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CRUISE REPORT

84005

UCONN-84-1

Vessel: R/V UCONN
Cruise Number: UCONN 84-1
Parent Project: New England Coastal Geology (9470-00479)
Funding Agency: USGS/Connecticut Department of Environmental Protection - CO-OP
Funding Amount: \$100,000 (Fiscal Year 1984)
Contract Number: USGS/CDEP Coop Agreement Number 14-08-0001-A-0132
Contract Start and End Date: 1 July 83 - 48 months.

Area of Operations: Western Long Island Sound
Cruise Start and End Dates: 16 May 84 - 25 May 84
16 May - Leave New Haven, CT.
16 May - Port Jefferson, NY
17-20 May - New Haven, CT
21-23 May - Milford, CT
24 May - Port Jefferson, N.Y.
25 May - New Haven, CT

Chief Scientist: Ralph S. Lewis - Connecticut Geological and Natural History Survey

Cruise Data Curator: Sally Needell, USGS

Scientific Party: Ralph S. Lewis - CGNHS, May 16-25
Steve Colman - Geologist, USGS, May 16, 17
Gerald Edwards - Geologist, USGS, May 21-25
Bob Altamura - Geologist, CGNHS, May 18
Margaret Thomas - Geologist, CGNHS, May 19
David Nichols - Electronics Tech., USGS, May 16-25
David Mason - Mechanical Tech., USGS, May 16-25

Ship's Captain: Larry Birch, University of Connecticut

Purpose of Cruise:

- 1) To define the geology and shallow structure of Western Long Island Sound.
- 2) To determine the geologic framework and Quaternary development of the study area.
- 3) To identify and map potential geologic hazards.
- 4) To simultaneously use and compare two types of Hydrophone/Amplifier/Graphic Recorder Systems to determine which system is most suitable for this type of survey.

Navigation Techniques:

Tracklines were designed to follow LORAN-C lines generated from Nantucket, MA (26540-26730) and from Carolina Beach, North Carolina (43910-44050). Coordinate locations were recorded on a Texas Instruments Silent 700 Hardcopy Printer automatically at 5-minute intervals, as well as manually wherever special circumstances required. In addition, coordinate locations were noted in a USGS Integrated Navigation System/North Star LORAN-C Navigation Log for cross-checking purposes and special notations.

Scientific Equipment Employed:

EG&G - Model 234 Energy Source - 300 Joule Power Supply
 EG&G - Model 267A Sound Source - Boomer Plate and Sled
 EG&G - Hydrophone with Pre/Amp in streamer.
 Innerspace - Hydrophone without Pre/Amp in streamer.
 Innerspace - Model 202 Pre-Amplifier/Filter
 Teledyne - Model 300 High-Resolution Amplifier
 EPC - 4100 Programmable Graphic Recorder
 EPC - 4603 Programmable Graphic Recorder
 H.P. - 8-Track Tape Recorder
 IRIG - B Time Code Clock
 Loran C with Texas Instruments Silent 700 Hardcopy Printer
 EDO - Western Sidescan Sonar System

Uniboom Recording Systems:Main Recording System:

Innerspace Hydrophone Streamer
 Innerspace Pre-Amp/Filter 400-2000 Hz
 EPC - Model 4603 Graphic Recorder
 H.P. - 8-Track Tape Recorder
 IRIG - B Time Code Clock

Slave Recording System:

EG&G - Hydrophone Streamer with Pre-Amp
 Teledyne 300 High-Resolution Amplifier
 (365-1060 Hz)
 EPC - Model 4100 Graphic Recorder

Tabulated Information:

- a) Number of days at sea - 9
- b) Line kilometers of Uniboom profiling - 633.75 (342.2 NM)

Track Chart AttachedEquipment Test-

During the cruise, a comparison test was made on two Hydrosteamers - EG&G and Innerspace. The EG&G streamer was pre-amped in the actual streamer section then amplified in the instrument lab. The Innerspace streamer was pre-amped in the instrument lab with no pre-amp in the actual streamer.

The data showed that although deep reflectors were slightly more prominent with the EG&G streamer, the overall record was very noisy in comparison to the records produced by the Innerspace streamer. In addition, the Innerspace streamer was an order of magnitude better in the upper end and deeper reflectors were recognized due to the "spreading gain" feature of the EPC 4603 Graphic Recorder.

In conclusion, the results of the tests indicated that the Inner-space Package, for surveys of this type, is the optimum in performance and reliability.

Cruise Summary

The combination of calm seas and few emergency course alterations allowed for consistent, well documented High-Res Seismic Reflection Data. In addition, the excellent resolution and penetration of the

Innerspace Hydrophone System, except in areas where gas deposits obscured the acoustic signal, produced clear, well-defined records from which the geology of Western Long Island Sound can be ascertained.

Original cruise plans called for the implementation of the EDO Western Sidescan Sonar System to obtain sea-floor imagery. Unfortunately, the system malfunctioned the first sea day and was discontinued.

