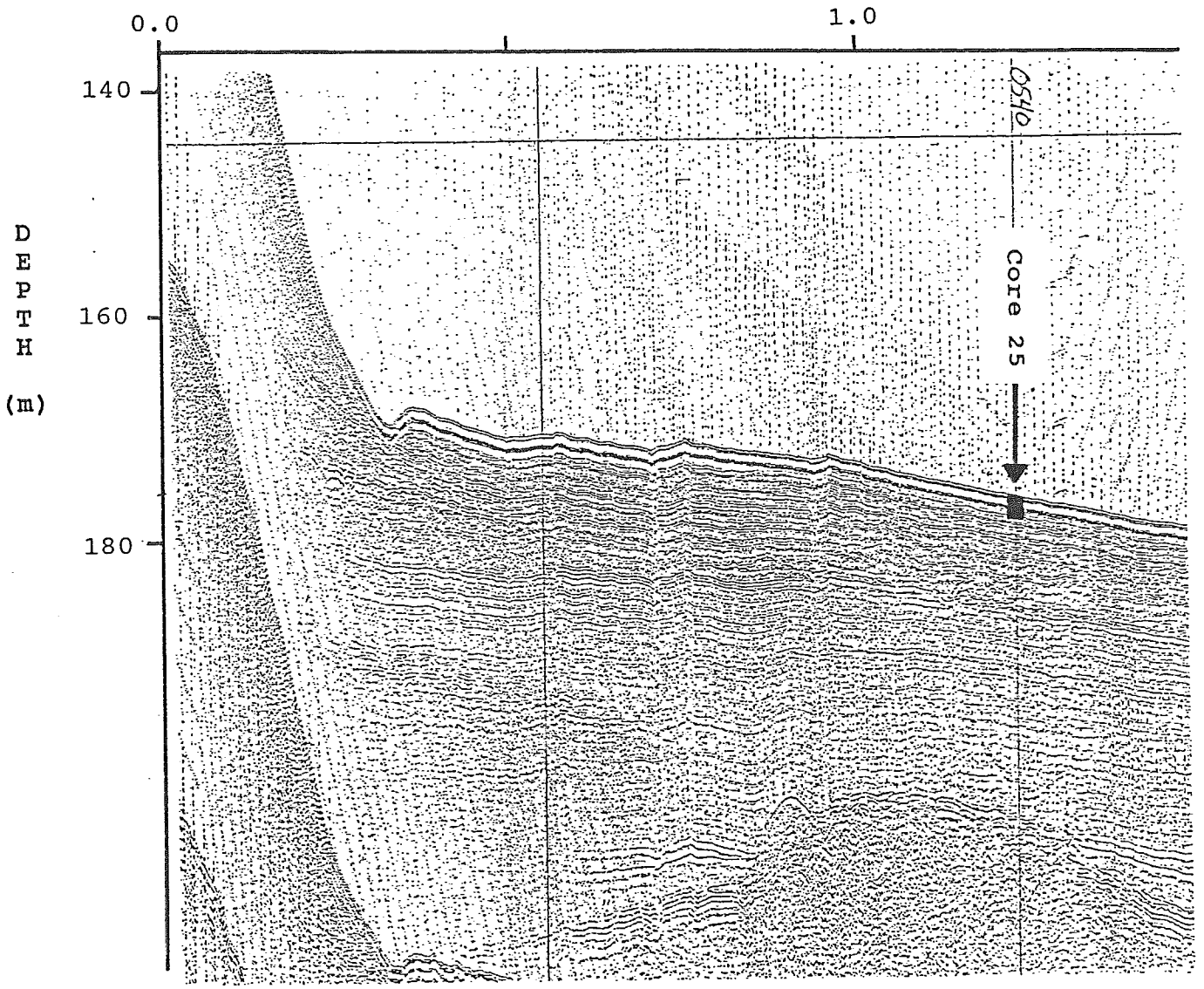
92-004-25: B-Piston

Julian Day: 183 GMT Time: 1558

Latitude: 52° 06.5437 N Longitude: 129° 44.3761 W

Depth: 175.5 m Core Length: 205 cm

Geographic Location: Middle Bank



HUNTEC DTS profile

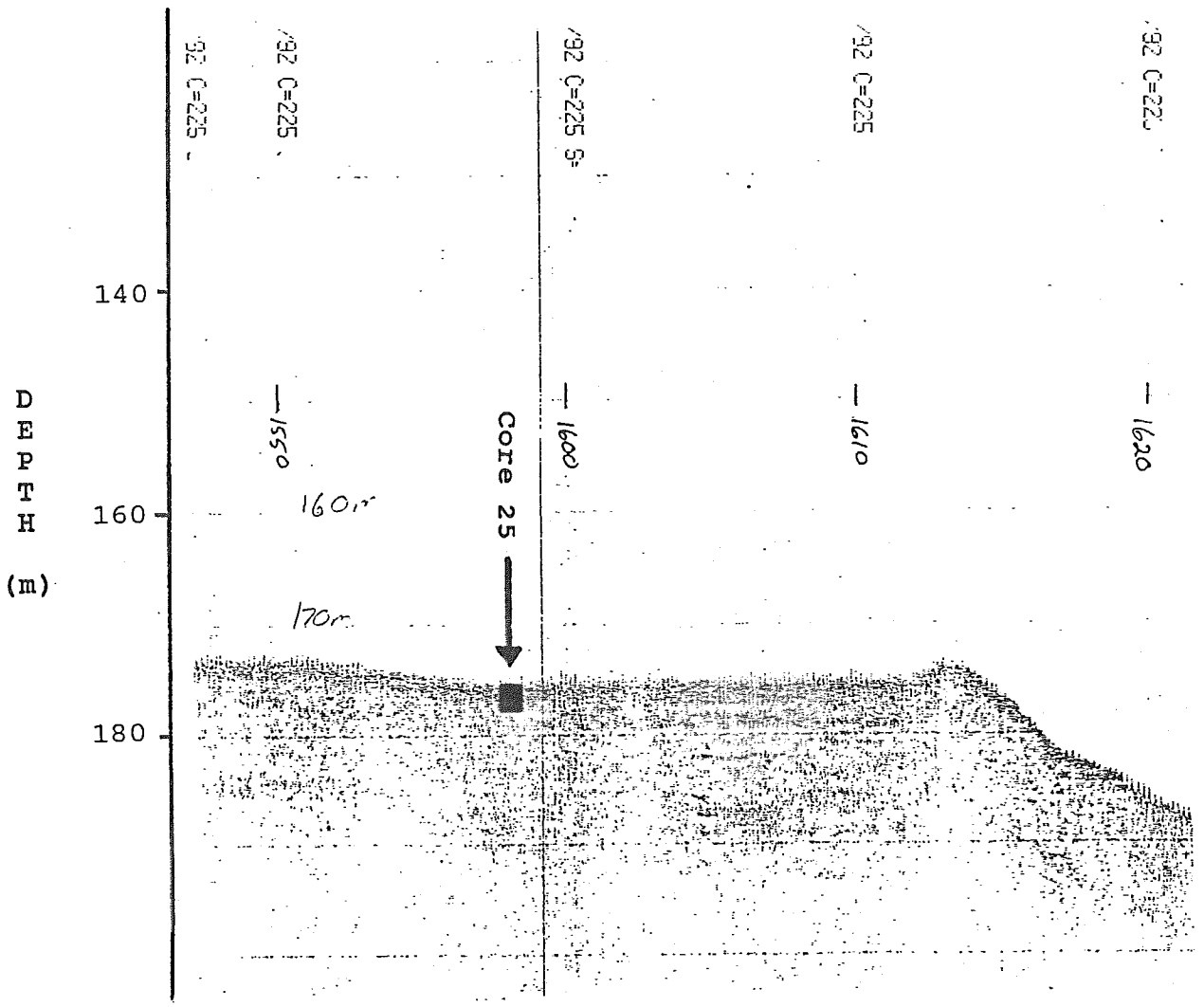
92-004-25: B-Piston

Julian Day: 183 GMT Time: 1558

Latitude: 52° 06.5437 N Longitude: 129° 44.3761 W

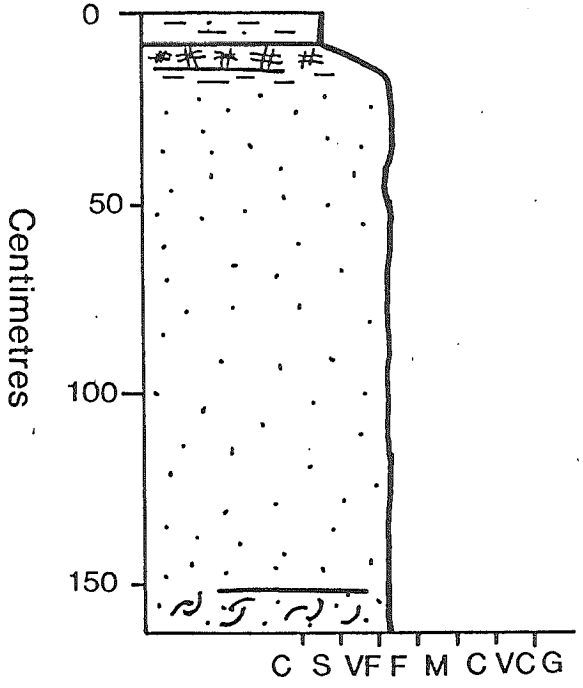
Depth: 175.5 m Core Length: 205 cm

Geographic Location: Middle Bank



3.5 KHz BATHYMETRY profile

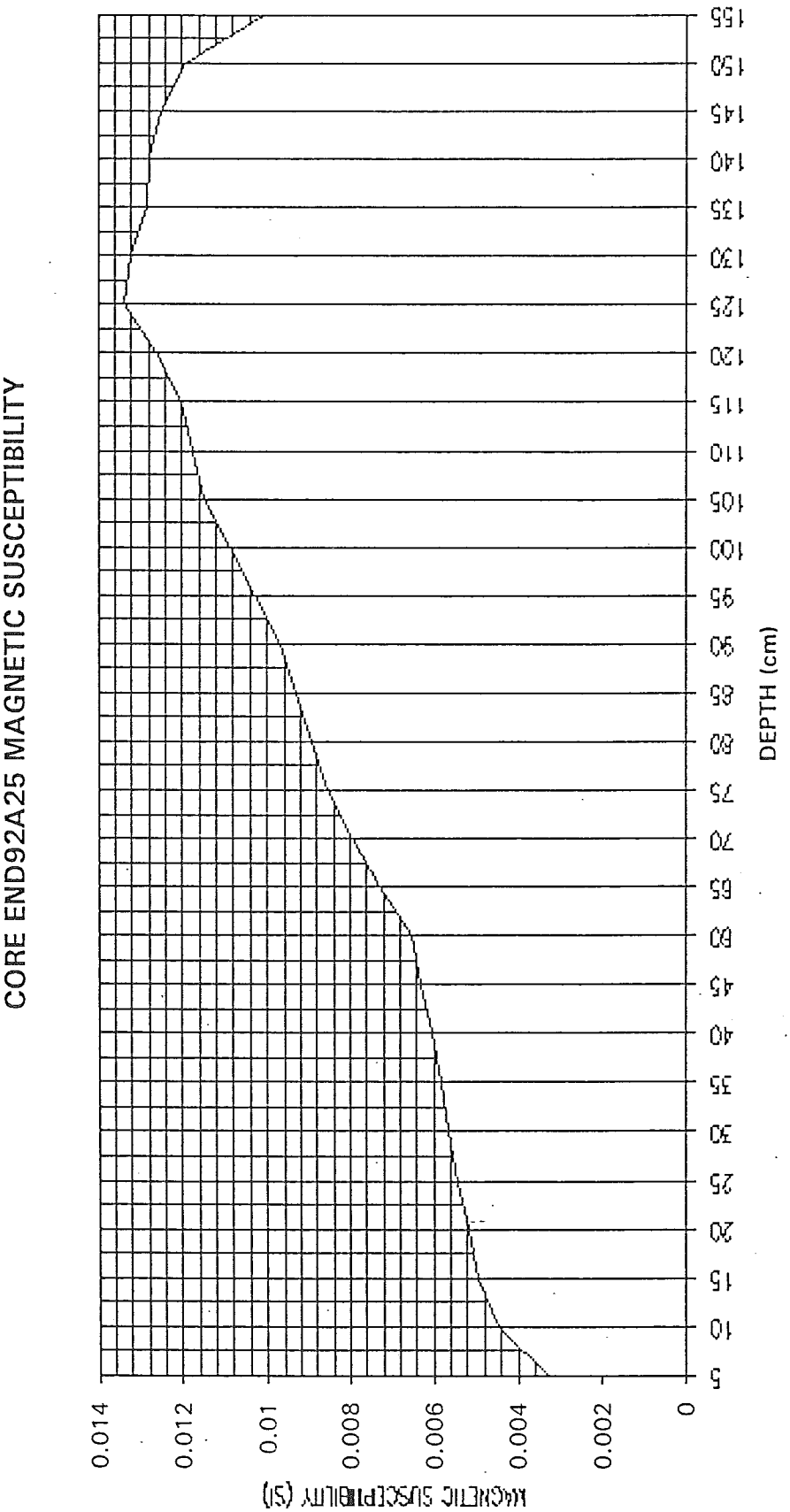
END 92A025
175m



TENTATIVE INTERPRETATION

Flow in.

E92A25.XLC


CORE END92A25 MAGNETIC SUSCEPTIBILITY
DEPTH (cm)
MAGNETIC SUSCEPTIBILITY (SI)
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
105
110
115
120
125
130
135
140
145
150
155
0
0.002
0.004
0.006
0.008
0.01
0.012
0.014

