Executive Secretary

Book Number	From	To

U. S. GEOLOGICAL SURVEY
OFFICE OF MARINE GEOLOGY
WOODS HOLE, MASS. 02543 #-14005

ATLANTIC TWIN
VIBROCORE PROGRAM
CAPE COD BAY, MASS.
JUNE 17th - 23rd, 1974
MASSACHUSETTS COOPERATIVE

ATTW 14005 203514

VIBRACORE SAMPLING
CAPE COD BAY
JUNE 17th - 23rd, 1974
R/V ATLANTIC TWIN

SHIP STAFF

CAPTAIN - WALLACE VANHORN
ENGINEER - THOMAS ANDERSON
DECK HAND - ROBERT SCHRADER
COOK - GREG REDLING

SCIENTIFIC STAFF

ROBERT OLDALE
CHUCK O'HARA
FRANK JENNINGS
DAVID BARNES
CHUCK MEEDER
RAYMOND HALL
MIKE SAMPSON - GEO. DNR-MASS
MACK FERREDEE

PROPERTY OF Charles J. O'Hara
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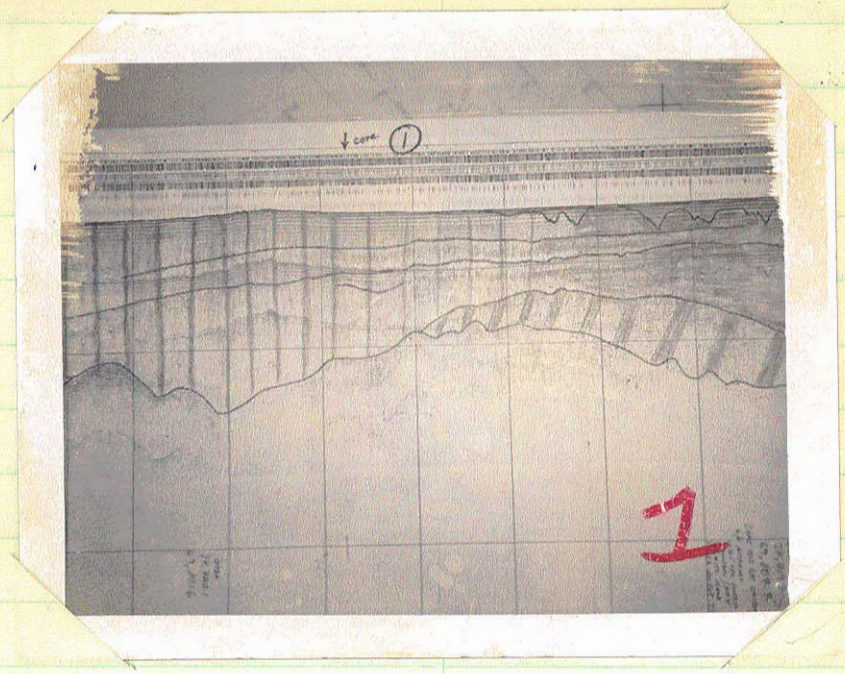


Core site #1 Fine # 14

General Area - 3.5 NM NE of Canal entrance CC Bay

Loran-C Position - 37,720.0 / 69,804.2 usec

Coordinates - 41°48.2'N Lat / 70°25.6'W Long.

Water Depth - 73' / 22.3 meters

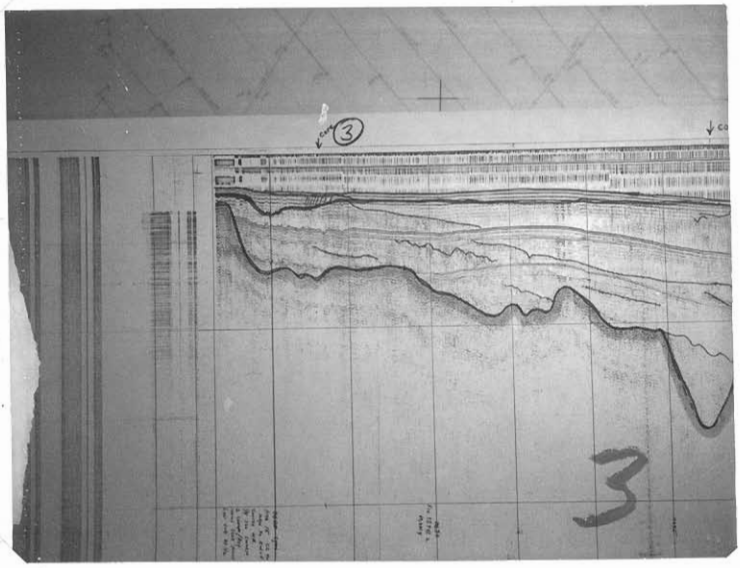
Penetration - 14' / 4.27 meters

Recovery - 3.1 meters

Lithology - Core catcher / Core

Medium to coarse grained sand w/ some gravel grading to clayey silt (dark gray) and to very compact clay (gray).

Comments:



Core site # 3 Line # 15

General Area - 1.1 NM NE of Canal entrance CC Bay

Loran-C Position - 37,748.1 / 69,802.9 usec

Coordinates - 41°47.3' N Lat / 70°28.7' W Long

Water Depth - 48' / 14.63 meters

Penetration - 14' / 4.27 meters

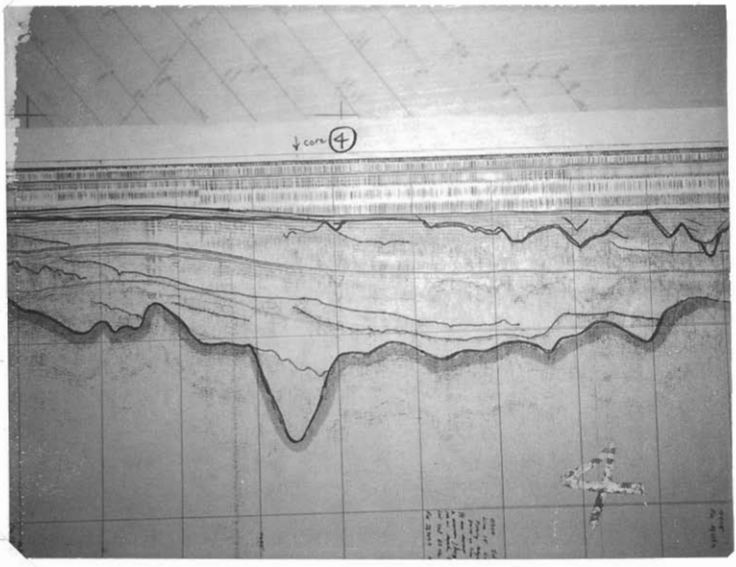
Recovery - 4.27 meters

Lithology - Core catcher /

Core -

Medium to fine sand grading to fine sand (gray) Noted coarse sand with gravel (up to 2cm) about 1/3 down the core. Shell detritus 2/3 down the section

Comments: Gravel lenses may be responsible for forset reflectors seen in Uniboom records.



