

CONTRACT BETWEEN
THE UNIVERSITY OF KANSAS
AND
THE U. S. NUCLEAR REGULATORY COMMISSION

THIS AGREEMENT, effective the 1st day of July , 1982, by and between the UNITED STATES OF AMERICA (hereinafter referred to as the "Government"), as represented by the NUCLEAR REGULATORY COMMISSION (hereinafter referred to as the "Commission"), and THE UNIVERSITY OF KANSAS existing under the laws of the State of Kansas with its principal office in Lawrence, Kansas (hereinafter referred to as the "Contractor"),

WITNESSETH THAT:

WHEREAS, the Commission desires to have the Contractor perform certain research work, as hereinafter provided; and

WHEREAS, this 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, the parties hereto agree as follows:

ARTICLE I - THE RESEARCH TO BE PERFORMED

- (a) The Contractor shall, to the best of its ability, furnish personnel, facilities, equipment, materials, supplies, and services, except such as are furnished by the Government, necessary for the performance of the research provided for in Appendix A hereto, and shall perform the research and report thereon pursuant to the provisions of this contract. It is understood that Appendix A, a guide to the performance of this contract, may be deviated from by the Contractor subject to the specific requirements of this contract.
- (b) This work shall be conducted under the direction of Don W. Steeples and Ralph W. Knapp or such other members of the Contractor's staff as may be mutually satisfactory to the parties.

ARTICLE II - THE PERIOD OF PERFORMANCE

The period of performance under this contract shall commence on July 1, 1982 and expire on June 30 , 1985. Performance may be extended for additional periods by the mutual written agreement of the parties.

ARTICLE III - CONSIDERATION

- (a) In full consideration of the Contractor's performance hereunder, the Commission shall furnish the equipment, supplies, materials, and services, if any, listed in Article A-II(b) and pay the Contractor the sum of \$8,000.00, hereinafter called the "Support Ceiling" which sum shall be subject to adjustment as hereinafter provided.
- (b) Payments to the Contractor shall equal the "Cumulative Support Cost" of the performance of this contract, as the term "Cumulative Support Cost" is defined in Article B-XXVIII, provided, however, and notwithstanding any other provisions of this contract, that the Government's monetary liability under this contract shall not exceed the Support Ceiling specified in (a) above. The Commission shall not pay more than the Support Ceiling or an amount equal to the Cumulative Support Cost, whichever is less. The Contractor shall be obligated to perform under this contract throughout the agreed-upon period of performance, and to bear all costs which the Commission has not agreed to pay, provided, however, that the Contractor shall have the right to cease to perform the research provided for in this contract, upon written notice to the Commission to that effect, at any time when or after the Cumulative Support Cost equals or exceeds the Support Ceiling.
- (c) The Support Ceiling specified in (a) above may be increased unilaterally by the Commission by written notice to the Contractor and may be increased or decreased by written agreement of the parties (whether or not by formal modification to this contract). In the event the stated period of contract performance is extended, the Support Ceiling will be revised to reflect any increased Commission support for the extended period or periods.
- (d) Upon termination, or expiration of the total period of performance, the Contractor shall promptly refund to the Commission (or make such disposition as the Commission may in writing direct) any sums paid by the Commission to the Contractor under this contract, in excess of the Cumulative Support Cost incurred in performance under this contract.

ARTICLE IV - GOVERNMENT PROPERTY

The following items of property procured or fabricated by the Contractor are hereby listed as "Government property": None

ARTICLE V - APPENDICES

Appendix A, Appendix B - General Provisions and Appendix C - Statement of Costs, are hereby attached to and made a part of this contract.

ARTICLE VI - NONDISCRIMINATION

The Contractor agrees to comply with the Commission's Regulation (Part 4 of Title 10, Chapter 1, Code of Federal Regulations), as amended, effectuating the provisions of Title VI of the Civil Rights Act of 1964, and Title IV of the Energy Reorganization Act of 1974, as amended.

ARTICLE VII - CONFLICT OF INTEREST

The Contractor agrees to adopt policies and procedures, designed to avoid conflict-of-interest situations, which are in substantial conformance with the Joint Statement of the Council of American Association of University Professors and the American Council on Education of December 1964, entitled "On Preventing Conflicts of Interest in Government-Sponsored Research at Universities", which policies and procedures will be in connection with this contract.

