

6100979

1. CONTRACT (Proc. Inst. Ident.) NO. **DR-AS07-79ID12057** 2. EFFECTIVE DATE **7-1-79** 3. REQUISITION/PURCHASE REQUEST/PROJECT NO. _____ 4. CERTIFIED FOR NATIONAL DEFENSE UNDER 150A REG. 2 AND/OR DMS REG. 1. RATING: _____

5. ISSUED BY CODE: _____ 6. ADMINISTERED BY CODE: _____ (If other than block 5)
**U.S. Department of Energy
Idaho Operations Office
Contracts Management Division
550 Second St. Idaho Falls ID 83401**

7. DELIVERY FOR DESTINATION: OTHER (See below):

8. CONTRACTOR NAME AND ADDRESS CODE: _____ FACILITY CODE: _____ 9. DISCOUNT FOR PROMPT PAYMENT: _____
**Bureau of Economic Geology
University of Texas at Austin
University Station, Box X
Austin, Texas 78712**

10. SUBMIT INVOICES (4 copies unless otherwise specified) TO ADDRESS SHOWN IN BLOCK _____

11. SHIP TO/MARK FOR CODE: _____ 12. PAYMENT WILL BE MADE BY CODE: _____

13. THIS PROCUREMENT WAS ADVERTISED, NEGOTIATED, PURSUANT TO: 10 U.S.C. 2304 (a)(1) **PL 95-91**
 41 U.S.C. 251 (a)(1)

14. ACCOUNTING AND APPROPRIATION DATA
AE-10-02-020 89X021.91 ID 90-91

15. ITEM NO.	16. SUPPLIES/SERVICES	17. QUANTITY	18. UNIT	19. UNIT PRICE	20. AMOUNT
<p>Services in accordance with the attached Special Research Contract including the Contract, Appendix A, Appendix B, Appendix C and Appendix D for a project entitled "Quantitative Hydrologic Assessment of Cretaceous Geothermal Aquifers and Regional Study of Geothermal Potential from Tertiary and Paleozoic Strata in Central Texas and Statewide Survey of Temperatures of Deep Aquifers in Texas"</p> <p style="text-align: right;">TEXAS BEG CONTRACT</p> <p style="text-align: center;">CONFIRMED COPY</p>					

21. TOTAL AMOUNT OF CONTRACT \$ **327,202.00**

CONTRACTING OFFICER WILL COMPLETE BLOCK 22 OR 26 AS APPLICABLE

22. CONTRACTOR'S NEGOTIATED AGREEMENT (Contractor is required to sign this document and return 2 copies to issuing office.) Contractor agrees to furnish and deliver all items or perform all the services set forth or otherwise identified above and on any continuation sheets for the consideration stated herein. The rights and obligations of the parties to this contract shall be subject to and governed by the following documents: (a) this award/contract, (b) the solicitation, if any, and (c) such provisions, representations, certifications, and specifications, as are attached or incorporated by reference herein. (Attachments are listed herein.)

25. AWARD (Contractor is not required to sign this document.) Your offer on Solicitation Number _____, including the additions or changes made by you which additions or changes are set forth in full above, is hereby accepted as to the items listed above and on any continuation sheets. This award consummates the contract which consists of the following documents: (a) the Government's solicitation and your offer, and (b) this award/contract. No further contractual document is necessary.

23. NAME OF CONTRACTOR
BY [Signature]
Signature of person authorized to sign
THE UNIVERSITY OF TEXAS AT AUSTIN

27. UNITED STATES OF AMERICA
BY [Signature]
Signature of Contracting Officer

24. NAME AND TITLE OF SIGNER (Type or print)
**G. J. Fonken
Vice-President for Research**

28. NAME OF CONTRACTING OFFICER (Type or print)
John X. Combo, Acting Manager

29. DATE SIGNED
9/27/79 **SEP 24 1979**

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CONTRACT BETWEEN
UNIVERSITY OF TEXAS AT AUSTIN

AND

THE DEPARTMENT OF ENERGY

THIS CONTRACT is between the UNITED STATES OF AMERICA (hereinafter referred to as the "Government"), acting through the U.S. DEPARTMENT OF ENERGY (hereinafter referred to as "DOE"), and the UNIVERSITY OF TEXAS AT AUSTIN (hereinafter referred to as the "Contractor").

Recitals

DOE wishes to have the Contractor perform certain research. This contract states the terms and conditions under which the Contractor agrees to perform the work.

This contract is authorized by the Department of Energy Organization Act of 1977 and other applicable law.

Agreement

Now, therefore, the parties hereto agree as follows:

ARTICLE I - THE RESEARCH TO BE PERFORMED

(a) The Contractor shall 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 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 Charles M. Woodruff, Jr. or such other member 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, 1979 and expire on September 30, 1980. Performance may be extended for additional periods by the mutual written agreement of the parties. It is presently expected that this contract will be extended by mutual agreement until September 30, 1981.

ARTICLE III - CONSIDERATION

(a) In full consideration of the Contractor's performance hereunder, DOE shall furnish the equipment, supplies, materials, and services, if any, listed in Article A-II(b)(2), and pay the Contractor the sum of Three Hundred Twenty-Seven Thousand Two Hundred Two Dollars (\$327,202.00), hereinafter called the Government "Ceiling," which sum shall be subject to adjustment as hereinafter provided.

(b) Payments to the Contractor shall equal the "cumulative Government cost" of the performance of this contract, as the term "cumulative Government cost" is defined in Article B-XXIX, provided however, and notwithstanding any other provision of this contract, that the Government's monetary liability under this contract shall not exceed the Government ceiling or an amount equal to the cumulative Government 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 DOE 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 DOE to that effect, at any time when or after the cumulative Government cost equals or exceeds the Government ceiling.

(c) The Government ceiling specified in paragraph (a) above may be increased unilaterally by DOE 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 Government ceiling will be revised to reflect any increased DOE funding for the extended period or periods.

(d) Upon termination or expiration of the total period of performance, the Contractor shall promptly refund to DOE (or make such disposition as DOE may in writing direct) any sums paid by DOE to the Contractor under this contract, through direct payment or under letter of credit, in excess of the cumulative Government cost incurred in performance under the 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 - DATE OF INCURRENCE OF COSTS

The Contractor shall be entitled to reimbursement for costs incurred in an amount not to exceed Fifty Thousand Dollars (50,000.00) on or after July 1, 1979, which, if incurred after this contract had been entered into, would have been reimbursable under the provisions of this contract.

ARTICLE VI - APPENDICES

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

APPENDIX A

CONTRACTOR: UNIVERSITY OF TEXAS AT AUSTIN

For the contract period from July 1, 1979 through September 30, 1980.

Article A-1 - RESEARCH TO BE PERFORMED BY CONTRACTOR

The scope of work under this contract is unclassified, and the Contractor under this contract with the Department of Energy will perform research described in proposals entitled "Quantitative Hydrologic Assessment of Cretaceous Geothermal Aquifers and Regional Study of Geothermal Potential from Tertiary and Paleozoic strata in Central Texas" and "State wide Survey of Temperatures of Deep Aquifers in Texas" as modified in discussions with DOE. The entire project will take two years. The specific detailed statement of research for the first year consists of the following:

Task 1 - Quantitative hydrologic assessment of three cretaceous aquifers (Hosstom/Trinity; Paluxy; Woodbine) identified during previous 1 year regional overview.

Subtask

0

- a. Search water-well files for single pump drawdown tests, for data used in computing transmissibility, storage coefficient, and hydraulic conductivity.
- b. Encode data obtained from tile search; run programs for T, C, & S.
- c. Begin plotting T, C, and S for final map.
- d. Prepare a tentative (incomplete data base) map showing hydraulic properties of the three cretaceous aquifers).

Task 2 - State-Wide Lineament Survey

Subtask

- a. Acquire landsat images for entire state of Texas.
- b. Assess landsat images for lineaments; using both Band-5 and enhanced color images; 3 man-hours for each image, then make composite of lineaments for each of the two types of image surveyed. Compare and evaluate.
- c. Compile lineaments at scale of 1:250,000 for cartographic transfer at a scale of 1:1,000,000.
- d. Prepare a lineament map of Texas at scale of 1:1,000,000.

Article A-1 - RESEARCH TO BE PERFORMED BY CONTRACTOR (Cont'd)

Task 3 - Application of Lineament Survey to Faults affecting the 3 major cretaceous aquifers

Subtask

- a. Compile all faults mapped on structural maps during previous (regional stratigraphic) overview.
- b. Compile all lineaments covering area along the 3 major cretaceous aquifers.
- c. Compare faults to lineaments.
- d. Compare faults and lineaments to geothermal data (including water temperatures, or geothermal gradient data already prepared during previous (overview) study.
- e. Prepare a fault and lineament map of central Texas for comparison to hydraulic data (see Task 1).

Task 4 - State-Wide Water Temperature Measurements

Subtask

- a. Survey water quality (temp.) data files at Texas Department of Water Resources; locate aquifers as potential geothermal targets; survey water level data files to locate target wells.
- b. Begin water temperature field measurements for the following areas:
 - (1) Balcones and Inner Coastal Plain
 - (2) Trans Pecos Area
 - (3) High Plains
- c. Prepare a partial aquifer temperature map for Texas, including cretaceous and tertiary aquifers along inner coastal plain, and unknown aquifers in Trans Pecos and High Plains.

Task 5 - State-Wide Geothermal Gradient Map

Subtask

- a. Acquire basic data including electric logs w/BHT, and county well location maps.

Article A-1 - RESEARCH TO BE PERFORMED BY CONTRACTOR (Cont'd)

- b. Encode BHT (as corrected), and locate geothermal control points.
- c. Continues encoding of a log data for programming to give geothermal gradient.
- d. Prepare a partial geothermal gradient map of Texas.

Task 6 - Provide Data to USGS Geotherml file

Task 7 - Publish Generalized (Public) Geothermal Map of Texas

Article A-II - WAYS AND MEANS OF PERFORMANCE

- (a) Items for which funding will be provided for effort during the initial term are as indicated below:

Salaries and Wages:	\$177,189
Indirect Costs at 26%	
for 7/1/79-8/31/79 and	
18% for 9/1/79-9/30/80	26,667
Other Direct Costs	83,767
Travel	12,804
Subcontract to Texas Dept. of	
Water Resources	26,775
	<u>\$327,202</u>

Items for the subsequent term and the balance of the funding provided in A-III below will be defined when the contract is extended.

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

None

- (c) Time or effort of principal investigator(s) contributed by the Contractor but excluded from computation of Government cost and consideration in proportioning costs:

None

Article A-II - WAYS AND MEANS OF PERFORMANCE (Cont'd)

Article A-III - FUNDING

The total estimated cost of items under A-II(a) above for the contract period stated in this Appendix A is \$327,202; DOE will pay 100% of the actual costs of these items incurred during the contract period stated in the Appendix A, subject to the provisions of Article III and Article B-XXIX. The estimated Government cost for the contract period stated in this Appendix A is \$327,202.

The estimated Government cost is funded as follows:

- | | |
|---|-------------------|
| (a) Estimated unexpended balance from prior period(s) | \$ <u>-0-</u> |
| (b) New funds for the current period | \$ <u>327,202</u> |

Article A-IV - ADMINISTRATION AND REPORTS

- (a) Principal Investigator - Charles M. Woodruff, Jr.
Bureau of Economic Geology
University of Texas at Austin
University Station, Box X
Austin, Texas 78712
Telephone (512) 471-1534

Technical Administrator - Dr. L. L. Mink
(DOE's Project Manager) Energy & Technology Division
DOE Idaho Operations Office
550 Second Street
Idaho Falls, Idaho 83401
Telephone (208) 526-0638

The Principal Investigator shall be responsible for directing the work within the scope of Article A-I above as outlined in discussions and in periodic letters from the Technical Administrator.

- (b) The Principal Investigator is responsible for the preparation and submission of reports to the Technical Administrator in accordance with Appendix D, DOE Form CR-537.

M. Widmayer

file M.2.20

AUG 24 1979

RECEIVED
AUG 28 1979
GEOTHERMAL ENERGY
BRANCH

Bureau of Economic Geology
The University of Texas at Austin
University Station, Box X
Austin, Texas 78712

Attention: C. M. Woodruff, Jr., Principal Investigator

Subject: ADVANCE AGREEMENT TO COVER PRECONTRACT COSTS -
GEOTHERMAL RESOURCE ASSESSMENT FOR THE STATE
OF TEXAS - PROPOSED CONTRACT NO. DE-AS07-79ID12057

Gentlemen:

This letter replaces my letter of July 11, 1979, on the same subject. You are hereby authorized as of July 1, 1979, to incur costs not to exceed Fifty Thousand Dollars (\$50,000.00) for initiating work under the subject project. Your proposals shall be used as interim guides pending completion of the subject contract.

The allowable costs for these efforts shall include appropriate and reasonable labor, subcontracting, travel, and administrative costs. Allowable costs are defined in Parts 1-15, Title 41, of the Code of Federal Regulations.

The resulting contract shall contain the following article:

"DATE OF INCURRENCE OF COSTS

The Contractor shall be entitled to reimbursement for costs incurred in an amount not to exceed Fifty Thousand Dollars (\$50,000.00) on or after July 1, 1979, which, if incurred after this contract had been entered into, would have been reimbursable under the provisions of this contract."

Bureau of Economic Geology
The University of Texas at Austin

-2-

AUG 24 1979

Kent Hastings in my office has been assigned to negotiate the resulting contract and can be reached on 208-526-1510.

Very truly yours,

Original Signed By
Lois D. Anderson

Lois D. Anderson, Chief
Contract Negotiation Branch
Contracts Management Division
Contracting Officer

CM

bcc: F. S. Smith
E. G. Jones
M. Widmayer

CNB
KRHastings:mh
8/21/79

E&T
MWidmayer

P&B
FSSmith

FM
EGJones

CMD/AMA
NCAquilina

CNB
LDAnderson

U. S. DEPARTMENT OF ENERGY
PROCUREMENT/FINANCIAL ASSISTANCE REQUEST-AUTHORIZATION

1. TO Lois Anderson, Chief, Contracts and Negotiations Branch, DOE-ID

2. FROM INITIATING OFFICE R.E. Wood, Director, Energy Technology Division

3. INITIAL: UPDATE: 4. PROCUREMENT: FINANCIAL ASSISTANCE:
5. PR NUMBER: _____ 6. PR CORRECTION LETTER: _____ 7. RELATED PR NUMBER: _____

ACTION IDENTIFICATION

8. TITLE: Geothermal Resource Assessment for the State of Texas

9. UNSOLICITED PROPOSAL NO: _____ 10. PROJECT NO: _____ 11. CFDA NO: _____
12. PRODUCT OR SERVICE: * AG3 13. SUPPORT SERVICES: YES NO 14. CONSULTANT AWARD: YES NO
15. CONTROLLED DELIVERABLE: * ALY 16. REPORT/DRAWING REQ: YES NO IF YES, ATTACH DETAILS.
17. CLASSIFICATION OF MATERIALS/WORK: U U-UNCLASSIFIED C-CONFIDENTIAL S-SECRET T-TOP SECRET
18. GOVERNMENT PROPERTY: N F-FURNISHED P-PURCHASED N-NOT INVOLVED IF CODE F OR P, ATTACH DETAILS.

AWARD PLANNING

19. AWARD AS ORDER UNDER BIN: DE-AS07-79ID12057 IF CODE T, _____
20. DESIRED AWARD DATE: 07 01 79 21. KIND OF AWARD ACTION: * 1A 22. TYPE OF AWARD: * X ATTACH DETAILS.
23. IF MULTI-YEAR AWARD, INDICATE NUMBER OF YEARS: _____ 24. TYPE SOLICITATION INSTRUMENT: * _____
25. EXTENT OF COMPETITION: * _____ IF COMPETITIVE, ATTACH TECHNICAL EVALUATION PLAN. IF NON-COMPETITIVE, ATTACH JUSTIFICATION. REF: DOE-PR 9-3,805,51 or 9-4,909(f).
26. SOURCE SELECTION PROCEDURE: 4 1-A-E 2-SEB 3-OTHER 4-NONE
27. FOR A-E, SHOW ESTIMATED CONSTRUCTION COST IN DOLLARS: _____

AWARDEE

IF COMPETITIVE, HAS LIST OF SOURCES BEEN ATTACHED? YES NO IF NON-COMPETITIVE, COMPLETE 28-31.
28. NAME: University of Texas at Austin 29. ADDRESS: University Station Box X Austin, Texas 78712
30. DIVISION: Bureau of Economic Geology
31. GOCO/LAB: A A-GOCO/LAB B-GOCO/NON-LAB C-NON-GOCO/LAB D-NOT APPLICABLE

FINANCIAL

AWARD VALUE
32. GOV'T SHARE 390,000
33. TOTAL 390,000
34. CONSIDERATION IN KIND, LOAN, OR LOAN
GUARANTEE DATA REPORTED ON PR-799C:
35. PROJECT PERIOD: FROM 07 01 79 THRU 06 30 81

PROJECT MANAGER

45. NAME: Leland L. Mink
46. SIGNATURE: Leland Mink
47. DATE: 06 25 79 48. OFFICE CODE: _____
49. FTS TELEPHONE NUMBER: 503-0638

CURRENT FY FUNDS COMMITTED

36. B&R NUMBER	37. FUND CLASS	38. DOLLAR AMOUNT
<u>AE10-02-020</u>	<u>E</u>	<u>318,750</u>
-----	-----	-----
-----	-----	-----
39. FROM PR-799B (PART A)		<u>318,750</u>
40. TOTAL THIS PR		<u>318,750</u>
41. FUNDING PERIOD: FROM <u>07 01 79</u> THRU <u>06 30 81</u>		
42. APPROPRIATION SYMBOL: <u>89X0210.91</u>		
43. ALLOTMENT SYMBOL: <u>10-90-91</u>		
44. OBJECT CLASS: _____		

PROGRAM OFFICIAL

50. NAME: R.E. Wood
51. SIGNATURE: R. E. Wood
52. DATE: 06 26 79

CERTIFYING OFFICIAL

53. NAME: F.S. Smith
I HEREBY CERTIFY THAT THE FUNDS CITED IN ITEM 40 ARE AVAILABLE.
54. SIGNATURE: _____
55. DATE: _____

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. AMENDMENT/MODIFICATION NO. A001	2. EFFECTIVE DATE	3. REQUISITION/PURCHASE REQUEST NO	4. PROJECT NO. (If applicable)
5. ISSUED BY U. S. Department of Energy Idaho Operations Office 550 Second Street Idaho Falls, Idaho 83401	CODE	6. ADMINISTERED BY (If other than block 5)	CODE File M.2.20

7. CONTRACTOR NAME AND ADDRESS Bureau of Economic Geology The University of Texas at Austin University Station, Box X Austin, Texas	CODE	FACILITY CODE	8. AMENDMENT OF SOLICITATION NO. DATED _____ (See block 9) MODIFICATION OF CONTRACT/ORDER NO. DE-AS07-79ID12057 DATED 9-27-79 (See block 11)
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9. THIS BLOCK APPLIES ONLY TO AMENDMENTS OF SOLICITATIONS

The above numbered solicitation is amended as set forth in block 12. The hour and date specified for receipt of Offers is extended, is not extended.

Offerors must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation, or as amended, by one of the following methods:

(a) By signing and returning _____ copies of this amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGEMENT TO BE RECEIVED AT THE ISSUING OFFICE PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If, by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided such telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

10. ACCOUNTING AND APPROPRIATION DATA (If required)

AM 1510	89X0244.91	ID-04-91	250
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11. THIS BLOCK APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS

(a) This Change Order is issued pursuant to _____
The Changes set forth in block 12 are made to the above numbered contract/order.

(b) The above numbered contract/order is modified to reflect the administrative changes (such as changes in paying office, appropriation data, etc.) set forth in block 12.

(c) This Supplemental Agreement is entered into pursuant to authority of agreement of the Parties.
It modifies the above numbered contract as set forth in block 12.

12. DESCRIPTION OF AMENDMENT/MODIFICATION

1. Article II is modified by adding the following:
"The performance of Task 8 in this Modification No. A001 will begin on July 1, 1980 and is estimated to be completed by November 1, 1980."

2. Article III Paragraph (a) is modified to increase the Government ceiling by \$50,077 to a revised ceiling of \$377,279.

3. A new Article VII is hereby added as follows:
"ARTICLE VII - DATE OF INCURRENCE OF COSTS - MODIFICATION NO. A001. The Contractor shall be entitled to reimbursement for costs incurred in an amount not to exceed Twenty-five Thousand Dollars (\$25,000.00) on or after July 1, 1980, which, if incurred after this contract had been entered into, would have been reimbursable under the provisions of this contract."

CONTINUED

Except as provided herein, all terms and conditions of the document referenced in block 8, as heretofore changed, remain unchanged and in full force and effect.

13. CONTRACTOR/OFFEROR IS NOT REQUIRED TO SIGN THIS DOCUMENT CONTRACTOR/OFFEROR IS REQUIRED TO SIGN THIS DOCUMENT AND RETURN 3 COPIES TO ISSUING OFFICE

14. NAME OF CONTRACTOR/OFFEROR BY <u>[Signature]</u> (Signature of person authorized to sign)	17. UNITED STATES OF AMERICA BY <u>[Signature]</u> (Signature of Contracting Officer)
---	---

15. NAME AND TITLE OF SIGNER (Type or print) President for	16. DATE SIGNED SEP 16 1980	18. NAME OF CONTRACTING OFFICER (Type or print) Neil W. Fraser	19. DATE SIGNED
---	--------------------------------	---	-----------------

4. Article A-I is modified by addint the following new task:

"Task 8 EVALUATION OF GEOTHERMAL POTENTIAL AT SELECTED MILITARY BASES IN CENTRAL TEXAS

Conduct a reconnaissance survey for geothermal resource potential in Bexar, Travis, and Val Verde Counties where selected military bases are located. Information will include temperature measurements and hydraulic properties of promising stratigraphic units yielding warm water. These data will be encoded into the BEG Master Data File. Maps depicting structure and stratigraphy of the geothermal potential will be constructed. A final report will accompany the maps describing the evaluation of use-potential in each of the three counties."

5. Article A-II Paragraph (a) is modified as follows:

"Items for which funding will be provided for effort on Task 8 are as indicated below:

Salaries and Wages:	\$17,011
Indirect Costs:	7,357
Other Direct Costs:	25,359
Travel:	<u>350</u>
	\$50,077"

6. Article A-III is modified to increase the total estimated cost of performance by \$50,077 to a revised estimate of \$377,279. These funds are provided with this Modification.

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. AMENDMENT/MODIFICATION NO. A002	2. EFFECTIVE DATE	3. REQUISITION/PURCHASE REQUEST NO.	4. FUND NO. (if applicable)
--	-------------------	-------------------------------------	-----------------------------

ISSUED BY U. S. Department of Energy Idaho Operations Office 650 Second Street Idaho Falls, Idaho 83401	5. ADMINISTERED BY (If other than GPO)
---	--

CONTRACTOR NAME AND ADDRESS Bureau of Economic Geology The University of Texas at Austin University Station, Box X Austin, Texas	6. AMENDMENT OF SOLICITATION NO. DATED _____ (See block 2)
CONTRACTOR CODE	7. MODIFICATION OF CONTRACT/ORDER NO. DE-AS97-79ID12057 DATED 9-27-79 (See block 1)

THIS BLOCK APPLIES ONLY TO AMENDMENTS OF SOLICITATIONS

The above numbered solicitation is amended as set forth in block 12. The hour and date specified for receipt of offers is extended, is not extended.

Offerors must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation, or as amended, by one of the following methods:

(a) By signing and returning _____ copies of this amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGEMENT TO BE RECEIVED AT THE ISSUING OFFICE PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If, by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided such telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

8. ACCOUNTING AND APPROPRIATION DATA (If required)

AM 1510 and 35AM15 89X0224.91 ID-04-91 250

THIS BLOCK APPLIES ONLY TO MODIFICATIONS OF CONTRACTS, ORDERS

(a) This Change Order is issued pursuant to _____
The changes set forth in block 12 are made to the above numbered contract/order.

(b) The above numbered contract/order is modified to reflect the administrative changes (such as changes in paying office, appropriation data, etc.) set forth in block 12.

(c) This Supplemental Agreement is entered into pursuant to authority of agreement of the Parties.
It modifies the above numbered contract as set forth in block 12.

9. DESCRIPTION OF AMENDMENT/MODIFICATION

1. Article I, Research to be Performed, is amended by adding a new paragraph as follows:

"Appendix A-2, 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. Article II, The Period of Performance, is amended as follows:

"The period of performance for the work performed under this Supplemental Agreement shall commence on October 1, 1980, and expire on October 31, 1981. The period of time for performing the research work under Appendix A-2 may be extended for additional periods by the mutual written agreement of the parties."

3. Article III Paragraph (a) is revised to add the following:

"It is estimated that the total cost to the Government for work described in Appendix A-2 is \$257,000. The amount presently obligated by the

Except as provided herein, all terms and conditions of the document referenced in block 8, as heretofore changed, remain in full force and effect.

13. CONTRACTOR/OFFEROR IS NOT REQUIRED TO SIGN THIS DOCUMENT CONTRACTOR/OFFEROR IS REQUIRED TO SIGN THIS DOCUMENT AND RETURN 2 COPIES TO ISSUING OFFICE

14. NAME OF CONTRACTOR/OFFEROR **THE UNIVERSITY OF TEXAS AT AUSTIN**

15. NAME AND TITLE OF SIGNER (Type or print)
J. J. Fonken
Vice-President for Economic Affairs and Research

16. DATE SIGNED
SEP 30 1980

17. UNITED STATES OF AMERICA

18. NAME OF CONTRACTING OFFICER (Type or print)
Nell W. Fraser

19. DATE SIGNED
SEP 3 4 1980

Modification No. A002 (Cont'd)
Contract No. DE-AS07-79ID12057

Government with respect to this Modification No. A002 is \$109,000. The balance of the support to equal the total estimated cost of \$257,901 will be obligated when and if available. The Government will not be liable to pay to the contractor any amount in excess of the amount obligated, and when the amount payable under this contract equals 100% of the amount obligated hereunder the contractor will be excused from further performance until the Contracting Officer thereafter increases the funds obligated."

4. Article IV, Government Property is amended by listing the following item:

Digitizing Board (3' x 4')

CONTRACTOR: UNIVERSITY OF TEXAS AT AUSTIN

2

Appendix A2

For contract period October 1, 1980 through October 31, 1981.

ARTICLE A-1 - RESEARCH TO BE PERFORMED BY CONTRACTOR

Statement of Work

Task 1 Statewide Water Temperature Measurements

- a) A continuation of area-by-area water temperature measurements will be performed. Water chemistry analyses will be conducted as needed to identify different suites of geochemistry.
- b) Computer files will be maintained for all data developed under this contract. Data will be submitted to the USGS GEOTHERM file on water chemistry, hole/spring location, and temperature.
- c) All data will be maintained and interpreted for usefulness towards a technical map which will be produced in 1982.

Task 2 Geologic and Hydrologic Assessments

Area - specific studies of geothermal potential will be conducted in the Dallas, Austin, and Marlin, Texas areas. Study will include detailed assessments of structural configuration, lineament analysis, sand-body geometry (i.e., isopach mapping and sand:shale ratios), geochemical attributes, and hydrogeologic setting.

An investigative report will be produced for the Central Texas region describing the resource base in the region, usefulness of resources, and a compilation of data available for the region. This report will be published as a BEG report, as part of the cost-share of this project.