Core site #4 Line # 15

General Area - 2.4 NM NE of Canal entrance CC Bay

Loran-C Position - 37,721.4 / 69,798.0 usec

Coordinates - 41°49.1'N lat / 70°26.8'W long

Water Depth - 72' / 21.9 meters

Penetration - 14' / 4.27 meters

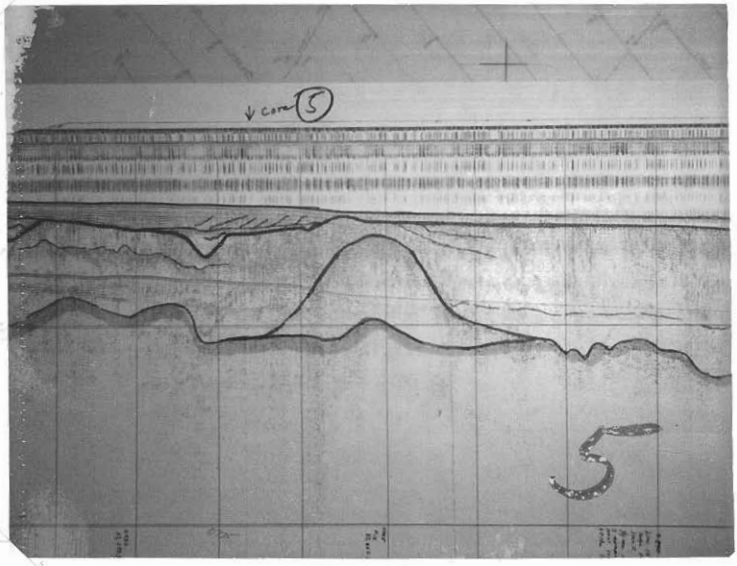
Recovery - 3.61 meters

Lethology - Core catcher /

Core

light gray sandy silty clay grading to clay

Comments:



Core site #5 Line #15

General Area - 6.2 NM due East of Indian Hill - Manomet

Loran-C Position - 37,670.0 / 69,787.5 usec

Coordinates - 41°52.8'N Lat / 70° 23.5'W Long

Water Depth - 100' / 30.48 meters

Penetration - 14' / 4.27 meters

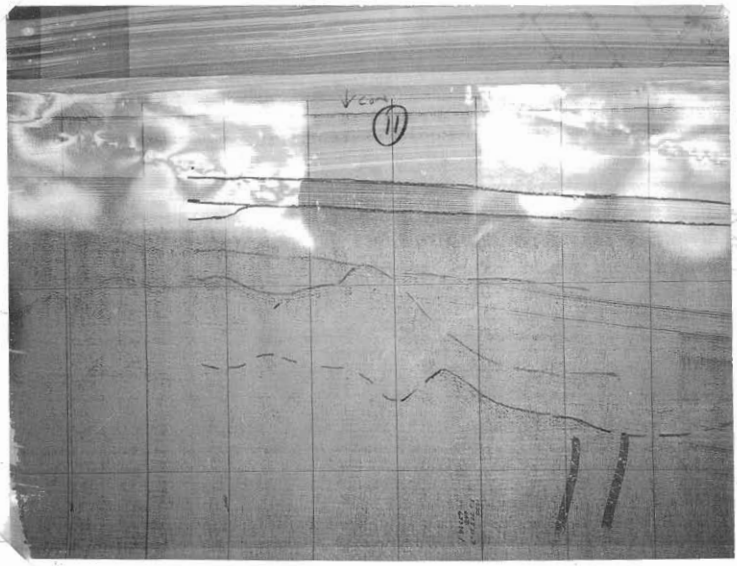
Recovery - 4.27 meters

Lithology - Core catcher - fine gray sand

Core -

Fine grained - apparently well sorted sand w/ juvenile bivalve shells present in top of core

Comments: Deltaic structure was not sampled - too deep?



Core site # 11 Site # 19

General Area - 1.8 NM due S of Wood End - Provincetown

Loran-C Position - 37,532.0 / 69,779.0 user

Coordinates - 41° 59.4' N lat / 70° 11.0' W long

Water Depth - 106' / 32.3 meters

Penetration - 14' / 4.27 meters

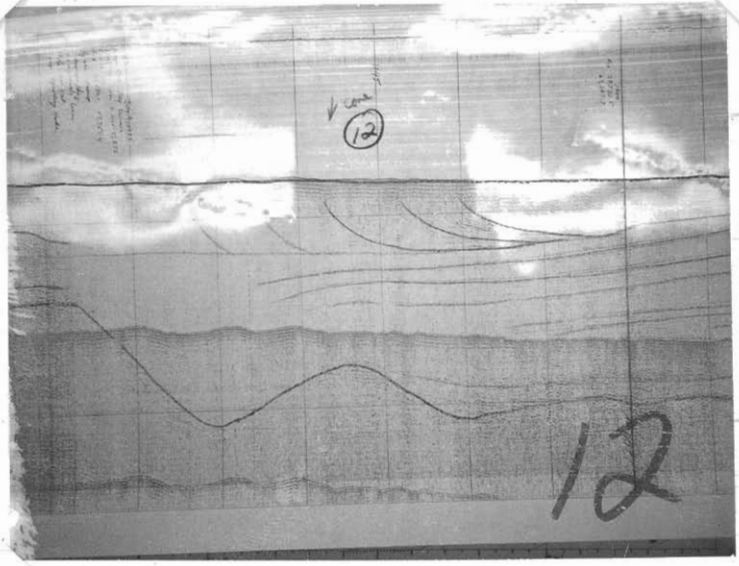
Recovery - 2.85 meters

Lithology - Core catcher - mud

Core -

Very dark high organic mud (H_2S odor)

Comments: Mud sample from upper section of core apparently washed out during vibracoring



Core site # 12 Seismic # 19

General Area - 1.1 NM due West of Race Point - Provincetown

Loran-C Position - 37,532.5 / 69,750.2 usec

Coordinate - 42° 04.1' N lat / 70° 16.1' W long.