ARTICLE VIII - ALTERATIONS

- a. Article B-XXII, Priorities, Allocations, and Allotments, of Appendix B is deleted in its entirety.
- b. In accordance with FPR Temporary Regulation No. 39, Article B-XXVII, Listings of Employment Openings, of Appendix B is deleted in its entirety and inserted in lieu thereof is the attached Article B-XXVII, Disabled Veterans and Veterans of the Vietnam Era.
- c. Article B-XXXII, Employment of the Handicapped, of Appendix B is deleted in its entirety and inserted in lieu thereof is the attached Article B-XXXII, Employment of the Handicapped.
- d. The attached Article B-XXXIII, Preference for U. S. Flag Air Carriers, is added to Appendix B.
- e. The attached Article B-XXXIV, Clean Air and Water, is added to Appendix B.
- f. Article B-VII, Patents, of Appendix B is deleted in its entirety and inserted in lieu thereof is the attached Article B-XXXV - Patent Rights (Small Business Firms or Non-Profit Organizations).

IN WITNESS WHEREOF, the parties have executed this document.

UNITED STATES OF AMERICA

BY: J. G. Morton

Kellogg V. Morton
Contracting Officer

(title)

Nuclear Regulatory Commission

BY: _____

Vice Chancellor

(title)

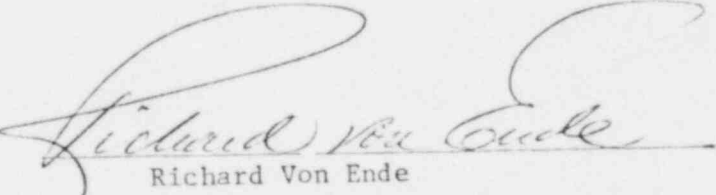
I, Richard Von Ende, certify that I am the
(attester)
Executive Secretary of the Contractor named
(title)

under this document; that Frances Degen Horowitz
(signatory)

who signed this document on behalf of said Contractor was then
Vice Chancellor of said Contractor; that
(title)

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.


Richard Von Ende

(SEAL)

CONTRACTOR: THE UNIVERSITY OF KANSAS

APPENDIX A

For the Contract period July 1, 1982 through June 30, 1985

Article A-I RESEARCH TO BE PERFORMED BY CONTRACTOR

- (a) The scope of work under this contract is unclassified and shall be in accordance with Contractor's proposal entitled, "Kansas Seismograph Network", and "Nebraska Seismograph Network" both dated March 3, 1982, and as jointly revised on May 17, 1982. Specifically, the Contractor shall perform the following tasks.

TASK 1 - Kansas Seismograph Network,

1. Design and install a 6-to-7 station seismograph network capable of recording and providing location data for earthquakes within the study area of the Kansas network (shown in Figure 1) down to $m_b 2.5$. The design of this network shall be fully compatible with the other networks being solicited in this RFP. The network shall be fully operational within 120 days of the effective date of the contract.
2. The preliminary geographical layout (station locations specified to within 8 km of final location) shall be submitted to the NRC for approval within 60 days of the effective date of the contract. The network shall have onsite recording or a central recording facility. The performance of the work specified in paragraph 1 above and in this paragraph 2 shall result in a fully operational network within 120 days of the effective date of the contract.
3. Operate the network (a) with a minimum of down time (less than 5% of time) for the individual stations and the central recording facility, and (b) with fully-trained personnel qualified to operate the equipment. The contractor shall provide a graphical representation of the temporal operational status of the network in each quarterly report.
4. Determine the hypocentral location and magnitude (a local scale tied to a regional scale and the Richter scale) of all earthquakes within the instrumented area down to $m_b 2.5$.
5. Conduct analyses of recorded data. The analyses will include, but not necessarily be limited to, the following:
 - a. Location of earthquakes within the study area including depth and assignment of a magnitude (the contractor shall note that accurate depth information is very important to this project);
 - b. Delineation of seismically active areas based on new and historic data;
 - c. Determination of fault motions and stress directions through the calculation of focal mechanisms, single event and composite, when practical;

- d. Study of the regional velocity structure using both earthquakes and explosions, such as quarry blasts; and
 - e. Study of the propagation characteristics of seismic waves in the study area.
6. With the concurrence of the PO, relocate or establish new stations as it becomes necessary.
 7. Report any interesting or significant earthquakes within the study area to the PO by telephone.