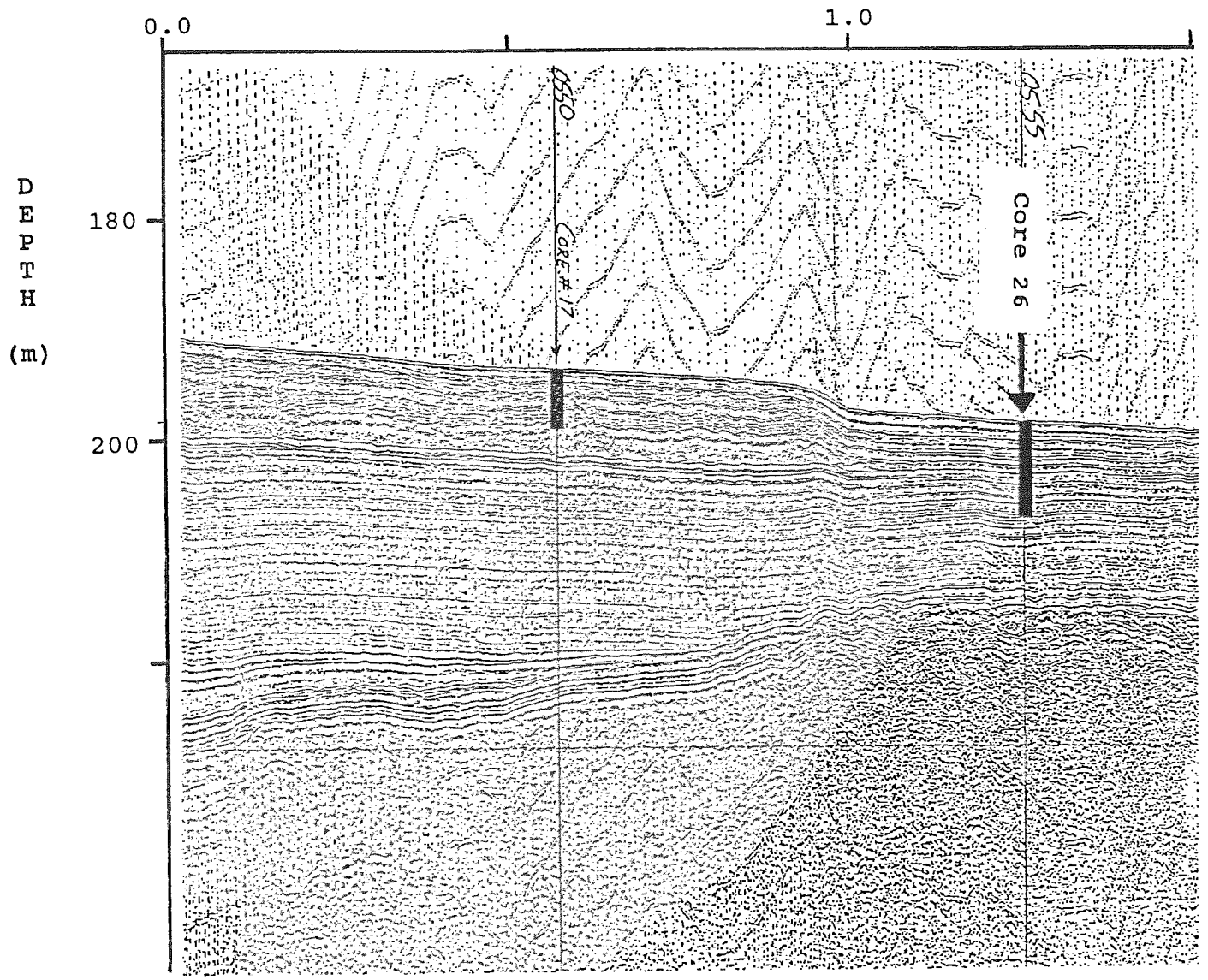
92-004-26: B-Piston

Julian Day: 183 GMT Time: 1649

Latitude: 52° 07.9114 N Longitude: 129° 42.6866 W

Depth: 198.5 m Core Length: 885 cm

Geographic Location: Middle Bank



HUNTEC DTS profile

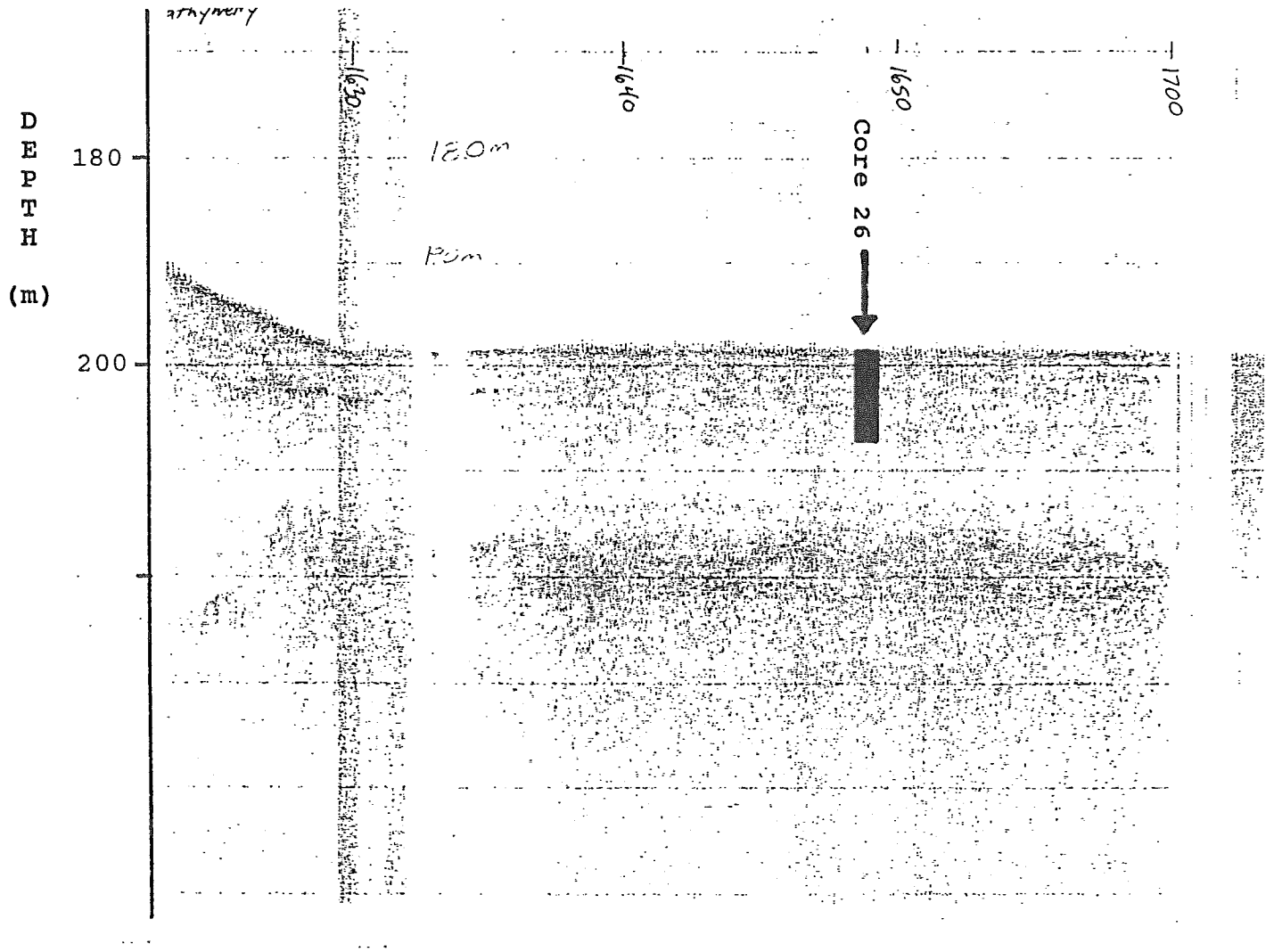
92-004-26: B-Piston