Water Depth - 185' / 56.4 meters

Penetration - 14' / 4.27 meters

Recovery - 3.54 meters

Lithology - core catcher /

Core -

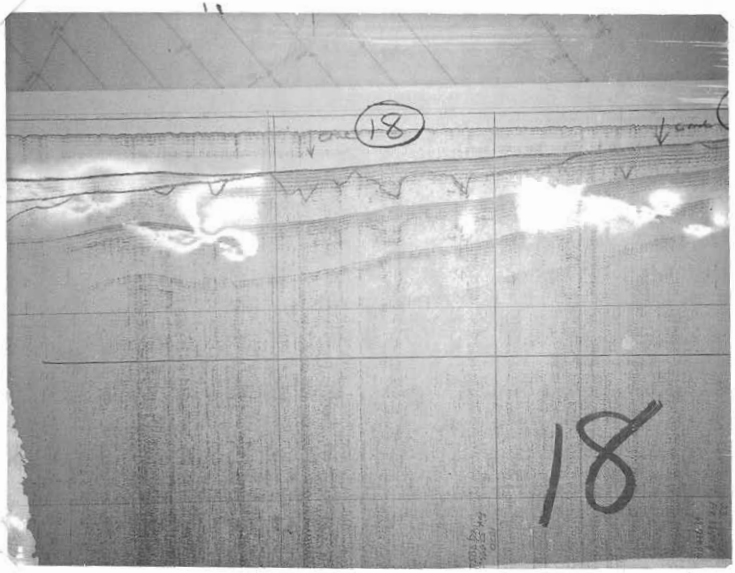
Fine sand upper quarter of core grading to medium size sand

Comments - May have been some mud washed away from top of core
No penetration of forset structure

Core site # 13 Fire # 20
General Area - 0.2 NM due West of Race Point - P-town
Loran - C position - 37,527.8 / 69,753.5 usec
Coordinates - 42°03.7'N Lat / 70°15.1'W Long
Water Depth - 185' / 56.9 meters
Penetration - Not attempted
Recovery - None
Lithology - None
Core -

Coring mission aborted due to up to 5 knots current. Note: fathometer record while on station indicated one anomalous bathymetric high having 38' of relief.

Comments: Possibly sand waves still in process of development



Core site # 18 Site # 22

General Area – 2.5 NM SE of Long Point - P-town

Loran-C position – 37,496.8 / 69,780.1 usec

Coordinates – 42°00.5'N Lat / 70°07.3'W Long

Water Depth – 60' / 18.3 meters

Penetration – 19' / 9.27 meters

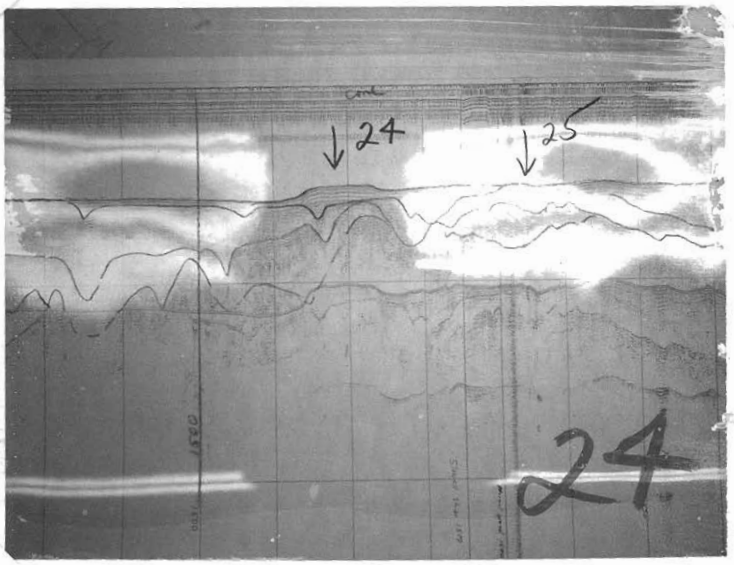
Recovery – 9.27 meters

Lithology – core catcher /

Core –

Medium to fine sand grading to medium sand grading to coarse sand

Comments: Dark organic mud apparently not present superficially



Core site # 24 Line # 5

General Area - 5.3 NM due east of Burnett Pt. / Plymouth

Loran - C position - 37,652.0 / 69,745.8 usec

Coordinates - 42° 00.1' N Lat / 70° 28.9' W Long

Water Depth - 116' / 35.4 meters

Penetration - 12' / 3.66 meters

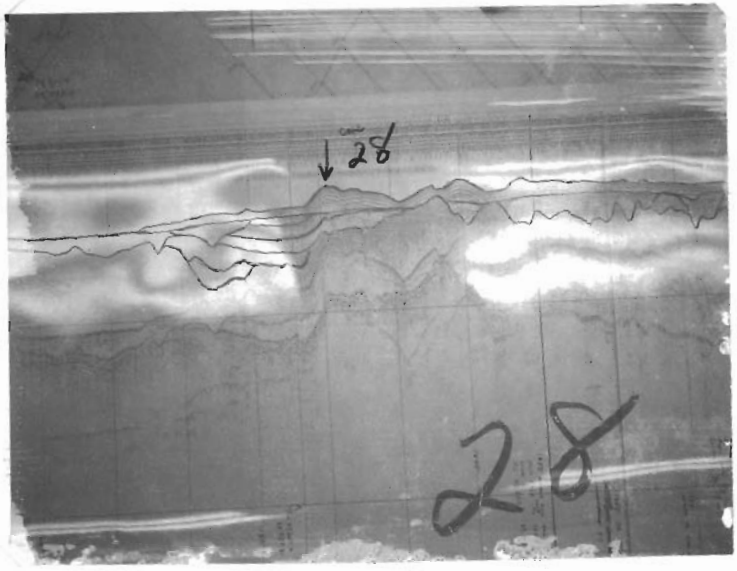
Recovery - 4.26 meters according to log ?

Lithology - Core catcher - coarse sand - pebble ~2 cm dia.

Core -

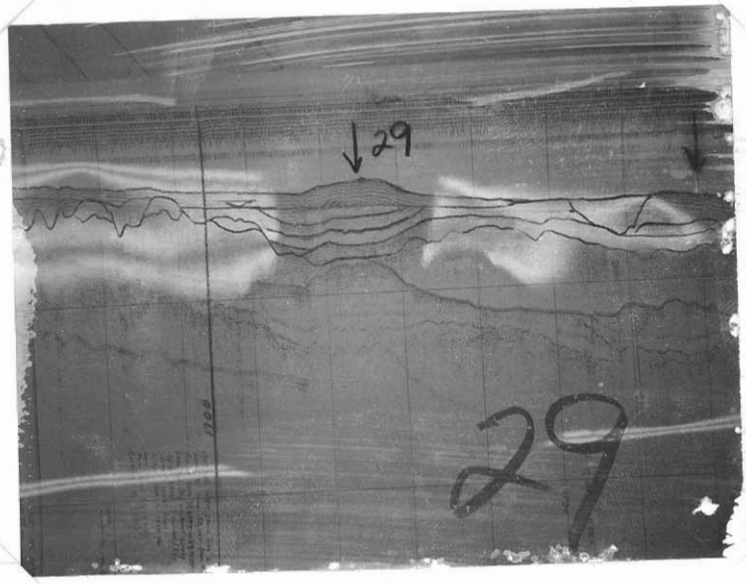
Coarse sand throughout

Comments:



Core site # 28 Line # 5
General Area - 3.7 NM due East of Green Harbor/Brant RK.
Loran - C Position - 37,652.0 / 69,717.5 usec
Coordinates - 42°09.6'N Lat / 70°33.9'W Long.
Water Depth - 75' / 22.9 meters.
Penetration - 12.25' / 3.7 meters 2nd attempt
Recovery - 4.26 meters according to log ?
Lithology - Core catcher/
Core -
Fine sand throughout abundant w/ heavy minerals

Comments: Initial try afforded only 0.62 meters of material



Core site #29 Line # 6

General Area - 4.9 NM due East of Brant Rk. / Green Harbor

Loran-C Position - 37,640.0 / 69,716.8 usec

Coordinates - 42° 05.2' N Lat / 70° 32.8' W Long

Water Depth - 100' / 30.5 meters

Penetration - 12' / 3.66 meters

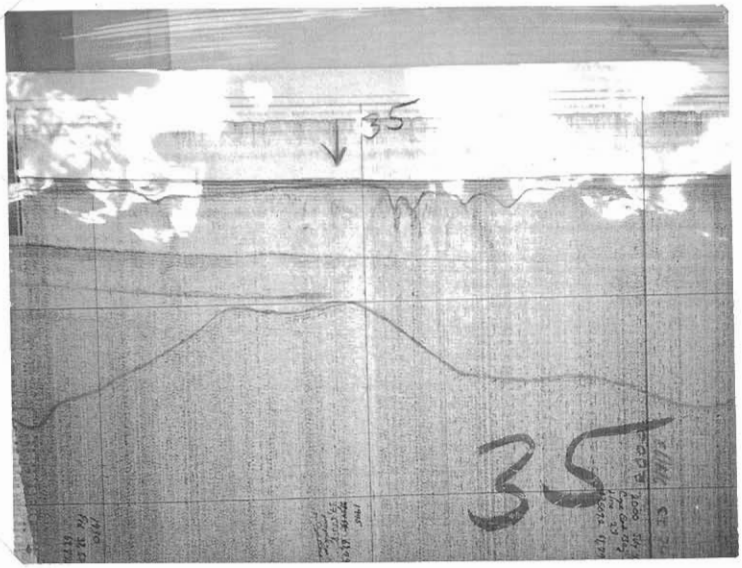
Recovery - 4.27 meters according to log?

Lithology - Core Catcher /

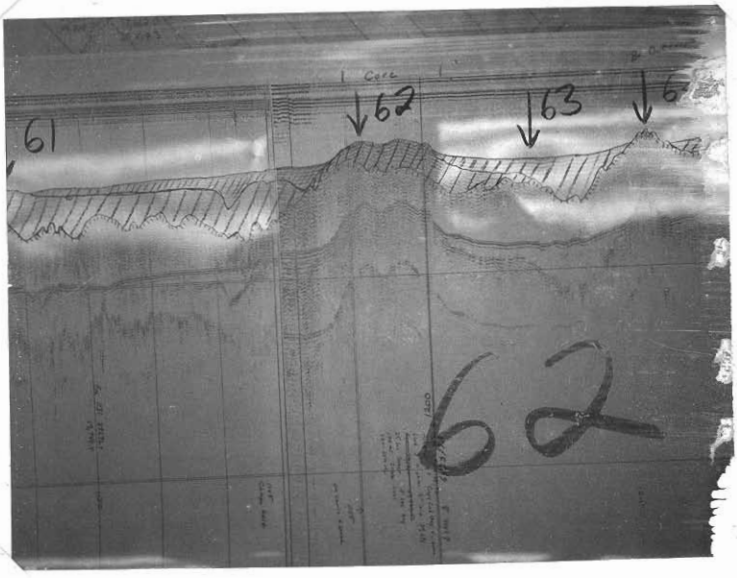
Core -

Medium to coarse grained sand throughout.

Comments:



Core site # 35 Line # 23
General Area - 3.8 NM due East of Truffin I. / Wellfleet
Loran-C Position - 37,545.0 / 69,799.5 usec
Coordinates - 41°56.3'N Lat / 70°09.7'W Long
Water Depth - 87' / 26.5 meters
Penetration - 4.27 meters
Recovery - 4.27 meters
Lithology - Core catcher /
Core -
Well sorted medium to fine sand grading to poorly sorted gravelly (angular) sand - some shell hash present in uppermost section of core
Comments: Relict tidal deposit - fines winnowed



Core site #62 Line # 3

General area - 2.3 NM due East of Saint Pt. / Plymouth Bay

Loran-C position - 37,676.5 / 69,736.7 usec

Coordinates - 42°00.6'N Lat / 70°32.9'W Long

Water Depth - 80' / 24.4 meters

Penetration - ~~8~~ 10' /

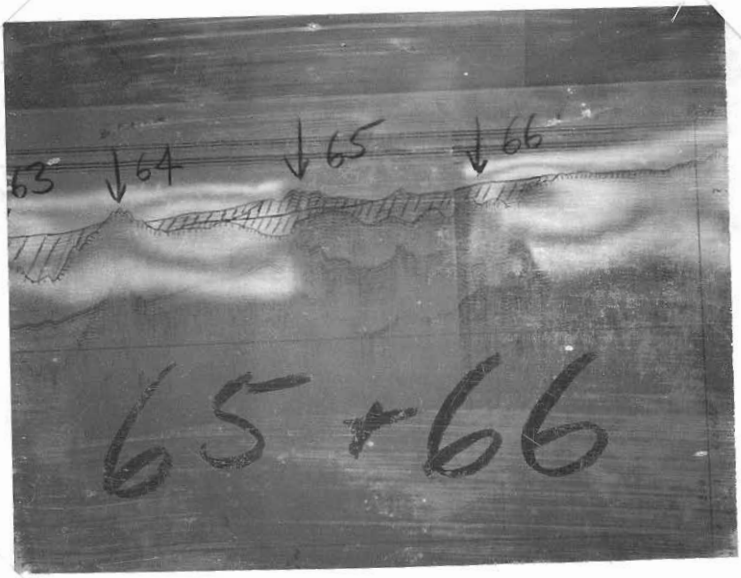
Recovery - 3.06 meters

Lithology - Core catcher /

Core -

Medium sand grading to medium fine sand and relatively clean - minor amounts of silt and gravel present in very small amt.

Comments:



Core site # 65 Line # 3

General Area - 2.4 NM NNE of Sunset Pt / Plymouth Bay

Loran-C Position - 37,676.3 / 69,724.7 usec

Coordinates - 42°02.5'N Lat / 70°35.0'W Long.