Task 3 Lineament Survey and Analysis

Lineament surveys conducted during 1979-80 will be digitized for computer analyses to include: lineament azimuths, density per unit area, length of lineaments versus number of lineaments, correlation of lineaments to other known geological and structural evidence of geothermal resources. A report will be produced describing the usefulness of lineament surveys as an exploration technique in Texas sedimentary environments. This report will be published as a BEG report, as part of the cost-share of this project. A map at a scale of 1:1,000,000 will be developed to accompany this report.

Task 4 Central Texas Military Bases

Continued study of geothermal resources on Military Bases in Val Verde, Bexar, and Travis Counties will be conducted. A final report of the resource potential for each site will be developed describing resource base, temperatures, location, water chemistry, and usefulness of the geothermal potential. Recommendations to the Department of Defense will be made in the report for continued resource investigation and development of any resources found in this study.

Task 5 Reports

Reports will be prepared in accordance with DOE reporting requirements as set forth in the attached DOE-CR-537.

ARTICLE A-II - WAYS AND MEANS OF PERFORMANCE

(a) Items for which support will be provided are as follows:

Salaries	\$131,792
Fringe Benefits	32,949
Vac. & Sick Leave Benefits	1,318
Indirect Costs	23,723
Other Direct Costs	44,809
Expendable Supplies	2,500
Computer Expense	1,610
Equipment	8,000
Publication Expense	1,000
Travel	10,200
Total Budget	\$257,901

(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 cost and fringe benefits contributed by the Contractor but excluded from computation of Support Cost and consideration in proportioning costs:

None

ARTICLE A-III - FUNDING

The total estimated cost of items under A-II(a) above, for the contract period stated in this Appendix A2, is \$257,901. DOE will pay 100% of the actual costs of these items incurred during the contract period stated in this Appendix A2, subject to the provisions of Article III and Article B-V. The estimated DOE Support Cost for the contract period stated in this Appendix A2 is \$257,901.

(a) Estimated unexpended balance from prior period(s)	\$ <u> -0-</u>
(b) Revised funds for the current period	\$ <u> 257,901</u>

U. S. DEPARTMENT OF ENERGY
REPORTING REQUIREMENTS CHECKLIST

DOE Form CR-537
 (1-78)

(See Instructions on Reverse)

FORM APPROVED
 OMB NO. 38R-0190

1. IDENTIFICATION	2. OBLIGATION INSTRUMENT: DE-AS07-79ID12057 Modification No. A002
-------------------	---

3. REPORTING REQUIREMENTS

A. PROJECT MANAGEMENT	Frequency	B. TECHNICAL INFORMATION REPORTING	Frequency
1. <input type="checkbox"/> Management Plan		1. <input checked="" type="checkbox"/> Notice of Energy RD&D Project (SSIE)	O
2. <input type="checkbox"/> Milestone Schedule & Status Report		2. <input checked="" type="checkbox"/> Technical Progress Report	M
3. <input type="checkbox"/> Cost Plan		3. <input checked="" type="checkbox"/> Topical Report	Y
4. <input type="checkbox"/> Manpower Plan		4. <input checked="" type="checkbox"/> Final Technical Report	Y
5. <input checked="" type="checkbox"/> Contract Management Summary Report	M	C. PMS/MINI-PMS	
6. <input checked="" type="checkbox"/> Project Status Report	M		
7. <input type="checkbox"/> Cost Management Report			
8. <input type="checkbox"/> Manpower Management Report			
9. <input type="checkbox"/> Conference Record			
10. <input type="checkbox"/> Hot Line Report		1. Cost Performance Report	
		<input type="checkbox"/> Format 1 WBS	
		<input type="checkbox"/> Format 2 Functional	
		<input type="checkbox"/> Format 3 Baseline	
		<input type="checkbox"/> Format 5 Problem Analysis	
		2. <input type="checkbox"/> Cost/Schedule Status Report	
		3. <input type="checkbox"/> Management Control System Description	
		4. <input type="checkbox"/> Summary System Description	
		5. <input type="checkbox"/> WBS Dictionary	

FREQUENCY CODES: A - As Required C - Contract Change F - Final (End of Contract) M - Monthly O - One Time (Soon After Contract Award)	Q - Quarterly S - Semi-Annually X - Mandatory for Delivery with Proposals/Bid Y - Yearly or Upon Contract Renewal
--	--

4. SPECIAL INSTRUCTIONS

A.5. and A.6. - Copies are due within fifteen days after end of the calendar month.

B.2. - Copies are due within fifteen days after end of the calendar month.

B.3. - Submit 2 copies in draft forty-five days prior to completion of the yearly term. After DOE approval is received, submit copies as required on attached "Report Distribution List."

B.4. - Submit 2 copies in draft forty-five days prior to completion date of contract term. After DOE approval is received, submit eleven copies including one camera-ready copy.

5. ATTACHED HEREWITH:

Report Distribution List

WBS/Reporting Category

6. PREPARED BY (Signature and date)	7. REVIEWED BY (Signature and date)
-------------------------------------	-------------------------------------



ID F-129 (Rev. 08-79)
 Ref. DOE 13302
 (use with DOE CR-537)

U.S. DEPARTMENT OF ENERGY
 IDAHO OPERATIONS OFFICE
REPORT DISTRIBUTION LIST

Contract No.	Report Types														
	Milestone Schedule & Status Management Plan	Contract Management & Status Report	Manpower Management Summary Report	Project Status Report	Manpower Plan	Cost Management Report	Notice of Energy	Conference Report	Technical RD&D Project	Hot Line Report	Final Technical Report	Topical Report	Cost/Schedule Status Report	Summary System Description	WBS Dictionary
DE-AS07-79ID12057 Modification No. A002															
Addressees	Number of Report Copies														
U. S. Department of Energy Idaho Operations Office 550 Second Street Idaho Falls, Idaho 83401															
Attn: M. A. Widmayer Energy & Technology Division							2	2					2	2	12
Attn: Nell W. Fraser, Director Contracts Management Division							1	1					1	1	1
Attn: E. G. Jones, Director Financial Management Division							1	1							
Bob Gray U. S. Department of Energy Division of Geothermal Energy MS 3344 Federal Building 12th and Penn., N.W. Washington, DC 20461							2	2					2	2	
Duncan Foley UURI 420 Chipeta Way, Suite 120 Salt Lake City, UT 84108							1	1					1	1	
Special Instructions															

U.S. DEPARTMENT OF ENERGY
memorandum
RECEIVED

DATE: APR 7 1980

REPLY TO RA-233
ATTN OF

SUBJECT Reprogramming of Funds

APR 15 1980

ENERGY & TECHNOLOGY
DIVISION

TO: Dr. Clayton Nichols, ID

As a result of the meeting with representatives of the Department of Defense to discuss future initiatives, it was decided that there would be no further activity on the part of DOE to locate and develop geothermal energy at Hill AFB, Utah. Instead, the Air Force will consider the use of ground water heat pumps to provide the hot water for their space heating requirements.

Monies that have been provided for further drilling at Hill are now available for reprogramming. According to John Griffith, there is a balance of \$415k in FY 80 monies remaining from the \$500k provided earlier. DOD has requested that part of this be utilized to support some studies of interest to them. These are:

1. Site-specific investigations in the vicinity of the Fallon Naval Air Station, NV. The Navy is interested in both electrical power generation and space heating, if adequate resources can be located. Approximately \$50k will be required for this study.
2. An economic analysis of the use of geothermal energy at Dover AFB, DE. It is estimated that this would cost around \$10k.
3. Evaluation of the geothermal potential at selected military bases in Texas. The work would be performed by the University Texas at Austin. A letter proposal for this work has been received from the Bureau of Economic Geology and a copy is attached. Cost of the work is \$50k.
4. The drilling of thermal gradient holes at several military facilities in the southeastern U.S. This work would be performed by VPI and \$100k is being sought for this effort.

The total amount requested by DOD for these efforts is \$210. There remains \$205k for other uses. As discussed with Susan Prestwich, the \$205k is to be used to fund the support provided by EG&G and UURI for the User-Coupled Confirmation Drilling Program. Since only the University of Texas work will fall under ID procurement, \$160k is being withdrawn from ID for transmittal to other field offices.

Enclosure

RECEIVED

APR 14 1980

GEOTHERMAL ENERGY
BRANCH

Robert A. Gray
Program Manager
Division of Geothermal Energy
Resource Applications



THE UNIVERSITY OF TEXAS AT AUSTIN
BUREAU OF ECONOMIC GEOLOGY
AUSTIN, TEXAS 78712

University Station, Box X
Phone 512-471-1534
471-7721
474-5994

March 27, 1980

Dr. Gerald Brophy
3914 12th Street South
Arlington, Virginia 22204

Reference: Contract No. DE-AS07-79ID12057

Dear Dr. Brophy:

The following modification is requested for the above contract:

TASK 8--EVALUATION OF GEOTHERMAL POTENTIAL AT SELECTED MILITARY BASES IN
CENTRAL TEXAS

Geographic Scope: Bexar County, Val Verde County, and Travis County, and adjacent areas as needed to assay geothermal resources beneath Randolph AFB, Lackland AFB, and other military installations in the San Antonio area, and at Laughlin AFB in Del Rio, and at Bergstrom AFB in Austin.

Time Frame of Project: April 1, 1980 - September 30, 1980.

Subtask 1--Using the best available data, conduct detailed stratigraphic and structural geologic study for potential geothermal aquifers in the geographic area delineated. This will entail mainly augmenting and refining data on the Hosston Sand and the Edwards Limestone from our prior regional evaluation along the Balcones, and Luling-Mexia-Talco Fault Zones.

Subtask 2--Using existing hydrologic data, present depictions of ground-water resources from the putative geothermal aquifers beneath the various military installations. Data permitting, the following types of hydrologic information will be assessed: water temperature, water chemistry, and sustainable well yield. In some areas these data may be sparse or nonexistent. We will make every effort to obtain a complete data base, but we will be constrained by the location of wells. In some areas, well locations will result in an inferred hydrologic picture, constructed on the basis of the aquifers' stratigraphic and structural settings.

Subtask 3--Conduct a generalized (economic) feasibility study for using geothermal ground waters in each of the three main areas evaluated.

Dr. Gerald Brophy
March 27, 1980
Page 2

This economic assessment will not be a detailed cost-effectiveness study for each of the bases; the time frame and funding level for this project do not permit this. Detailed on-site, base-by-base, energetic budgets would entail mechanical engineering, and architectural studies that are beyond the technical capabilities of the BEG. Hence our feasibility study will present a first approximation that matches the resources available with the climatic and selected current demands. We will present the total available Btu content of the waters, the climatic factors important to seasonal heating demands (heating degree days), and the expected energetic costs of pumping the water. Too, we will employ space-heating, and water-heating data as provided to BEG for selected bases (probably Randolph, Lackland, and Laughlin) to note what part (if any) of this load can be reduced by using geothermal waters.

Additional Funding Request--\$50,000

Thank you for consideration of this matter and I look forward to discussing this proposal with you in the near future.

Sincerely,



Doug Ratcliff
Assistant Director

DR/bjs

M. 2. 20

MAR 6 1981

Bureau of Economic Geology
The University of Texas at Austin
University Station, Box X
Austin, Texas 78712

ATTENTION: Doug Ratcliff

SUBJECT: MODIFICATION NO. A003 TO CONTRACT NO. DE-AS07-79ID12057

Gentlemen:

Enclosed for your retention and files is one fully executed copy of
the subject modification.

Very truly yours,

(sgd.) William C. Drake

William C. Drake
Contracting Officer
Chief, R&D Contracts Branch
Contracts Management Division

Enclosure

bcc: E. G. Jones, w/enc.
M. A. Widmayer, w/enc.
R. L. Combs, w/enc.

R&DCB
GCHolan
3-2-81

R&DCB
KRHastings

E&T
MAWidmayer

P&B
FSSmith

FHD
EGJones

R&DCB
WCDrake

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. AMENDMENT/MODIFICATION NO. A003 2. EFFECTIVE DATE _____ 3. REQUISITION/PURCHASE REQUEST NO. _____ 4. PROJECT NO. (If applicable) _____

5. ISSUED BY _____ CODE _____ 6. ADMINISTERED BY (If other than block 5) _____ CODE _____
 U.S. Department of Energy
 Idaho Operations Office
 40 Second Street
 Idaho Falls, Idaho 83401

7. CONTRACTOR NAME AND ADDRESS CODE _____ FACILITY CODE _____ 8. AMENDMENT OF SOLICITATION NO. _____
 Bureau of Economic Geology
 The University of Texas at Austin
 University Station, Box X
 Austin, Texas 78712
 DATED _____ (See block 9)
 MODIFICATION OF CONTRACT/ORDER NO. DE-AS07-79ID12057
 DATED 9-27-79 (See block 11)

THIS BLOCK APPLIES ONLY TO AMENDMENTS OF SOLICITATIONS
 The above numbered solicitation is amended as set forth in block 12. The hour and date specified for receipt of Offers is extended, is not extended.
 Offerors must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation, or as amended, by one of the following methods:
 (a) By signing and returning _____ copies of this amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGEMENT TO BE RECEIVED AT THE ISSUING OFFICE PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If, by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided such telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

ACCOUNTING AND APPROPRIATION DATA (If required)
1510 89X0224.91 ID-14-91 250

THIS BLOCK APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS
 This Change Order is issued pursuant to _____
 The Changes set forth in block 12 are made to the above numbered contract/order.
 The above numbered contract/order is modified to reflect the administrative changes (such as changes in paying office, appropriation data, etc.) set forth in block 12.
 This Supplemental Agreement is entered into pursuant to authority of Article III, Consideration of the Contract.
 It modifies the above numbered contract as set forth in block 12.

DESCRIPTION OF AMENDMENT/MODIFICATION
Article III, CONSIDERATION is hereby modified to increase the amount obligated for work under Modification No. A002 by One Hundred Forty-Eight Thousand Nine Hundred One Dollars (\$48,901.00). The cost and funding under the contract is summarized as follows:

	<u>Estimated Cost</u>	<u>Cumulative Estimated Cost</u>	<u>Obligations and Support Ceiling</u>	<u>Cumulative Obligations and Support Ceiling</u>
Basic Contract	\$ 327,202	\$ 327,202	\$ 327,202	\$ 327,202
Mod. A001	50,077	377,279	50,077	377,279
Mod. A002	257,901	635,180	109,000	486,279
Mod. A003	-0-	635,180	148,901	635,180

Unless provided herein, all terms and conditions of the document referenced in block 8, as heretofore changed, remain unchanged and in full force and effect.

CONTRACTOR/OFFEROR IS NOT REQUIRED TO SIGN THIS DOCUMENT CONTRACTOR/OFFEROR IS REQUIRED TO SIGN THIS DOCUMENT AND RETURN _____ COPIES TO ISSUING OFFICE

NAME OF CONTRACTOR/OFFEROR _____ 17. UNITED STATES OF AMERICA
 (Signature of person authorized to sign) BY William C. Drake (Signature of Contracting Officer)

NAME AND TITLE OF SIGNER (Type or print) _____ 16. DATE SIGNED _____ 18. NAME OF CONTRACTING OFFICER (Type or print) William C. Drake 19. DATE SIGNED 3/2/81



TBEG .
PROPOSAL ONLY

THE UNIVERSITY OF TEXAS AT AUSTIN
BUREAU OF ECONOMIC GEOLOGY
AUSTIN, TEXAS 78712-7508

University Station, Box X
Phone 512-471-1534
471-7721

September 25, 1981

Dr. Roy Mink
U.S. Department of Energy
Idaho Operations Office
550 Second Street
Idaho Falls, Idaho 83401

Dear Roy:

Attached are two items which will provide additional information for our continuation proposal associated with contract number DE-AS07-79ID12057. The detailed budget is provided for your fiscal officer's use. The additional detail for the scope of work is provided at Duncan Foley's request.

If you need additional information, please give me a call.

Sincerely,

Doug Ratcliff
Assistant Director

DR:mk

Enc:

xc: C. M. Woodruff, Jr.
Duncan Foley ✓
Susan Prestwich

Addenda to, and refinement of, Scope of Work--

Renewal Proposal for Concluding Study:

GEOTHERMAL RESOURCE ASSESSMENT FOR THE STATE OF TEXAS

Submitted by

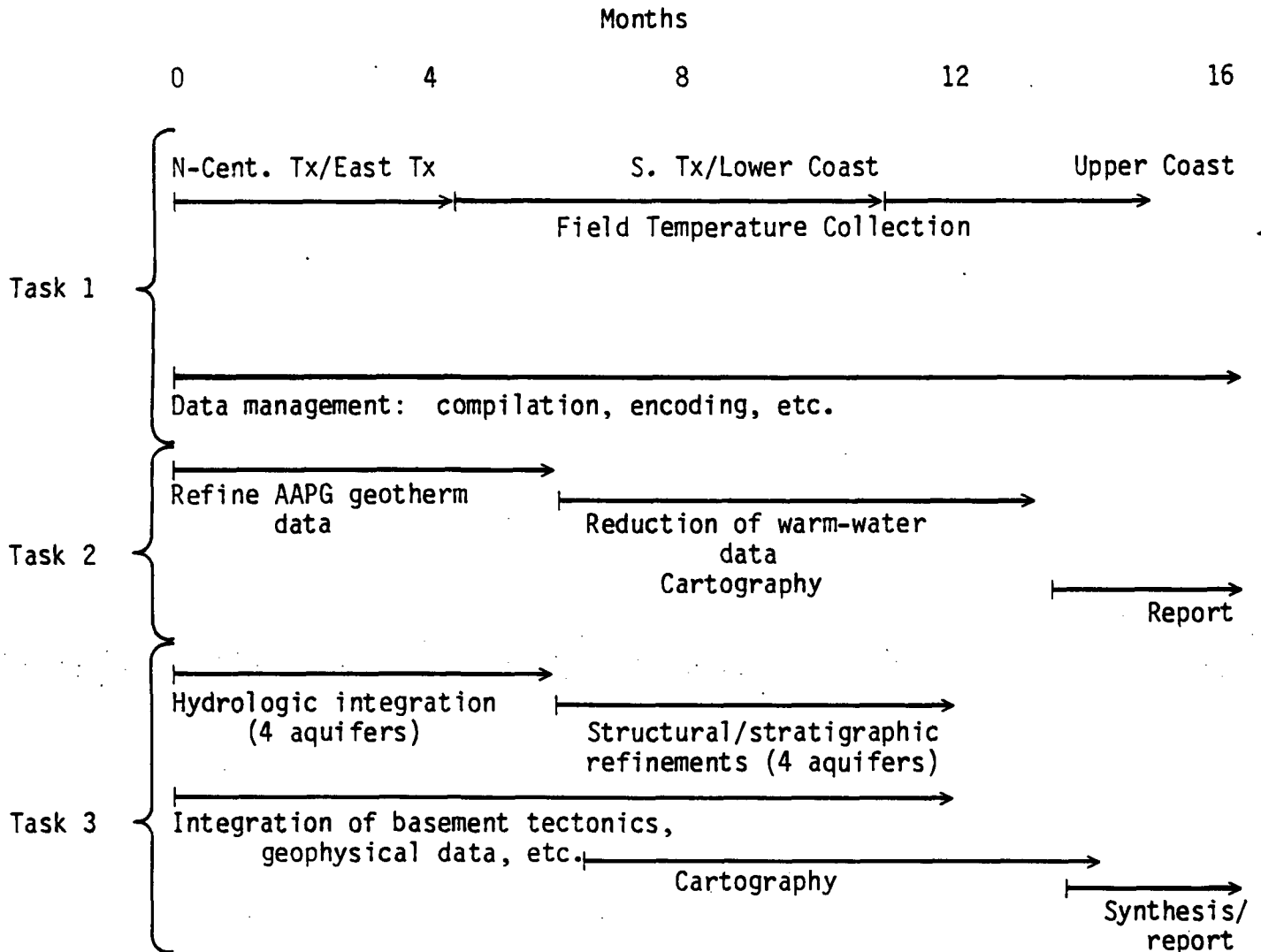
Bureau of Economic Geology
The University of Texas at Austin

C. M. Woodruff, Jr. and Arthur G. Goldstein
Co-principal Investigators

- p. 9 Include a concluding sentence for Task 1: "The Bureau will cooperate with other state and federal agencies and will supply data and advice regarding geothermal resources to the general public when the data are verified."
- p. 9 "citation" in paragraph 3 refers to: American Association of Petroleum Geologists and U.S. Geological Survey, 1976, Geothermal Gradient Map of North America, scale 1:5,000,000.
- p. 10 Include a concluding paragraph to Task 2:
"Using a statewide computerized data base means that there may be continuing editing problems owing to mistabulation or incorrect keypunching (to mention only two). Part of this integration task will include the ongoing refinement of the entire data population and the communication of any corrections to the USGS GEOTHERM File."
- p. 10 Paragraph 2--comment: the "slash/bar" convention may be modified for the sake of clarity to include only temperature and depth on the map, while salinity and discharge will be tabulated elsewhere.

Other addenda on following pages include a correction of Table 1 "Schedule of Research," and a list of references cited in this proposal.

Table 1. Schedule of Research



REFERENCES

- American Association of Petroleum Geologists and U.S. Geological Survey, 1976, Geothermal gradient map of North America, scale 1:5,000,000.
- Flawn, P. T., Goldstein, A., Jr., King, P. B., and Weaver, C. E., 1961, The Ouachita System: University of Texas, Austin, Publication 6120, 401 p.
- Henry, C. D., 1979, Geologic setting and geochemistry of thermal water and geothermal assessment, Trans-Pecos Texas: The University of Texas at Austin, Bureau of Economic Geology Report of Investigations No. 96, 48 p.
- Henry, C. D. and Gluck, J. K., 1981, A preliminary assessment of the geologic setting, hydrology, and geochemistry of the Hueco Tanks Geothermal Area, Texas and New Mexico: The University of Texas at Austin, Bureau of Economic Geology Geological Circular 81-1, 48 p.
- Woodruff, C. M., Jr., 1979, Geothermal ground water in Central Texas-- A potential energy resource: Texas Business Review, v. 53, no. 5, p. 153-157.
- _____, 1980, Regional tectonic features of the inner Gulf Coast Basin and the Mississippi Embayment--implications to potential low-temperature geothermal resources: Transactions, Gulf Coast Association of Geological Societies, 30th Annual Meeting, v. 30, p. 251-256.
- Woodruff, C. M., Jr., and McBride, M. W., 1979, Regional assessment of geothermal potential along the Balcones and Luling-Mexia-Talco Fault Zones, Central Texas: Final Report to U.S. Department of Energy, Contract No. DE-AS05-78ET28375, 145 p.
- Woodruff, C. M. Jr., Henry, C. D., and Gever, C., 1981, Geothermal resource potential at military bases in Bexar, Travis, and Val Verde Counties, Texas: Appendix H in Geothermal resource assessment for the State of Texas, status of progress, November 1980: Draft Final Report to U.S. Department of Energy, Contract No. DE-AS07-79ID12057, 63 p. plus addenda.

DETAILED BUDGET

I. SALARIES

C. M. Woodruff, Jr.			
11/1/81-8/31/82	(\$34,290)	100%	\$28,575
9/1/82-2/28/83	(\$37,719)	100%	18,860
			<u>\$47,435</u>
A. G. Goldstein			
11/1/81-8/31/82	(\$29,160)	75%	\$18,225
9/1/82-2/28/83	(\$31,744)	75%	11,904
			<u>\$30,129</u>
Research Scientist Associate I (2)			
11/1/81-8/31/82	(\$19,512)	100%	\$16,260
9/1/82-2/28/83	(\$21,264)	100%	10,632
			<u>\$26,892</u>
			x 2
			<u>\$53,784</u>
Research Scientist Assistant II (3)			
11/1/81-8/31/82	(\$13,512)	50%	\$ 5,630
9/1/82-2/28/83	(\$14,000)	50%	3,500
			<u>\$ 9,130</u>
			x 3
			<u>\$27,390</u>
Computer Programmer II			
11/1/81-8/31/82	(\$20,856)	15%	\$ 2,607
9/1/82-2/28/83	(\$22,747)	15%	1,706
			<u>\$ 4,313</u>
Cartographic Technician I			
11/1/81-8/31/82	(\$13,092)	50%	\$ 5,455
9/1/82-2/28/83	(\$14,168)	50%	3,542
			<u>\$ 8,997</u>
Senior Secretary			
11/1/81-8/31/82	(\$10,848)	25%	\$ 2,260
9/1/82-2/28/83	(\$11,400)	25%	1,425
			<u>\$ 3,685</u>
Editor II			
11/1/81-8/31/82	(\$17,640)	10%	\$ 1,470
9/1/82-2/28/83	(\$19,240)	10%	962
			<u>\$ 2,432</u>
Typeset Operator I			
11/1/81-8/31/82	(\$14,928)	10%	\$ 1,244
9/1/82-2/28/83	(\$16,260)	10%	813
			<u>\$ 2,057</u>

II. FRINGE BENEFITS
VACATION AND SICK LEAVE BENEFITS

See the attached statement of negotiated rates.

III. EXPENDABLE SUPPLIES, SERVICES, MATERIALS

This category of expenditures is costing approximately \$1,600/month on the present contract. It was estimated by the principal investigator that it would be approximately 25% of the present level during the next contract period. This is due to the fact that most of the primary data has already been acquired. The \$8,000 figure is calculated at \$500/month for sixteen months.

IV. RENTAL OF OFFICE SPACE AND ASSOCIATED EXPENSES

Rental was calculated based on rental charges incurred in April, 1981. During April rental expenses were \$4,999 and salary expenses were \$14,780. This represents 34% of salaries. The salaries to be paid by DOE in the coming year total \$131,348. Thirty-four percent of this figure is \$44,658.

V. TRAVEL

Between November, 1980 and May, 1981, this contract expended \$2,477 on travel for an average of \$354/month. The \$6,200 figure shown in the proposal is calculated by adding a 10% inflation factor on the present average and multiplying by sixteen.

VI. COMPUTER EXPENSES

The number of hours is an estimate made by the principal investigator. The rate of \$230/hour is a negotiated rate (see attached).

VII. INDIRECT COSTS

See the attached statement of negotiated rates.

THE UNIVERSITY OF TEXAS AT AUSTIN
AUSTIN, TEXAS 78712

November 1, 1980

MEMORANDUM

TO: Deans, Directors, Departmental Chairmen, Project Directors,
and other Administrative Officials

SUBJECT: Fringe Benefits - Vacation and Sick Leave (VSL)

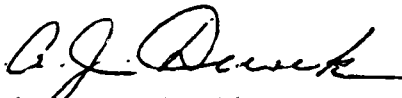
Effective September 1, 1980, the Vacation and Sick Leave (VSL) reserve charge to contracts and grants and other accounts assessed for the VSL charge was increased to 1.3% of applicable salaries.

In preparing budgets for sponsored projects proposals, the fringe benefits and VSL reserve categories are now to appear as follows:

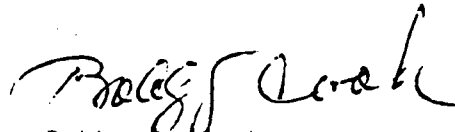
Fringe Benefits: 25% of Salaries and Wages 9/01/80 - 8/31/81
Provisional 9/01/81 until amended

VSL Reserve: 1.3% of eligible salaries 9/01/80 - 8/31/81
Provisional 9/01/81 until amended

The other accounts which are assessed for the VSL charge are the 18, 19, 28, 30, 38, 40, 55, 63, and 87 series presently being charged for O.A.S.I., W.C.I., U.C.I. and premium sharing. (See memorandum dated January 14, 1977 from Office of the Business Manager, "Operating Plan for Charging Rates to Fund Lump Sum Payments of Vacation and Sick Leave"). Questions concerning the VSL charge to these other accounts should be referred to Dave Odom, PAX 771, CTX 3723, or Amy Wilson, PAX 1270, CTX 4503.