TASK 2 - Nebraska Seismograph Network

1. Design and install a 4-to-6 station seismograph network capable of recording and providing location data for earthquakes within the study area of the Kansas network (shown in Figure 1) down to $m_b \sim 2.5$. The design of this network shall be fully compatible with the other networks being solicited in this RFP. The network shall be fully operational within 120 days of the effective date of the contract.
2. The preliminary geographical layout (station locations specified to within 8 km of final location) shall be submitted to the NRC for approval within 60 days of the effective date of the contract. The network shall have onsite recording or a central recording facility. The performance of the work specified in paragraph 1 above and in this paragraph 2 shall result in a fully operational network within 120 days of the effective date of the contract.
3. Operate the network (a) with a minimum of down time (less than 5% of time) for the individual stations and the central recording facility, and (b) with fully-trained personnel qualified to operate the equipment. The contractor shall provide a graphical representation of the temporal operational status of the network in each quarterly report.
4. Determine the hypocentral location and magnitude (a local scale tied to a regional scale and the Richter scale) of all earthquakes within the instrumented area down to $m_b \sim 2.5$.
5. Conduct analyses of recorded data. The analyses will include, but not necessarily be limited to, the following:
 - a. Location of earthquakes within the study area including depth and assignment of a magnitude (the contractor shall note that accurate depth information is very important to this project);
 - b. Delineation of seismically active areas based on new and historic data;

- c. Determination of fault motions and stress directions through the calculation of focal mechanisms, single event and composite, when practical;
 - d. Study of the regional velocity structure using both earthquakes and explosions, such as quarry blasts; and
 - e. Study of the propagation characteristics of seismic waves in the study area.
- 6. With the concurrence of the PO, relocate or establish new stations as it becomes necessary.
 - 7. Report any interesting or significant earthquakes within the study area to the PO by telephone.

(b) The Principal Investigators expect to devote the following approximate amount(s) of time to the contract work:

Don W. Steeples - Ten (10) hours per week throughout the contract period
Ralph W. Knapp - Five (5) hours per week throughout the contract period

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 \$ 77,158.00
- (2) Equipment to be purchased or fabricated by the Contractor \$ 27,980.00

Items Estimated to Cost More Than \$1,000.00

Drum Recorders for 3 stations	\$11,000.00
Telemetry equipment for 6 stations	9,060.00
Portable frequency counter and oscilloscope	2,000.00
Installation hardware for 6 stations	2,400.00
Batteries and solar chargers for 6 stations	1,800.00

Items Estimated to Cost Less Than \$1,000.00

Discriminator Rack and Power Supply	\$ 765.00
Spare telemetry components	955.00

- (3) Travel
 - (i) Domestic \$ 12,860.00
 - (ii) Foreign \$ -0-
- (4) Other direct costs including fringe benefits
- (5) Indirect costs based on a predetermined rate of 37 percent applicable to Modified Total Direct Cost.

(b) Items, if any, significant to the performance of this contract, but excluded from computation of Support Cost and from consideration in proportioning costs: NRC CONTRIBUTION: NRC shall directly contract with the applicable telephone company(s), to provide telephone telemetry services, for the transmission of seismic network data gathered by the contractor for this contract.

(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:

Don W. Steeples - Ten (10) hours per week throughout the contract period
Raiph W. Knapp - Five (5) hours per week throughout the contract period

Article A-III

The total estimated cost of items under A-II(a) above for the contract period stated in this Appendix A is \$203,629.00 ; 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 \$203,629.00 .

The estimated NRC Support Cost is funded as follows:

- (a) Estimated unexpended balance from prior period(s) \$ -0-
- (b) New funds for the current period \$ 8,000.00
- (c) The new funds being added in A-III(b) constitute the basis for advance payments provided under Article B-X.