Julian Day: 183 GMT Time: 1649

Latitude: 52° 07.9114 N Longitude: 129° 42.6866 W

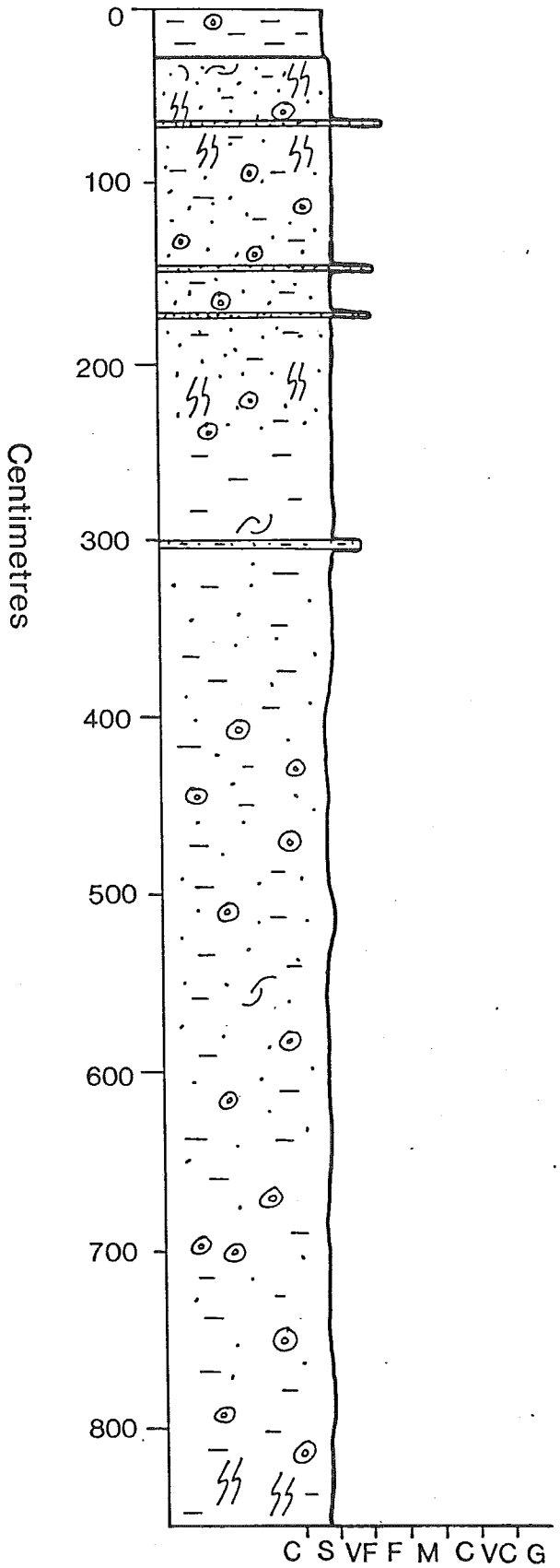
Depth: 198.5 m Core Length: 885 cm

Geographic Location: Middle Bank



3.5 KHz BATHYMETRY profile

END 92A026
198m

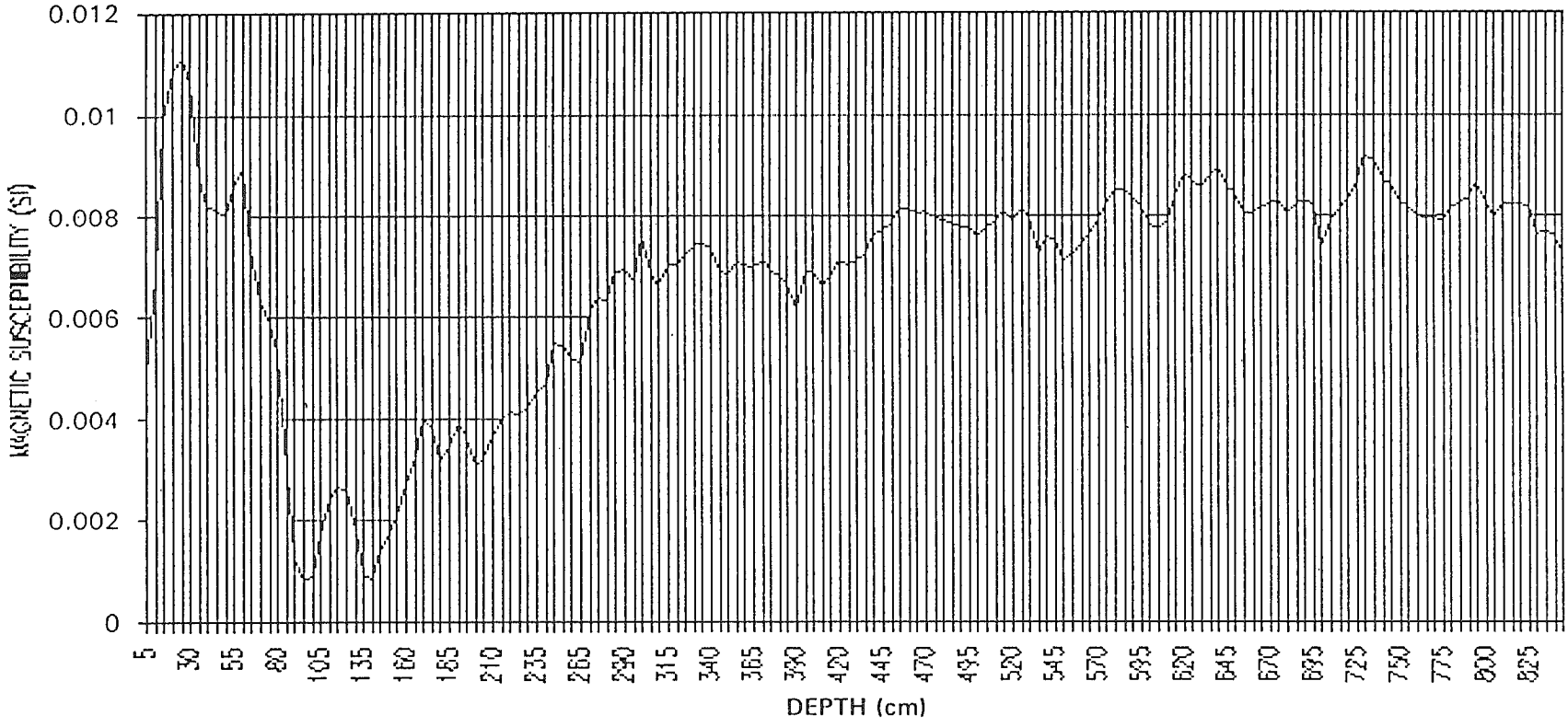


TENTATIVE INTERPRETATION

Holocene mud.