Water Depth - 60' / 18.3 meters

Penetration - 4.5' / 1.37 meters

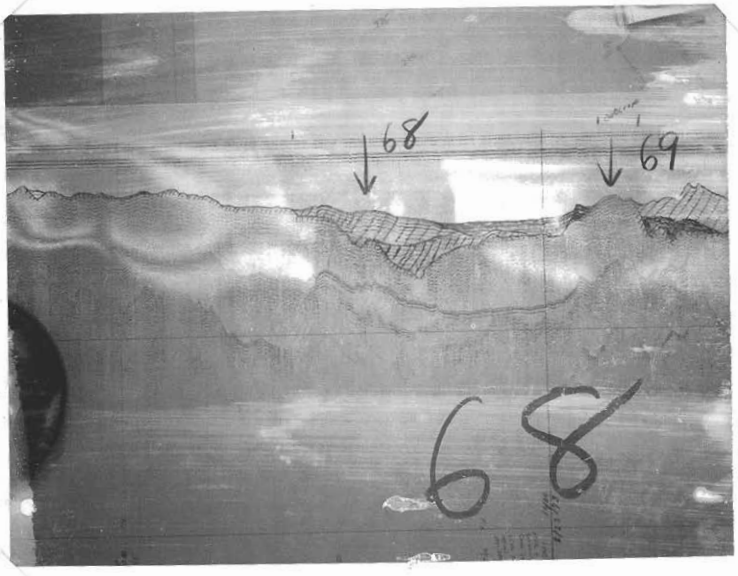
Recovery - 0.57 meters

Lithology - Core catcher /

Core -

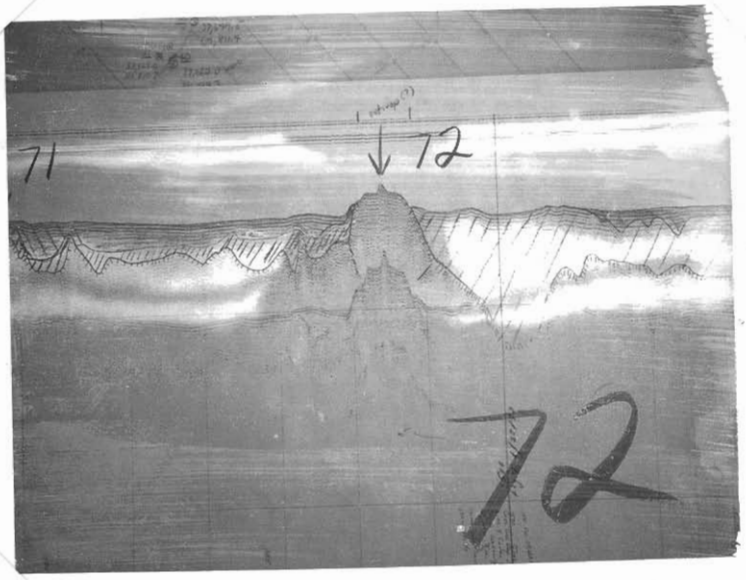
Medium - fine sand

Comments: Station aborted - blown head gasket



Core site #68 Serie # 4
General area - 3.3 NM NNE of Gurnet Pt. / Plymouth Bay
Loran-C Position - 37,669.0 / 69,723.7 usec
Coordinates - 42° 03.2' N Lat / 70° 39.0' W Long
Water Depth 100' / 30.5 meters
Penetration - 4.27 meters
Recovery - 4.27 meters
Lithology - Core catcher /
Core -
Silty (<5%) fine sand grading to sandy clayey silt

Comments:



Core site #72 Line #4

General Area - 4.7 NM ESE of Gannet Pt / Plymouth Bay

Loran-C Position - 37,663.8 / 69,797.4 user

Coordinates - 41°59.4'N Lat / 70°29.8'W Long

Water Depth - 80' / 24.4 meters

Penetration - 13.5' / 4.1 meters

Recovery - 4.27 meters

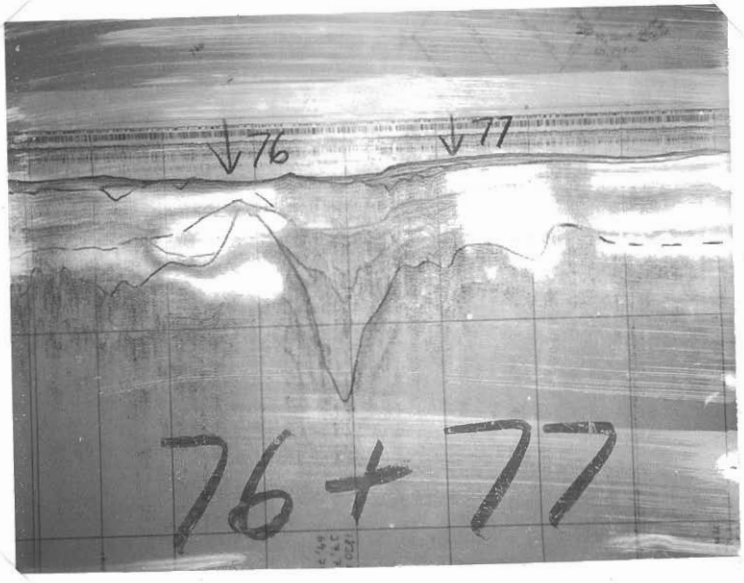
Lithology - Core catcher /

Core -

Fine silty sand grading to very fine sand

NOTE: Gravel observed between core liner & casing

Comments: Most likely the structure is bedrock outcroppings mantled by a thin veneer of sand



