

SUPPLEMENTAL AGREEMENT
BETWEEN
THE UNIVERSITY OF MICHIGAN
AND
THE U. S. NUCLEAR REGULATORY COMMISSION

THIS SUPPLEMENTAL AGREEMENT, effective the 5th day of February, 1980, 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 THE UNIVERSITY OF MICHIGAN (hereinafter referred to as the "Contractor"),

WITNESSETH THAT:

WHEREAS, the parties desire to modify Contract No. NRC-04-76-192 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, supersedes the Appendix A attached to the previous modification.
2. In Article II - The Period of Performance, the date "June 30, 1980" is substituted for the date "June 30, 1979."
3. In Article III - Consideration, the sum "\$403,100.00" is substituted for the sum "\$372,016.00."

IN WITNESS WHEREOF, the parties have executed this document.

UNITED STATES OF AMERICA

BY: [Signature]
Kellogg W. Morton, Chief
Research Contracts Branch
(title)

Nuclear Regulatory Commission

THE UNIVERSITY OF MICHIGAN

BY: C. W. Matthews FEB 20 1980
C. W. Matthews, Controller
(title)

I, Paul J. Stemple, certify that I am the
(attester)

Manager, Office of Contract Administration of the Contractor named
(title)

under this document; that C. W. Matthews
(signatory)

who signed this document on behalf of said Contractor was then

Controller 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.

[Signature]
Paul J. Stemple, Manager
Office of Contract Administration

(SEAL)

CONTRACTOR: UNIVERSITY OF MICHIGAN

APPENDIX A

For the Contract period July 1, 1979 through June 30, 1980

Article A-I RESEARCH TO BE PERFORMED BY CONTRACTOR

(a) The unclassified scope of work under this contract entitled, "Geophysical Investigations of the Anna, Ohio Earthquake Zone," is as follows:

1. The contractor will continue operation of the nine telemetered seismograph stations in the vicinity of Anna, Ohio and the telemetered seismograph station near Kalamazoo, Michigan; analyze and interpret the data collected with the goal of establishing the local seismicity and earthquake hazard. No additional stations are anticipated and none of the stations will be moved in this fiscal year.
2. The contract will convert the nine telemetered seismograph stations in the Anna Ohio region from non-renewable power sources to renewable solar power systems. This will result in long term financial savings to the Nuclear Regulatory Commission and reduce environmental pollution caused by the non-renewable batteries.
3. In addition to the ten telemetered seismograph stations mentioned in section 1, the contractor will record four peripheral stations, BLA (Blacksburg, VA.), FVM (French Village, Mo.), and GPD (Green Pond, NJ.), and AAM (Ann Arbor, MI.). These stations are all transmitted to the Seismological Observatory through a cooperative arrangement with the National Earthquake Information Service. All data from sections 1 and 3 will be recorded simultaneously on visual recorders and in multiplexed form on magnetic tape.
4. The contractor will maintain seven seismoscopes installed in public hearings in the Anna, Ohio region. These instruments have been provided at no-cost to the contractor or the Nuclear Regulatory Commission by the Earthquake Engineering Branch of the U. S. Geological Survey. These instruments require three maintenance trips per year.
5. The contractor will continue seismological research with the data from the Anna Array, and a variety of computer programs to assess the seismic hazard from the Anna Ohio earthquake zone and the utility of the seismic array.
6. Evaluate by computerized analysis the seismic detection capabilities of the networks operated by the University of Michigan and St. Louis University, particularly in the region between the two networks (a possible northeastern extension of the New Madrid Seismic Zone).

7. Evaluate by field observation the background noise level at a number of potential seismographic station sites in the area of the extension.

Reports

A topical report fully describing the adapted version of the array evaluation algorithm shall be prepared and include flow diagrams, explanation of mathematics, explanation of input requirements, test deck and test results, input coding statements and compiled program. (Reference may be made to previous published work.) A program tape will be available from the Contractor in a tested and operable form compatible with hardware available to NRC.

- (b) The Principal Investigator expects to devote the following approximate amount(s) of time to the contract work:

F. J. Mauk - 100% of his time for two summer months. (One summer month in 1979 and one summer month in 1980)

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 | \$ <u>41,748.00</u> |
| (2) Equipment to be purchased or
fabricated by the Contractor | \$ <u>25,745.00</u> |
| <u>Equipment over \$1,000.00</u> | |

DEC Writer II LA-36 Computer Terminal w/multitech
FM 300 Acoustic Coupler 9-
Motorola Solar Power System for Field Station

- | | |
|--------------|--------------------|
| (3) Travel | |
| (i) Domestic | \$ <u>8,335.00</u> |
| (ii) Foreign | \$ <u>-0-</u> |

- (4) Other direct costs including fringe benefits
- (5) Indirect costs based on a predetermined rate of 68.7 percent applicable to salaries, wages and benefits.

- (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:

NONE

Article A-III

The total estimated cost of items under A-II(a) above for the contract period stated in this Appendix A is \$ 130,212.00 ; 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 \$130,212.00 .

The estimated NRC Support Cost is funded as follows:

- | | |
|---|---------------------|
| (a) Estimated unexpended balance from prior period(s) | \$ <u>-0-</u> |
| (b) New funds for the current period | \$ <u>31,084.00</u> |
| (c) The new funds being added in A-III(b) constitute the basis for advance payments provided under Article B-X. | |