Late Wisconsinan mud deposited during sea level recovery with turbidite events in upper part of unit.

CORE END92A26 MAGNETIC SUSCEPTIBILITY



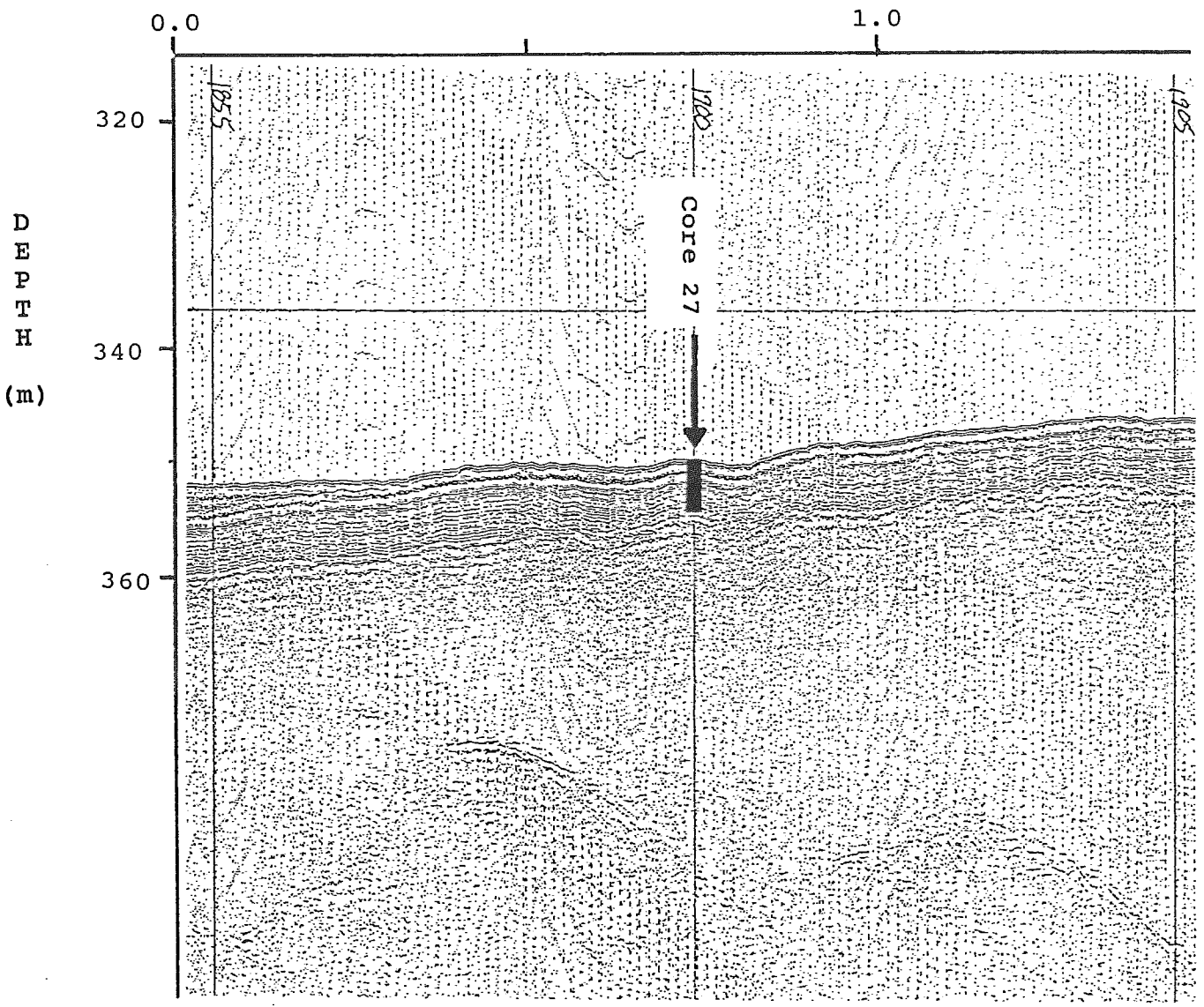
92-004-27: B-Piston

Julian Day: 183 GMT Time: 2222

Latitude: 51° 39.2729 N Longitude: 130° 0.0986 W

Depth: 350 m Core Length: 458 cm

Geographic Location: Outer Mitchells Trough



HUNTEC DTS profile

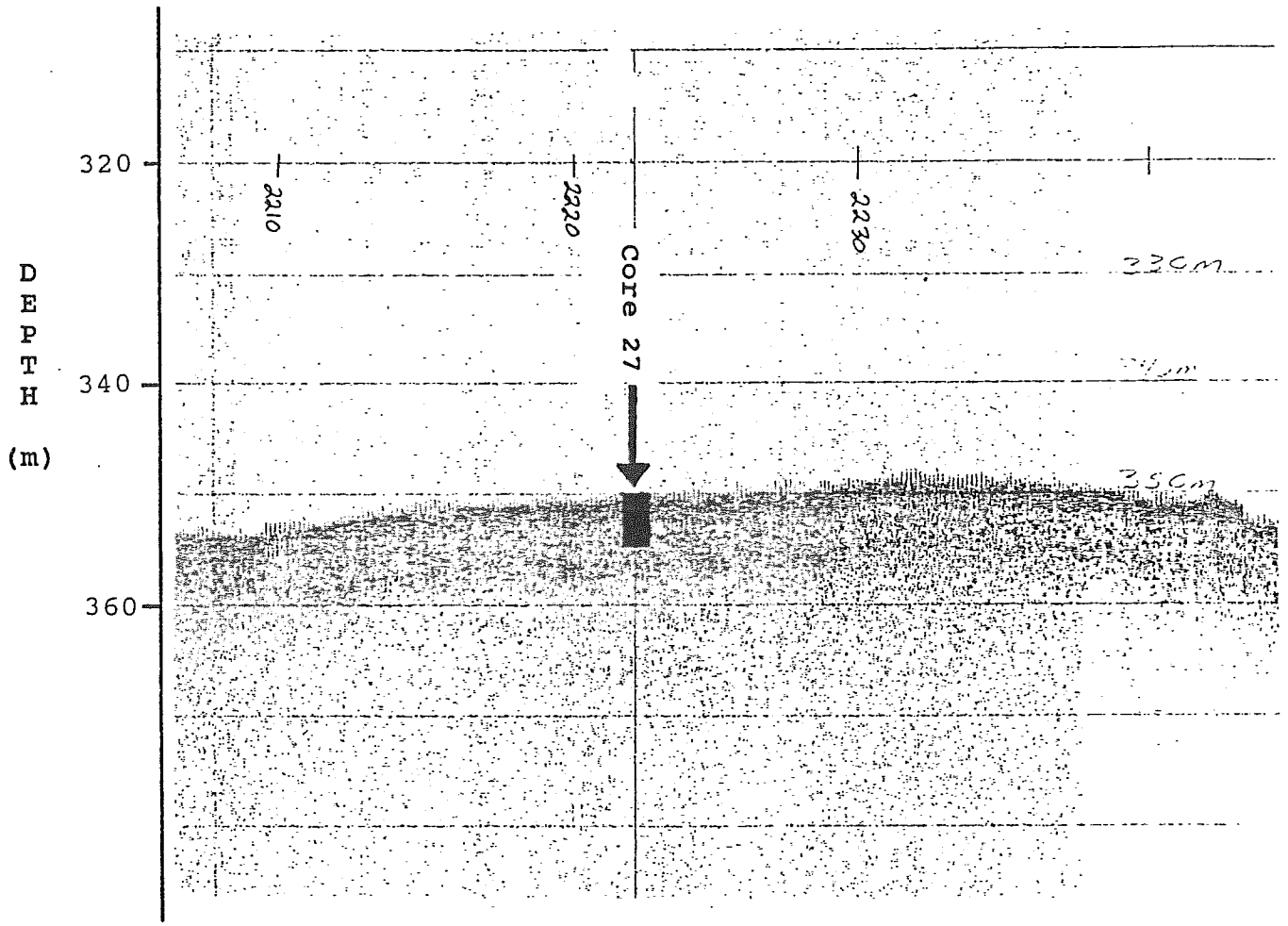
92-004-27: B-Piston

Julian Day: 183 GMT Time: 2222

Latitude: 51° 39.2729 N Longitude: 130° 0.0986 W

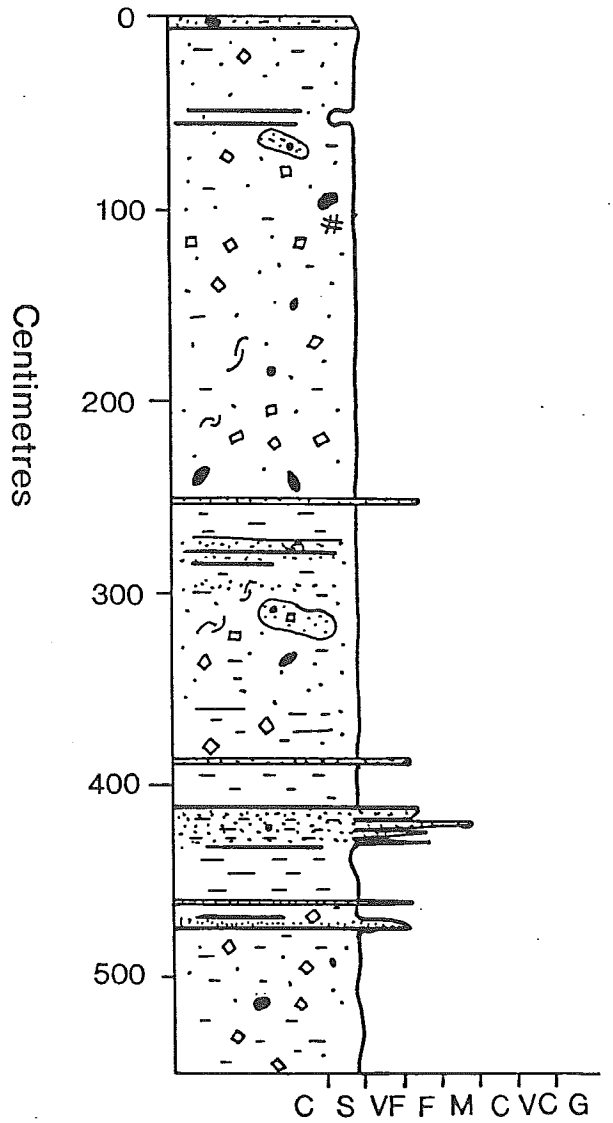
