C00-2483-10

CONNECTICUT SEISMIC NETWORK STUDIES

Technical Progress Report

Submitted by

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01 July 1974 - 30 June 1975

PREPARED FOR THE NUCLEAR REGULATORY COMMISSION
UNDER CONTRACT NO. AT(11-1)-2483

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Introduction

This progress report briefly describes the scope of investigations undertaken and significant results obtained on Contract No. AT(11-1)-2483 for the period 1 July 1974 to 30 June 1975. The current contract is due to expire 30 September 1975.

Seismic Network Configuration

During the contract period, the University of Connecticut seismic network was expanded from four stations to six. Figure 1 shows the geographic locations of the six stations in Connecticut and Table I lists the station parameters. In addition, data from the Weston Observatory site at Fall River, Massachusetts, is also being received on line.

All data are transmitted via FM telemetry to the central recording station at Avery Point. The transmit and receive electronics, including VCO's, discriminators, and broad-band filters, have been constructed and maintained by personnel at the University of Connecticut. During the remainder of the current contract period, all electronics will be standardized to essentially identical response characteristics. An example of the frequency response of the seismographs using the new electronics is given in Table II.

Seismicity

Table III chronologically lists earthquakes which have occurred during the contract period in and adjacent to New

Figure 1

England (excluding those in New York state as reported by Lamont-Doherty Geological Observatory). Several events prior to the contract period but after the start of the UConn network in 1972 are also listed.

During the routine analyses for local seismicity, data were also obtained for more than 400 teleseisms and reported to the National Earthquake Information Service of the U.S. Geological Survey.

Travel-time Models

Using data from quarry blasts throughout Connecticut and portions of Rhode Island and Massachusetts, accurate although incomplete, travel-time relationships have been developed. With two portable seismographs available in the Fall of 1975, it is expected that detailed and complete models will be obtained in early 1976.

Preliminary results are as follows:

6.09 km/sec.	8.16 km thick
6.43 km/sec.	20.60 km thick
8.07 km/sec.	- - - - -
5.10 km/sec.	Triassic Basin
5.68 km/sec.	

Time and Effort of Principal Investigator

During the period 1 July 1974-31 May 1975, 10% of the P.I.'s time was devoted to the contract; during June 1975, approximately 50% was devoted. It is expected that during September 1975, approximately 25% of the P.I.'s time will be spent on the contract.

Reports

In accordance with contract specifications, the following Monthly Informal Progress Reports have been submitted to the Project Monitor (Dr. Jerry Harbour, Division of Reactor Safety Research), and copies to Weston Observatory (Boston College), Lamont-Doherty Geological Observatory (Columbia University), Massachusetts Institute of Technology and Penn State University:

C00-2483-1

C00-2483-2

C00-2483-3

C00-2483-4

C00-2483-5

C00-2483-6

C00-2483-7

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TABLE I

Station Parameters

<u>Station Code</u>		<u>Latitude</u>	<u>Longitude</u>	<u>Elevation</u>
APT	Avery Point, Ct.	41°18'57.5"N	72°03'50.0"W	3 meters
BCT*	Brookfield, Ct.	41°29'36.0"N	73°23'02.0"W	69
BPT	Bridgeport, Ct.	41°13'19.5"N	73°14'32.0"W	83
HDM	Haddam, Ct.	41°29'08.8"N	72°31'23.6"W	24
TMT	Talcott Mountain, Ct.	41°48'41.0"N	72°47'56.0"W	290
UCT	University of Ct., Storrs	41°49'54.0"N	72°15'02.0"W	149
FLR ⁺	Fall River, Ma.	41°43'00.0"N	71°07'17.5"W	52

* This station was formerly referred to as BFC; however, the code BFC had been reserved by the USGS for another station.

+ Installed and operated by Weston Observatory, Boston College.

TABLE II
Seismograph Frequency Response

<u>Frequency</u>	<u>Relative Magnification</u>
0.4	0.10
0.5	0.20
0.8	0.64
1.0	1.00
1.5	1.78
2.0	2.58
3.0	3.90
4.0	5.10
5.0	6.15
6.0	6.80
7.0	7.08
8.0	7.15
9.0	7.20
10.0	7.20

TABLE III

List of Earthquakes in New England

15 Feb 1972	Near Pound Ridge, N.Y. Location: 41.3N, 73.4W at 225255z (not UConn computer solution) m_b approximately 2 (Nuttli) Felt: approximately 200 phone calls
15 Jun 1973	Maine Location: 45.32N, 70.91W at 010904.2z m_b = 4.8 (USGS) Felt throughout New England, max. Int. V
28 Feb 1973	New Jersey Location: 39.72N, 75.44W at 082132.3z m_b = 3.8 (Nuttli - USGS) Felt: Ct, De, Md, Pa, NJ, NY, Max. Int. VI
01 Oct 1974	Vicinity of W. Warwick, R.I. Location: 41.7N, 71.5W at 063621z m_b = 2.5 (Nuttli) Felt in Coventry - W. Warwick area of R.I.
09 Oct 1974	Vicinity of Franklin, Mass. Location: 42.2N, 71.5W at 200434z m_b = 1.5 (Nuttli) Felt: Hyannis & Martha's Vineyard, Mass.
22 Dec 1974	75 km East of Boston, Mass. Location: 42.2N, 69.8W at 204649z m_b = 3.0 (Nuttli) No felt reports
27 Dec 1974	Vicinity of Needham, Mass. Location: 42.3N, 71.3W at 042948z m_b = 2.5 (Nuttli) No felt reports
27 Dec 1974	Vicinity of Needham, Mass. Location: 42.2N, 71.3W at 145125z m_b = 2.2 (Nuttli) No felt reports
17 Jan 1975	Bay of Fundy Location: 44.9N, 66.9W at 001037z m_b = 3.4 (Nuttli) No felt reports
20 Feb 1975	South of Long Island, N.Y. Location: 40.3N, 73.2W at 080625z m_b = 2.9 (Nuttli) No felt reports

TABLE III (cont'd)

01 Apr 1975

Manchester, Ct.

Location: 41.8N, 72.5W at 153026z

$m_b = 1.91$ (Nuttli) (distances 22-39, short for
Nuttli's relation)

No felt reports