A. J. Dusek, Director
Office of Sponsored Projects



Bobby G. Cook
Associate Vice-President
and Business Manager

NEGOTIATION AGREEMENT

Colleges and Universities
FMC 73-6 Negotiation

DATE October 17, 1980

INSTITUTION: University of Texas @ Austin
Austin, Texas 78701

FILING REF.: This replaces
 Negotiation Agreement
 dated ~~April 11, 1980~~

The indirect cost rate(s) contained herein is for use on grants and contracts with the Federal Government subject to the conditions contained in Section II.

SECTION I: RATES

<u>Type</u>	<u>Effective Period</u>		<u>Rate*</u>	<u>Locations</u>	<u>Applicable to</u>
	<u>From</u>	<u>To</u>			
<u>BASE-MODIFIED TOTAL DIRECT COSTS</u>					
Predetermined	9/1/80	8/31/81	33.0%	On Campus*	Research
Predetermined	9/1/80	8/31/81	10.0%	Off Campus	Research
Predetermined	9/1/80	8/31/81	8.5%	Applied Research Lab	Research
Predetermined	9/1/80	8/31/81	28.0%	Port Aransas, M.S.I.**	Research
Predetermined	9/1/80	8/31/81	32.0%	Galveston, M.S.I.**	Research
Predetermined	9/1/80	8/31/81	4.0%	Seagoing Vessels	Research
Predetermined	9/1/80	8/31/81	25.0%	On Campus	Instruction & Training
Provisional	9/1/81	Until Amended	Use same rates and conditions, etc., cited for fiscal year ending August 31, 1981.		

NEGOTIATION AGREEMENT

Colleges and Universities
FMC 73-6 Negotiation

DATE October 17, 1980

INSTITUTION: University of Texas @ Austin
Austin, Texas 78701

FILING REF.: This replaces
 Negotiation Agreement
 dated April 11, 1980

The indirect cost rate(s) contained herein is for use on grants and contracts with the Federal Government subject to the conditions contained in Section II.

SECTION I: RATES

<u>Type</u>	<u>Effective Period</u>		<u>Rate*</u>	<u>Locations</u>	<u>Applicable to</u>
	<u>From</u>	<u>To</u>			
<u>*BASE-SALARIES AND WAGES</u>					
Predetermined	9/1/79	8/31/80	52.0%(1)✓	On Campus*	Research
Predetermined	9/1/79	8/31/80	18.0%(1)✓	Off Campus	Research
Predetermined	9/1/79	8/31/80	15.0%(1)✓	Applied Res. Lab.	Research
Predetermined	9/1/79	8/31/80	49.0%(1)✓	Fort Aransas H.S.I.**	Research
Predetermined	9/1/79	8/31/80	49.0%(1)✓	Galveston H.S.I.**	Research
Predetermined	9/1/79	8/31/80	6.0%(1)✓	Seagoing Vessels	Research
Predetermined	9/1/79	8/31/80	49.0%(1)✓	On Campus	Educational Ser. Agreement
Predetermined	9/1/79	8/31/80	60.5%(2)✓	On Campus*	Research
Predetermined	9/1/79	8/31/80	26.5%(2)✓	Off Campus	Research
Predetermined	9/1/79	8/31/80	23.5%(2)✓	Applied Res. Lab.	Research
Predetermined	9/1/79	8/31/80	57.5%(2)	Fort Aransas H.S.I.**	Research
Predetermined	9/1/79	8/31/80	57.5%(2)✓	Galveston H.S.I.**	Research
Predetermined	9/1/79	8/31/80	14.5%(2)✓	Seagoing Vessels	Research
Predetermined	9/1/79	8/31/80	57.5%(2)✓	On Campus	Educational Ser. Agreement

NEGOTIATION AGREEMENT

Colleges and Universities
FMC 73-6 Negotiation

INSTITUTION: University of Texas @ Austin
 Austin, Texas 78701

DATE October 17, 1980

FILING REF.: This replaces
 Negotiation Agreement
 dated April 11, 1980

The indirect cost rate(s) contained herein is for use on grants
 and contracts with the Federal Government subject to the conditions
 contained in Section II.

SECTION I: RATES

Type	Effective Period		Rate*	Locations	Applicable to
	From	To			
<u>BASE-SALARIES & WAGES cont'd</u>					
Predetermined	9/1/80	8/31/81	55.0%(1)	On Campus*	Research
Predetermined	9/1/80	8/31/81	18.0%(1)	Off Campus	Research
Predetermined	9/1/80	8/31/81	15.0%(1)	Applied Res. Lab.	Research
Predetermined	9/1/80	8/31/81	52.0%(1)	Port Aransas M.S.I.**	Research
Predetermined	9/1/80	8/31/81	51.0%(1)	Galveston M.S.I.**	Research
Predetermined	9/1/80	8/31/81	7.0%(1)	Seagoing Vessels	Research
Predetermined	9/1/80	8/31/81	49.0%(1)	On Campus	Instruction & Training
Predetermined	9/1/80	8/31/81	60.5%(2)	On Campus*	Research
Predetermined	9/1/80	8/31/81	26.5%(2)	Off Campus	Research
Predetermined	9/1/80	8/31/81	23.5%(2)	Applied Res. Lab.	Research
Predetermined	9/1/80	8/31/81	57.5%(2)	Port Aransas M.S.I.**	Research
Predetermined	9/1/80	8/31/81	57.5%(2)	Galveston M.S.I.**	Research
Predetermined	9/1/80	8/31/81	14.5%(2)	Seagoing Vessels	Research
Predetermined	9/1/80	8/31/81	57.5%(2)	On Campus	Instruction & Training
Provisional	9/1/81	Until Amended	Use same rates and conditions, etc., cited for fiscal year ending August 31, 1981		

NEGOTIATION AGREEMENT

Colleges and Universities
FMC 73-6 Negotiation

DATE October 17, 1980

INSTITUTION: University of Texas @ Austin
Austin, Texas 78701

FILING REF.: This replaces
 Negotiation Agreement
 dated April 11, 1980

The indirect cost rate(s) contained herein is for use on grants and contracts with the Federal Government subject to the conditions contained in Section II.

SECTION I: RATES FRINGE BENEFITS

<u>Type</u>	<u>Effective Period</u>		<u>Rate*</u>	<u>Locations</u>	<u>Applicable to</u>
	<u>From</u>	<u>To</u>			
Fixed	9/1/76	8/31/77	1.2%	All	All Programs
Fixed	9/1/77	8/31/78	1.0%	All	All Programs
Fixed	9/1/78	8/31/79	1.0%	All	All Programs
Fixed	9/1/79	3/31/80	.6%	All	All Programs
Fixed	4/1/80	8/31/80	1.0%	All	All Programs
Fixed	9/1/80	8/31/81	1.3%	All	All Programs
Provisional	9/1/81	Until Amended	1.3%	All	All Programs

*BASE: Direct salaries and wages excluding salaries and wages of faculty with a nine month appointment.

NOTE: This organization uses this fringe benefit rate for budgeting and charging termination costs for accrued vacation and sick leave.

The cost of vacation, holiday, sick leave, and other paid absences excluding termination costs for accrued vacation and sick leave are included in salaries and wages and charged to grants and contracts as part of the normal charge for salaries and wages.

This organization also uses a fringe benefit rate for estimating other direct fringe benefit costs in grant applications and contract proposals. For final reporting, the cost of each benefit with the exception of termination costs for accrued vacation and sick leave is specifically identified to each employee and charged individually. The current rate used for estimating purposes is 25.0 percent, and this rate is applied to salaries and wages for budget purposes. The following fringe benefits are included in this fringe benefit rate:

FICA (Social Security)
 Workmen's Compensation
 Unemployment Compensation
 Group Life/Health Insurance
 Retirement

BASE

Office of Management and Budget (OMB), Circular A-21, "Cost Principles for Educational Institutions" requires indirect cost rates based on modified total direct cost (MTDC). During the transition from salaries and wages to the MTDC base, rates will be calculated using both salaries and wages and MTDC for the same period. The rates based on salaries and wage rate will be used to cost projects budgeted and awarded with the salaries and wage rate. The MTDC rate is effective September 1, 1980.

Modified total direct cost (MTDC). Total direct cost less subgrant and subcontract cost in excess of \$25,000 each, capital equipment expenditures, alterations and renovations, stipends and tuition payments.

Direct salaries and wages excluding fringe benefits.

Treatment of Fringe Benefits: Prior to September 1, 1979, fringe benefit costs applicable to direct salaries and wages, with the exception of retirement costs, were treated as direct cost. Retirement costs were treated as indirect cost and were included as part of the indirect cost rate. Effective September 1, 1979, all fringe benefit costs including retirement cost, applicable to direct salaries and wages are treated as direct costs (See Section I, Fringe Benefits).

- (1) These indirect cost rates exclude retirement costs and are applicable to all programs budgeted and awarded with retirement cost direct.
- (2) These indirect cost rates include retirement costs as part of the rate and are for costing those programs with retirement cost budgeted and awarded indirect.

* Includes main campus and Dalcones Research Center.

** M.S.I. - Marine Science Institute

LIMITATIONS: Use of the rate(s) contained in this agreement is subject to any statutory or administrative limitation applicable to a given grant or contract and the availability of funds. Acceptance of the rate(s) agreed to herein is predicated on the conditions: (1) that no costs other than those incurred by the grantee/contractor are included in its indirect cost pool as finally accepted and that such costs are legal obligations of the grantee/contract and allowable under the governing cost principles, (2) that the same costs that have been treated as indirect costs are not claimed as direct costs, (3) that similar types of costs have been accorded consistent accounting treatment, and (4) that the information provided by the grantee/contractor which was used as a basis for acceptance of the rate(s) agreed to herein is not subsequently found to be materially incomplete or inaccurate.

ACCOUNTING CHANGES: If a fixed or predetermined rate(s) is contained in this agreement, it is based on the accounting system in effect at the time the agreement is negotiated. Changes to the method of accounting for costs which affect the amount of reimbursement resulting from the use of this rate(s) require the prior approval of the authorized representative of the cognizant negotiation agency. Such changes include but are not limited to changes in the charging of a particular type of cost from indirect to direct. Failure to obtain such approval may result in subsequent cost disallowances.

FIXED RATES: If a fixed rate is contained in this agreement, it is based on an estimate of the costs which will be incurred during the period to which the rate applies. When the actual costs for such period have been determined, an adjustment will be made in a subsequent negotiation to compensate for the difference between the costs used to establish the fixed rate and actual costs.

USE BY OTHER FEDERAL AGENCIES: The rate(s) contained herein was negotiated in accordance with the authority set forth in FMC 73-6 and should be applied to the extent provided in such Circular, to grants and contracts to which FMC 73-8 applies. Copies of this document may be provided to other Federal agencies as a means of notifying them of the agreement contained herein.

The categories designated by an asterisk below are normally treated as direct costs by this institution when such costs can be identified specifically with a government award, an instructional activity, or any other direct institutional activity, or when they can be directly assigned to such activities relatively easily with a high degree of accuracy.

- Salaries and wages including vacation, holiday and sick leave pay.
- Overtime premium
- Consultant costs
- Employee fringe benefits related to direct salaries and wages.
- Material supplies, and equipment.

- 6. Communication costs such as long distance telephone calls, mailing, cablegrams, etc.
- 7. Travel expenses
- * 8. Freight charges
- * 9. Other:

SECTION II: SPECIAL REMARKS: (F)

1. Long distance telephone, postage, and xerox expenses are treated as direct costs by this institution.
2. Operation and maintenance of Physical Plant, i.e., utilities, janitorial, and minor repairs, are treated as indirect costs.
3. Off campus activities are considered "Off Campus" when the programs and projects are performed in facilities not owned or maintained by the University. Programs and projects performed partially off campus are apportioned between their on and off campus components.
4. For informational purposes, the indirect cost centers that are normally considered in the development of the on and off campus rates are as follows:

	<u>On Campus</u>	<u>Off Campus</u>
Administrative and General	X	X
Departmental Administration	X	X
Library	X	
Operation and Maintenance	X	
Research Administration	X	X
Building and Equipment Use charge	X	
Staff Benefits	X	X
Student Services	X	

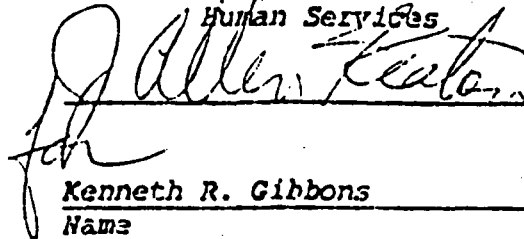
ACCEPTANCE

By the Institution
 The University of Texas at Austin
 Original signed by
 Name R. L. Anderson, Comptroller

The University of Texas System
 Title

October 24, 1980
 Date

By the Department of Health and
 Human Services


 Name Kenneth R. Gibbons

Director, Division of Cost Allocation
 Title

Date: October 17, 1980

Negotiated by: Gene Reeves

Telephone: Commercial: (214) 767-3261
FTS: 729-3261

NEGOTIATION AGREEMENT

Colleges and Universities
FMC 73-6 Negotiation

October 17, 1980
 DATE _____

INSTITUTION: University of Texas @ Austin
 210 West Sixth Street
 Austin, Texas 78701

FILING REF.: This replaces
 Negotiation Agreement
 dated November 5, 1979

The indirect cost rate(s) contained herein is for use on grants
 and contracts with the Federal Government subject to the conditions
 contained in Section II.

SECTION I: PATES

Type	Effective Period		Rate*	Locations	Applicable to
	From	To			
Fixed	9/1/78	8/31/79	\$136.00 / per day	*	30" Telescope
Fixed	9/1/78	8/31/79	\$196.00 / per day	*	36" Telescope
Fixed	9/1/78	8/31/79	\$1,016.00 / per day	*	82" Telescope
Fixed	9/1/78	8/31/79	\$1,731.00 / per day	*	107" Telescope
Predetermined	9/1/79	8/31/80	\$138.00 / per day	*	30" Telescope
Predetermined	9/1/79	8/31/80	\$199.00 / per day	*	36" Telescope
Predetermined	9/1/79	8/31/80	\$1,030.00 / per day	*	82" Telescope
Predetermined	9/1/79	8/31/80	\$1,750.00 / per day	*	107" Telescope
Predetermined	9/1/80	8/31/81	\$160.00 / per day	*	30" Telescope
Predetermined	9/1/80	8/31/81	\$230.00 / per day	*	36" Telescope
Predetermined	9/1/80	8/31/81	\$1,200.00 / per day	*	82" Telescope
Predetermined	9/1/80	8/31/81	\$2,100.00 / Per Day	*	107" Telescope

Provisional 9/1/81 Until Amended Use same rates, conditions, etc., as cited
 for Fiscal Year Ending August 31, 1981.

*McDonald Observatory, University of Texas @ Austin located at Fort Davis, Texas.
 See Separate Negotiation Agreement for Indirect Cost Rates applicable to
 University of Texas @ Austin.

LIMITATIONS: Use of the rate(s) contained in this agreement is subject to any statutory or administrative limitation applicable to a given grant or contract and the availability of funds. Acceptance of the rate(s) agreed to herein is predicated on the following conditions: (1) that no costs other than those incurred by the grantee/contractor are included in its indirect cost pool as finally accepted and that such costs are legal obligations of the grantee/contractor and allowable under the governing cost principles, (2) that the same costs that have been treated as indirect costs are not claimed as direct costs, (3) that similar types of costs have been accorded consistent accounting treatment, and (4) that the information provided by the grantee/contractor which was used as a basis for acceptance of the rate(s) agreed to herein is not subsequently found to be materially incomplete or inaccurate.

ACCOUNTING CHANGES: If a fixed or predetermined rate(s) is contained in this agreement, it is based on the accounting system in effect at the time the agreement was negotiated. Changes to the method of accounting for costs which affect the amount of reimbursement resulting from the use of this rate(s) require the prior approval of an authorized representative of the cognizant negotiation agency. Such changes include but are not limited to changes in the charging of a particular type of cost from indirect to direct. Failure to obtain such approval may result in subsequent cost allowances.

FIXED RATES: If a fixed rate is contained in this agreement, it is based on an estimate of the costs which will be incurred during the period to which the rate applies. When the actual costs for such period have been determined, an adjustment will be made in a subsequent negotiation to compensate for the difference between the costs used to establish the fixed rate and actual costs.

USE BY OTHER FEDERAL AGENCIES: The rate(s) contained herein was negotiated in accordance with the authority set forth in FMC 73-6 and should be applied to the extent provided in such Circular, to grants and contracts to which FMC 73-8 applies. Copies of this document may be provided to other Federal agencies as a means of notifying them of the agreement contained herein.

The categories designated by an asterisk below are normally treated as direct costs by this institution when such costs can be identified specifically with a government award, an instructional activity, or any other direct institutional activity, or when they can be directly assigned to such activities relatively easily with a high degree of accuracy.

- | | | |
|---|------|--|
| Salaries and wages including vacation,
holiday and sick leave pay. | * 6. | Communication costs such as long
distance telephone calls, mailing,
cablegrams, etc. |
| Overtime premium | * 7. | Travel expenses |
| Consultant costs | * 8. | Freight charges |
| Employee fringe benefits related
to direct salaries and wages. | 9. | Other: |
| Material supplies, and equipment. | | |

ACCEPTANCE

By the Institution
The University of Texas at Austin

Original signed by

R. L. Anderson

Name R. L. Anderson, Comptroller

The University of Texas System
Title

October 24, 1980
Date

By the Department of Health and
Human Services

Kenneth R. Gibbons

Kenneth R. Gibbons
Name

Director, Division of Cost Allocation
Title

Date: October 17, 1980

Negotiated by: Gene Reeves

Telephone: Commercial: (214) 767-3361

PTS: 729-3261

Colleges and Universities
Computer Rates

INSTITUTION: *University of Texas @ Austin*
Austin, Texas 78701

DATE October 15, 1980

FILING REF.: This replaces
Negotiation Agreement
dated November 20, 1979

The computer time cost rate(s) contained herein is for use on grants and contracts with the Federal Government subject to the conditions contained in Section II.

SECTION I: RATES

Effective Period

<u>Type</u>	<u>From</u>	<u>To</u>	<u>Rate*</u>	<u>Computer System Locations</u>	<u>Applicable To</u>
Predetermined	9/1/77	8/31/79	\$230 per hour	*Control Data Corporation	All Programs
Predetermined	9/1/77	8/31/78	\$155 per hour	** Digital Equipment Corp.-10	All Programs
Predetermined	9/1/78	8/31/79	\$150 per hour	** DEC-10	All Programs
Predetermined	9/1/79	8/31/81	\$230 per hour	* CDC	All Programs
Predetermined	9/1/79	8/31/81	\$150 per hour	** DEC-10	All Programs
Provisional	9/1/80	Until Amended	\$150 per hour	*** IBM 370/158	All Programs
Provisional	9/1/81	Until Amended	\$230 per hour	*CDC	All Programs
Provisional	9/1/81	Until Amended	\$150 per hour	** DEC -10	All Programs

*Control Data Corporation Computer System at the Computation Center of the University of Texas @ Austin.

** Digital Equipment Corporation -10 Computer System at the Computation Center of the University of Texas @ Austin.

***IBM 370/158 System at the Computation Center of the University of Texas @ Austin.

A. LIMITATIONS: Use of the rate(s) contained in this agreement is subject to any statutory or administrative limitations and is applicable to a given grant or contract only to the extent that funds are available. Acceptance of the rate(s) agreed to herein is predicated on the conditions: (1) that no costs other than those incurred by the grantee/contractor were included in its computer rate computation as finally accepted and that such costs are legal obligations of the grantee/contractor and allowable under the governing cost principles, (2) that the same costs included in the computer rate computation are not claimed individually as either direct or indirect costs, (3) that similar types of costs have been accorded consistent accounting treatment, and (4) that the information provided by the grantee/contractor which was used as a basis for acceptance of the rate(s) agreed to herein is not subsequently found to be materially incomplete or inaccurate.

B. ACCOUNTING CHANGES: If a fixed or predetermined rate(s) is contained in this agreement, it is based on the accounting system in effect at the time the proposal was prepared and the agreement was negotiated. Changes to the method of accounting for costs which affect the amount of reimbursement resulting from the use of this rate(s) require the prior approval of the authorized representative of the cognizant negotiation agency. Failure to obtain such approval may result in subsequent cost disallowances.

C. FIXED RATES: If a fixed rate is contained in this agreement, it is based on an estimate of the costs which will be incurred during the period to which the rate applies. When the actual costs for such period have been determined, an adjustment will be made in a subsequent negotiation to compensate for the difference between the costs used to establish the fixed rate and actual costs.

D. USE BY OTHER FEDERAL AGENCIES: The rate(s) contained herein was negotiated in accordance with the authority set forth in General Services Administration Federal Management Circular 73-6 and should be applied to the extent provided in such Circular, to grants and contracts to which General Services Administration Federal Management Circular 73-8 applies. Copies of this document may be provided to other Federal agencies as a means of notifying them of the agreement contained herein.

By the Institution The University of Texas at Austin

Original in copy
R. L. Anderson

Name R. L. Anderson, Comptroller
The University of Texas System
Title

October 24, 1980
Date

By the Cognizant Negotiation Agency
On Behalf of the Federal Government

Dept. of Health and Human Services/s/
Agency

Kenneth R. Gibbons

Kenneth R. Gibbons

Name
Director, Division of Cost Allocation

Title

Date October 15, 1980

Negotiated by Paula Hill

Telephone (214) 767-3261 FTS:729-3261

STATEMENT OF WORK: TEXAS BUREAU OF ECONOMIC GEOLOGY

1. Statewide Water-Temperature Measurements. Contractor will continue to compile existing data on thermal wells statewide, on a region-by-region basis, identifying candidate target wells (deep water wells without documented temperatures or recorded temperatures deemed suspect) and performing field temperature measurements where appropriate. Data compiled will be encoded in the BEG information system and routinely entered into the USGS GEOTHERM file. The contractor will cooperate with other state and federal agencies and will supply verified data and advice regarding geothermal resources to the general public.
2. Statewide Integration of Geothermal Data. Contractor will compile and publish a statewide geothermal technical interpretive map, incorporating all thermal water data compiled in Task 1, integrated with geothermal gradient contours based upon a re-evaluation of AAPG data for bottom-hole temperature and depth of petroleum tests. This task will include the on-going refinement of the entire data population and communication of corrections to the USGS GEOTHERM file.
3. Integration of Data Pertaining to Geothermal Resources along the Balcones/Ouachita Trend, Central Texas. Contractor will incorporate data obtained for the Balcones/Ouachita trend concerning, but not necessarily limited to, rock properties, water chemistry, aquifer yield, geothermal gradient, geothermometry and lineaments and update regional survey maps. Aquifers which will be studied include: the Hosston/Trinity, the Paluxy, the Edwards, and the Woodbine. Thematic maps will be produced, integrating lithic framework, basinal hydrology, water chemistry and geothermics with structural data, in order to materially aid in the delineation and evaluation of thermal waters along the trend.

TWxD TO SUSAN PRESTWICH
10/7/81.

STANDARD FORM 30, JULY 1966 GENERAL SERVICES ADMINISTRATION ED. PROC. REG. (41 CFR) 101-11.6		AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT		PAGE 1	OF 2
1. AMENDMENT/MODIFICATION NO. A004		2. EFFECTIVE DATE		3. REQUISITION/PURCHASE REQUEST NO. 07-81ID12057.502	
4. PROJECT NO. (If applicable)		5. ISSUED BY U. S. Department of Energy Idaho Operations Office 550 Second Street Idaho Falls, Idaho 83401		6. ADMINISTERED BY (If other than block 5) CODE	
7. CONTRACTOR NAME AND ADDRESS Bureau of Economic Geology The University of Texas at Austin University Station, Box X Austin, Texas		8. FACILITY CODE		9. AMENDMENT OF SOLICITATION NO. _____ DATED _____ (See block 9) MODIFICATION OF CONTRACT/ORDER NO. DE-AS07-79ID12057 DATED 9-27-79 (See block 11)	
10. THIS BLOCK APPLIES ONLY TO AMENDMENTS OF SOLICITATIONS <input type="checkbox"/> The above numbered solicitation is amended as set forth in block 12. The hour and date specified for receipt of Offers <input type="checkbox"/> is extended, <input type="checkbox"/> is not extended. Offerors must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation, or as amended, by one of the following methods: (a) By signing and returning _____ copies of this amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGEMENT TO BE RECEIVED AT THE ISSUING OFFICE PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If, by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided such telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.					
11. ACCOUNTING AND APPROPRIATION DATA (If required) AM1510 Increases estimated cost to DOE, Support Ceiling and Obligations by \$249,756 to \$884,936. Costs contributed by contractor for work under this Mod. \$67,901.					
12. THIS BLOCK APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS (a) <input type="checkbox"/> This Change Order is issued pursuant to _____ The Changes set forth in block 12 are made to the above numbered contract/order. (b) <input type="checkbox"/> The above numbered contract/order is modified to reflect the administrative changes (such as changes in paying office, appropriation data, etc.) set forth in block 12. (c) <input checked="" type="checkbox"/> This Supplemental Agreement is entered into pursuant to authority of _____ agreement of the parties. It modifies the above numbered contract as set forth in block 12.					
13. DESCRIPTION OF AMENDMENT/MODIFICATION 1. <u>ARTICLE I - RESEARCH TO BE PERFORMED</u> , is amended by adding a new paragraph as follows: "Appendix A-4, 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. <u>ARTICLE II - THE PERIOD OF PERFORMANCE</u> , is amended as follows: "The period of performance for the work performed under this Supplemental Agreement shall commence on November 1, 1981, and expire on February 28, 1983. The period of time for performing the research work under Appendix A-4 may be extended for additional periods by the mutual written agreement of the parties." 3. <u>ARTICLE III Paragraph (a)</u> is revised to add the following: "It is estimated that the total cost to the Government for work described in Appendix A-4 is \$249,756. The amount hereby obligated by the Government					
CONTINUED.....					
Except as provided herein, all terms and conditions of the document referenced in block 8, as heretofore changed, remain unchanged and in full force and effect.					
14. NAME OF CONTRACTOR/OFFEROR THE UNIVERSITY OF TEXAS AT AUSTIN		17. UNITED STATES OF AMERICA		18. NAME OF CONTRACTING OFFICER William C. Duke (Signature of Contracting Officer)	
BY _____ (Signature of person authorized to sign)		BY _____ (Signature of Contracting Officer)		19. DATE SIGNED 12/1/81	
15. NAME AND TITLE OF SIGNER (Type or print) G. J. Fonken, Vice-President for Academic Affairs and Research		16. DATE SIGNED 11/20/81		18. NAME OF CONTRACTING OFFICER (Type or print) CONTRACTING OFFICER	

with respect to this Modification No. A004 is \$249,756. The Government will not be liable to pay to the contractor any amount in excess of the amount obligated, and when the amount payable under this contract equals 100% of the amount obligated hereunder the contractor will be excused from further performance until the Contracting Officer thereafter increases the funds obligated."

4. The following new article is added:

"ARTICLE VIII - DATE OF INCURRENCE OF COSTS - MODIFICATION NO. A004

The Contractor shall be entitled to reimbursement for costs incurred in an amount not to exceed \$50,000 on or after November 1, 1981, which, if incurred after this modification had been entered into, would have been reimbursable under the provisions of this modification."

CONTRACTOR: UNIVERSITY OF TEXAS AT AUSTIN

Appendix A-4

For contract period November 1, 1981, through February 28, 1983.

ARTICLE A-1 - RESEARCH TO BE PERFORMED BY CONTRACTOR

Task 1. State User Maps

Complete all data and modifications necessary for NOAA to publish map.

