

SUPPLEMENTAL AGREEMENT
BETWEEN
BOSTON COLLEGE
AND
THE U. S. NUCLEAR REGULATORY COMMISSION

THIS SUPPLEMENTAL AGREEMENT, effective the 1st day of November, 1978, by and between the UNITED STATES OF AMERICA (hereinafter referred to as the "Government"), as represented by the UNITED STATES NUCLEAR REGULATORY COMMISSION (hereinafter referred to as the "Commission"), and BOSTON COLLEGE (hereinafter referred to as the "Contractor"),

WITNESSETH THAT:

WHEREAS, the parties desire to modify Contract No. NRC-04-74-238 as hereinafter provided, and this supplemental agreement is authorized by law, including the Energy Reorganization Act of 1974, as amended, and the Atomic Energy Act of 1954, as amended.

NOW, THEREFORE, said contract is hereby modified as follows:

1. Appendix A, attached to this supplemental agreement and made a part hereof, provides for the research to be performed by the Contractor during the contract period specified therein.
2. In Article II - The Period of Performance, the date "October 31, 1979" is substituted for the date "October 31, 1978".
3. In Article III - Consideration, the sum "\$505,272.00" is substituted for the sum "\$309,000.00".
4. In Article I - The Research To Be Performed, delete the name "R.O. Ahner."

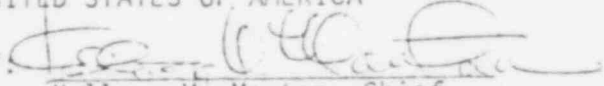
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IN WITNESS WHEREOF, the parties have executed this document.

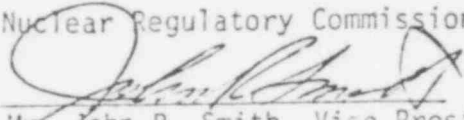
UNITED STATES OF AMERICA

BY:


Kellogg W. Morton, Chief
Research Contracts Branch
(title)

Nuclear Regulatory Commission

BY:


Mr. John R. Smith, Vice President
Finance and Business Affairs
(title)

Boston College

I, Rev. Paul A. Fitzgerald, certify that I am the
(attester)

Secretary of the University of the Contractor named
(title)

under this document; that Mr. John R. Smith
(signatory)

who signed this document on behalf of said Contractor was then
Vice President, Finance and Business Affairs of said Contractor; that
this document was duly signed for and on behalf of said Contractor by
authority of its governing body and is within the scope of its legal
powers.

IN WITNESS WHEREOF, I have hereunto affixed my hand and the seal of
said Contractor.

Paul A. Fitzgerald, S.J.

(SEAL)

901121

CONTRACTOR: BOSTON COLLEGE

APPENDIX A

For the Contract period November 1, 1978 through October 31, 1979.

Article A-I RESEARCH TO BE PERFORMED BY CONTRACTOR

- (a) The unclassified scope of work under this contract entitled, "A Study of Seismicity and Tectonics in New England" is as follows:

The Weston Observatory of Boston College will continue the operation and maintenance of a northern New England seismic network as an integral part of the Northeastern United States Seismic Network (NEUSSEN) with the following objectives:

1. To establish the seismicity of New England with regard to:
 - a) frequency of occurrence of seismic events,
 - b) epicentral locations
 - c) focal depths
 - d) magnitude and intensity, and
 - e) recurrence relationships.
2. To provide quantitative data on New England earthquakes to State, Federal, and Industrial authorities on a timely basis regarding event origin time, location, magnitude, and intensity, especially for those shocks which cause damage or are felt by local residents.
3. To determine the crustal and upper mantle lithologic and velocity structure of New England and the correlation of local seismicity with surficial geology. Improved knowledge of the crustal structure yields more accurately determined hypocenters which in turn yield more accurately located active fault zones which are necessary for purposes of construction and long-term surface stability.
4. To upgrade the seismic capability of the network by continuously evaluating the frequency response of the system, by modifying circuitry where necessary to improve reliability and stability for calibration, and by "freezing" the network configuration so as to more consistently define long term seismological properties of the region.
5. To expand the cooperation with other northeastern United States and Canadian networks.

6. To quantitatively determine the threshold of the Network in terms of probability of detection and magnitude. Implicit in this objective is the determination of a New England magnitude and intensity scale.
 7. The contractor will procure the necessary equipment and assemble with in-house components five portable seismographs which he will deploy as quickly as possible in the epicentral area of the earthquake of April 18, 1979.
- (b) The Principal Investigator expects to devote the following approximate amount(s) of time to the contract work:

E. F. Chiburis - 100% of his time for 2 summer months and 10% of his time for 9 months.

ARTICLE A-II WAYS AND MEANS OF PERFORMANCE

(a) Items for which support will be provided as indicated in A-III, below

(1) Salaries and Wages \$ 77,600.00

(2) Equipment to be purchased or fabricated by the Contractor \$ 24,700.00

(i) Over \$1,000.00

10 Galvonometers
10 VCO/Discriminator Systems
5 MeQ - 800B Seismograph Recorders

(ii) Under \$1,000.00

discriminator racks

(3) Travel (i) Domestic \$ 6,800.00

(ii) Foreign \$ -0-

(4) Other direct costs including fringe benefits

(5) Indirect costs based on a predetermined rate of 65 percent applicable to salaries and wages.

(b) Items, if any, significant to the performance of this contract, but excluded from computation of Support Cost and from consideration in proportioning costs:

NONE

- (c) Time or effort of Principal Investigator(s) including indirect costs and fringe benefits contributed by Contractor but excluded from computation of Support Cost and from consideration in proportioning costs:

E. F. Chiburis, Principal Investigator, 10% of his time for 9 months.

Article A-III

The total estimated cost of items under A-II(a) above for the contract period stated in this Appendix A is \$196,272.00; the Commission will pay 100 percent of the actual costs of these items incurred during the contract period stated in this Appendix A, subject to the provisions of Article III and Article B-XXVIII. The estimated NRC Support Cost for the contract period stated in this Appendix A is \$196,272.00.

The estimated NRC Support Cost is funded as follows:

- | | |
|---|---------------------|
| (a) Estimated unexpended balance | \$ <u>-0-</u> |
| (b) New funds for the current period | <u>\$196,272.00</u> |
| (c) The new funds being added in A-III(b) constitute the basis for advance payments provided under Article B-X. | |