Depth: 350 m Core Length: 458 cm

Geographic Location: Outer Mitchells Trough



3.5 KHz BATHYMETRY profile

END 92A027
350m



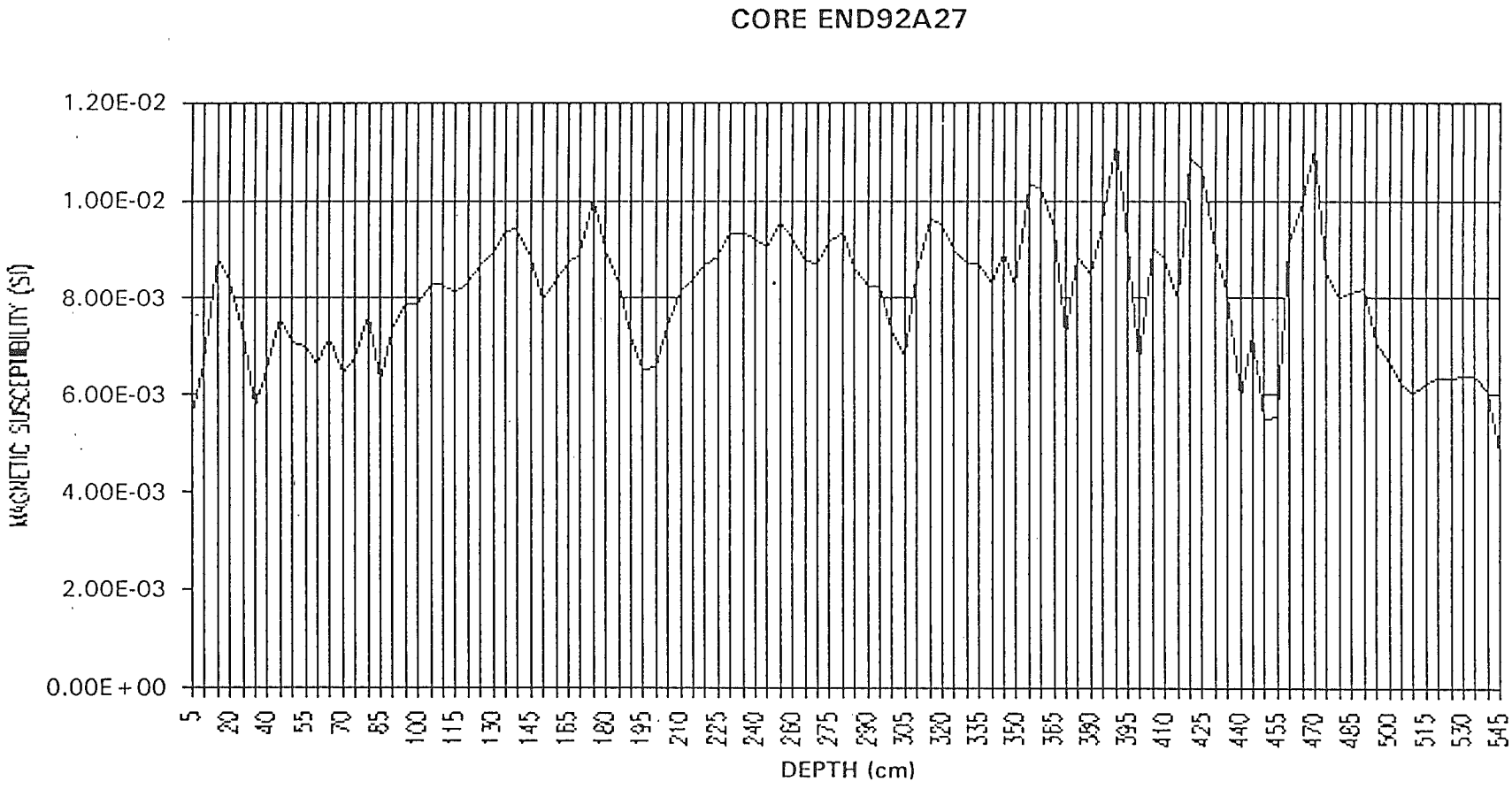
TENTATIVE INTERPRETATION

Holocene sandy mud.

Late Wisconsinan ice distal glaciomarine.

Late Wisconsinan ice proximal glaciomarine.

Late Wisconsinan till.


CORE END92A27
1.20E-02
1.00E-02
8.00E-03
6.00E-03
4.00E-03
2.00E-03
0.00E+00
5
20
40
55
70
85
100
115
130
145
165
180
195
210
225
240
260
275
290
305
320
335
350
365
380
395
410
425
440
455
470
485
500
515
530
545
DEPTH (cm)