Task 2. Statewide Water-Temperature Measurements

Contractor will continue to compile existing data on thermal wells statewide, on a region-by-region basis, identifying candidate target wells (deep water wells without documented temperatures or recorded temperatures deemed suspect) and performing field temperature measurements where appropriate. Data compiled will be encoded in the BEG information system and routinely entered into the USGS Geothermal file. The contractor will cooperate with other state and federal agencies and will supply verified data and advice regarding geothermal resources to the general public.

Task 3. Statewide Integration of Geothermal Data

Contractor will compile and publish a statewide geothermal technical interpretive map, incorporating all thermal water data in Task 1, integrated with geothermal gradient contours based upon a reevaluation of AAPG data for bottom-hole temperature and depth of petroleum tests. This task will include the on-going refinement of the entire data population and communication of corrections to the USGS GEOTHERM file.

Task 4. Integration of Data Pertaining to Geothermal Resources along the Balcones/Quachita Trend, Central Texas

Contractor will incorporate data obtained for the Balcones/Quachita trend concerning, but not necessarily limited to rock properties, water chemistry, aquifer yield, geothermal gradient, geothermometry and lineaments and update regional survey maps. Aquifers which will be studied include: the Hosston/Trinity, the Pauty, the Edwards, and the Woodbine. Thematic maps will be produced, integrating lithic framework, basal hydrology, water chemistry and geothermics with structural data, in order to materially aid in the delineation and evaluation of thermal waters along the trend.

Task 5. Program Management

Provide overall project management and complete and report on tasks in a timely manner. Provide all management reports, open file and published reports, and final reports as defined by the attached DOE Form CR-537, Reporting Requirements Checklist.

SUMMARY OF DELIVERABLES

<u>Item</u>	<u>Due Date</u>
<u>Task 1.</u>	
State User Map	1-1-82
<u>Task 2.</u>	
a. Topical Data Tabulation Addendum to Topical Data Catalog	1-1-83
<u>Task 3.</u>	
a. Statewide Technical Thermal Well Map	
Proof-copy	1-1-83
Published by State	2-20-83
b. Interpretive Report Accompanying Map	
Draft	1-1-83
Published by State	2-20-83
c. Report - "Structural Controls of Geothermal Anomalies"	1-1-83
<u>Task 4.</u>	
a. Final Report - "Balcones/Quachita Trend of Central Texas" with map-based depictions	
Draft	1-1-83
Final	2-20-83
Final Summary Report	
Draft	1-1-83
Final	2-20-83

ARTICLE A-II - WAYS AND MEANS OF PERFORMANCE

(a) Items for which support will be provided are as follows:

		<u>DOE</u>	<u>BEG</u>
SALARIES			
Co-principal Investigators			
C. M. Woodruff, Jr.	100%	47,435	
A. G. Goldstein	75%	30,129	
Project Staff			
Research Scientist Associate I (2)	100%	53,784	
Research Scientist Assistant II (3)	50%		27,390
Support Staff			
Computer Programmer II	15%		4,313
Cartographic Technician I	50%		8,997
Senior Secretary	25%		3,685
Editor II	10%		2,432
Typeset Operator I	10%		2,057
		<hr/>	<hr/>
	SALARIES SUBTOTAL:	131,348	48,874
FRINGE BENEFITS			
25.0% of salaries		32,837	12,219
VACATION AND SICK LEAVE BENEFITS			
1.3% of salaries		1,708	635
EXPENDABLE SUPPLIES, SERVICES, MATERIALS			
		8,000	
RENTAL OF OFFICE SPACE AND ASSOCIATED EXPENSES			
		44,658	
TRAVEL			
		6,200	
COMPUTER EXPENSES			
10 hours at \$230/hour		2,300	
		<hr/>	<hr/>
	TOTAL DIRECT COSTS:	227,051	61,728
INDIRECT COSTS (off-campus rate)			
10% of total direct costs		22,705	6,173
		<hr/>	<hr/>
	TOTAL:	\$249,756	\$67,901

(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 Contractor Personnel including indirect cost and fringe benefits contributed by the Contractor but excluded from computation of Support Cost and consideration in proportioning costs:

\$67,901

ARTICLE A-III - FUNDING

The total estimated cost of items under A-II(a) above, for the contract period stated in this Appendix A-4, is \$249,756. DOE will pay 100% of the actual costs of these items incurred during the contract period stated in this Appendix A-4, subject to the provisions of Article III and Article B-V. The estimated DOE Support Cost for the contract period stated in this Appendix A-4 is \$249,756.

- | | |
|---|------------|
| (a) Estimated unexpended balance from prior period(s) | \$ -0- |
| (b) Revised funds for the current period | \$ 249,756 |

U. S. DEPARTMENT OF ENERGY
REPORTING REQUIREMENTS CHECKLIST

DOE Form CR-537
(1-78)

(See Instructions on Reverse)

FORM APPROVED
OMB NO. 38R-0190

1. IDENTIFICATION Geothermal Resource Assessment in Texas		2. OBLIGATION INSTRUMENT: Modification No. A004 to Contract No. DE-AS07-79ID12057		
3. REPORTING REQUIREMENTS				
A. PROJECT MANAGEMENT		B. TECHNICAL INFORMATION REPORTING		
1. <input type="checkbox"/> Management Plan	Frequency M M	1. <input checked="" type="checkbox"/> Notice of Energy RD&D Project (SSIE)	Frequency O A F	
2. <input type="checkbox"/> Milestone Schedule & Status Report		2. <input type="checkbox"/> Technical Progress Report		
3. <input type="checkbox"/> Cost Plan		3. <input checked="" type="checkbox"/> Topical Report		
4. <input type="checkbox"/> Manpower Plan		4. <input checked="" type="checkbox"/> Final Technical Report		
5. <input checked="" type="checkbox"/> Contract Management Summary Report		C. PMS/MINI-PMS	1. Cost Performance Report	
6. <input checked="" type="checkbox"/> Project Status Report			<input type="checkbox"/> Format 1 WBS	
7. <input type="checkbox"/> Cost Management Report			<input type="checkbox"/> Format 2 Functional	
8. <input type="checkbox"/> Manpower Management Report			<input type="checkbox"/> Format 3 Baseline	
9. <input type="checkbox"/> Conference Record			<input type="checkbox"/> Format 5 Problem Analysis	
10. <input type="checkbox"/> Hot Line Report			2. <input type="checkbox"/> Cost/Schedule Status Report	
FREQUENCY CODES:		Q - Quarterly		
A - As Required		S - Semi-Annually		
C - Contract Change		X - Mandatory for Delivery with Proposals/Bid		
F - Final (End of Contract)		Y - Yearly or Upon Contract Renewal		
M - Monthly		O - One Time (Soon After Contract Award)		
4. SPECIAL INSTRUCTIONS				
A.5., A.6. - Copies are due within fifteen days after end of the calendar month.				
B.3. - Submit in draft after completion of work as indicated in Statement of Work. After DOE approval is received, submit copies as required on attached "Report Distribution List."				
B.4. - Submit 2 copies in draft forty-five days prior to completion date of contract term. After DOE approval is received, submit in final including one camera-ready copy.				
5. ATTACHED HEREWITH:				
<input checked="" type="checkbox"/> Report Distribution List		<input type="checkbox"/>		
<input type="checkbox"/> WBS/Reporting Category		<input type="checkbox"/>		
6. PREPARED BY (Signature and date):		7. REVIEWED BY (Signature and date):		



IO F-129 (Rev. 08-79)
 Ref. DOE 13302
 Use with DOE CR-537

U.S. DEPARTMENT OF ENERGY
 IDAHO OPERATIONS OFFICE
REPORT DISTRIBUTION LIST

Contract No. DE-AS07-79ID12057 Modification No. A004	Milestone Schedule & Status Report Management Plan	Contract Management & Status Report Management Plan	Manpower Management Summary Report Manpower Plan	Project Status Report Manpower Plan	Cost Management Report Manpower Plan	Notice of Energy RD&D Project (SSE) Hot Line Report	Conference Report	Technical Progress Report (SSIE) Topical Report	Final Technical Report	Cost Performance Report	Cost/Schedule Status Report	Summary System Description Status Report	WBS Dictionary
	Addressees		Number of Report Copies										
U. S. Department of Energy Idaho Operations Office 550 Second Street Idaho Falls, Idaho 83401													
Attn: S. M. Prestwich, Program Mgr. Energy & Technology Division					2	2						2	12
Attn: Nell W. Fraser, Director Contracts Management Division					1	1						1	1
Attn: E. G. Jones, Director Financial Management Division					1								
Bob Gray (MS 3344, Federal Building) U. S. Department of Energy, DGE 12th and Penn. N.W. Washington, DC 20461					2	2						2	2
Duncan Foley UURI 420 Chipeta Way, Suite 120 Salt Lake City, UT 84108					1	1						1	1
U. S. Department of Energy Technical Information Center P. O. Box 62 Oak Ridge, TN 37830												1	
Special Instructions													

CONTRACT NO. DE-AS07-79ID12057

I refer to the various BEG/DOE geothermal contracts as Balcones I, II, III, and IV. Balcones I refers to DOE contract no. ET-78-S-05-5864 for FY 1978-79. The final report was accepted by DOE during 1979 and is not part of the current list. Balcones II, III, and IV are all part of DOE contract no. DE-AS07-79ID12057. Balcones II refers mostly to work during FY 1979-80 (Tasks 1/0, 2/0, 3/0, 4/0, 5/0, 6/0, 7/0, and 8/1). Balcones III refers to work during FY 1980-81 (Tasks 1/2, 2/2, 3/2, 4/2, and 5/2). Balcones IV refers to work during FY 1981-82 and extensions into FY 1982-83 (Tasks 1/4, 2/4, 3/4, 4/4, and 5/4).

<u>Task No.</u>	<u>Name, Comments, and Status</u>
1/0	<u>Quantitative Hydrologic Assessment of Hosston/Trinity, Paluxy, and Woodbine Aquifers</u> Comments: None. Status: Work complete; manuscript in press.
2/0	<u>Statewide Lineament Survey</u> Comments: In the draft final report, the lineament mapping was presented as a folio of 51 sheets at 1:500,000 scale derived directly from the Landsat images. In the forthcoming final report this folio is reduced to approximately 1:1,000,000 as prescribed in the contract (see Appendix E in Woodruff and others, 1981). Status: Work complete; manuscript in press.
3/0	<u>Apply Lineament Survey to Faults Affecting the Three Major Cretaceous Aquifers</u> Comments: None. Status: Work complete; manuscript in press.
4/0	<u>Statewide Water-Temperature Measurements — Balcones, Trans-Pecos, and High Plains Regions</u> Comments: This task has been merged with Tasks 6/0, 1/2, and 2/4. The reason for this merging is that our temperature collection and data management are two parts of a single process. In fact, the transfer of our water-temperature data files to GEOTHERM compose our deliverable for these tasks. Also, compilation of water-temperature data from existing files, targeting of wells for subsequent field work, and the actual temperature measurements in the field are continuous processes that have been (and still are) ongoing. Thus, artificial constraints are imposed if we deliver products region-by-region. Instead, our master data file is being manipulated so that a computer tape



THE UNIVERSITY OF TEXAS AT AUSTIN
BUREAU OF ECONOMIC GEOLOGY
AUSTIN, TEXAS 78712-7508

University Station, Box X
Phone 512-471-1534
471-7721

May 20, 1982

Ms. Susan Prestwich
U.S. Department of Energy
Idaho Operations Office
550 Second Street
Idaho Falls, Idaho 83401

Reference: DE-AS07-79ID12057

Dear Ms. Prestwich:

I am sending, under separate cover, a report entitled "Geothermal Resource Assessment for the State of Texas, Status of Progress, November, 1980," by C. M. Woodruff, Jr. This report consists of three volumes: the main text, appendices A through D, and appendices E through H. Eleven copies plus one camera-ready copy are included for your use. In addition to your copies, I have sent one set to each of the individuals listed at the bottom of this letter and two sets to Charles Bufe.

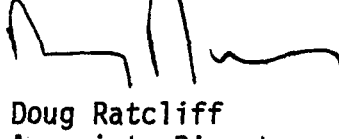
The transmittal of this report represents the final deliverable for the following tasks as listed by Carl Ruscetta (UURI):

<u>Task No.</u>	<u>Name</u>
1/0	Quantitative Hydrologic Assessment of Hosston/Trinity, Paluxy, and Woodbine Aquifers
2/0	Statewide Lineament Survey
3/0	Apply Lineament Survey to Faults Affecting the Three Major Cretaceous Aquifers
4/0	Statewide Water-Temperature Measurements — Balcones, Trans-Pecos, and High Plains (this task was partially filled by the submission of our GEOTHERM computer tape on April 30, 1982)
5/0	Statewide Geothermal Gradient Map
8/1	Geothermal Potential — Selected Military Bases
4/2	Continued Military Base Study — Val Verde, Bexar, and Travis Counties

Ms. Susan Prestwich
May 20, 1982
Page 2

Two bibliographies are also included ("Lineaments" and "Geothermics and Heat Flow in Texas") that were not previously listed as deliverables. If you have any questions concerning this report, please give me a call.

Sincerely,

A handwritten signature in black ink, appearing to read "Doug Ratcliff". The signature is stylized with a prominent vertical stroke and a horizontal base.

Doug Ratcliff
Associate Director

jjm

xc: C. Bufe (2)
D. Foley ✓
N. Fraser
R. Morton
W. Fisher
C. Ruscetta



TEXAS ENERGY AND NATURAL RESOURCES ADVISORY COUNCIL
200 EAST 18TH STREET ☆ AUSTIN, TEXAS 78701 ☆ 512/475-0414

July 8, 1983

Mr. Duncan Foley
Earth Science Laboratory
University of Utah Research Institute
420 Chipeta Way, Suite 120
Salt Lake City, Utah 84108

Dear Mr. Foley:

With the termination of the Texas Energy and Natural Resources Advisory Council this August, I want, on behalf of the TENRAC staff, to express appreciation for your interest, participation, and contributions to the TENRAC mission.

It is my belief that the functions of TENRAC have served the people of this State and the nation exceedingly well. At a time when the State was bombarded with energy and environmental crises of profound proportions, TENRAC was founded to bring into focus Texas' position on State and national issues and to provide the basis for a coordinated and unified response. The agency was also called upon to stimulate and encourage research and development of energy alternatives of particular interest to Texas in light of our declining oil and gas reserves. I believe we have been eminently successful in these endeavors and gained the respect of peer State agencies and the Federal Government as well.

To accomplish our mission required the cooperation and participation of numerous individuals from diverse backgrounds and often with competing interests. With unselfish assistance and patience of individuals such as yourself, the best interest of the State was clearly served. Your contributions and interest in these efforts are most appreciated, and the staff and I are grateful for your cooperation. With the sunseting of TENRAC, we wish you the best in your pursuits and are thankful for the opportunity for our association.

Sincerely,

A handwritten signature in cursive script that reads "Bill Carter".

Bill Carter
Acting Executive Director

BC/jb



TEXAS ENERGY AND NATURAL RESOURCES ADVISORY COUNCIL
200 EAST 18TH STREET ☆ AUSTIN, TEXAS 78701 ☆ 512/475-0414

February 25, 1983

Ms. E. M. Hyster
Contracts Management Division
U.S. Department of Energy
Idaho Operations Office
550 Second Street
Idaho Falls, Idaho 83401

Re: Project Completion under Cooperative Agreement No.
DE-FC07-79ID12080

Dear Ms. Hyster:

As you rightly noted in your letter of February 1, the project for geothermal exploration in Trans-Pecos region has experienced repeated delays. The final report on the project had been partially written and circulated to Dr. Duncan Foley of UURI sometime back. Delay in its completion is a result of the need for incorporating important, lately gathered field data by the research group at University of Texas at El Paso (UTEP).

Professor Robert Roy of UTEP has indicated to me that portion of the report covering the latest field investigations in Presidio and Hudspeth counties will be completed by the end of this month. Providing an additional month thereafter for revision, by Mr. Michael Miklas of Stottler Stagg & Associates, we estimate that the final draft of the report should be submitted to your office by March 31, 1983. After we receive DOE's approval of this draft, report finalization and fulfilment of contractual deliverables will be made in a most expeditious manner.

Please call if you have any questions.

Sincerely,

A handwritten signature in cursive script, appearing to read "C. D. Rao".

C. D. Rao, Coordinator
Coal & Geothermal Programs

CDR:vh

cc: Ms. Susan M. Prestwich
Dr. Duncan Foley
Dr. Carl Ruscetta
Dr. Robert F. Roy
Mr. Michael P. Miklas
Dr. C. D. Henry

X 3/2/83



TEXAS ENERGY AND NATURAL RESOURCES ADVISORY COUNCIL
200 EAST 18TH STREET ☆ AUSTIN, TEXAS 78701 ☆ 512/475-0414

February 25, 1983

Ms. E. M. Hyster
Contracts Management Division
U.S. Department of Energy
Idaho Operations Office
550 Second Street
Idaho Falls, Idaho 83401

Re: Project Completion under Cooperative Agreement No.
DE-FC07-79ID12080

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C. D. Rao, Coordinator
Coal & Geothermal Programs

CDR:vh

cc: Ms. Susan M. Prestwich
Dr. Duncan Foley
~~Dr.~~ Carl Ruscetta
Dr. Robert F. Roy
Mr. Michael P. Miklas
Dr. C. D. Henry

TX - TENRAC

21 December 1982

Elizabeth: This may help in your approach to the Tenrac problem.

CARL RUSCETTA

Dr. C. D. Rao
Coordinator
Coal and Geothermal Programs
TENRAC
200 East 18th Street
Austin, TX 78701

Dear Dr. Rao:

This letter is to acknowledge the receipt of the incomplete draft of the Final Report of the Trans-Pecos Texas Geothermal Research Team, DOE Contract No. DE-FC07-79ID12080, Geothermal Exploration in Trans-Pecos Texas/New Mexico.

This draft was received by Susan Prestwich along with a cover letter from Michael P. Miklas, Jr. of Stottler Stagg and Associates, who is a member of the project team. I also understand that copies of the draft have been received by Duncan Foley and Carl Ruscetta of the Earth Science Laboratory/UURI, for their review.

It is good to see that work on this project and the necessary final report are now nearing completion and that a final report can be prepared upon the receipt of Dr. Rob Roy's inputs by Mr. Miklas. As you know, the contract completion was scheduled for 30 November '82, after several time extensions, and it was not considered appropriate for DOE to grant further extensions. I do appreciate your concern and earnest cooperation in bringing this project to a successful conclusion.

Very truly yours,

Elizabeth Hyster
Contract Officer

TELEFAXED 12/21/82
A.M.

21 December 1982

Elizabeth: This may help in your approach to the Tenrac problem.

Dr. C. D. Rao
Coordinator
Coal and Geothermal Programs
TENRAC
200 East 18th Street
Austin, TX 78701

Dear Dr. Rao:

This letter is to acknowledge the receipt of the incomplete draft of the Final Report of the Trans-Pecos Texas Geothermal Research Team, DOE Contract No. DE-FC07-79ID12080, Geothermal Exploration in Trans-Pecos Texas/New Mexico.

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Very truly yours,

Elizabeth Hyster
Contract Officer

<p>FCPM-182 (Rev. 10-77)</p> <p align="center">U. S. DEPARTMENT OF ENERGY</p> <p align="center">COOPERATIVE AGREEMENT</p> <p align="center">PURSUANT TO AUTHORITY OF PL 93-410, PL 93-438, PL 93-473, PL 93-577, and PL 95-91</p>	<p>1. Agreement No. DE-FC07-79ID12080</p>	<p>1.5. Modification No.</p>								
<p>1. Participant Name and Address Texas Energy and Natural Resources Advisory Council 411 West 13th Street Austin, Texas 78701</p>	<p>2. Agreement Period From: 9/28/79 To: 9/30/81</p>									
<p>3. Project Title Geothermal Exploration in Trans Pecos, Texas/New Mexico</p>	<p>4. Participant Type <input type="checkbox"/> Educational <input type="checkbox"/> Nonprofit <input checked="" type="checkbox"/> State or Local Government <input type="checkbox"/> Profit</p>									
<p>5. Project Will Be Conducted Per See Article III</p>	<p>7. Technical Reports Are Required See Article III</p>									
<p>1. Principal Investigator(s) or Program Director(s) Name and Address David M. White Texas Energy and Natural Resources Advisory Council 411 West 13th Street, Room 902 Austin, Texas 78701 Telephone (512) 475-5588</p>	<p>3. DOE Program Officer (Name and Address) Margaret A. Widmayer, Energy & Technology Division, DOE-ID 550 Second Street Idaho Falls, Idaho 83401 Telephone No. 208-526-1466</p>									
<p>10. Accounting and Appropriation Data AE-10-02-02 89X0210.91</p>	<p>11. Method of Payment <input type="checkbox"/> % At Award. % When Requested. 5% Upon Receipt of Final Report <input type="checkbox"/> Letter of Credit <input type="checkbox"/> Reimbursement <input checked="" type="checkbox"/> Other (specify) See Article V</p>									
<p>12. Submit Vouchers, if any, to Agreements Officer Unless Otherwise Specified in this Block Director, Contracts Management Division, DOE-ID, 550 Second Street, Idaho Falls, Idaho 83401</p>	<p>14. Remarks: TEXAS TENRAC CONTRACT</p>									
<p>13. Funding Sources</p> <table border="1"> <thead> <tr> <th>Source</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>JOE:</td> <td>\$ <u>170,000.00</u></td> </tr> <tr> <td>Participant:</td> <td>\$ <u>50,000.00</u></td> </tr> <tr> <td>Total Funding:</td> <td>\$ <u>220,000.00</u></td> </tr> </tbody> </table>			Source	Amount	JOE:	\$ <u>170,000.00</u>	Participant:	\$ <u>50,000.00</u>	Total Funding:	\$ <u>220,000.00</u>
Source			Amount							
JOE:	\$ <u>170,000.00</u>									
Participant:	\$ <u>50,000.00</u>									
Total Funding:	\$ <u>220,000.00</u>									
<p>15. Amount Obligated by This Action: \$ 170,000.00</p>										
<p>16. JOE Issuing Office (Name and Address) Idaho Operations Office 550 Second Street Idaho Falls, Idaho 83401</p> <p>17. JOE Cooperative Agreements Officer <i>J. F. Marmo</i> 10/3/79 _____ Signature (Date) Name (typed) J. F. Marmo Title Contracting Officer Telephone No. 208-526-1470</p>	<p>18. Participant Acceptance <i>Milton L. Holloway</i> _____ Signature of Authorized Official (Date) Name (typed) Milton L. Holloway Title Director, Energy Analysis & Develop- ment Division, TENRAC</p>									

COOPERATIVE AGREEMENT

THIS AGREEMENT, by and between the UNITED STATES OF AMERICA (hereinafter called the "Government"), acting through the DEPARTMENT OF ENERGY (hereinafter called "DOE") with its Idaho Operations Office located at 550 Second Street in Idaho Falls, Idaho 83401, and the TEXAS ENERGY ADVISORY COUNCIL (hereinafter called the "Participant") located at Austin, Texas 78752;

WITNESSETH THAT:

WHEREAS, the Government is interested in the assessment of geothermal resources; and

WHEREAS, the Participant has proposed to undertake such a project and DOE desires to provide certain financial assistance for the accomplishment of such a program; and

WHEREAS, this Cooperative Agreement (Agreement) is authorized by the Department of Energy Organization Act (Public Law 95-91), Sections 7(a)(2) and 8 of Public Law 93-577, and Sections 103(5) and 107(a) of Public Law 93-438;

NOW, THEREFORE, DOE and the Participant agree as follows:

ARTICLE I - STATEMENT OF JOINT OBJECTIVE

The characterization of geothermal reservoirs in the western part of Texas is important to both the Participant and the Government for estimating the potential of geothermal energy in the areas. The investigations will provide information necessary to develop specific geothermal reservoirs for direct use of heat energy and, possibly, for electrical generation.

ARTICLE II - DEFINITIONS

As used throughout this Agreement, the following terms shall have the meanings set forth below:

A. The term "head of the agency" or "Secretary" as used herein means the Secretary, the Under Secretary, any Assistant Secretary, or any other head or assistant head of the executive or military department or other Federal agency; and the term "his duly authorized representative" means any person or persons or board (other than the Contracting Officer) authorized to act for the head of the agency or the Secretary.

B. The term "Contracting Officer" means the person executing this Agreement on behalf of the Government, and any other officer or civilian employee who is a properly designated Contracting Officer; and the term

ARTICLE II - DEFINITIONS (Cont'd)

includes, except as otherwise provided in this Agreement, the authorized representative of a Contracting Officer acting within the limits of his authority.

C. Except as otherwise provided in this Agreement, the term "sub-contract" includes purchase orders under this Agreement.

ARTICLE III - STATEMENT OF WORK

Previous work in the region, supported by ERDA (1976-1977), the Texas Legislature (1975-77), the Texas Energy Advisory Council (TEAC, 1978-79), and two utilities has delineated several areas of potential for geothermal resources, and has identified two subregions in West Texas which should be investigated in detail. These are listed as the Hueco Tanks subregion to the east of El Paso, and the Presidio Bolson subregion.

The Participant is responsible to assure that the research is accomplished in a manner consistent with the provisions of this Agreement. The Participant's proposal identified as "Geothermal Exploration in Trans Pecos, Texas/New Mexico," as it may have been amended, is made a part of this Agreement by this reference; however, if there is any conflict between the content of the proposal and the content of this Agreement, the content of this Agreement governs.

The following tasks are set forth in the proposal:

Task 1 - Establish Geologic setting and Review Existing Data. The objectives of this task are to review and compile existing geological and geochemical data related to the Hueco Tanks and Presidio Bolson subregions in order to assess potential sites for additional geothermal exploration.

Task 2 - Drilling Program. In the Hueco Tanks subregion during year 1 twelve shallow temperature gradient holes (50M) will be drilled followed by three 300M holes. Based on the results of year 1 drilling, one 750M hole will be drilled during year 2.

In the Presidio Bolson subregion, ten 50M holes will be drilled in year 2. Based on results one 300M hole will be drilled.

Task 3 - Data Aquisition. In the Hueco Tanks subregion the following projects will be undertaken: 1) measure thermal gradients in the boreholes completed in Task 2, and determine heat flow; 2) conduct a gravity survey over about 100 stations; 3) conduct a microearthquake survey using three stations for a minimum of two weeks; 4) analyze chemically any fluids encountered in the boreholes as feasible, and any other wells or springs in the area and 5) conduct an electrical resistivity survey. In the Presidio Bolson subregion projects 1), 3), and 4) will be conducted.

ARTICLE III - STATEMENT OF WORK (Cont'd)

Task 4 - Data Analysis and Synthesis.

Task 5 - Project Reporting. Reports in accordance with the attached Appendix B DOE Form CR-537 Reporting Requirements Checklist shall be prepared and reviewed by a team under the direction of Mr. White of TEAC, and will include persons from the University of Texas at El Paso, the University of Texas at Austin (Bureau of Economic Geology), and the Southwest Research Institute.

ARTICLE IV - FINANCIAL SUPPORT OF THE PROJECT

A. The total estimated cost of performing work under this Agreement is Two Hundred Twenty Thousand Dollars (\$220,000.00) of which the Participant will pay Fifty Thousand Dollars (\$50,000.00) and DOE will pay One Hundred Seventy Thousand Dollars (\$170,000.00). The Participant will pay all direct salaries and wages and the applicable overhead costs for employees of the University of Texas at El Paso and the University of Texas at Austin (Bureau of Economic Geology). In addition, the Participant will pay for Two Thousand One Hundred Fifty Six Dollars (\$2,156.00) of Other Direct Costs for the Bureau of Economic Geology effort. DOE will reimburse the Participant for fringe benefits for these employees of University of Texas at El Paso and University of Texas at Austin and will also reimburse for Other Direct Costs including travel and subcontracts. DOE will also reimburse the Participant for all costs of the Southwest Research Institute subcontract. The total cost to DOE is hereby established as One Hundred Seventy Thousand Dollars (\$170,000.00), and this amount is also the maximum amount of the project which is subject to reimbursement by DOE unless such maximum cost is changed in writing by the Contracting Officer.