Core site # 76 Line # 13

General Area – 2.9 NM NNE of Canal entrance - CC Bay

Loran-C Position – 37,732.0/69,793.7 usec

Coordinates – 41°49.4'N lat / 70°28.6'W

Water Depth – 56' / 17.1 meters

Penetration – NONE

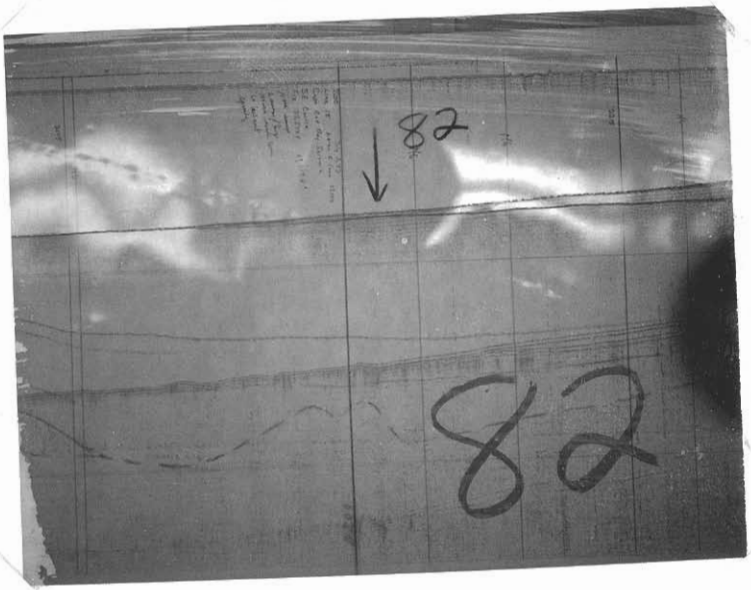
Recovery – NONE

Lithology: Core catcher /

Core –

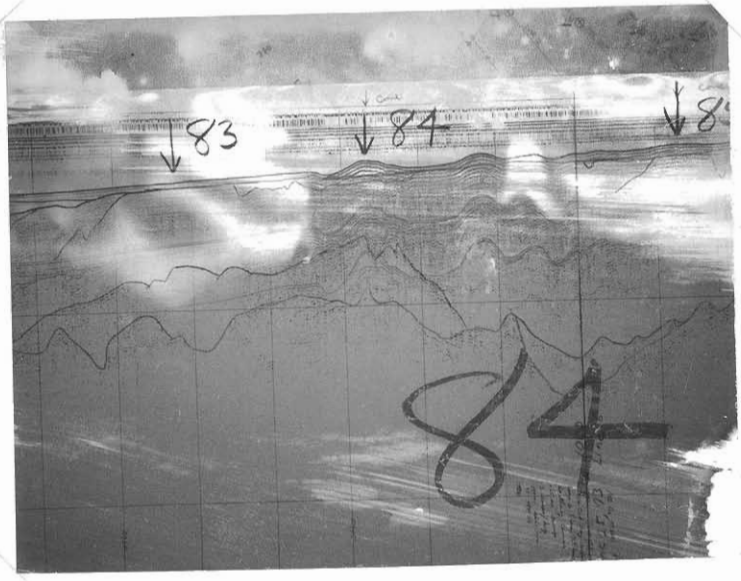
Lack of penetration may indicate gravel and/or coarse glacial debris

Comments:



Core site # 82 Unit # 18
General Area - 1.7 NM SW of Race Point / P-town
Loran-C Position - 37,544.6 / 69,758.2 usec
Coordinates - 42° 02.3' N lat / 70° 15.9' W long
Water Depth - 185' / 56.9 meters
Penetration - 14' / 4.27 meters
Recovery - 2.26 meters
Lithology - Core catcher /
Core -
Silty clay with shell hash grading to fine clean sand

Comments: Upper section of core was probably washed out during coring operation



Core site # 84 Line # 6

General Area - 5.6 NM NNE of Beach PT / Sandy Neck

Loran-C Position - - 37,640.0 / 69,818.0 usec

Coordinates - 41°48.9' N Lat / 70°15.1' W Long

Water Depth - 60' / 18.3 meters

Penetration - 14' / 4.27 meters

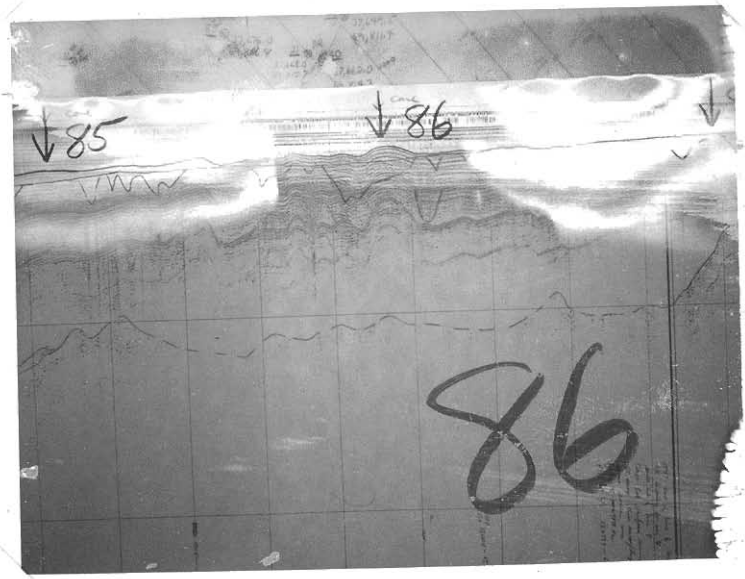
Recovery - 4.27 meters

Lithology - Core catcher

Core -

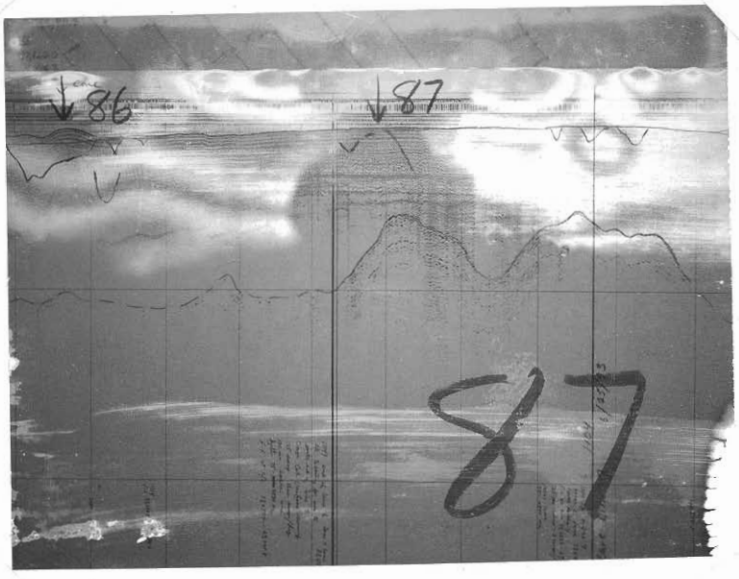
Fine sand throughout

Comments: Remnant ~~feature~~ extension of Billingsgate Shoal?



Core site # 86 Line # 6.
General Area - 2.8 NM NW of Jesuit Harbor / East Dennis
Loran-C Position - 37,690.0 / 69,832.5 usec
Coordinates - 41° 96.5' N lat / 70° 12.6' W long
Water Depth - 30' / 9.1 meters
Penetration - 13.5' / 4.1 meters
Recovery - 4.04 meters
Lithology - Core catcher
Core -
Medium, well sorted clean sand throughout

Comments: Remnant extension of Billingsgate Shoal?