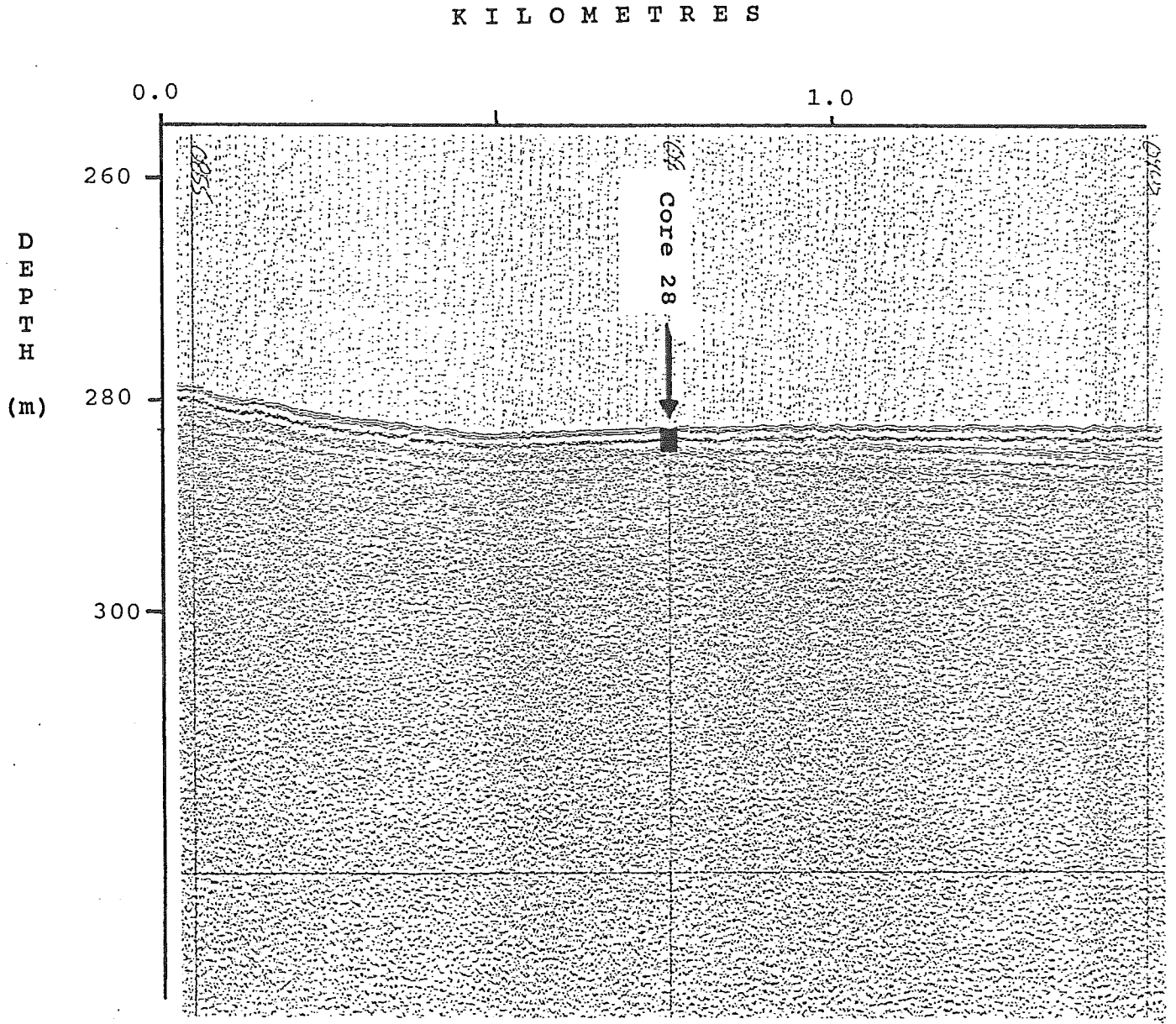
92-004-28: B-Piston

Julian Day: 184 GMT Time: 0153

Latitude: 51° 12.873 N Longitude: 129° 29.604 W

Depth: 283 m Core Length: 210 cm

Geographic Location: Outer Goose Island Trough



HUNTEC DTS profile

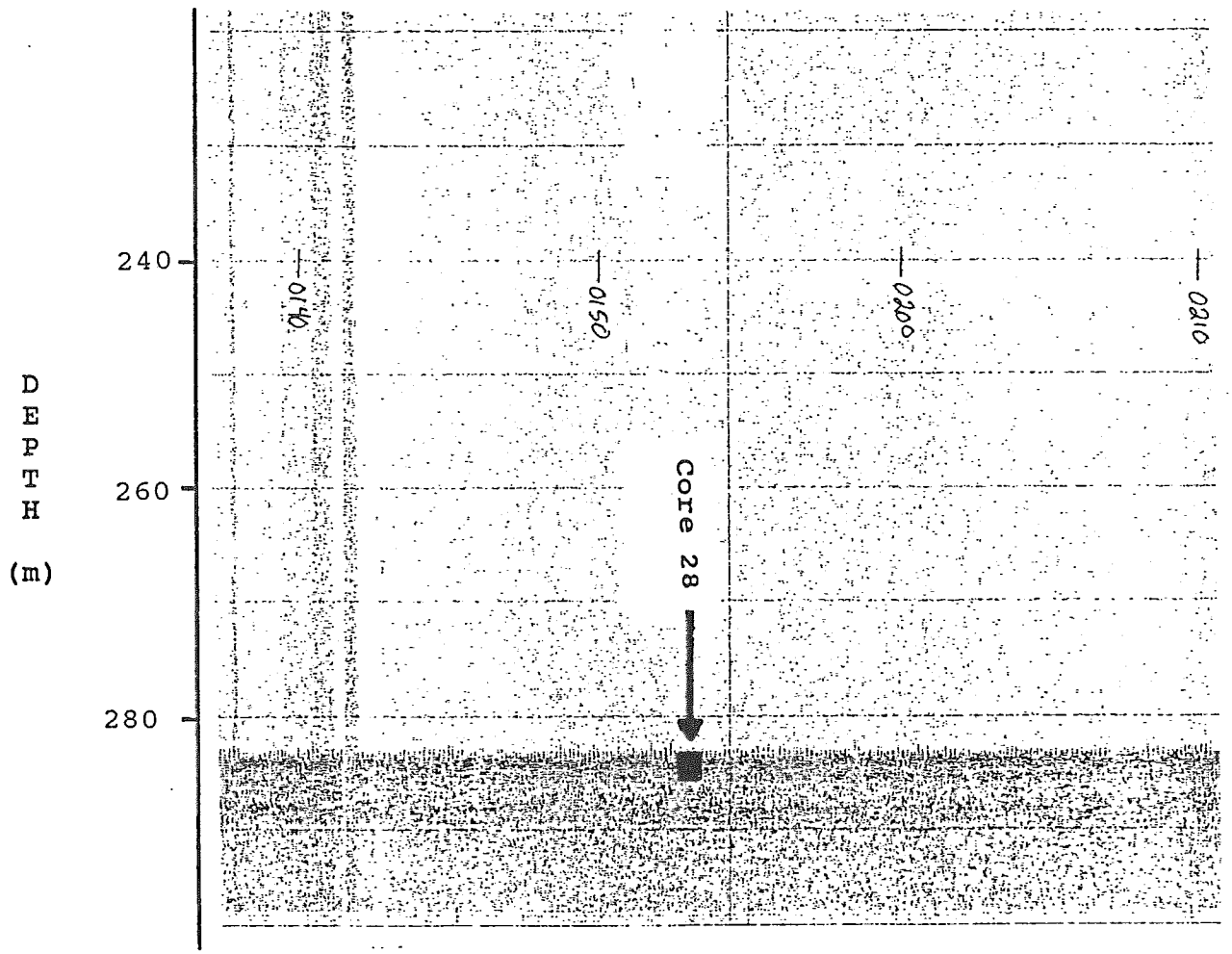
92-004-28: B-Piston

Julian Day: 184 GMT Time: 0153

Latitude: 51° 12.873 N Longitude: 129° 29.604 W

Depth: 283 m Core Length: 210 cm

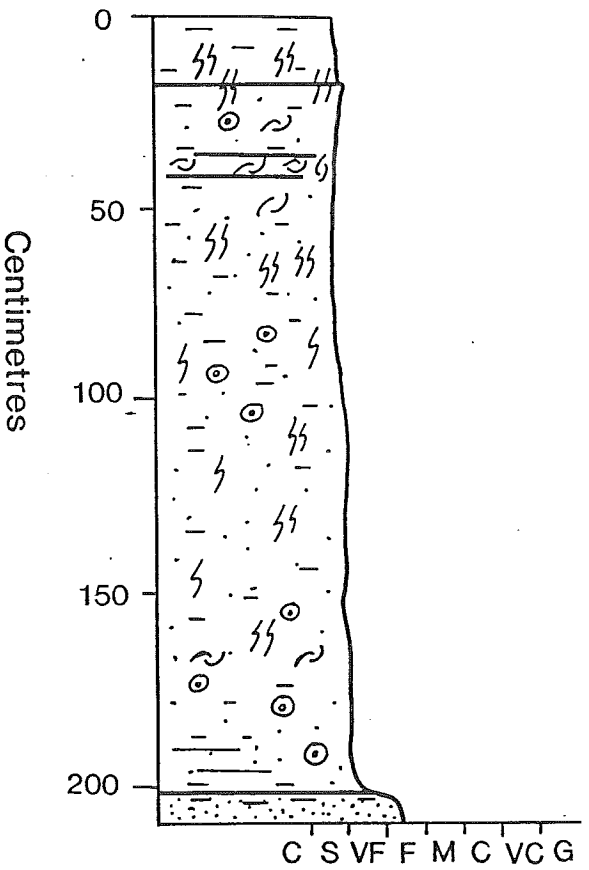
Geographic Location: Outer Goose Island Trough