B. In regard to any increase or decrease in the total estimated cost of this Agreement as a result of any change in the original Statement of Work as may be agreed upon by the parties during the term of this Agreement, the appropriate sharing of the funding, if any, of such increase or decrease shall be shared at the ratio of 77% DOE, 23% Participant.

C. The amount of funds obligated under this Agreement by DOE for the period from approximately September 28, 1979 through September 30, 1981 is One Hundred Seventy Thousand Dollars (\$170,000.00). The Participant shall notify DOE in writing when 90% of this obligation is reached with a description of the project status relative to the remaining funds.

ARTICLE V - METHOD AND BASIS OF PAYMENT

A. Once each three months, or as agreed to otherwise by the parties, the Participant shall submit an invoice to DOE supported by a statement of current costs incurred for performance of work under this Agreement and claimed to constitute allowable costs. Requests for payment should contain a cost breakdown showing the amount requested, the total amount requested to date, and the total cost of the project to date, including the value of the Participant's cost-sharing as provided for in Article IV of this Agreement. The total amount paid by DOE will not exceed the amount specified in Article IV.

B. Allowable costs will be determined in accordance with Article A.I. of Appendix A. If any of the costs included in the invoices are determined to be unallowable in accordance with Article A.I. of Appendix A the invoice will be appropriately reduced.

C. One per cent of DOE payment will be retained until the Final Report is received and accepted by the Contracting Officer.

ARTICLE VI - TERM OF AGREEMENT

Work under this Agreement shall be accomplished during the period from approximately September 28, 1979 through September 30, 1981. The period of this Agreement may be extended as mutually agreed upon by DOE and the Participant.

ARTICLE VII - PROJECT MANAGEMENT

A. In addition to DOE personnel, the Participant agrees to permit non-DOE personnel who are under contract with DOE, and identified from time to time by the Contracting Officer, to assist the DOE representative in performance of his duties and to have necessary access to the Participant's and major subcontractors' records pertaining to the project. DOE correspondence, if any, with subcontractors shall be routed through the Participant.

B. (1) DOE's Program Officer on this project and the person who shall be the Participant's contact for all matters pertaining to this Agreement shall be the following-named person or such other person(s) as may be designated by the Contracting Officer:

Margaret A. Widmayer
Energy and Technology Division
DOE - Idaho Operations Office
550 Second Street
Idaho Falls, Idaho 83401
Telephone (208) 526-1466

ARTICLE VII - PROJECT MANAGEMENT (Cont'd)

(2) The Participant's Project Director for the work under this Agreement will be the following person or such other person(s) as may be mutually acceptable to the parties:

David M. White
Texas Energy Advisory Council
7703 North Lamar Boulevard
Austin, Texas 78752
Telephone (512) 475-5588

C. Technical Review

(1) Performance of the work under this Agreement shall be subject to the technical review of DOE's Program Officer designated in paragraph B. above. The term "technical review" is defined to include, but not necessarily limited to:

(i) Provisions of written information to the Participant which assists in the interpretation of technical portions of the work description; and

(ii) Review and, where required by the Agreement, approval of technical reports, drawings, specifications, and technical information to be delivered by the Participant to the Government under this Agreement.

(2) Technical review must be within the scope of work stated in this Agreement.

ARTICLE VIII - CHANGES AND MODIFICATIONS

Any changes or modifications to this Agreement or in the scope of work to be performed shall be made by mutual written agreement of the parties. A change may be initiated by either party to this Agreement. The Contracting Officer shall have the authority to determine what constitutes a change.

ARTICLE IX - TERMINATION

A. It is the express intent of DOE and the Participant to fund their respective cost participation for the project.

B. Notwithstanding the foregoing, it is understood that DOE may at any time upon giving written notice terminate this Agreement for convenience for any reason.

ARTICLE IX - TERMINATION (Cont'd)

C. Also, notwithstanding the foregoing, it is understood that the Participant may at any time upon giving sixty (60) days prior written notice to DOE terminate this Agreement for its convenience for reasonable cause.

D. In the event of termination for convenience, it is expected that the parties will cooperate with each other to reasonably phase out the Participant's costs and cost commitments, including cost liabilities to third parties; provided, however, that the total amount obligated by the Government under this Agreement shall not be exceeded. Moreover, upon any such termination for convenience, the Participant agrees to promptly, upon DOE's request, transfer to DOE all information resulting from the work performed to the date of the termination notice.

E. In the event of termination for convenience, the Government agrees to pay the Participant all allowable costs incurred prior to termination, and the Participant shall:

(1) Place no further orders or subcontracts for materials, services, or facilities, intended to be invoiced to the Government for its contribution.

(2) Cancel all orders and subcontracts to the extent that they relate to the performance of work terminated by the Notice of Termination and intended to be invoiced to the Government for its contribution.

(3) Notwithstanding subparagraphs E.(1) and (2) above, the Participant has the right to proceed with such orders and subcontracts should it decide to continue performance of the work at its expense only.

F. After a termination for convenience, the Participant shall submit to the Contracting Officer its termination claim. Such claim shall be submitted promptly but in no event later than one (1) year from the effective date of termination unless one or more extensions in writing are granted by the Contracting Officer. Upon failure of the Participant to submit its termination claim within the time allowed, the Contracting Officer may determine, on the basis of information available to him, the amount, if any, due to the Participant by reason of the termination and shall thereupon pay to the Participant the amount so determined.

ARTICLE IX - TERMINATION (Cont'd)

G. Costs claimed and agreed to pursuant to this article must constitute allowable costs as defined in Article A-1 of the Appendix A of this Agreement and shall be shared in accordance with Article IV.

H. If in the opinion of DOE, the Participant fails to substantially perform under this Agreement and does not cure such failure within a reasonable time, after written notice of such failure by the Contracting Officer, DOE may by written notice to the Participant terminate this Agreement for default. Such termination for default notice, signed by the Contracting Officer, shall be effective upon receipt by the Participant. The Government shall not be liable for the incurrence of any obligations under this Agreement from the date of the receipt of such termination notice. Upon any such termination for default, the Participant agrees to promptly upon DOE's request, transfer to DOE all information resulting from the work performed to the date of the termination notice.

I. Except with respect to defaults of subcontractors, the Participant shall not be in default by reason of failure to substantially perform under this Agreement if such failure arises out of causes beyond the control and without the fault or negligence of the Participant. Such causes may include, but are not restricted to, acts of God or of the public enemy, acts of the Government in either its sovereign or contractual capacity, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, and unusually severe weather, but in every case the failure to perform must be beyond the control and without the fault or negligence of the Participant. If the failure to substantially perform is caused by the failure of a subcontractor to perform or make progress, and if such failure arises out of causes beyond the control of both the Participant and a subcontractor, and without the fault or negligence of either of them, the Participant shall not be deemed to be in default unless the supplies or services to be furnished by the subcontractor were reasonably obtainable from other sources. Upon request of the Participant, if the Contracting Officer shall determine that failure to perform was occasioned by any one or more of the said causes, this Agreement shall be revised accordingly, subject to the rights of DOE under paragraph B. above.

ARTICLE X - LIABILITY AND INDEMNIFICATION

The Government will not be liable for payment of damages for injuries to any person, or loss of life or personal property, or loss suffered or sustained and arising from the work performed under this Agreement. The Participant agrees to indemnify and save the Government harmless from any and all claims, demands, damages, actions, costs, or charges against the Government arising as the result of the above-mentioned injuries, damages, or loss, except for any such damages or claims arising out of the negligent act of the Government or its employees in the course of their official duties.

ARTICLE XI - USE OF INFORMATION

All data and information generated, derived or obtained from the activities provided for herein, and this Agreement, will be public information.

ARTICLE XII - DATE OF INCURRENCE OF COSTS

The Contractor shall be entitled to reimbursement for costs incurred in an amount not to exceed One Hundred Seventy Thousand Dollars (\$170,000.00) on or after September 28, 1979, which, if incurred after this contract has been entered into, would have been reimbursable under the provisions of this contract.

ARTICLE XIII - ADDITIONAL AGREEMENT PROVISIONS

Appendix A, attached hereto and made a part hereof, sets forth additional general provisions of this Agreement.

1. IDENTIFICATION	2. OBLIGATION INSTRUMENT: DE-FC07-79ID12080
-------------------	--

3. REPORTING REQUIREMENTS

A. PROJECT MANAGEMENT	Frequency	B. TECHNICAL INFORMATION REPORTING	Frequency
1. <input type="checkbox"/> Management Plan		1. <input checked="" type="checkbox"/> Notice of Energy RD&D Project (SSIE)	O
2. <input type="checkbox"/> Milestone Schedule & Status Report		2. <input checked="" type="checkbox"/> Technical Progress Report	Q
3. <input type="checkbox"/> Cost Plan		3. <input checked="" type="checkbox"/> Topical Report	Y
4. <input type="checkbox"/> Manpower Plan		4. <input checked="" type="checkbox"/> Final Technical Report	F
5. <input checked="" type="checkbox"/> Contract Management Summary Report	M	C. PMS/MINI-PMS	
6. <input checked="" type="checkbox"/> Project Status Report	M		
7. <input type="checkbox"/> Cost Management Report			
8. <input type="checkbox"/> Manpower Management Report			
9. <input checked="" type="checkbox"/> Conference Record	A		
10. <input checked="" type="checkbox"/> Hot Line Report	A	1. Cost Performance Report	
		<input type="checkbox"/> Format 1 WBS	
		<input type="checkbox"/> Format 2 Functional	
		<input type="checkbox"/> Format 3 Baseline	
		<input type="checkbox"/> Format 5 Problem Analysis	
		2. <input type="checkbox"/> Cost/Schedule Status Report	
		3. <input type="checkbox"/> Management Control System Description	
		4. <input type="checkbox"/> Summary System Description	
		5. <input type="checkbox"/> WBS Dictionary	

FREQUENCY CODES:

A - As Required	Q - Quarterly
C - Contract Change	S - Semi-Annually
F - Final (End of Contract)	X - Mandatory for Delivery with Proposals/Bid
M - Monthly	Y - Yearly or Upon Contract Renewal
O - One Time (Soon After Contract Award)	

4. SPECIAL INSTRUCTIONS

Submit reports per attached Report Distribution List to arrive as indicated below:

A.5. and 6. Due within fifteen days after end of calendar month.

A.9. and 10. As soon as possible.

B.1. Due within fifteen days after Cooperative Agreement award.

B.2. Due within fifteen days after end of the calendar quarter.

B.3. Due not less than forty-five days prior to completion of the yearly term.

B.4. Submit in draft forty-five days prior to completion date of the Cooperative Agreement. After thirty days for DOE review submit eleven copies including one camera ready copy.

5. ATTACHED HEREWITH:

<input checked="" type="checkbox"/> Report Distribution List	<input type="checkbox"/>
<input type="checkbox"/> WBS/Reporting Category	<input type="checkbox"/>

6. PREPARED BY (Signature and date):	7. REVIEWED BY (Signature and date):
--------------------------------------	--------------------------------------



ID F-129 (Rev. 08-79)
 Ref. DOE 13302
 (use with DOE CR-537)

U.S. DEPARTMENT OF ENERGY
 IDAHO OPERATIONS OFFICE
REPORT DISTRIBUTION LIST

Contract No. DE-FC07-79ID12080	<i>Milestone Schedule & Status Management Plan</i> <i>Contract Management & Status Report</i> <i>Manpower Summary Report</i> <i>Project Status Report</i> <i>Cost Management Report</i> <i>Manpower Management Report</i> <i>Notice of Energy RD&D Project</i> <i>Conference Record</i> <i>Hot Line Report</i> <i>Technical Progress Report</i> <i>Final Technical Report</i> <i>Cost/Schedule Status Report</i> <i>Summary System Description</i> <i>WBS Dictionary</i>
--	---

Addressees	Number of Report Copies																			
DOE Program Officer					6	6			6	1	2	6	6	11						

Special Instructions

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. AMENDMENT/MODIFICATION NO. M001
2. EFFECTIVE DATE
3. REQUISITION/PURCHASE REQUEST NO.
4. PROJECT NO. (If applicable)

5. ISSUED BY CODE
U. S. Department of Energy
Idaho Operations Office
550 Second Street, Idaho Falls, ID 83401
6. ADMINISTERED BY (If other than block 5) CODE
File M. 2. 22

7. CONTRACTOR NAME AND ADDRESS CODE FACILITY CODE
Texas Energy and Natural Resources Council
411 West 13th Street
Austin, Texas 78701
Attn: C. D. Rao
8. AMENDMENT OF SOLICITATION NO.
DATED (See block 9)
MODIFICATION OF CONTRACT/ORDER NO. DE-FC07-79ID12080
DATED 9-28-79 (See block 11)

9. THIS BLOCK APPLIES ONLY TO AMENDMENTS OF SOLICITATIONS
 The above numbered solicitation is amended as set forth in block 12. The hour and date specified for receipt of Offers is extended, is not extended.
Offerors must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation, or as amended, by one of the following methods:
(a) By signing and returning _____ copies of this amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGEMENT TO BE RECEIVED AT THE ISSUING OFFICE PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If, by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided such telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

10. ACCOUNTING AND APPROPRIATION DATA (If required)

11. THIS BLOCK APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS
(a) This Change Order is issued pursuant to _____
The Changes set forth in block 12 are made to the above numbered contract/order.
(b) The above numbered contract/order is modified to reflect the administrative changes (such as changes in paying office, appropriation data, etc.) set forth in block 12.
(c) This Supplemental Agreement is entered into pursuant to authority of Mutual agreement of the Parties
It modifies the above numbered contract as set forth in block 12.

12. DESCRIPTION OF AMENDMENT/MODIFICATION
In accordance with Participant's letter dated July 3, 1980, Article VII - Project Management, paragraph B. (2), is revised to change the Participant's Project Director to C. D. Rao.

Except as provided herein, all terms and conditions of the document referenced in block 8, as heretofore changed, remain unchanged and in full force and effect.

13. CONTRACTOR/OFFEROR IS NOT REQUIRED TO SIGN THIS DOCUMENT CONTRACTOR/OFFEROR IS REQUIRED TO SIGN THIS DOCUMENT AND RETURN _____ COPIES TO ISSUING OFFICE

14. NAME OF CONTRACTOR/OFFEROR BY _____ (Signature of person authorized to sign)
17. UNITED STATES OF AMERICA BY Nell W. Fraser (Signature of Contracting Officer)

15. NAME AND TITLE OF SIGNER (Type or print)
16. DATE SIGNED
18. NAME OF CONTRACTING OFFICER (Type or print) Nell W. Fraser
19. DATE SIGNED JUL 31 1980

TEXAS.

File M2.22

JUN 2 1981

Texas Energy and Natural Resources
Advisory Council
411 West 13th Street
Austin, Texas 78701

ATTENTION: C. D. Rao

SUBJECT: MODIFICATION NO. 1002 TO COOPERATIVE
AGREEMENT NO. DE-FC07-79ID12080

Gentlemen:

Enclosed for your retention and files is one fully executed copy of
the subject modification.

Very truly yours,

~~WILLIAM C. DRAKE~~

William C. Drake
Contracting Officer
Chief, R&D Contracts Branch
Contracts Management Division

Enclosure

cc: E. C. Jones, w/enc.
R. L. Combs, w/enc.
M. A. Widmeyer, w/enc.
M. K. Tucker, w/enc. ✓

RECEIVED

JUN 03 1981

GEOTHERMAL ENERGY
BRANCH

RSDCB
GCNolan
6-2-81

RSDCB
EIHyster

RSDCB
WCDrake

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. AMENDMENT/MODIFICATION NO. M002	2. EFFECTIVE DATE	3. REQUISITION/PURCHASE REQUEST NO. 07-81ID12080.501	4. PROJECT NO. (If applicable)
---------------------------------------	-------------------	---	--------------------------------

5. ISSUED BY U. S. Department of Energy Idaho Operations Office 550 Second Street Idaho Falls, Idaho 83401	6. ADMINISTERED BY (If other than block 5)
--	--

7. CONTRACTOR NAME AND ADDRESS Texas Energy and Natural Resources Advisory Council 411 West 13th Street Austin, Texas 78701 Attn: C. D. Rao	8. AMENDMENT OF SOLICITATION NO. DATED _____ (See block 9) MODIFICATION OF CONTRACT/ORDER NO. DE-FC07-79ID12080 DATED 9-28-79 (See block 11)
--	---

9. THIS BLOCK APPLIES ONLY TO AMENDMENTS OF SOLICITATIONS

The above numbered solicitation is amended as set forth in block 12. The hour and date specified for receipt of Offers is extended, is not extended.

Offerors must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation, or as amended, by one of the following methods:

(a) By signing and returning _____ copies of this amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGEMENT TO BE RECEIVED AT THE ISSUING OFFICE PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If, by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided such telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

10. ACCOUNTING AND APPROPRIATION DATA (If required)

11. THIS BLOCK APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS

(a) This Change Order is issued pursuant to _____
The Changes set forth in block 12 are made to the above numbered contract/order.

(b) The above numbered contract/order is modified to reflect the administrative changes (such as changes in paying office, appropriation data, etc.) set forth in block 12.

(c) This Supplemental Agreement is entered into pursuant to authority of mutual agreement of the parties.
It modifies the above numbered contract as set forth in block 12.

12. DESCRIPTION OF AMENDMENT/MODIFICATION

In accordance with the Participant's letter of May 12, 1981, the term of the Agreement is hereby extended to March 30, 1982. This Modification does not increase either the total estimated cost of \$200,000.00 or the total cost to DOE of \$170,000.00.

Except as provided herein, all terms and conditions of the document referenced in block 8, as heretofore changed, remain unchanged and in full force and effect.

13. CONTRACTOR/OFFEROR IS NOT REQUIRED TO SIGN THIS DOCUMENT CONTRACTOR/OFFEROR IS REQUIRED TO SIGN THIS DOCUMENT AND RETURN _____ COPIES TO ISSUING OFFICE

14. NAME OF CONTRACTOR/OFFEROR	17. UNITED STATES OF AMERICA
BY _____ (Signature of person authorized to sign)	BY <u>William C. Drake</u> (Signature of Contracting Officer)

15. NAME AND TITLE OF SIGNER (Type or print)	16. DATE SIGNED	18. NAME OF CONTRACTING OFFICER (Type or print) William C. Drake	19. DATE SIGNED 6/2/81
--	-----------------	---	---------------------------

UURI

EARTH SCIENCE LABORATORY
420 CHIPETA WAY, SUITE 120
SALT LAKE CITY, UTAH 84108
TELEPHONE 801-581-5283

MEMORANDUM

February 19, 1982

TO: Dr. C. D. Rau
Texas Energy and Natural
Resources Advisory Council
200 E. 18th Street
Austin, TX 78701

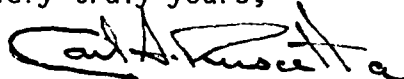
FROM: Carl A. Ruscetta
Technical Program Coordinator

SUBJECT: No Cost Time Extension for Contract DE-FC07-79ID12080

I note in reviewing your January 1982 Project Status Report that delays in the Presidio Bolsen drilling program will preclude completion of this project by 30 March '82, which is the scheduled completion date for the subject contract.

I recommend that you request a time extension on this contract to 30 June '82 from DOE/Idaho. By copy of this memo I will alert Susan Prestwich that such a request is forthcoming. I am sure there will be no problem in obtaining this extension.

Very truly yours,



Carl A. Ruscetta
Technical Program Coordinator

CAR:nlr

cc S. Prestwich DOE/ID
D. Foley



TEXAS ENERGY AND NATURAL RESOURCES ADVISORY COUNCIL
200 EAST 18TH STREET, AUSTIN, TEXAS 78701

March 17, 1982

Ms. Susan Prestwich
Geothermal Resource Assessment Program Manager
US Department of Energy
550 Second Street
Idaho Falls, Idaho 83401

Re: Geothermal Exploration in Trans-Pecos, Texas/New Mexico,
Cooperative Agreement No. DE-FC07-79ID12080, Extension
of Term to July 31, 1982

Dear Ms. Prestwich:

As you may have observed from the monthly progress reports on the above referenced project, field drilling of thermal gradient wells in Presidio Bolson has been delayed considerably. Despite constant pressure being maintained on the drilling subcontractor by Dr. Robert Roy of UTEP we believe that the drilling may commence only in late March or early April. Barring unforeseen further delays we estimate that drilling, data collection and final report preparation can be accomplished within a period of four months.

We therefore seek an extension of term of the cooperative agreement by four months, from March 30 to July 31, 1982. This extension will not increase the total cost to DOE of \$170,000.00

Please grant the extension and issue a contract modification.

Sincerely,

A handwritten signature in black ink, appearing to read "C. D. Rao".

C. D. Rao
Project Director

CDR:vh

cc: Ms. Elizabeth A. Hyster
Dr. Duncan Foley, UURI
~~Dr. Carl Ruscetta, UURI~~
Dr. Robert F. Roy, UTEP
Mr. Michael P. Miklas, Jr./SSA

Co-Chairmen:
William P. Clements, Jr.
Governor

William P. Hobby
Lieutenant Governor

Vice-Chairman:
Bill Clayton
Speaker of the House

Executive Director:
Milton L. Holloway



TEXAS
(TENRAC)

Mod. DE-FO7-791012080

NOTE

U.S. DEPARTMENT OF ENERGY
IDAHO OPERATIONS OFFICE

PROCUREMENT/FINANCIAL ASSISTANCE REQUEST-AUTHORIZATION

ID F-799A (Rev. 01-81)
Ref: DOE PR1-1.4

1. To CMD

2. From Initiating Office EET Div. Technical

3. Initial: Update: 4. Procurement: Financial Assistance:

5. PR Number: 07-82 ID 12080.501 6. PR Correction Letter: 7. Related PR Number:

ACTION IDENTIFICATION

8. Title: TENRAC Modification to DE-FO7-791012080
No Cost from Government

9. Unsolicited Proposal No: _____ 10. Project No: _____ 11. CFDA No: _____

12. Product or Service: * _____ 13. Support Services: Yes No 14. Consultant Award: Yes No

15. Controlled Deliverable: * _____ 16. Report/Drawing Req: Yes No If Yes, Attach Details.

17. Classification of Materials/Work: _____ U-Unclassified C-Confidential S-Secret T-Top Secret

18. Government Property: _____ F-Furnished P-Purchased N-Not Involved If Code F or P, Attach Details.

AWARD PLANNING

19. Award as Order Under Bin: _____

20. Desired Award Date: 03 30 82 21. Kind of Award Action: * 1Q 22. Type of Award: * T If Code T, Attach Details.
Month Day Year

23. If Multi-Year Award, Indicate Number of Years: _____ 24. Type Solicitation Instrument: * _____

25. Extent of Competition: * _____ If Competitive, Attach Technical Evaluation Plan. If Non-Competitive, Attach Justification. Ref: DOE-PR 9-3.805.51 or 9-4.909(n).

26. Source Selection Procedure: _____ 1-A-E 2-SEB 3-Other 4-None

27. For A-E, Show Estimated Construction Cost in Dollars: _____

AWARDEE

If Competitive, has List of Sources been Attached? Yes No If Non-Competitive, Complete 28-31.

28. Name: Texas Energy & Natural Resources 29. Address: 200E 18th St

30. Division: Texas Energy Council Austin, Texas 78701

31. GOCO/Lab: A-GOCO/Lab B-GOCO/Non-Lab C-Non-GOCO/Lab D-Not Applicable

FINANCIAL

Award Value Dollar Amount

32. Gov't Share -0-

33. Total _____

34. Consideration in Kind, Loan, or Loan Guarantee Data Reported on PR-799C:

35. Project Period: From 03 30 82 Thru 07 31 82
Month Day Year Month Day Year

Current FY Funds Committed		
36. B&R Number	37. Fund Class	38. Dollar Amount
_____	_____	_____
_____	_____	_____
_____	_____	_____

39. From PR-799B (Part A) _____

40. Total This PR _____

41. Funding Period: From _____ Thru _____
Month Day Year Month Day Year

42. Appropriation Symbol: _____

43. Allotment Symbol: _____

44. Object Class: _____

* See back of form for codes

PROJECT MANAGER

45. Name: S.M. Frostwich

46. Signature: [Signature]

47. Date: 3 23 82 48. Office Code: _____
Month Day Year

49. FTS Telephone Number: 6-1147

PROGRAM OFFICIAL

50. Name: R.E. Wood

51. Signature: [Signature]

52. Date: _____
Month Day Year

CERTIFYING OFFICIAL

53. Name: F.S. Smith

I hereby certify that the Funds Sited in Item 40 are Available:

54. Signature: [Signature]

55. Date: 3 23 82
Month Day Year

DOE FORM PR-415 Required Yes No

U. S. DEPARTMENT OF ENERGY
PROCUREMENT/FINANCIAL ASSISTANCE REQUEST-AUTHORIZATION

1. TO CMD

2. FROM INITIATING OFFICE E&T Geothermal

3. INITIAL: [X] UPDATE: [] 4. PROCUREMENT: [] FINANCIAL ASSISTANCE: []
5. PR NUMBER: 2 6. PR CORRECTION LETTER: 7. RELATED PR NUMBER:

ACTION IDENTIFICATION
8. TITLE: TEHRAC - Texas State Geothermal Resource Assessment DE-FC09-79UD12080
Modification for 1st Cost Line Extension

9. UNSOLICITED PROPOSAL NO: 10. PROJECT NO: 11. CFDA NO:
12. PRODUCT OR SERVICE: * 13. SUPPORT SERVICES: YES [] NO [] 14. CONSULTANT AWARD: YES [] NO []
15. CONTROLLED DELIVERABLE: * 16. REPORT/DRAWING REQ: YES [] NO [] IF YES, ATTACH DETAILS.
17. CLASSIFICATION OF MATERIALS/WORK: U - UNCLASSIFIED C - CONFIDENTIAL S - SECRET T - TOP SECRET
18. GOVERNMENT PROPERTY: F - FURNISHED P - PURCHASED N - NOT INVOLVED IF CODE F OR P, ATTACH DETAILS.