Core site #87 Line # 6/7

General Area - 0.5 NM North of Jobscussett Pt / Dennis

Loran-C Position - 37,638.0 / 69,839.0 usec

Coordinates - 41° 45.6' N Lat / 70° 11.2' W Long

Water Depth - 25' / 7.6 meters

Penetration - 12' / 3.66 meters

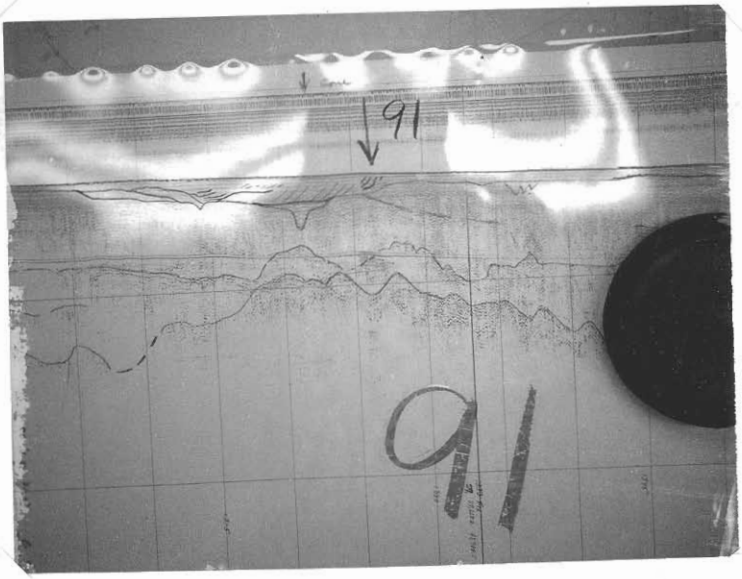
Recovery - 3.84 meters

Lithology - Core catcher

Core -

Poorly sorted non-stained sand (coarse quartz / grading to well sorted very fine sand

Comments - Till like material in core catcher but bottom structure flat hill?



Core site # 91 Line # 7

General Area - approx 2.5 NM due south of Fishing Ledge

Loran-C position - 37,628.0 / 69,790.6 usec

Coordinates - 41°53.8'N Lat / 70°18.7'W Long

Water Depth - 100' / 30.5 meters

Penetration - 11' / 3.35 meters

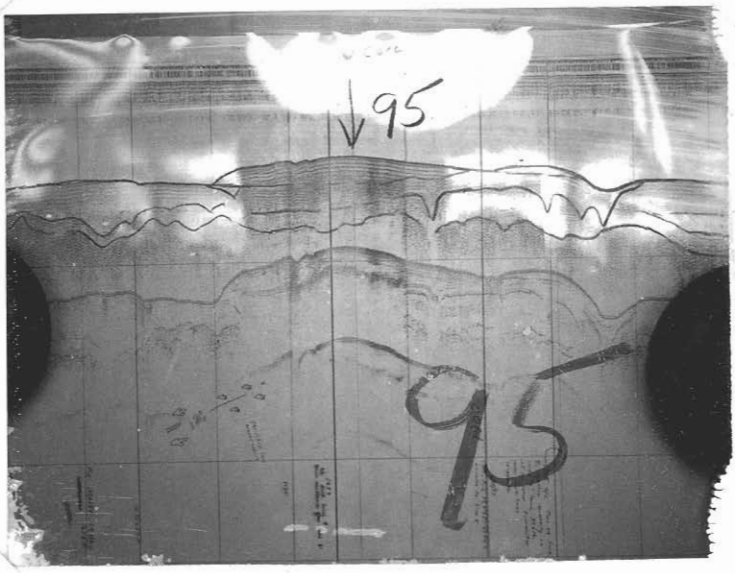
Recovery - 3.41 meters

Lithology - Core catcher /

Core -

Mud (<4') ~~gr~~ overlaping medium sand interbedded w/ small lenses of gravel (pebble range) Foreset beds of detail structure.

Comments: Gravel may be responsible for seismic foreset reflectors



Core site #95 — Line # 7/8

General Area - 5 nm ENE of Brant Rk / Green Harbor

Loran-C Position - 37,627.0 / 69,713.0 usec

Coordinates - 42° 06.4' N Lat / 70° 32.1' W Long

Water Depth - 113' / 34.4 meters

Penetration - 14' / 4.27 meters

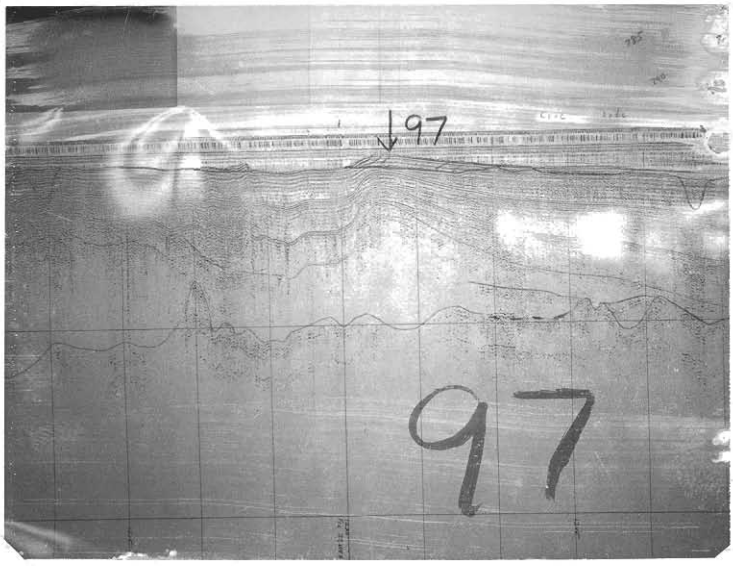
Recovery - 4.27 meters

Lithology - Core catcher/

Core

Sandy clayey silt (abundant organic matter - H_2S odor) grading to fine sand w/ traces of gravel & shell detritus grading to additional organic sandy clayey silt