3.5 KHz BATHYMETRY profile

END 92A028

283m



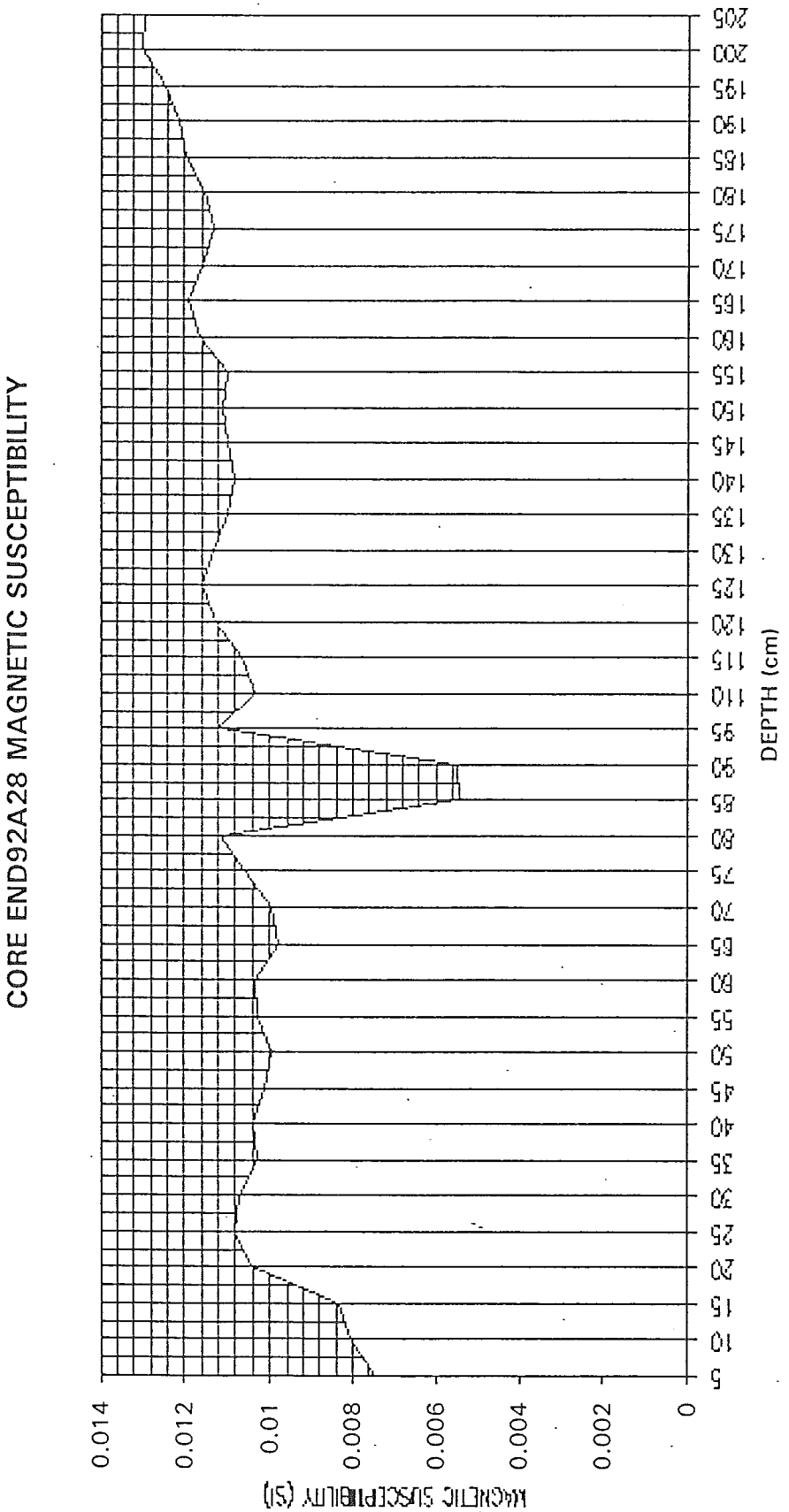
TENTATIVE INTERPRETATION

Holocene mud.

Late Wisconsinan sandy mud deposited during sea level recovery.

Late Wisconsinan muddy sand deposited during sea level lowstand.

E92A28.XLC


CORE END92A28 MAGNETIC SUSCEPTIBILITY
MAGNETIC SUSCEPTIBILITY (SI)
0.014
0.012
0.01
0.008
0.006
0.004
0.002
0
DEPTH (cm)
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
110
115
120
125
130
135
140
145
150
155
160
165
170
175
180
185
190
195
200
205

APPENDIX 1

HUNTEC D.T.S. DAILY REPORTS

by

Graham B. Standen

Cruise Report PGC 92-04
C.F.A.V. Endeavour
17th June -4th July 1992

Chief Scientist H. Josenhans
Pacific Geoscience Centre
Pat Bay, Sidney
Victoria British Columbia.

Prepared by Graham B. Standen
on behalf of
Geoforce Consultants
Argo Building
Bedford Institute of Oceanography
P.O. Box 696
Dartmouth, Nova Scotia B2Y 3Y9

Copies to :

Heiner Josenhans. Pacific Geoscience Centre, Patricia Bay, Sidney, British Columbia.
William Hill. Pacific Geoscience Centre, Patricia Bay, Sidney, British Columbia.
File. Geoforce C1000-01

Key Personnel

H. Josenhans. Chief Scientist. Energy Mines & Resources.
William Hill. Senior Electronic Technoligist. Pacific Geoscience Centre.
Captain Ken Butler. Captain CFAV Endeavour. Canadian Forces Base Esquilmalt.
Graham Standen. Geoforce Consultants. Huntec maintenance/operator.

Cruise Objectives.

The objective of this cruise is to collect data in the Queen Charlotte Sound area reference the history of the seafloor stability and paleoenvironment of the area. It is hoped to determine the regional extent of glacial till. Define the rate of glacial ice retreat. To determine the overall volume of prograde spits.

Equipment Configuration.

Huntec Deep Towed system	540 joules
Displayed on EPC 4100 analog printers	Ser # 213 and 107.
Firing rate	0.750 second
Sweep rate	0.250 second
Filter setting: Internal hydrophone -	0.500 hz- 10.0 Khz.
External Hydrophone -	0.700 hz- 5.0 Khz.
Power output	4 kvolts
Data recorded on:	HP 3968 8 track tape recorder.
	Channel 1 : Internal hydrophone
	Channel 2 : Trigger /6.4 kilohertz sync
	Channel 3 : External hydrophone.

Note: The Internal hydrophone record was changed to an external hydrophone display due to towfish noise on the record. The external signal was filtered at 1.5 Khertz - 5.00 Khertz for the rest of the cruise.

Daily Reports

Day 169 Arrived from Halifax N.S. Late afternoon.

Day 170 Mobilizing equipment on board CFAV Endeavour.

Day 171 Completed mobilization on the CFAV Endeavour.

Day 172 System tested alongside the jetty. Depth indicator on Body motion compensator not reading correctly. Attitude sensor unit pressure reading adjusted. Reading appears to be correct. System reassemble and tested again. All signals present. System fired for approximately for two hours. System recovered and secured.

Day 173 Standing by to sail.

Day 174 Sailed from Esquilmalt, en route to survey area.

0220z Running survey line off of Texada Island.

0440z Equipment recovered. Heading to Knights Inlet

Total running time 2hrs 20 min

Standby time 21hrs 40 min

Day 175 Recovering TED unit from Knights Inlet. Sailing to survey area.

Day 176

0600z Equipment deployed. Running line in Queeen Charlotte Sound.

0945z EOL # 1. Start of line # 2. 1245z EOL # 2. A/C to line # 3

1300z Sol # 3.

1500z EOL # 3. SOL # 4.

1600z EOL # 4. SOL # 5.

1631z EOL # 5. Equipment being recovered. Ship going to coring stations.

Total running time 10 hrs 30 min

Standby time 12 hrs 30 min

Day 177

0050z Equipment deployed. The tow cable jumped out the block and had to be reterminated.

0550z Cable repaired, DTS deployed. Running lines.

1845z Equipment recovered. Ship going to coring stations.

2231z Equipment deployed. Running lines.

Day 178

0000z Continuing to run lines.

0730z PCU shuts down. Fault found in the 220 volt ac connector. The electrical wire to the connector had become loose. This was repaired and at 0815z power was restored to the system.

1832z Equipment recovered. Ship going to coring stations.

2130z Equipment deployed. Running a short line to determine the next core site.

2212z Equipment recovered. Ship going to core station.

Total running time. 18 hr min

Down time 45 min

Standby time 5 hr 15 min

Day 179.

0149z Equipment deployed, running lines.

2359z Continuing to run lines.

Total running time 22 hr 10 min

Standby time 1 hr 50 min

Day 180

0000z Running lines in Queen Charlotte Sound.

1438z Equipment recovered. Ship at coring stations.

Total running time. 14 hr 38 min

Standby time 9 hr 22 min

Day 181

Coring complete, ship is heading to Islands to disembark two scientist for shore studies.

0630z Equipment deployed. Running lines in Hecate Strait. 1330z Huntec and sidescan became entangled, both systems recovered, untangled and redeployed.

2000z Equipment recovered, ship going to core stations.

Day 182

0030z Equipment deployed. Running survey lines.

0227z Equipment recovered, ship engine failure.

0248z Ships engine fault repaired, Equipment deployed, continuing to run lines.

1621z Equipment recovered, ship at coring stations.

Play back of data made to confirm data is recoverable. Total Running time 16 hr 21 min

Standby time 7 hr 39 min

Day 183

Heading to Islands to pick up shore party.

0330z Equipment deployed. Running survey lines.

0600z Equipment recovered. Steaming to next survey area.

0900z Equipment deployed. Running survey lines.

1324z Equipment recovered. Ship going to coring stations.

1724z Equipment deployed, running a short Huntec line only.

1830z Equipment recovered. Ship going to coring station.

Total running time. 8hrs 30 min

Standby time. 15hrs 30 min

Day 184

0220z Equipment deployed, running survey lines.

1401z Equipment recovered, end of survey. Heading to Esquimolt. All equipment being disconnected prior to arrival.

Total running time. 9hrs 40 min

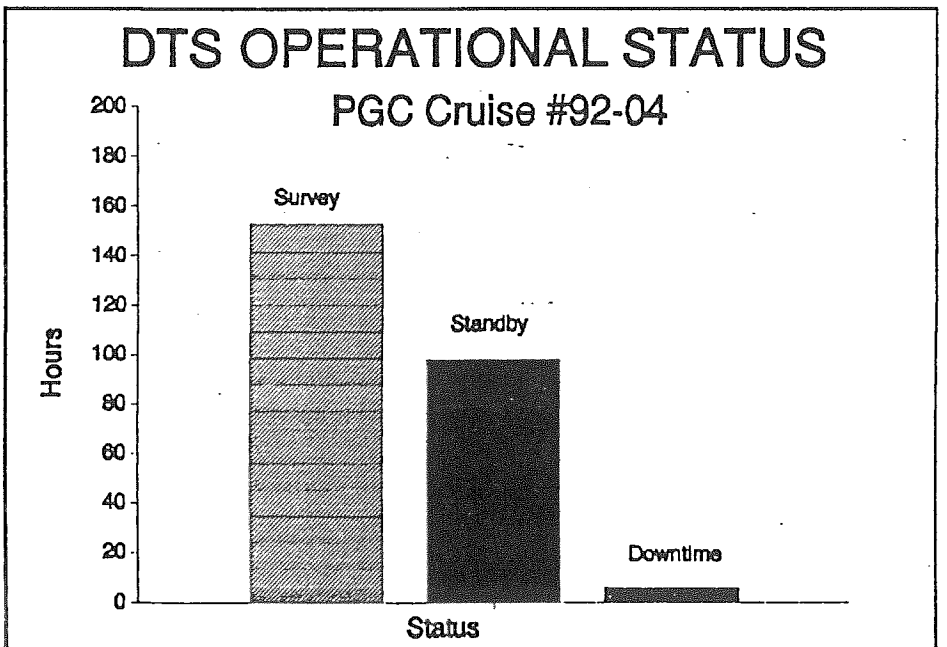
Standby time 13hrs 20 min

Day 185.