AWARD PLANNING
19. AWARD AS ORDER UNDER BIN: IF CODE T, ATTACH DETAILS.
20. DESIRED AWARD DATE: ASAP 21. KIND OF AWARD ACTION: * 1Q 22. TYPE OF AWARD: * I
23. IF MULTI-YEAR AWARD, INDICATE NUMBER OF YEARS: 24. TYPE SOLICITATION INSTRUMENT: *
25. EXTENT OF COMPETITION: * IF COMPETITIVE, ATTACH TECHNICAL EVALUATION PLAN. IF NON-COMPETITIVE, ATTACH JUSTIFICATION. *REF: DOE-PR 9-3.805.51 or 9-4.909(f).
26. SOURCE SELECTION PROCEDURE: 1 - A-E 2 - SEB 3 - OTHER 4 - NONE
27. FOR A-E, SHOW ESTIMATED CONSTRUCTION COST IN DOLLARS:

AWARDEE
IF COMPETITIVE, HAS LIST OF SOURCES BEEN ATTACHED? YES [] NO [] IF NON-COMPETITIVE, COMPLETE 28 - 31.
28. NAME: TEXAS ENERGY & ADVISORY RESOURCES 29. ADDRESS: 200618th ST Austin TX 78701
30. DIVISION: Advisory Council PE - CDRAD
31. GOCO/LAB: A - GOCO/LAB B - GOCO/NON-LAB C - NON-GOCO/LAB D - NOT APPLICABLE

FINANCIAL
AWARD VALUE DOLLAR AMOUNT
32. GOV'T SHARE
33. TOTAL
34. CONSIDERATION IN KIND, LOAN, OR LOAN GUARANTEE DATA REPORTED ON PR-799C: []
35. PROJECT PERIOD: FROM 7 31 82 THRU 11 30 82
CURRENT FY FUNDS COMMITTED
36. B&R NUMBER 37. FUND CLASS 38. DOLLAR AMOUNT
39. FROM PR-799B (PART A)
40. TOTAL THIS PR
41. FUNDING PERIOD: FROM THRU
42. APPROPRIATION SYMBOL:
43. ALLOTMENT SYMBOL:
44. OBJECT CLASS:

PROJECT MANAGER
45. NAME: S. M. Presturich
46. SIGNATURE: Susan M. Presturich
47. DATE: 8 26 82 48. OFFICE CODE:
49. FTS TELEPHONE NUMBER: 6-1147

PROGRAM OFFICIAL
50. NAME: RE Wood
51. SIGNATURE: RE Wood
52. DATE: 8-26-82

CERTIFYING OFFICIAL
53. NAME: F S Smith
I HEREBY CERTIFY THAT THE FUNDS CITED IN ITEM 40 ARE AVAILABLE.
54. SIGNATURE:
55. DATE:

* SEE BACK OF FORM FOR CODES

NOTICE OF FINANCIAL ASSISTANCE AWARD
(See Instructions on Reverse)

M 2.22
Posted X

96-294

Under the authority of Public Law _____ subject to legislation, regulations and policies applicable to (cite legislative program title):

National Geothermal Resource Assessment Program

<p>1. PROJECT TITLE Geothermal Exploration in Trans Pecos, Texas/ New Mexico</p>	<p>2. INSTRUMENT TYPE <input type="checkbox"/> GRANT <input checked="" type="checkbox"/> COOPERATIVE AGREEMENT</p>
<p>3. RECIPIENT (Name, address, zip code, area code and telephone no.) Texas Energy and Natural Resources Advisory Council 200 East 18th Street Austin, Texas 78701</p>	<p>4. INSTRUMENT NO. DE-FC07-79ID12080</p> <p>5. AMENDMENT NO. M004</p>
<p>8. RECIPIENT PROJECT DIRECTOR (Name and telephone No.) C. D. Rao</p>	<p>6. BUDGET PERIOD FROM: 9/28/79 THRU: 11/30/82</p> <p>7. PROJECT PERIOD FROM: 9/28/79 THRU: 11/30/82</p>
<p>9. RECIPIENT BUSINESS OFFICER (Name and telephone No.)</p>	<p>10. TYPE OF AWARD <input type="checkbox"/> NEW <input type="checkbox"/> CONTINUATION <input type="checkbox"/> RENEWAL <input type="checkbox"/> REVISION <input checked="" type="checkbox"/> SUPPLEMENT</p>
<p>11. DOE PROJECT OFFICER (Name, address, zip code, telephone No.) S. M. Prestwich 208/526-1147 Idaho Operations Office 550 Second St., Idaho Falls, ID 83401</p>	<p>12. ADMINISTERED FOR DOE BY (Name, address, zip code, telephone No.) E. M. Hyster 208/526-1229 U. S. Department of Energy Idaho Operations Office 550 Second Street Idaho Falls, Idaho 83401</p>

13. RECIPIENT TYPE

<input checked="" type="checkbox"/> STATE GOV'T	<input type="checkbox"/> INDIAN TRIBAL GOV'T	<input type="checkbox"/> HOSPITAL	<input type="checkbox"/> FOR PROFIT ORGANIZATION	<input type="checkbox"/> INDIVIDUAL
<input type="checkbox"/> LOCAL GOV'T	<input type="checkbox"/> INSTITUTION OF HIGHER EDUCATION	<input type="checkbox"/> OTHER NONPROFIT ORGANIZATION	<input type="checkbox"/> C	<input type="checkbox"/> P
			<input type="checkbox"/> SP	<input type="checkbox"/> OTHER (Specify)

14. ACCOUNTING AND APPROPRIATIONS DATA				15. EMPLOYER I.D. NUMBER/SSN
a. Appropriation Symbol N/A	b. B & R Number N/A	c. FT/AFP/OC	d. CFA Number	

16. BUDGET AND FUNDING INFORMATION																			
<p>a. CURRENT BUDGET PERIOD INFORMATION</p> <table style="width:100%;"> <tr><td>(1) DOE Funds Obligated This Action</td><td align="right">\$ -0-</td></tr> <tr><td>(2) DOE Funds Authorized for Carry Over</td><td align="right">\$ -0-</td></tr> <tr><td>(3) DOE Funds Previously Obligated in this Budget Period</td><td align="right">\$ 170,000</td></tr> <tr><td>(4) DOE Share of Total Approved Budget</td><td align="right">\$ 170,000</td></tr> <tr><td>(5) Recipient Share of Total Approved Budget</td><td align="right">\$ 50,000</td></tr> <tr><td>(6) Total Approved Budget</td><td align="right">\$ 220,000</td></tr> </table>	(1) DOE Funds Obligated This Action	\$ -0-	(2) DOE Funds Authorized for Carry Over	\$ -0-	(3) DOE Funds Previously Obligated in this Budget Period	\$ 170,000	(4) DOE Share of Total Approved Budget	\$ 170,000	(5) Recipient Share of Total Approved Budget	\$ 50,000	(6) Total Approved Budget	\$ 220,000	<p>b. CUMULATIVE DOE OBLIGATIONS</p> <table style="width:100%;"> <tr><td>(1) This Budget Period [Total of lines a. (1) and a. (3)]</td><td align="right">\$ 170,000</td></tr> <tr><td>(2) Prior Budget Periods</td><td align="right">\$ -0-</td></tr> <tr><td>(3) Project Period to Date [Total of lines b. (1) and b. (2)]</td><td align="right">\$ 170,000</td></tr> </table>	(1) This Budget Period [Total of lines a. (1) and a. (3)]	\$ 170,000	(2) Prior Budget Periods	\$ -0-	(3) Project Period to Date [Total of lines b. (1) and b. (2)]	\$ 170,000
(1) DOE Funds Obligated This Action	\$ -0-																		
(2) DOE Funds Authorized for Carry Over	\$ -0-																		
(3) DOE Funds Previously Obligated in this Budget Period	\$ 170,000																		
(4) DOE Share of Total Approved Budget	\$ 170,000																		
(5) Recipient Share of Total Approved Budget	\$ 50,000																		
(6) Total Approved Budget	\$ 220,000																		
(1) This Budget Period [Total of lines a. (1) and a. (3)]	\$ 170,000																		
(2) Prior Budget Periods	\$ -0-																		
(3) Project Period to Date [Total of lines b. (1) and b. (2)]	\$ 170,000																		

17. TOTAL ESTIMATED COST OF PROJECT \$ 220,000

(This is the current estimated cost of the project. It is not a promise to award nor an authorization to expend funds in this amount.)

18. AWARD/AGREEMENT TERMS AND CONDITIONS

This award/agreement consists of this form plus the following:

a. Special terms and conditions (if grant) or schedule, general provisions, special provisions (if cooperative agreement)

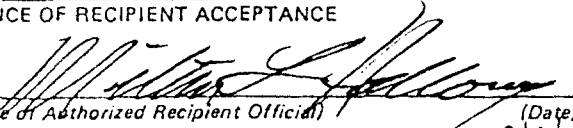
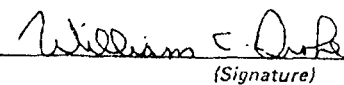
b. Applicable program regulations (specify) _____ (Date) _____

c. DOE Assistance Regulations, 10 CFR Part-600, as amended, Subparts A and B (Grants) or C (Cooperative Agreements).

d. Application/proposal dated 8/16/82, as submitted with changes as negotiated

19. REMARKS

This modification provides for an extension of the anticipated completion date to November 30, 1982 with no change in the financial support or estimated cost of the project.

<p>20. EVIDENCE OF RECIPIENT ACCEPTANCE</p> <p align="center"> (Signature of Authorized Recipient Official) _____ (Date) <u>9/8/82</u> Milton L. Holloway (Name) Executive Director (Title)</p>	<p>21. AWARDED BY</p> <p align="center"> (Signature) _____ (Date) <u>9/3/82</u> William C. Drake (Name) Contracting Officer (Title)</p>
--	---

Contract No. DE-AS07-79ID12037

CONTRACT BETWEEN
SOUTHERN METHODIST UNIVERSITY
AND
THE DEPARTMENT OF ENERGY

THIS AGREEMENT, entered into the 27th day of July 1979 by and between the UNITED STATES OF AMERICA (hereinafter called the "Government"), acting through the DEPARTMENT OF ENERGY (hereinafter called "DOE"), and SOUTHERN METHODIST UNIVERSITY (hereinafter called the "Contractor") a corporation organized and existing under the laws of the State of Texas, with its principal office at Dallas, Texas 75275;

WITNESSETH THAT:

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

WHEREAS, this contract is authorized by Section 302(c)(5) of the Federal Property and Administrative Services Act of 1949, as amended, and the Department of Energy Organization Act of 1977 (Public Law 95-91), and other applicable laws;

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 David D. Blackwell or such other member(s) 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 the "entered into" date and expire on May 31, 1980. 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, DOE shall furnish the equipment, supplies, materials, and services, if any, listed in Article A-II B., and pay the Contractor the sum of One Hundred Sixty-Seven Thousand Dollars (\$167,000.00), 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-V of Appendix B; 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 paragraph A. above. DOE 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 DOE 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 DOE 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 paragraph A. above, may be increased unilaterally by DOE 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 may be revised to reflect any increased DOE support for the extended period or periods.

D. Upon termination, or expiration of the total period of performance, the Contractor shall promptly refund to DOE (or make such disposition as DOE may in writing direct) any sums paid by DOE to the Contractor under this contract, through direct payment or under letter of credit, in excess of the Cumulative Support Cost incurred in performance under the 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 - DATE OF INCURRENCE OF COSTS

The Contractor shall be entitled to reimbursement for costs incurred in an amount not to exceed Thirty Thousand Dollars (\$30,000.00) on or after June 1, 1979, which, if incurred after this contract had been entered into, would have been reimbursable under the provisions of this contract.

ARTICLE VI - ADDITIONAL CONTRACT PROVISIONS

Appendix B attached hereto and made a part hereof, sets forth additional general contract provisions of this contract.

IN WITNESS WHEREOF, the parties hereto have executed this contract as of the day and year first above written.

THE UNITED STATES OF AMERICA

BY THE DEPARTMENT OF ENERGY

By Lois D. Anderson

Lois D. Anderson, Chief, Contract Negotiation Branch
Contracts Management Division
Idaho Operations Office
Contracting Officer

SOUTHERN METHODIST UNIVERSITY

By Truman F. Cook

Truman F. Cook
(Name Typed)

Title Asst. Vice President for Research

SMU Box 302, Dallas, Texas 75275
(Business Address)

Witnesses as to signature of
Contractors:

Mary Earhart
(Signature)

Mary Earhart
Name (typed)

SMU Box 302, Dallas, TX 75275
(Address)

Mildred B. Haenel
(Signature)

Mildred B. Haenel
Name (typed)

SMU Box 302, Dallas, TX 75275
(Address)

I, Phoebe A. Davis, certify that I
am the Secretary of the Contractor
named under this document, that Truman F. Cook,
who signed this document on behalf of the Contractor, was then Asst. Vice
President for Research of said Contractor; that said document was
duly signed for and in 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 signature and the seal of
said Contractor this 25th day of July, 1979.



Phoebe A. Davis
Secretary
SOUTHERN METHODIST UNIVERSITY

(SEAL)

CONTRACTOR: SOUTHERN METHODIST UNIVERSITY

APPENDIX A

For the contract period from the "entered into" date through May 31, 1980.

Article A-1 - RESEARCH TO BE PERFORMED BY CONTRACTOR

(a) The scope of work under this contract is unclassified, and the Contractor under this contract with the Department of Energy will perform research consisting of the following:

(1) The states of Oregon and Washington will contract drilling and perform various geological and geophysical studies necessary for inclusion in this study. The cost of the state work will be at the states' expense. Southern Methodist University (SMU), as part of this contract, will cooperate with the states of Oregon and Washington in order to define the heat flow and geothermal potential in the Cascade Range and in the Basin and Range province of Oregon.

(2) SMU will conduct field measurements of temperature and in situ well parameters of natural gamma activity, specific conductance, resistivity, and sonic velocity. Samples will be collected for thermal conductivity determinations. In the laboratory thermal conductivity determinations, terrain corrections, and other core sample determinations will be made. Complete heat flow values will then be calculated for geothermal interpretation.

(3) SMU will then integrate all data from the three parties to the research for a combined interpretation of the regional heat flow and geothermal potential of select target areas.

(4) Deliverables: SMU will develop a report (plus figures) with detailed estimates of the magnitude and location of the geothermal resources in the Cascade Range of Oregon and Washington, and in the Basin and Range province of Oregon. In addition, SMU will provide all the analyses to the states of Oregon and Washington for subsequent incorporation into state geothermal resource maps at the state's expense.

Article A-II - WAYS AND MEANS OF PERFORMANCE

(a) The items to be supported include the following:

Salaries	\$61,153
Employee Benefits	5,634
12% Faculty Salaries of \$32,005	
6.15% staff (non-retirement) of \$29,148	
Indirect Costs	37,250
65% on-campus salaries of \$50,286	
42% off-campus salaries of \$10,867	
Equipment	31,000
Supplies	8,020
Travel	15,943
Computer	6,000
Publication	2,000
	<u>\$167,000</u>

(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 cost and fringe benefits contributed by the Contractor but excluded from computation of Support Cost and consideration in proportioning costs:

None

(d) All subcontracts and consultant agreements require the review and written approval of the Contracting Officer.

Article A-III - FUNDING

The total estimated cost of items under A-II(a) above, for the contract period stated in this Appendix A is \$167,000.00; DOE will pay 100% 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-V. The estimated DOE Support Cost for the contract period stated in this Appendix is \$167,000.00.

The estimated DOE 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>\$167,000.00</u>

Article A-IV - ADMINISTRATION AND REPORTS

(a) Principal Investigator - Dr. David D. Blackwell
Southern Methodist University
Department of Geological Studies
Telephone (214) 692-2745

Technical Administrator - Dr. Leland L. Mink
(DOE's Project Manager) DOE-ID
Energy & Technology Division
Resource Definition Branch
Telephone (208) 526-0638

The Principal Investigator shall be responsible for directing the work within the scope of Article A-I above as outlined in discussions and in periodic letters from the Technical Administrator.

(b) The Principal Investigator is responsible for the preparation and submission of reports to the Technical Administrator in accordance with Attachment D, DOE Form CR-537, which is made a part hereof by this reference.

Note: Equipment items and estimated cost in A-II(a) includes:

Motorized well-logging equipment	\$15,000
Digital recorder for well-logging equipment	2,000
Digital multimeter for temperature measurement	1,990
Divided bar apparatus	1,500
Circulating baths and cooler:	
Neslab TX 9	765
Neslab TX 40	1,545
Neslab PBC 2	700
Digital plotter for temperature-depth data	2,200
Terminal, Xerox 1725	3,300
Digital recorder for thermal conductivity apparatus	<u>2,000</u>
	\$31,000

Contract No. DE-AS07-79ID12037

APPENDIX B
GENERAL PROVISIONS
FOR
SPECIAL RESEARCH CONTRACTS
WITH EDUCATIONAL INSTITUTIONS

APPENDIX B - GENERAL PROVISIONS

SPECIAL RESEARCH CONTRACTS
WITH EDUCATIONAL INSTITUTIONS

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APPENDIX B - GENERAL PROVISIONS

SPECIAL RESEARCH CONTRACT

ARTICLE B-I DEFINITIONS

A. The term "DOE" means the United States Department of Energy or any duly authorized representative thereof, including the Contracting Officer except for the purpose of deciding an appeal under the article entitled "Disputes."

B. The term "Contracting Officer" means the person executing this contract on behalf of the Government and includes his successors or any duly authorized representative of any such person.

C. Except as otherwise provided in this contract, the term "sub-contracts" includes purchase orders under this contract.

ARTICLE B-II RESPONSIBILITY FOR THE WORK

The Contractor is solely responsible for the conduct of the work.

ARTICLE B-III ADDITIONAL APPROVALS

A. In addition to such approvals as are specifically required by other provisions of this contract, the Contractor shall obtain DOE's approval for:

(1) A change of the principal investigator, co-investigator, or other key people as might be named in this contract or continuation of the research work for any one period in excess of three (3) months without direction by an approved principal investigator. The principal investigator may increase or decrease the amount of effort which he devotes to the project without obtaining DOE approval; however, a representative of the Contractor shall consult with the appropriate DOE Technical Administrator if the principal investigator plans to, or becomes aware that he will devote substantially less effort to the work than anticipated in the article entitled, "Research to be Performed by Contractor" of Appendix A. The purpose of such consultation will be to determine what effect, if any, the anticipated change will have on the research work and what modification to the contract, if any, may be appropriate.

ARTICLE B-III ADDITIONAL APPROVALS (Cont'd)

(2) No change in the phenomenon or phenomena under study, i.e., broad category of the research under the contract shall be made without the specific written approval of DOE; ordinarily, such changes, if approved by DOE, will be accomplished through a new contract or a mutually agreed-to modification. The Contractor may change the specific objectives in the research work described in the contract, provided it gives DOE prompt notification of such changes; and the Contractor may continue to follow the new objectives while DOE determines whether it wishes to continue the program under the changed approach. Significant changes in methods or procedures employed in performing the research should be reported in the first technical progress report issued subsequent to the change(s).

(3) Acquisition of:

(i) An item of equipment not itemized in Appendix A, the cost of which is \$1,000 or more. Approval is not required if the equipment is merely a different model of an item listed in Appendix A; or

(ii) An item or items of equipment the cost of which will cause the total equipment dollar level shown in the article entitled "Ways and Means of Performance" of the Appendix A to be in excess of 125 percent thereof (if plant and capital equipment funds are provided for the acquisition of equipment with title to be vested in the Government, the total cost of such shall not exceed the amount provided for such equipment unless prior DOE approval has been obtained).

(4) Purchase of any general-purpose equipment, such as office furniture, air conditioning, etc., not specifically provided for in Appendix A.

(5) Incurring costs for items set forth in the article entitled "Ways and Means of Performance" of Appendix A, during the pertinent contract period stated in Appendix A, in excess of 110 percent of the total estimated cost specified in Article A-III, "Funding," of Appendix A. Charges to DOE for any such costs incurred with the approval of DOE shall also be subject to the limitations of Article III, "Consideration."

ARTICLE B-III ADDITIONAL APPROVALS (Cont'd)

(6) Any proposed foreign travel (see Article B-XVI).

(7) Expenditures for domestic travel in excess of \$500, or 125 percent of the amount shown in paragraph (a) of the article entitled "Ways and Means of Performance" of Appendix A for such travel, whichever is greater.

(8) Acquisition of excess personal property.

ARTICLE B-IV PAYMENTS

A. DOE shall make payments to the Contractor with respect to the amount of consideration prescribed in Article III of this contract as follows:

(1) A maximum of forty-five percent (45%) of the new funds as set forth in Article A-III(b) of this contract following execution of this contract (and following the effectuation of each extended period).

(2) A maximum of an additional forty-five percent (45%) of the new funds as set forth in Article A-III(b) of this contract upon receipt of a request or requests from the Contractor evidencing that the amount requested is then required in connection with the work under the contract.

(3) If, following submission of an annual progress report, the contract is to be extended for an additional period of performance, an additional payment may be made at the time of execution of the extension which when added to the payments already made under subparagraphs A.(1) and (2) above for the expiring period, will not exceed the new funds set forth in Article A-III(b) for the expiring period; a concluding payment for the pertinent period, if appropriate, may be made following submission of a certified statement showing the DOE Support Cost and evidencing the Contractor's performance under the contract.

(4) If the contract is not to be extended, the final payment of the consideration provided for in Article III of this contract shall be made following submission by the Contractor of a final report, in form and content satisfactory to DOE, and submission of a certified statement showing the DOE Support Cost and evidencing the Contractor's performance under the contract and compliance by the Contractor with the patent provisions of this contract.

ARTICLE B-IV PAYMENTS (Cont'd)

B. The payments made pursuant to paragraph A. above shall not prejudice or otherwise affect adversely any of the Government's rights under the contract. For purposes of settlement in the event of termination pursuant to Article B-IX hereof, these payments shall not be construed as evidentiary, and any excess payment in the light of Article B-IX shall be promptly returned to DOE.

C. DOE, at its option, may invoke the following with respect to any amount of the contract consideration remaining to be paid at any given time:

(1) DOE shall issue a letter of credit as provided for by Treasury Fiscal Requirements Manual, Part VI, Section 1020, under which payments to the Contractor with respect to the amount of consideration provided for in Article III of this contract will be made. The Contractor agrees that the first ninety percent (90%) of the new funds as set forth in Article A-III(b) of the contract will be under the letter of credit and will be subject to the submission by the Contractor of a Payment Voucher on Letter of Credit (TUS 5401), in accordance with procedures based upon Treasury Fiscal Requirement Manual, Part VI, Section 1020, which are agreed to by the parties. Following submission by the Contractor of a final report provided for in Article A-IV, in form and content satisfactory to DOE, and submission of a certified statement showing the total expenditures and evidencing the Contractor's performance under the contract, and upon submission by the Contractor to DOE of such invoices or vouchers as are satisfactory to DOE, DOE shall pay the Contractor the concluding payment of the consideration provided for in Article III of this contract, or said concluding payment will be included under the letter of credit and will be subject to submission by the Contractor of a Payment Voucher on Letter of Credit, in accordance with the procedure described above. If, following submission of an annual report, the contract is extended for an additional period of performance, an additional payment may similarly be made at the time of execution of the extension which, when added to the payments already made for the expiring period, will not exceed the new funds as set forth in Article A-III(b) for the expiring period; a concluding payment for the pertinent period, if appropriate, may be made following submission of a certified statement showing the DOE Support Cost for the pertinent period and evidencing the Contractor's performance under the contract.

ARTICLE B-IV PAYMENTS (Cont'd)

(2) DOE reserves the right to increase, decrease, or cancel the amount covered by the letter of credit, provided that such action is required because of a change in the amount of consideration provided for in Article III or is taken pursuant to subparagraph C.(1) of this article. The issuance and use of a letter of credit and receipt of funds pursuant thereto shall not prejudice or otherwise adversely affect any of the Government's rights under the contract.

ARTICLE B-V DETERMINATION OF SUPPORT COSTS

A. The term "Support Cost" as used in this contract means DOE's share of the sum of costs incurred by the Contractor for items included under Article A-II(a) of Appendix A which are in furtherance of the work hereunder, which are incurred in accordance with the provisions of this contract, and which are reported to DOE in accordance with paragraph B. below. The term "Cumulative Support Cost" as used in this contract means the total of the Support Cost incurred during the initial contract period (i.e., that period under which this contract was first written as a Special Research Contract) plus any extension period(s) of the contract.

B. Within three (3) months after the end of each contract period set forth in Appendix A, and within three (3) months after the termination or expiration of the total period of performance, the Contractor shall furnish a certified statement, executed by an official of the Contractor showing the Contractor's cost, and evidencing its performance under the contract, during the contract term just completed. The statement shall show all costs incurred during the pertinent contract term set forth in Appendix A for items under Article A-II(a) of Appendix A, including the Contractor's share, if any, of such costs, and show the extent of the Contractor's contribution of items listed under Article A-II(b) of Appendix A. Costs included in the certified statement may include the following: Expenditures of cash; the cost of material and supplies transferred from stores inventory; and the amount due the Contractor for indirect costs in accordance with the rate and factor or factors shown in Appendix A of the contract for the pertinent contract period. The costs for the pertinent contract period shall be consistent with the principles of Federal Management Circular 73-8, as constituted on the effective commencement date of said period. The certified statement shall be in the form set forth in Appendix C.

C. The certified statement should be in agreement with the Contractor's financial records and shall reflect only expenditures actually made during the period covered, including transfers from inventory. It shall

ARTICLE B-V DETERMINATION OF SUPPORT COSTS (Cont'd)

not include commitments, as a part of such expenditures, for goods or services on order, but not received or those received but not paid for unless the Contractor is operating under an estimated and consistently applied system of accrual accounting. If this is the case, the certified statement shall be so footnoted. A combination of accrual and cash accounting for cost accumulation and reporting purposes shall not be used. The renewal proposal budget should be footnoted to show the estimated amount of outstanding commitments for property at the end of the current contract period. The certified statement contains a space in which should be inserted the actual amount of outstanding commitments for property at the end of the period covered by the statement. This commitment amount is for information only and is not a part of the expenditure calculation. The Contractor understands that DOE expects to rely on this certified statement for determining the Support Cost for the pertinent contract period. With respect to any period in which proportionate cost-sharing is applicable, the Support Cost for the pertinent period will be determined by applying the percentage figure included in Article A-III for the pertinent period, to the certified cost of items included under Article A-II(a) incurred during the pertinent contract period. All charges to DOE shall be subject to the approval requirements of this contract. The Contractor is expected to maintain auditable records as contemplated by Article B-VI.C. to substantiate the costs incurred for items under Article A-II(a) and to show the extent of the Contractor's contribution of items listed under Article A-II(b).

ARTICLE B-VI INSPECTION, REPORTS, RECORDS AND ACCOUNTS

A. DOE shall have the right to inspect, in such manner and at all reasonable times as it deems appropriate, all activities of the Contractor arising in the course of its undertakings under this contract.

B. The Contractor shall make progress and other reports in such manner and at such times as specified. The Contractor shall also make such other reports to DOE, with respect to its activities under this contract, as DOE may reasonably require from time to time.

C. The Contractor agrees to keep records and books of account, in accordance with generally accepted accounting principles and practices, and consistent with the requirements of Federal Management Circular 73-8, as constituted on the effective commencement date of the contract period, covering its costs and expenditures for items included under Article A-II(a) of Appendix A and which are in furtherance of the

ARTICLE B-VI INSPECTION, REPORTS, RECORDS AND ACCOUNTS (Cont'd)

research work under this contract. In the event a Contractor contribution is listed in Article A-II(b), the Contractor shall maintain records adequate to permit DOE to determine the extent of the contribution. If professional staff members are included under Article A-II(c), the Contractor shall maintain records on such personnel in accordance with the payroll distribution procedures of section J.7.b of Federal Management Circular 73-8.

D. DOE shall at all reasonable times be afforded access to the premises and to these books and records and to related correspondence, receipts, vouchers, memoranda, and other data of the Contractor, and the Contractor shall preserve such books and papers, without additional compensation therefor, in accordance with the retention requirements referenced in Article B-XIV.

ARTICLE B-VII PROPERTY ITEMS

A. Except as otherwise provided in this paragraph A. and paragraph B. of this Article B-VII, title to all materials, supplies and equipment purchased or otherwise acquired by the Contractor in the performance of its research activities shall be and remain in the Contractor. Said materials, supplies, and equipment shall be used for the benefit of research under this contract and any extensions or successor contracts hereto and, provided there is no interference with said research, shall be made available for use by investigators working on any Federal research agreement at the same location. Subject to these priorities, the materials, supplies, and equipment may be used as the Contractor wishes. Except as otherwise agreed in writing, title to any items of property listed as "Government property" shall pass directly to the Government; such property shall be subject to paragraphs B., C., D., E., and F. of this Article B-VII.

B. Subject to the mutual agreement of DOE and the Contractor, the Government may furnish the Contractor items of equipment, materials, supplies, or facilities for use by the Contractor in the performance of the contract work; title to these items shall remain in the Government unless otherwise agreed in writing. Such items of property and the items of property listed elsewhere in this contract as Government property, are hereinafter referred to as "Government property." Title to Government Property shall not be affected by the incorporation or attachment thereof to any property not owned by the Government nor shall any such property, or any part thereof, be or become a fixture or lose its identity as personalty by reason of affixation to any realty.