Comments: Check on dissipation rate of H_2S gas at depth w/ time



Core site # 97 Line # 9

General Area - 3.8 NM due North of Nesint Harbor / East Dennis

Loran-C Position - 37,607.2 / 69,829.7 usec

Coordinates - 41°49.1' N Lat / 70°10.3' W Long

Water Depth - 20' / 6.1 meters

Penetration - 14' / 4.27 meters

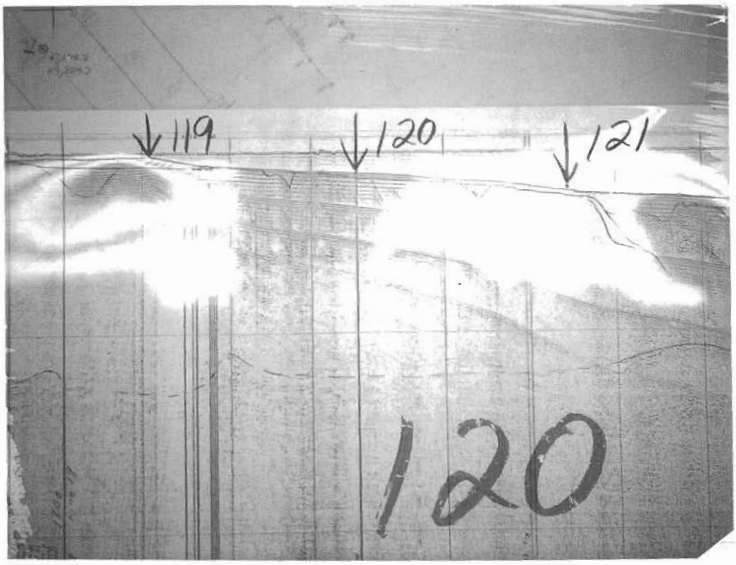
Recovery - 4.27 meters

Lithology - Core catcher

Core -

Well sorted - clean medium to fine grained sand

Comments: Bulkington Proper Shoal - SW extension



Core site # 120 Line # 17

General Area – 2.6 NM due W of Jeremy Pt / Great I - Wellfleet Harbor

Loran - C Position – 37,556.0 / 69,810.7 usec

Coordinates – 41°53.3' N Lat / 70°07.9' W Long

Water Depth – 35' / 10.7 meters

Penetration – 13' / 4.0 meters

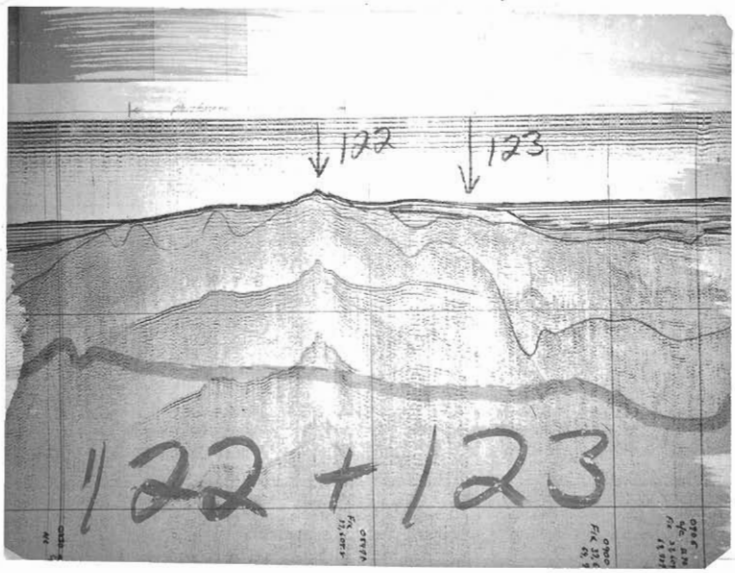
Recovery – 3.07 meters

Lithology – Core catcher /

Core –

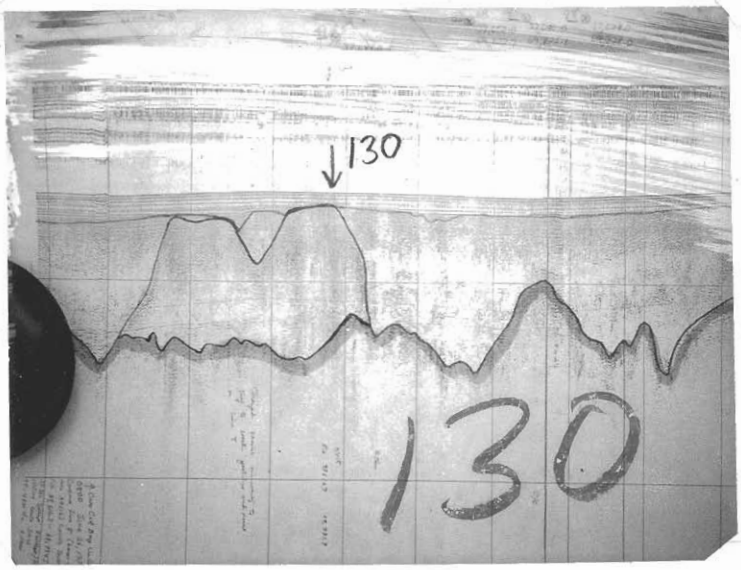
Coarse sand grading to medium sand grading to well sorted fine grained sand

Comments: May have lost some muddy material from top of core section



Core site # 122 Line # Fishing Ledge
General Area - Fishing Ledge - South portion
Loran-C Position - 37, ~~5586.0~~ 6085.6 / 69,781.2 usec
Coordinates - 41°56.1' N Lat / 70°18.3' W Long
Water Depth - 100' / 30.5 meters
Penetration - 9' / 2.7 meters
Recovery - unknown - still wedged in casing
Lithology - Core catcher /
Core -
Appears to be glacial till (angular gravel seen)
- semi-indurated light gray clay matrix

Comments - Glacial till deposit may shape the flanks of Fishing Ledge
Coastal plain erosional remnant of probable Cretaceous age



Core site # 130 Leg # 8

General Area - 1.7 NM NW of Fishing Ledge

Loran - C Position - 37,612.7 / 69,771.7 user

Coordinates - 41°57.9' N Lat / 70°20.9' W Long

Water Depth - 134' / 40.8 meters

Penetration - 8' / 2.4 meters

Recovery - 3.58 meters ?

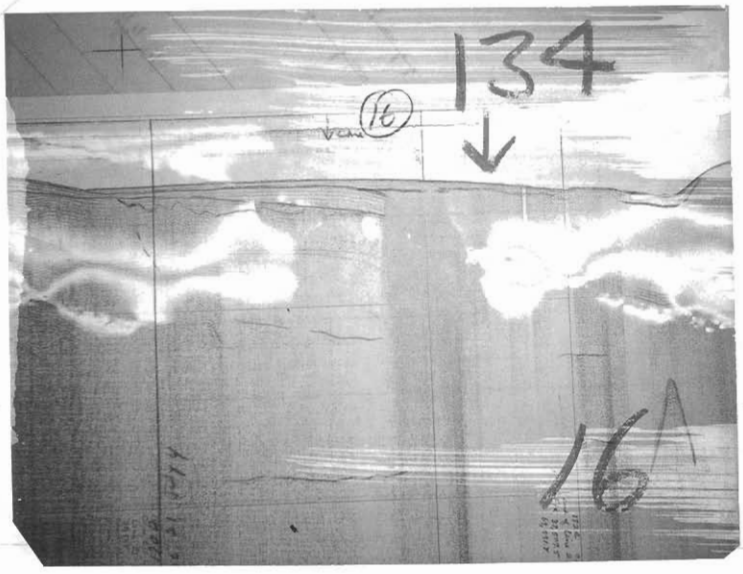
Lithology - Core catcher /

Core -

All clay - no detection of H_2S gas

Clean of Organic detritus

Comments.



Core sta # 134 Fine # 21
General Area - 1.1 NM SE of Long Pt / P-town Harbor
Loran-C Position - 37,507.4 / 69,774.5 secc
Coordinates - 42°01.1'N Lat / 70°09.3'W Long
Water Depth - 70' / 21.3 meters
Penetration - 14' / 4.27 meters
Recovery - 14' / 4.27 meters
Lithology - Core catcher /
Core -

Very dark highly organic mud
Concentrated H_2S noted

Comments: H_2S gas in sediment may account for loss of seismic reflectors at depth