All equipment unloaded from CFAV Endeavour

Day 186

En route to Halifax N.S.



Equipment Status.

Power Control Unit - No problems with this unit.

Winch and Power Pack.

The tow cable was reterminated due to it coming out of the block. This was the only problem that was had with piece of equipment. The cable had a coat of Prelude # 6 applied at the end of the cruise.

The power pack has a slight leak at the level sight glass. The cork gasket should be changed at the next refit.

Roller Block.

This should be modified so as the cable cannot jump out of the block and cause unnecessary delays in the seismic program.

EPC 4100 (ser # 213 & 107)

Both of these machine's worked well with no down time.

Deep Towed Body.

There were no problems with this equipment during the cruise.

System console.

There was a discrepancy between the digital readout on the Body motion compensator (BMC) and the depth of the towfish indicated on the seismic record. Although this did not impair the operation of the system, this fault should be found and rectified.

Acknowledgments

I would like to thank the Officers and crew of the CFAV Endeavour for all the assistance that they gave me during the cruise. I would also like to thank Dr Vaughn Barrie, Ivan Frierdecky Bill Hill and Kim Conway and the other watchkeepers for their help whilst on board.

APPENDIX 2

CRUISE EQUIPMENT DIARY

by

Bill Hill

Field Trip #: PGC 92004

Dates: June 22 - July 3, 1992
Vessel: ENDEAVOUR
Chief Scientist: Heiner Josenhans
Area of Study: Queen Charlotte Sound

Systems Used:

- Huntec Deeptow
- Klein Sidescan
- airgun seismic
- BIG nav. & Hydronav
- 3.5 / 12 kHz sounders
- vibracorer
- piston corer
- oceano release

Notes:

-need for a master timing clock system and annotator was expressed strongly
-need for new firing unit for airguns (old Bolt FC-1 doesn't appear to have enough current handling capacity)
-Klein 531TH sidescan recorder still using helix at about one every two days (at $70.00 each)
-the need for control and therefore maintenance of at least some of the major use winches was very evident this trip i.e. the sidescan winch could not hold the depressor and kept slipping, the hydro winch blew a hydraulic line and the winch sent to raise and lower vibracorer couldn't even lift it
-sleeve guns gave impressive results but showed the need for better air filtering from compressor

June 1 - 19, 1992

-much effort expended testing and repairing AGC vibracorer as needed to have winch replaced, weight removed, electrical control system cleaned and tested. (Bob Macdonald, Kim Conway)
-servicing sidescan recorder, EPC recorder (repairs to 4100s), repairs to Internav LC408 (one beyond economical repair and replaced by Furuno LC-90)
-after waiting for Capital order HydroNav software and replacement computer, software arrived but computer held up at DSS (so much for DISO's)
-packed up most of the gear we own...two transport loads, one flat deck, one moving van 14', two pickup loads, and one van load
-participated in loading transports and offloading Angela Davis gear from AGC
-picked up Budget rental truck and loaded on 17th
-18th...delivered electronics to ship by 09:30 and aided in the offloading and starded setting up...depart ship at 16:00 to return Budget rental to Sidney
-19th...van load to ship and continued to set up gear...sidescan, sounders, huntec and navigation - return to PGC at 16:00 and packed up final needs for Graham to take to ship

June 22, 1992

-depart PGC at 07:30 and delivered to Endeavour by Trudie Forbes and Gail Jewsbury...Thanks to them....
-depart Esquimalt at 09:30 (ON TIME!!!)
-set navigation and made sure most everything was tied down
-seismic system...spliced firing cable for sleeve guns and with Kim's help made up an umbilical of firing line, airline and steel towcable (guns alot heavier than Bolt 40 cu. in.) - Kim came up with a tow bridle and attached umbilical to gun - for final hook up of airline to compressor we found we were short a fitting and again the ship's engineers bailed us out - Ivan ran the compressor and we blew out airline before hooking up to manifold and gun. (Gun line had alot of water in it!!!)
-set up sidescan with depressor but found on first deployment that with the narrow "A-frame" it interfeared with the Huntec also the winch would not hold the weight...it needs to be repaired before using again as the controller does not centre so it jerks badly and makes it dangerous to control - the hand brake needs servicing as the teeth are worn out and the brake will not stay in set position. Bill Allen reshaped the teeth with file - it worked but more work needed
-ran first lines off of Texada...sidescan packed it in after about a half hour...brought on board - found -15v feed through to CPU card shorted...no spare so just removed
-at end of line started run to Knight Inlet..

June 23, 1992

-running to Knight Inlet
-set up Oceano ready to recall TED...on sight at 13:00 and it responded immediately but indicated we were about 5km away but after a few minutes it was located on the surface about 1km away...recovery went well and it was onboard by 14:00 - Ivan dumped the events...of which there was only approx. a dozen
-put legs on vibracorer with Kim and Bill Allen - Kim wired up unit except wire on winch...we tested out penetrometre
-final check out of gear as we proceeded to first survey site in Queen Charlotte sound...gear in at 22:30

June 24, 1992

-surveying cont'd until 09:30
-called at 06:50...Bolt firing unit blowing fuses...fuse was half amp output fuse...exchanged cards and survey continued...located shorted transistor...no spare
-coring to start at 10:00...but small winch used to pick up corer barrel during recovery blew a hose...replaced, then ships hydraulics blew a valve...repaired - finally first core to happen a 40 footer that turned the barrel into a pretzel and bent a second -next core a 20 footer was O.K.
-surveying to start at 18:00...while deploying gear Huntec cable jumped out of sleave and jammed...fish recovered but had to reterminate...seismic survey cont'd with Huntec back in by 23:00...an excellent turn around time, thanks to Graham

June 25, 1992

-surveying cont'd until 11:30
-two cores taken both good...
-exchanged 10 cu. in. sleeve gun for the 40 cu. in. and set up Teledyne array batteried and tested ready to deploy at 16:00
-survey gear in at 16:00 ... 40 cu. in. sleeve gun, PGC 100 array on EPC9800 and Teledyne array on EPC9700...Huntec and sidescan
-BBQ on Helicopter deck!!!

June 26, 1992

-survey cont'd until 10:30
-aided Kim in spooling cable onto new vibracore winch...tested clutch mechanism...will modify again but doubt if it will engage in time when winch running...also a brake to put some drag onto winch drum is needed...
-replaced another sidescan helix and replaced blade and blade drive motor...set up EPC9800 to play sidescan onto..
-serviced EPC4000 recorders in use...
-coring...one 20', one 30' and one 40' c/w bent core barrels also a grab

-surveying cont'd approx. 17:30...started with PGC and NSRF array but soon replaced NSRF array with Teledyne

June 27, 1992

-surveying all day
-called at 02:00 sleeve gun not firing...replaced solenoid on 40 cu. in. gun and respliced firing line with new connector and redeployed at 04:15
-called again at 06:30 airgun quit again...replaced with the 10 cu. in. gun...don't understand problem but this time 40 cu. in. gun would not seal
-cont'd to aid Kim with vibracore winch brake and clutch problems...engineering working on some mods

June 28, 1992

-surveying cont'd until gear pulled at 08:00
-set up for vibracoring...first attempt found that winch sent for samson braid was not strong enough to hold vibracorer so set up to use steel cable on 100HP...first core unable to retract barrel as winch motor blows breaker...resealed winch motor connector...with the ideal weather 7 cores taken with poor results due to cobble condition of the bottom
-reinstalled blade on sidescan recorder
-removed records and serviced 4000 series EPCs
-one excellent 20' piston core taken
-run in to Campania Island from 16:30 to 21:00 to let Olav and Jay ashore for two days
-run back to start of survey lines at 23:30

June 29, 1992

-surveying cont'd replaced Teledyne array with Benthos array
-gear in at 13:15
-coring...2 piston cores and one vibracore all excellent
-start surveying

June 30, 1992

-surveying cont'd until 10:30
-coring...2 piston and a vibracore
-start run to pickup shore party at 13:30
-picked up Olav and Jay at 19:30
-survey gear in at 20:00...to 23:00
-steaming to next site

July 1, 1992

-gear in at 02:00...surveying until 06:20
-called to help bring gear in as only Graham and Gina on watch
-06:45...steaming to first core site
-08:30 coring: one 20' and one 30' piston core
-10:30 to 12:00 short Huntec line
-12:00 to 15:00 steam to core site
-started packing up and organizing gear...it's amazing how messed up things can get in just 2 weeks
-run to last core site at 18:00
-run to start of last survey line at 20:00

July 2, 1992

-survey cont'd until 07:00
-called at 06:00 to start putting Prelube on sidescan cable and Huntec and to help pull in gear
-started demob immediately and finished about 16:00