ARTICLE B-VII PROPERTY ITEMS (Cont'd)

C. To the extent practicable, the Contractor shall cause all items of Government property to be suitably marked with an identifying mark or symbol indicating that the items are the property of the Government. The Contractor shall maintain, at all times and in a manner satisfactory to DOE, records showing the use and disposition of Government property. Such records shall be subject to DOE inspection at all reasonable times and DOE shall at all reasonable times have access to the premises wherein any items of Government property are located. Unless otherwise authorized in writing by DOE, the Contractor shall use Government property only for the purposes of this contract; provided, however, that the Contractor is hereby authorized to use items of equipment constituting Government property for other Federal research contracts to the extent such use (1) does not interfere with its work under this contract, (2) is not prohibited by provisions of the other Federal contracts, and (3) is promptly reported by the Contractor to DOE under this contract.

D. The Contractor shall promptly notify DOE of any loss or destruction of or damage to Government property. It is understood that the Contractor shall not be liable for any such loss, destruction, or damage, unless same results from wilful misconduct or lack of good faith on the part of any corporate officer of the Contractor, or of one or more of the Contractor's representatives having supervision or direction of all or substantially all of the activities under this contract. If the Contractor is liable for any such loss, destruction, or damage, it shall promptly account therefor to the satisfaction of DOE; if the Contractor is not liable therefor, and is indemnified, reimbursed, or otherwise compensated for such loss, destruction, or damage, it shall promptly account therefor to the satisfaction of DOE.

E. With the written approval of DOE, the Contractor may sell, transfer, or otherwise dispose of items of Government property to such parties and upon such terms as so approved, or itself acquire title to items of Government property upon such terms as may be mutually agreed upon in writing by the Contractor and DOE. The proceeds of any such disposition, and any agreed price of any such Contractor acquisition, shall be paid by the Contractor to the Government, or credited on account of DOE payments to be made under this contract, as DOE may direct. Subject to the other provisions of this contract, the Contractor shall deliver Government property to DOE upon request (suitably packed and shipped at the Government's expense).

F. The Contractor shall utilize for the benefit of the work under this contract such items of property available to the Contractor by reason of its activities under other Federal research contracts as are appropriate for utilization under this contract pursuant to the provisions of the pertinent Federal contracts.

ARTICLE B-VIII - DISCLOSURE OF INFORMATION

A. It is mutually expected that the activities under this contract will not involve Restricted Data or other classified information or material. It is understood, however, that if in the opinion of either party this expectation changes prior to the expiration or termination of all activities under this contract, said party shall notify the other party accordingly in writing without delay. In any event, the Contractor shall classify, safeguard, and otherwise act with respect to all Restricted Data and other classified information and material, in accordance with applicable law and requirements of DOE, and shall promptly inform DOE in writing if and when Restricted Data or other classified information or material becomes involved. If and when Restricted Data or other classified information or material becomes involved, or in the mutual judgment of the parties it appears likely that Restricted Data or other classified information or material may become involved, the Contractor shall have the right to terminate performance of the work under this contract and in such event the provisions of this contract respecting termination for the convenience of the Government shall apply.

B. The Contractor shall not permit any individual to have access to Restricted Data, or other classified information, except in accordance with the Atomic Energy Act of 1954, as amended, and DOE's regulations and requirements.

C. The term "Restricted Data" as used in this article means all data concerning the design, manufacture, or utilization of atomic weapons, the production of special nuclear material or the use of special nuclear material in the production of energy, but shall not include data declassified or removed from the Restricted Data category pursuant to section 142 of the Atomic Energy Act of 1954, as amended.

ARTICLE B-IX - TERMINATION FOR CONVENIENCE OF THE GOVERNMENT

A. The performance of work under this contract may be terminated, in whole or from time to time in part, by the Government whenever for any reason the Contracting Officer shall determine that such termination is in the best interest of the Government. Termination of work hereunder shall be effected by delivery to the Contractor of a Notice of Termination specifying the extent to which performance of work under the contract is terminated and the date upon which such termination becomes effective.

B. After receipt of the Notice of Termination, the Contractor shall cancel its outstanding commitments hereunder covering the procurement of materials, supplies, equipment, and miscellaneous items. In

ARTICLE B-IX - TERMINATION FOR CONVENIENCE OF THE GOVERNMENT (Cont'd)

addition, the Contractor shall exercise all reasonable diligence to accomplish the cancellation or diversion of its outstanding commitments covering personal services and extending beyond the date of such termination to the extent that they relate to the performance of any work terminated by the notice. With respect to such canceled commitments, the Contractor agrees to (1) settle all outstanding liabilities and all claims arising out of such cancellation of commitments, with the approval or ratification of the Contracting Officer, to the extent he may require, which approval or ratification shall be final for all purposes of this article; and (2) assign to the Government, in the manner, at the time, and to the extent directed by the Contracting Officer, all of the right, title, and interest of the Contractor under the orders and subcontracts so terminated, in which case the Government shall have the right, in its discretion, to settle or pay any or all claims arising out of the termination of such orders and subcontracts.

C. The Contractor shall submit its termination claim to the Contracting Officer promptly after receipt of a Notice of Termination, but in no event later than one year from the effective date thereof, unless one or more extensions in writing are granted by the Contracting Officer upon written request of the Contractor within such one-year period or authorized extension thereof. Upon failure of the Contractor to submit its termination claim within the time allowed, the Contracting Officer may, subject to any review required by the contracting agency's procedures in effect as of the date of execution of this contract, determine, on the basis of information available to him, the amount, if any, due to the Contractor by reason of the termination and shall thereupon pay to the Contractor the amount so determined.

D. Any determination of costs under paragraph C. shall be governed by the contract cost principles and procedures in Subpart 1-15.3 of the Federal Procurement Regulations (41 CFR 1-15.3) in effect on the date of this contract.

E. Subject to the provisions of paragraph C. above, and subject to any review required by the contracting agency's procedures in effect as of the date of execution of this contract, the Contractor and the Contracting Officer may agree upon the whole or any part of the amount or amounts to be paid to the Contractor by reason of the termination under this article, which amount or amounts may include any reasonable cancellation charges thereby incurred by the Contractor and any reasonable loss upon outstanding commitments for personal services which it is unable to cancel; Provided, however, that in connection with any outstanding commitments for personal services which the Contractor is unable to cancel, the Contractor shall have exercised reasonable diligence to divert such

ARTICLE B-IX - TERMINATION FOR CONVENIENCE OF THE GOVERNMENT (Cont'd)

commitments to its other activities and operations. Any such agreement shall be embodied in an amendment to this contract and the Contractor shall be paid the agreed amount.

F. The Government may from time to time, under such terms and conditions as it may prescribe, make partial payments against costs incurred by the Contractor in connection with the terminated portion of this contract, whenever, in the opinion of the Contracting Officer, the aggregate of such payments is within the amount to which the Contractor will be entitled hereunder. If the total of such payments is in excess of the amount finally agreed or determined to be due under this article, such excess shall be payable by the Contractor to the Government upon demand; Provided, That if such excess is not so paid upon demand, interest thereon shall be payable by the Contractor to the Government at the rate established by the Secretary of the Treasury pursuant to Public Law 92-41 [50 U.S.C. App. 1215(b)(2)] for the Renegotiation Board, beginning 30 days from the date of such demand.

G. The Contractor agrees to transfer title to the Government and deliver in the manner, at the times, and to the extent, if any, directed by the Contracting Officer, such information and items which, if the contract had been completed, would have been required to be furnished to the Government, including:

- (1) Completed or partially completed plans, drawings, and information; and
- (2) Materials or equipment produced or in process or acquired in connection with the performance of the work terminated by the notice.

Other than the above, any termination inventory resulting from the termination of the contract may, with the written approval of the Contracting Officer, be sold or acquired by the Contractor under the conditions prescribed by and at a price or prices approved by the Contracting Officer. The proceeds of any such disposition shall be applied in reduction of any payments to be made by the Government to the Contractor under this contract or shall otherwise be credited to the price or cost of work covered by this contract or paid in such other manner as the Contracting Officer may direct. Pending final disposition of property arising from the termination, the Contractor agrees to take such action as may be necessary, or as the Contracting Officer may direct, for the protection and preservation of the property related to this contract which is in the possession of the Contractor and in which the Government has or may acquire an interest.

H. Any dispute as to questions of fact which may arise hereunder shall be subject to the "Disputes" article of this contract.

ARTICLE B-X - DISPUTES

A. This contract is subject to the Contract Disputes Act of 1978 (41 U.S.C. 601, et seq.). If a dispute arises relating to the contract, the Contractor may submit a claim to the Contracting Officer who shall issue a written decision on the dispute in the manner specified in DAR 1-314 (FPR 1-1.318).

B. "Claim" means:

- (1) a written request submitted to the Contracting Officer;
- (2) for payment of money, adjustment of contract terms, or other relief;
- (3) which is in dispute or remains unresolved after a reasonable time for its review and disposition by the Government; and
- (4) for which a Contracting Officer's decision is demanded.

C. In the case of disputed requests or amendments to such requests for payment exceeding \$50,000, or with any amendment causing the total request in dispute to exceed \$50,000, the Contractor shall certify, at the time of submission as a claim, as follows:

I certify that the claim is made in good faith, that the supporting data are accurate and complete to the best of my knowledge and belief; and that the amount requested accurately reflects the contract adjustment for which the Contractor believes the Government is liable.

(Contractor's Name) _____

(Title) _____

D. The Government shall pay the Contractor interest:

- (1) on the amount found due on claims submitted under this article;
- (2) at the rates fixed by the Secretary of the Treasury, under the Renegotiation Act, Public Law 92-41;

ARTICLE B-X - DISPUTES (Cont'd)

(3) from the date the Contracting Officer receives the claim, until the Government makes payment.

E. The decision of the Contracting Officer shall be final and conclusive and not subject to review by any forum, tribunal, or Government agency unless an appeal or action is timely commenced within the times specified by the Contract Disputes Act of 1978.

F. The Contractor shall proceed diligently with performance of this contract, pending final resolution of any request for relief, claim, appeal or action related to the contract, and comply with any decision of the Contracting Officer.

ARTICLE B-XI - PAYMENT OF INTEREST ON CONTRACTORS' CLAIMS

A. If an appeal is filed by the Contractor from a final decision of the Contracting Officer under the "Disputes" article of this contract, denying a claim arising under the contract, simple interest on the amount of the claim finally determined owed by the Government shall be payable to the Contractor. Such interest shall be at the rate determined by the Secretary of the Treasury pursuant to Public Law 92-41, 85 Stat. 97, from the date the Contractor furnishes to the Contracting Officer its written appeal under the "Disputes" article of this contract, to the date of (1) a final judgment by a court of competent jurisdiction, or (2) mailing to the Contractor of a supplemental agreement for execution either confirming completed negotiations between the parties or carrying out a decision of a board of contract appeals.

B. Notwithstanding paragraph A. above, (1) interest shall be applied only from the date payment was due, if such date is later than the filing of appeal, and (2) interest shall not be paid for any period of time that the Contracting Officer determines the Contractor has unduly delayed in pursuing its remedies before a board of contract appeals or a court of competent jurisdiction.

ARTICLE B-XII - OFFICIALS NOT TO BENEFIT

No member of or delegate to Congress, or resident commissioner, shall be admitted to any share or part of this contract, or to any benefit that may arise therefrom; but this provision shall not be construed to extend to this contract if made with a corporation for its general benefit.

ARTICLE B-XIII - COVENANT AGAINST CONTINGENT FEES

The Contractor warrants that no person or selling agency has been employed or retained to solicit or secure this contract upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee, excepting bona fide employees or bona fide established commercial or selling agencies maintained by the Contractor for the purpose of securing business. For breach or violation of this warranty, the Government shall have the right to annul this contract without liability or in its discretion to deduct from the contract price or consideration, or otherwise recover, the full amount of such commission, percentage, brokerage, or contingent fee.

ARTICLE B-XIV - EXAMINATION OF RECORDS BY COMPTROLLER GENERAL

A. This article is applicable if the amount of the contract exceeds \$10,000 and was entered into by means of negotiation, including small business restricted advertising, but is not applicable if this contract was entered into by means of formal advertising.

B. The Contractor agrees that the Comptroller General of the United States or any of his duly authorized representatives shall, until the expiration of three (3) years after final payment under this contract have access to and the right to examine any directly pertinent books, documents, papers, and records of the Contractor involving transactions related to this contract.

C. The Contractor further agrees to include in all its subcontracts hereunder a provision to the effect that the subcontractor agrees that the Comptroller General of the United States or any of his duly authorized representatives shall, until the expiration of three (3) years after final payment under the subcontract, unless DOE authorizes their prior disposition, have access to and the right to examine any directly pertinent books, documents, papers, and records of such subcontractor, involving transactions related to the subcontract. The term "subcontract" as used in this article excludes (1) purchase orders not exceeding \$10,000 and (2) subcontracts or purchase orders for public utility services at rates established for uniform applicability to the general public.

ARTICLE B-XIV - EXAMINATION OF RECORDS BY COMPTROLLER GENERAL (Cont'd)

D. The periods of access and examination described in paragraphs A. and B. above, for records which relate to (1) appeals under the "Disputes" article of this contract, (2) litigation or the settlement of claims arising out of the performance of this contract, or (3) costs and expenses of this contract as to which exception has been taken by the Comptroller General or any of his duly authorized representatives, shall continue until such appeals, litigation, claims, or exceptions have been disposed of.

E. Nothing in this contract shall be deemed to preclude an audit by the General Accounting Office of any transaction under this contract.

ARTICLE B-XV - BUY AMERICAN ACT

A. In acquiring end products, the Buy American Act (41 U.S. Code 10a-d) provides that the Government give preference to domestic source end products. For the purpose of this article:

(1) "Components" means those articles, materials, and supplies which are directly incorporated in the end products;

(2) "End products" means those articles, materials, and supplies which are acquired under this contract for public use; and

(3) "A domestic source end product" means (i) an un-manufactured end product which has been mined or produced in the United States, and (ii) an end product manufactured in the United States if the cost of the components thereof which are mined, produced, or manufactured in the United States exceeds 50 percent of the costs of all its components. For the purpose of this subparagraph A.(3)(ii), components of foreign origin of the same type or kind as the products referred to in subparagraphs B.(2) or (3) of this article shall be treated as components mined, produced, or manufactured in the United States.

B. The Contractor agrees that there will be used under this contract (by the Contractor, subcontractors, materialmen, and suppliers) only domestic source end products, except end products:

(1) Which are for use outside the United States;

(2) Which the Government determines are not mined, produced, or manufactured in the United States in sufficient and reasonably available commercial quantities and of a satisfactory quality;

ARTICLE B-XV - BUY AMERICAN ACT (Cont'd)

(3) As to which the head of the agency determines the domestic preference to be inconsistent with the public interest;
or

(4) As to which the head of the agency determines the cost to the Government to be unreasonable.

(The foregoing requirements are administered in accordance with Executive Order No. 10582, dated December 17, 1954.)

ARTICLE B-XVI - FOREIGN TRAVEL

Foreign travel shall be subject to the prior approval of the Contracting Officer for each separate trip regardless of whether funds for such travel are contained in an approved budget. Foreign travel is defined as travel outside of Canada and the United States and its territories and possessions.

ARTICLE B-XVII - ASSIGNMENT; SUBCONTRACTING

Neither this contract nor any interest therein nor claim thereunder shall be assigned or transferred by the Contractor, except as expressly authorized in writing by DOE. The Contractor shall not subcontract any research and development work under this contract, except as expressly authorized in writing by the Contracting Officer.

ARTICLE B-XVIII - CONTRACT WORK HOURS AND SAFETY STANDARDS ACT -
OVERTIME COMPENSATION

[This contract, to the extent that it is of a character specified in the Contract Work Hours and Safety Standards Act (40 U.S.C. 327-333), is subject to the following provisions and to all other applicable provisions and exceptions of such Act and the regulations of the Secretary of Labor thereunder.]

A. Overtime Requirements. No Contractor or subcontractor contracting for any part of the contract work, which may require or involve the employment of laborers, mechanics, apprentices, trainees, watchmen, and guards, shall require or permit any laborer, mechanic, apprentice, trainee, watchman, or guard, in any workweek in which he is employed on such work, to work in excess of eight (8) hours in any calendar day, or in excess of forty (40) hours in such workweek, on work subject to the provisions of the Contract Work Hours and Safety Standards Act, unless such laborer, mechanic, apprentice, trainee, watchman, or guard receives compensation at a rate not less than

ARTICLE B-XVIII - CONTRACT WORK HOURS AND SAFETY STANDARDS ACT -
OVERTIME COMPENSATION (Cont'd)

one and one-half times his basic rate of pay for all such hours worked in excess of eight (8) hours in any calendar day, or in excess of forty (40) hours in such workweek, whichever is the greater number of overtime hours.

B. Violation; Liability for Unpaid Wages; Liquidated Damages.

In the event of any violation of the provisions of paragraph A., the Contractor and any subcontractor responsible therefor shall be liable to any affected employee for his unpaid wages. In addition, such Contractor and subcontractor shall be liable to the United States for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer, mechanic, apprentice, trainee, watchman, or guard employed in violation of the provisions of paragraph A. in the sum of \$10 for each calendar day on which such employee was required or permitted to be employed on such work in excess of eight (8) hours or in excess of his standard workweek of forty (40) hours without payment of the overtime wages required by paragraph A.

C. Withholding for Unpaid Wages and Liquidated Damages.

The Contracting Officer may withhold from the Government Prime Contractor, from any moneys payable on account of work performed by the Contractor or subcontractor, such sums as may administratively be determined to be necessary to satisfy any liabilities of such Contractor or subcontractor for unpaid wages and liquidated damages as provided in the provisions of paragraph B.

D. Subcontracts.

The Contractor shall insert paragraphs A. through D. of this article in all subcontracts, and shall require their inclusion in all subcontracts of any tier.

E. Records.

The Contractor shall maintain payroll records containing the information specified in 29 CFR 516.2(a). Such records shall be preserved for three (3) years from the completion of the contract.

ARTICLE B-XIX - EQUAL OPPORTUNITY

[The following article is applicable unless this contract is exempt under the rules, regulations, and relevant orders of the Secretary of Labor (41 CFR, ch. 60).]

During the performance of this contract, the Contractor agrees as follows:

A. The Contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, or national origin. Such action shall include, but not be limited to the

ARTICLE B-XIX - EQUAL OPPORTUNITY (Cont'd)

following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the Contracting Officer setting forth the provisions of this Equal Opportunity article.

B. The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, or national origin.

C. The Contractor will send to each labor union or representative of workers with which it has a collective bargaining agreement or other contract or understanding, a notice to be provided by the Contracting Officer, advising the labor union or workers' representative of the Contractor's commitments under this Equal Opportunity article, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

D. The Contractor will comply with all provisions of Executive Order No. 11246 of September 24, 1965, as amended by Executive Order No. 11375 of October 13, 1967, and of the rules, regulations, and relevant orders of the Secretary of Labor.

E. The Contractor will furnish all information and reports required by Executive Order No. 11246 of September 24, 1965, as amended by Executive Order No. 11375 of October 13, 1967, and by the rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to its books, records, and accounts by the contracting agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

F. In the event of the Contractor's noncompliance with the Equal Opportunity article of this contract or with any of the said rules, regulations, or orders, this contract may be cancelled, terminated, or suspended, in whole or in part, and the Contractor may be declared ineligible for further Government contracts in accordance with procedures authorized in Executive Order No. 11246 of September 24, 1965, as amended by Executive Order No. 11375 of October 13, 1967, and such other sanctions may be imposed and remedies invoked as provided in Executive Order No. 11246 of September 24, 1965, as amended by Executive Order No. 11375 of October 13, 1967, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

ARTICLE B-XIX - EQUAL OPPORTUNITY (Cont'd)

G. The Contractor will include the provisions of paragraphs A. through G. in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order No. 11246 of September 24, 1965, as amended by Executive Order No. 11375 of October 13, 1967, so that such provisions will be binding upon each subcontractor or vendor. The Contractor will take such action with respect to any subcontract or purchase order as the contracting agency may direct as a means of enforcing such provisions, including sanctions for noncompliance; Provided, however, that in the event the Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the contracting agency, the Contractor may request the United States to enter into such litigation to protect the interests of the United States.

ARTICLE B-XX - DISABLED VETERANS AND VETERANS OF THE VIETNAM ERA

A. The Contractor will not discriminate against any employee or applicant for employment because he or she is a disabled veteran or veteran of the Vietnam Era in regard to any position for which the employee or applicant for employment is qualified. The Contractor agrees to take affirmative action to employ, advance in employment, and otherwise treat qualified disabled veterans and veterans of the Vietnam Era without discrimination based upon their disability or veterans status in all employment practices such as the following: employment, upgrading, demotion or transfer, recruitment, advertising, layoff or termination, rates of pay or other forms of compensation, and selection for training, including apprenticeship.

B. The Contractor agrees that all suitable employment openings of the Contractor which exist at the time of the execution of this contract and those which occur during the performance of this contract, including those not generated by this contract and including those occurring at an establishment of the Contractor other than the one wherein the contract is being performed but excluding those of independently operated corporate affiliates, shall be listed at an appropriate local office of the State employment service system wherein the opening occurs. The Contractor further agrees to provide such reports to such local office regarding employment openings and hires as may be required.

State and local government agencies holding Federal contracts of \$10,000 or more shall also list all their suitable openings with the appropriate office of the State employment service, but are not required to provide those reports set forth in paragraphs D. and E.

ARTICLE B-XX - DISABLED VETERANS AND VETERANS OF THE VIETNAM ERA (Cont'd)

C. Listing of employment openings with the employment service system pursuant to this article shall be made at least concurrently with the use of any other recruitment source or effort and shall involve the normal obligations which attach to the placing of a bona fide job order, including the acceptance of referrals of veterans and non-veterans. The listing of employment openings does not require the hiring of any particular job applicant or from any particular group of job applicants, and nothing herein is intended to relieve the Contractor from any requirements in Executive Orders or regulations regarding nondiscrimination in employment.

D. The reports required by paragraph B. of this article shall include but not be limited to periodic reports which shall be filed at least quarterly with the appropriate local office or, where the Contractor has more than one hiring location in a State, with the central office of that State employment service. Such reports shall indicate for each hiring location (1) the number of individuals hired during the reporting period, (2) the number of nondisabled veterans of the Vietnam Era hired, (3) the number of disabled veterans hired, and (4) the total number of disabled veterans hired. The reports should include covered veterans hired for on-the-job training under 38 U.S.C. 1787. The Contractor shall submit a report within thirty (30) days after the end of each reporting period wherein any performance is made on this contract identifying data for each hiring location. The Contractor shall maintain at each hiring location copies of the reports submitted until the expiration of one (1) year after final payment under the contract, during which time these reports and related documentation shall be made available, upon request, for examination by any authorized representatives of the Contracting Officer or of the Secretary of Labor. Documentation would include personnel records respecting job openings, recruitment, and placement.

E. Whenever the Contractor becomes contractually bound to the listing provisions of this article, it shall advise the employment service system in each State where it has establishments of the name and location of each hiring location in the State. As long as the Contractor is contractually bound to these provisions and has so advised the State system, there is no need to advise the State system of subsequent contracts. The Contractor may advise the State system when it is no longer bound by this contract article.

F. This article does not apply to the listing of employment openings which occur and are filled outside the 50 states, the District of Columbia, Puerto Rico, Guam, and the Virgin Islands.

G. The provisions of paragraphs B., C., D., and E. of this article do not apply to openings which the Contractor proposes to fill from within its

ARTICLE B-XX - DISABLED VETERANS AND VETERANS OF THE VIETNAM ERA (Cont'd)

own organization or to fill pursuant to a customary and traditional employer-union hiring arrangement. This exclusion does not apply to a particular opening once an employer decides to consider applicants outside of its own organization or employer-union arrangement for that opening.

H. As used in this article:

(1) "All suitable employment openings" includes, but is not limited to, openings which occur in the following job categories: production and non-production; plant and office; laborers and mechanics; supervisory and nonsupervisory; technical; and executive, administrative, and professional openings that are compensated on a salary basis of less than \$25,000 per year. This term includes full-time employment, temporary employment of more than three days' duration, and part-time employment. It does not include openings which the Contractor proposes to fill from within its own organization or to fill pursuant to a customary and traditional employer-union hiring arrangement nor openings in an educational institution which are restricted to students of that institution. Under the most compelling circumstances an employment opening may not be suitable for listing, including such situations where the needs of the Government cannot reasonably be otherwise supplied, where listing would be contrary to national security, or where the requirement of listing would otherwise not be for the best interest of the Government.

(2) "Appropriate office of the State employment service system" means the local office of the Federal/State national system of public employment offices with assigned responsibility for serving the area where the employment opening is to be filled, including the District of Columbia, Guam, Puerto Rico, and the Virgin Islands.

(3) "Openings which the Contractor proposes to fill from within its own organization" means employment openings for which no consideration will be given to persons outside the Contractor's organization (including any affiliates, subsidiaries, and the parent companies) and includes any openings which the Contractor proposes to fill from regularly established "recall" lists.

(4) "Openings which the Contractor proposes to fill pursuant to a customary and traditional employer-union hiring arrangement" means employment openings which the Contractor proposes to fill from union halls, which is part of the customary and traditional hiring relationship which exists between the Contractor and representatives of its employees.

ARTICLE B-XX - DISABLED VETERANS AND VETERANS OF THE VIETNAM ERA (Cont'd)

I. The Contractor agrees to comply with the rules, regulations, and relevant orders of the Secretary of Labor issued pursuant to the Act.

J. In the event of the Contractor's noncompliance with the requirements of this article, actions for noncompliance may be taken in accordance with the rules, regulations, and relevant orders of the Secretary of Labor issued pursuant to the Act.

K. The Contractor agrees to post in conspicuous places available to employees and applicants for employment notices in a form to be prescribed by the Director, provided by or through the Contracting Officer. Such notice shall state the Contractor's obligation under the law to take affirmative action to employ and advance in employment qualified disabled veterans and veterans of the Vietnam Era for employment, and the rights of applicants and employees.

L. The Contractor will notify each labor union or representative of workers with which it has a collective bargaining agreement or other contract understanding that the Contractor is bound by terms of the Vietnam Era Veteran's Readjustment Assistance Act and is committed to take affirmative action to employ and advance in employment qualified disabled veterans and veterans of the Vietnam Era.

M. The Contractor will include the provisions of this article in every subcontract or purchase order of \$10,000 or more unless exempted by rules, regulations, or orders of the Secretary issued pursuant to the Act, so that such provisions will be binding upon each subcontractor or vendor. The Contractor will take such action with respect to any subcontract or purchase order as the Director of the Office of Federal Contract Compliance Programs may direct to enforce such provisions, including action for noncompliance.

ARTICLE B-XXI - EMPLOYMENT OF THE HANDICAPPED

A. The Contractor will not discriminate against any employee or applicant for employment because of physical or mental handicap in regard to any position for which the employee or applicant for employment is qualified. The Contractor agrees to take affirmative action to employ, advance in employment and otherwise treat qualified handicapped individuals without discrimination based upon their physical or mental handicap in all employment practices such as the following: employment, upgrading, demotion or transfer, recruitment, advertising, layoff or termination, rates of pay or other forms of compensation, and selection for training including apprenticeship.

ARTICLE B-XXI - EMPLOYMENT OF THE HANDICAPPED (Cont'd)

B. The Contractor agrees to comply with the rules, regulations, and relevant orders of the Secretary of Labor issued pursuant to the Rehabilitation Act of 1973, as amended.

C. In the event of the Contractor's noncompliance with the requirements of this article, actions for noncompliance may be taken in accordance with the rules, regulations, and relevant orders of the Secretary of Labor issued pursuant to the Act.

D. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices in a form to be prescribed by the Director, Office of Federal Contract Compliance Programs, Department of Labor, provided by or through the Contracting Officer. Such notices shall state the Contractor's obligation under the law to take affirmative action to employ and advance in employment qualified handicapped employees and applicants for employment, and the rights of applicants and employees.

E. The Contractor will notify each labor union or representative of workers with which it has a collective bargaining agreement or other contract understanding, that the Contractor is bound by the terms of section 503 of the Act and is committed to take affirmative action to employ and advance in employment physically and mentally handicapped individuals.

F. The Contractor will include the provisions of this article in every subcontract or purchase order of \$2,500 or more unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to Section 503 of the Act, so that such provisions will be binding upon each subcontractor or vendor. The Contractor will take such action with respect to any subcontract or purchase order as the Director, Office of Federal Contract Compliance Programs, may direct to enforce such provisions, including action for noncompliance.

ARTICLE B-XXII - CONVICT LABOR

In connection with the performance of work under this contract, the Contractor agrees not to employ any person undergoing sentence of imprisonment except as provided by Public Law 89-176, September 10, 1965 [18 U.S.C. 4082(c)(2)] and Executive Order 11755, December 29, 1973.

ARTICLE B-XXIII - UTILIZATION OF LABOR SURPLUS AREA CONCERNS

(The following article is applicable if this contract exceeds \$10,000.00)

A. It is the policy of the Government to award contracts to labor surplus area concerns that agree to perform substantially in labor surplus areas, where this can be done consistent with the efficient performance of the contract and at prices no higher than are obtainable elsewhere. The Contractor agrees to use its best efforts to place its subcontracts in accordance with this policy.

B. In complying with paragraph A. of this article and with paragraph B. of the article of this contract entitled "Utilization of Small Business Concerns Owned and Controlled by Socially and Economically Disadvantaged Individuals," the Contractor in placing its subcontracts shall observe the following order of preference: (1) Small business concerns that are labor surplus area concerns, (2) other small business concerns, and (3) other labor surplus area concerns.

C. (1) The term "labor surplus area" means a geographical area identified by the Department of Labor as an area of concentrated unemployment or underemployment or an area of labor surplus.

(2) The term "labor surplus area concern" means a concern that together with its first-tier subcontractors will perform substantially in labor surplus areas.

(3) The term "perform substantially in a labor surplus area" means that the costs incurred on account of manufacturing, production, or appropriate services in labor surplus areas exceed 50 percent of the contract price.

ARTICLE XXIV - UTILIZATION OF SMALL BUSINESS CONCERNS AND SMALL BUSINESS CONCERNS OWNED AND CONTROLLED BY SOCIALLY AND ECONOMICALLY DISADVANTAGED INDIVIDUALS

A. It is the policy of the United States and the Department of Energy that small business concerns and small business concerns owned and controlled by socially and economically disadvantaged individuals shall have the maximum practicable opportunity to participate in the performance of contracts let by DOE.

B. The Contractor hereby agrees to carry out this policy in the awarding of subcontracts to the fullest extent consistent with the efficient

ARTICLE XXIV - UTILIZATION OF SMALL BUSINESS CONCERNS AND SMALL BUSINESS CONCERNS OWNED AND CONTROLLED BY SOCIALLY AND ECONOMICALLY DISADVANTAGED INDIVIDUALS (Cont'd)

performance of this contract. The Contractor further agrees to cooperate in any studies or surveys as may be conducted by the United States Small Business Administration or the Department of Energy as may be necessary to determine the extent of the Contractor's compliance with this article.

C. As used in this contract, the term "small business concern" shall mean a small business as defined pursuant to Section 3 of the Small Business Act (15 U.S.C. 632) and relevant regulations promulgated pursuant thereto, including §1-1.701 of the Federal Procurement Regulations. The term "small business concern owned and controlled by socially and economically disadvantaged individuals" shall mean a small business concern:

(1) Which is at least 51 per centum owned by one or more socially and economically disadvantaged individuals; or in the case of any publicly-owned business at least 51 per centum of the stock of which is owned by one or more socially and economically disadvantaged individuals; and

(2) Whose management and daily business operations are controlled by one or more of such individuals.

The Contractor shall presume that socially and economically disadvantaged individuals include Black Americans, Hispanic Americans, Native Americans and other minorities, or any other individual found to be disadvantaged by the Small Business Administration pursuant to Section 8(a) of the Small Business Act.

D. Contractors acting in good faith may rely on written representations by their subcontractors regarding their status as either a small business concern or a small business concern owned and controlled by socially and economically disadvantaged individuals.

ARTICLE B-XXV - CLEAN AIR AND WATER

[Applicable only if the contract exceeds \$100,000 or the Contracting Officer has determined that orders under an indefinite quantity contract in any one year will exceed \$100,000 or a facility to be used has been the subject of a conviction under the Clean Air Act (42 U.S.C. 1857c-8(c) or (1)) or the Federal Water Pollution Control Act (33 U.S.C. 1319(c)) and is listed by EPA, or the contract is not otherwise exempt.]

ARTICLE B-XXV - CLEAN AIR AND WATER (Cont'd)

A. The Contractor agrees as follows:

(1) To comply with all the requirements of Section 114 of the Clean Air Act, as amended (42 U.S.C. 1857, et seq., as amended by Public Law 91-604) and section 308 of the Federal Water Pollution Control Act (33 U.S.C. 1251 et seq., as amended by Public Law 92-500), respectively, relating to inspection, monitoring, entry, reports, and information, as well as other requirements specified in Section 114 and Section 308 of the Air Act and the Water Act, respectively, and all regulations and guidelines issued thereunder before the award of this contract.

(2) That no portion of the work required by this contract will be performed in a facility listed on the Environmental Protection Agency list of violating facilities on the date when this contract was awarded unless and until the EPA eliminates the name of such facility or facilities from such listing.

(3) To use its best efforts to comply with clean air standards and clean water standards at the facilities in which the contract is being performed.

(4) To insert the substance of the provisions of this article in any nonexempt subcontract, including this subparagraph A.(4).

B. The terms used in this article have the following meanings:

(1) The term "Air Act" means the Clean Air Act, as amended (42 U.S.C. 1857 et seq., as amended by Public Law 91-604).

(2) The term "Water Act" means Federal Water Pollution Control Act, as amended (33 U.S.C. 1251 et seq., as amended by Public Law 92-500).

(3) The term "Clean Air Standards" means any enforceable rules, regulations, guidelines, standards, limitations, orders, controls, prohibitions, or other requirements which are contained in, issued under, or otherwise adopted pursuant to the Air Act or Executive Order 11738, an applicable implementation plan as described in Section 110(d) of the Clean Air Act [42 U.S.C. 1857c-5(d)], an approved implementation procedure or plan under Section 111(c) or Section 111(d), respectively, of the Air Act [42 U.S.C. 1857c-6(c) or (d)], or an approved implementation procedure under Section 112(d) of the Air Act [42 U.S.C. 1857c-7(d)].

(4) The term "Clean Water Standards" means any enforceable limitation, control, condition, prohibition, standard, or other

ARTICLE B-XXV - CLEAN AIR AND WATER (Cont'd)

requirement which is promulgated pursuant to the Water Act or contained in a permit issued to a discharger by the Environmental Protection Agency or by a State under an approved program, as authorized by Section 402 of the Water Act (33 U.S.C. 1342), or by a local government to ensure compliance with pretreatment regulations as required by Section 307 of the Water Act (33 U.S.C. 1317).

(5) The term "compliance" means compliance with Clean Air or Water Standards. Compliance shall also mean compliance with a schedule or plan ordered or approved by a court of competent jurisdiction, the Environmental Protection Agency or an air or water pollution control agency in accordance with the requirement of the Air Act or Water Act and regulations issued pursuant thereto.

(6) The term "facility" means any building, plant, installation, structure, mine, vessel or other floating craft, location, or site of operations, owned, leased, or supervised by a contractor or subcontractor, to be utilized in the performance of a contract or subcontract. Where a location or site of operations contains or includes more than one building, plant, installation, or structure, the entire location shall be deemed to be a facility except where the Director, Office of Federal Activities, Environmental Protection Agency, determined that independent facilities are collocated in one geographical area.

ARTICLE B-XXVI - AUTHORIZATION AND CONSENT

The Government hereby gives its authorization and consent for all use and manufacture of any invention described in and covered by a patent of the United States in the performance of this contract or any part hereof or any amendment hereto or any subcontract hereunder (including all lower-tier subcontracts).

ARTICLE B-XXVII - NOTICE AND ASSISTANCE REGARDING PATENT AND COPYRIGHT INFRINGEMENT

(The provisions of this article shall be applicable only if the amount of this contract exceeds \$10,000.)

A. The Contractor shall report to the Contracting Officer, promptly and in reasonable written detail, each notice or claim of patent or copyright infringement based on the performance of this contract of which the Contractor has knowledge.

ARTICLE B-XXVII - NOTICE AND ASSISTANCE REGARDING PATENT AND COPYRIGHT
INFRINGEMENT (Cont'd)

B. In the event of any claim or suit against the Government on account of any alleged patent or copyright infringement arising out of the performance of this contract or out of the use of any supplies furnished or work or services performed hereunder, the Contractor shall furnish to the Government when requested by the Contracting Officer, all evidence and information in the possession of the Contractor pertaining to such suit or claim. Such evidence and information shall be furnished at the expense of the Government except where the Contractor has agreed to indemnify the Government.

C. This article shall be included in all subcontracts.

ARTICLE B-XXVIII - REPORTING OF ROYALTIES

If this contract is in an amount which exceeds \$10,000 and if any royalty payments are directly involved in the contract or are reflected in the contract price to the Government, the Contractor agrees to report in writing to the Patent Counsel (with notification by Patent Counsel to the Contracting Officer) during the performance of this contract and prior to its completion or final settlement the amount of any royalties or other payments paid or to be paid by it directly to others in connection with the performance of this contract together with the names and addresses of licensors to whom such payments are made and either the patent numbers involved or such other information as will permit the identification of the patents or other basis on which the royalties are to be paid. The approval of DOE of any individual payments or royalties shall not stop the Government at any time from contesting the enforceability, validity or scope of, or title to, any patent under which a royalty or payments are made.

ARTICLE B-XXIX - PATENT RIGHTS - SHORT FORM

A. Definitions.

(1) "Subject Invention" means any invention or discovery of the Contractor conceived or first actually reduced to practice in the course of or under this contract, and includes any art, method, process, machine, manufacture, design, or composition of matter, or any new and useful improvement thereof, or any variety of plants, whether patented or unpatented, under the Patent Laws of the United States of America or any foreign country.

(2) "Patent Counsel" means the DOE Patent Counsel assisting the procuring activity.

ARTICLE B-XXIX - PATENT RIGHTS - SHORT FORM (Cont'd)

B. Invention Disclosures and Reports.

(1) The Contractor shall furnish the Patent Counsel (with notification by Patent Counsel to the Contracting Officer):

(i) A written report containing full and complete technical information concerning each Subject Invention within six (6) months after conception or first actual reduction to practice whichever occurs first in the course of or under this contract, but in any event prior to any on sale, public use, or public disclosure of such invention known to the Contractor. The report shall identify the contract and inventor and shall be sufficiently complete in technical detail and appropriately illustrated by sketch or diagram to convey to one skilled in the art to which the invention pertains a clear understanding of the nature, purpose, operation, and to the extent known, the physical, chemical, biological, or electrical characteristics of the invention;

(ii) Upon request, but not more than annually, interim reports on a DOE-approved form listing Subject Inventions for that period and certifying that all Subject Inventions have been disclosed or that there were no such inventions; and

(iii) A final report on a DOE-approved form within three (3) months after completion of the contract work listing all Subject Inventions and certifying that all Subject Inventions have been disclosed or that there were no such inventions.

(2) The Contractor agrees that the Government may duplicate and disclose Subject Invention disclosures and all other reports and papers furnished or required to be furnished pursuant to the contract.

C. Allocation of Principal Rights.

(1) Assignment to the Government. The Contractor agrees to assign to the Government the entire right, title, and interest throughout the world in and to each Subject Invention, except to the extent that rights are retained by the Contractor under subparagraph C.(2) and paragraph D. of this article.

ARTICLE B-XXIX - PATENT RIGHTS - SHORT FORM (Cont'd)

(2) Greater Rights Determinations. The Contractor, or the employee-inventor with authorization of the Contractor, may request greater rights than the nonexclusive license and the foreign patent rights provided in paragraph D. of this article on identified inventions in accordance with the procedure and criteria of 41 CFR 9-9.109-6. A request for a determination of whether the Contractor or the employee-inventor is entitled to retain such greater rights must be submitted to the Patent Counsel (with notification by Patent Counsel to the Contracting Officer) at the time of the first disclosure of the invention pursuant to subparagraph B.(1) of this article or not later than nine (9) months after conception or first actual reduction to practice, whichever occurs first, or such longer period as may be authorized by the Patent Counsel (with notification by Patent Counsel to the Contracting Officer) for good cause shown in writing by the Contractor. The information to be submitted for a greater rights determination is specified in 41 CFR 9-9.109-6(e).

D. Minimum Rights to the Contractor. The Contractor reserves a revocable, nonexclusive, paid-up license in each patent application filed in any country on a Subject Invention and any resulting patent in which the Government acquires title. Revocation shall be in accordance with the procedure of subparagraphs C.(2) and (3) of the clause in 41 CFR 9-9.107-5(a). The Contractor also has the right to request foreign rights in accordance with the procedures of subparagraph C.(4) of the clause in 41 CFR 9-9.107-5(a).

E. Employee and Subcontractor Agreements. Unless otherwise authorized in writing by the Contracting Officer, the Contractor shall:

(1) Obtain patent agreements to effectuate the provisions of the Patent Rights article from all persons who perform any part of the work under this contract except nontechnical personnel, such as clerical employees and manual laborers.

(2) Unless otherwise authorized or directed by the Contracting Officer, the Contractor shall include the Patent Rights article of 41 CFR 9-9.107-5(a) or 41 CFR 9-9.107-6, as appropriate, modified to identify the parties in any subcontract hereunder having as a purpose the conduct of research, development or demonstration work; and

ARTICLE B-XXIX - PATENT RIGHTS - SHORT FORM (Cont'd)

(3) Promptly notify the Contracting Officer in writing upon the award of any subcontract containing a Patent Rights article by identifying the subcontractor, the work to be performed under the subcontract, and the dates of award and estimated completion. Upon the request of the Contracting Officer the Contractor shall furnish a copy of the subcontract to such requester.

F. Atomic Energy.

(1) No claim for pecuniary award or compensation under the provisions of the Atomic Energy Act of 1954, as amended, shall be asserted by the Contractor or its employees with respect to any invention or discovery made or conceived in the course of or under this contract.

(2) Except as otherwise authorized in writing by the Contracting Officer, the Contractor will obtain patent agreements to effectuate the provisions of subparagraph F.(1) of this article from all persons who perform any part of the work under this contract, except nontechnical personnel such as clerical employees and manual laborers.

G. Publication. In order that information concerning scientific or technical developments conceived or first actually reduced to practice in the course of or under the contract is not prematurely published so as to adversely affect patent interest of DOE, the Contractor agrees to submit to the Patent Counsel for patent review a copy of each paper sixty (60) days prior to its intended publication date. The Contractor may publish such information after expiration of a 60-day period following such submission or prior thereto if specifically approved by Patent Counsel, unless the Contractor is informed in writing within the 60-day period, that in order to protect patentable subject matter, publication must further be delayed. In this event, publication shall be delayed up to one hundred (100) days beyond the 60-day period or such longer period as mutually agreed to.

ARTICLE B-XXX - RIGHTS IN TECHNICAL DATA - SHORT FORM

A. Definitions. The definitions of terms set forth in 41 CFR 9-9.201 apply to the extent these terms are used herein.

B. Allocation of Rights.

(1) The Government shall have:

ARTICLE B-XXX - RIGHTS IN TECHNICAL DATA - SHORT FORM (Cont'd)

(i) Unlimited rights in technical data first produced or specifically used in the performance of this contract;

(ii) The right of the Contracting Officer or his representatives to inspect at all reasonable times up to three (3) years after final payment under this contract all technical data first produced or specifically used in the contract (for which inspection the Contractor or its subcontractor shall afford proper facilities to DOE);

(iii) The right to have any technical data first produced or specifically used in the performance of this contract delivered to the Government as the Contracting Officer may from time to time direct during the progress of the work or in any event as the Contracting Officer shall direct upon completion or termination of this contract.

(2) The Contractor shall have: The right to use for its private purposes, subject to patent, security or other provisions of this contract, technical data it first produces in the performance of this contract provided the data requirements of this contract have been met as of the date of the private use of such data. The Contractor agrees that to the extent it receives or is given access to proprietary data or other technical, business or financial data in the form of recorded information from DOE or a DOE contractor or subcontractor, the Contractor shall treat such data in accordance with any restrictive legend contained thereon, unless use is specifically authorized by prior written approval of the Contracting Officer.

C. Copyrighted Material.

(1) The Contractor agrees to, and does hereby grant to the Government, and to its officers, agents, servants and employees acting within the scope of their duties:

(i) A royalty-free, nonexclusive, irrevocable license to reproduce, translate, publish, use, and dispose of and to authorize others so to do, all copyrightable material first produced or composed in the performance of this contract by the Contractor, its employees or any individual or concern specifically employed or assigned to originate and prepare such material; and

ARTICLE B-XXX - RIGHTS IN TECHNICAL DATA - SHORT FORM (Cont'd)

(ii) A license as aforesaid under any and all copyrighted or copyrightable works not first produced or composed by the Contractor in the performance of this contract but which are incorporated in the material furnished under the contract, provided that such license shall be only to the extent the Contractor now has, or prior to completion or final settlement of the contract may acquire, the right to grant such license without becoming liable to pay compensation to others solely because of such grant.

(2) The Contractor agrees that it will not knowingly include any material copyrighted by others in any written or copyrightable material furnished or delivered under this contract without a license as provided for in subparagraph C.(1)(ii) hereof, or without the consent of the copyright owner, unless it obtains specific written approval of the Contracting Officer for the inclusion of such copyrighted material.

APPENDIX C
 UNITED STATES DEPARTMENT OF ENERGY
 STATEMENT OF COSTS

1. Name and address of Contractor: _____

2. Contract number: _____
3. Beginning and ending date of pertinent contract period: _____

4. Costs incurred during the pertinent contract period. [List only those costs which are to be reimbursed by DOE or proportionately shared by the parties in accordance with Article A-II(a) and Article A-III.]

<u>Cost Categories</u>	<u>(The listing of categories should be consistent with the itemization in Appendix A)</u>	<u>Amount</u>
a. Salaries and wages.		\$ _____
b. Equipment		_____
(List separately the cost of each piece of equipment separately listed in Appendix A to the contract or for which separate approval was obtained from DOE)		
c. Travel (show amounts for both foreign and domestic. If none, state none)		_____
Domestic.		_____
Foreign		_____
d. Other direct costs.		_____
e. Total direct expenditures		_____
f. Indirect charges.		_____
(Indicate percent and expenditures to which percent is applied)		

5. Total costs for items under Article A-II(a) for pertinent contract period. _____
6. Support cost for the pertinent contract period set forth in Appendix A, as defined in Article B-V of the contract, chargeable to DOE, for the pertinent contract period (percent of total costs using percent shown in Article A-III of Appendix A for pertinent period of contract). _____
7. Cumulative Support Cost (Support Cost under this statement plus Support Cost for previous periods of the contract). . . _____
8. Accumulated Support Ceiling in Article III of the contract . _____
9. The difference between lines 7. and 8. _____
10. Provide information regarding contribution by the Contractor of items listed in Article A-II(b) of Appendix A during pertinent contract period. State the extent of the Contractor's actual contribution; the measure of such contributions should be in the same terms as the Contractor's commitment under Article A-II(b), e.g., time, dollars. etc. _____
11. Actual outstanding commitments for property at the end of the period covered by this statement. _____

I hereby certify that this report is true and correct to the best of my knowledge and belief and that the costs listed herein were incurred in connection with the performance of the research provided for under this contract and in accordance with the terms and conditions set forth therein.

(Name and Title of an authorized representative)

(Signature)

(Date)

APPENDIX C

UNITED STATES DEPARTMENT OF ENERGY

STATEMENT OF COSTS

- 1. Name and address of Contractor: _____

- 2. Contract number: _____
- 3. Beginning and ending date of pertinent contract period: _____

4. Costs incurred during the pertinent contract period. [List only those costs which are to be reimbursed by DOE or proportionately shared by the parties in accordance with Article A-II(a) and Article A-III.]

<u>Cost Categories</u>	(The listing of categories should be consistent with the itemization in Appendix A)	<u>Amount</u>
a. Salaries and wages.		\$ _____
b. Equipment		_____
(List separately the cost of each piece of equipment separately listed in Appendix A to the contract or for which separate approval was obtained from DOE)		
c. Travel (show amounts for both foreign and domestic. If none, state none)		_____
Domestic.		_____
Foreign		_____
d. Other direct costs.		_____
e. Total direct expenditures		_____
f. Indirect charges.		_____

(Indicate percent and expenditures to which percent is applied)

- 5. Total costs for items under Article A-II(a) for pertinent contract period. _____
- 6. Support cost for the pertinent contract period set forth in Appendix A, as defined in Article B-V of the contract, chargeable to DOE, for the pertinent contract period (percent of total costs using percent shown in Article A-III of Appendix A for pertinent period of contract). _____
- 7. Cumulative Support Cost (Support Cost under this statement plus Support Cost for previous periods of the contract). . . _____
- 8. Accumulated Support Ceiling in Article III of the contract . _____
- 9. The difference between lines 7. and 8. _____
- 10. Provide information regarding contribution by the Contractor of items listed in Article A-II(b) of Appendix A during pertinent contract period. State the extent of the Contractor's actual contribution, the measure of such contributions should be in the same terms as the Contractor's commitment under Article A-II(b), e.g., time, dollars. etc. _____
- 11. Actual outstanding commitments for property at the end of the period covered by this statement. _____

I hereby certify that this report is true and correct to the best of my knowledge and belief and that the costs listed herein were incurred in connection with the performance of the research provided for under this contract and in accordance with the terms and conditions set forth therein.

(Name and Title of an authorized representative)

(Signature)

(Date)

REPORTING REQUIREMENTS CHECKLIST

DOE Form CR-337
(1-78)

(See Instructions on Reverse)

FORM APPROVED
OMB NO. 38R-0190

1. IDENTIFICATION		2. OBLIGATION INSTRUMENT: Contract No. DE-AS07-79ID12037	
3. REPORTING REQUIREMENTS			
A. PROJECT MANAGEMENT 1. <input type="checkbox"/> Management Plan 2. <input type="checkbox"/> Milestone Schedule & Status Report 3. <input type="checkbox"/> Cost Plan 4. <input type="checkbox"/> Manpower Plan 5. <input checked="" type="checkbox"/> Contract Management Summary Report 6. <input checked="" type="checkbox"/> Project Status Report 7. <input type="checkbox"/> Cost Management Report 8. <input type="checkbox"/> Manpower Management Report 9. <input checked="" type="checkbox"/> Conference Record 10. <input checked="" type="checkbox"/> Hot Line Report	Frequency M M A A	B. TECHNICAL INFORMATION REPORTING 1. <input checked="" type="checkbox"/> Notice of Energy RD&D Project (SSIE) 2. <input checked="" type="checkbox"/> Technical Progress Report 3. <input checked="" type="checkbox"/> Topical Report 4. <input checked="" type="checkbox"/> Final Technical Report C. PMS/MINI-PMS 1. Cost Performance Report <input type="checkbox"/> Format 1 WBS <input type="checkbox"/> Format 2 Functional <input type="checkbox"/> Format 3 Baseline <input type="checkbox"/> Format 5 Problem Analysis 2. <input type="checkbox"/> Cost/Schedule Status Report 3. <input type="checkbox"/> Management Control System Description 4. <input type="checkbox"/> Summary System Description 5. <input type="checkbox"/> WBS Dictionary	Frequency O Q Y F
FREQUENCY CODES: A - As Required C - Contract Change F - Final (End of Contract) M - Monthly Q - One Time (Soon After Contract Award)			
4. SPECIAL INSTRUCTIONS Submit all reports to the DOE Program Officer at Idaho Operations Office (ID) as indicated below: A.5 and 6 - Six copies are due at ID within fifteen days after end of the calendar month. B.1 - Two copies are due at ID within fifteen days after Cooperative Agreement Award. B.2 - Six copies are due at ID within fifteen days after end of the calendar quarter. B.3 - Six copies are due not less than forty-five days prior to completion of the yearly term. B.4 - Submit in draft forty-five days prior to completion date of Cooperative Agreement. After thirty days for DOE review, submit eleven copies including one camera-ready copy.			
5. ATTACHED HEREWITH: <input type="checkbox"/> Report Distribution List <input type="checkbox"/> WBS/Reporting Category			
6. PREPARED BY (Signature and date):		7. REVIEWED BY (Signature and date):	

STANDARD FORM 30, JULY 1966 GENERAL SERVICES ADMINISTRATION FED. PROC. REG. (41 CFR) 1-16.101		AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT		PAGE 1	OF 1
1. AMENDMENT/MODIFICATION NO. A001		2. EFFECTIVE DATE 6/1/80	3. REQUISITION/PURCHASE REQUEST NO.	4. PROJECT NO. (If applicable)	
5. ISSUED BY U. S. Department of Energy Idaho Operations Office 550 Second Street Idaho Falls, ID 83401		CODE	6. ADMINISTERED BY (If other than block 5)	CODE	
7. CONTRACTOR NAME AND ADDRESS (Street, city, county, state, and ZIP Code) Southern Methodist University SMU Box 302 Dallas, Texas 75275		CODE	FACILITY CODE	8. <input type="checkbox"/> AMENDMENT OF SOLICITATION NO. _____ DATED _____ (See block 9) <input checked="" type="checkbox"/> MODIFICATION OF CONTRACT/ORDER NO. DE-AS07-79ID12037 DATED _____ (See block 11)	
9. THIS BLOCK APPLIES ONLY TO AMENDMENTS OF SOLICITATIONS <input type="checkbox"/> The above numbered solicitation is amended as set forth in block 12. The hour and date specified for receipt of Offers <input type="checkbox"/> is extended, <input type="checkbox"/> is not extended. Offerors must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation, or as amended, by one of the following methods: (a) By signing and returning _____ copies of this amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE ISSUING OFFICE PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If, by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided such telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.					
10. ACCOUNTING AND APPROPRIATION DATA (If required)					
11. THIS BLOCK APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS (a) <input type="checkbox"/> This Change Order is issued pursuant to _____ The Changes set forth in block 12 are made to the above numbered contract/order. (b) <input type="checkbox"/> The above numbered contract/order is modified to reflect the administrative changes (such as changes in paying office, appropriation data, etc.) set forth in block 12. (c) <input checked="" type="checkbox"/> This Supplemental Agreement is entered into pursuant to authority of <u>Public Law 95-91, and other applicable laws</u> It modifies the above numbered contract as set forth in block 12.					
12. DESCRIPTION OF AMENDMENT/MODIFICATION (a) <u>ARTICLE I - THE RESEARCH TO BE PERFORMED</u> is amended by adding a new paragraph as follows: <p style="text-align: center;">"Appendix A1, 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."</p> (b) <u>ARTICLE II - THE PERIOD OF PERFORMANCE</u> is amended as follows: <p style="text-align: center;">"The period of performance for the work performed under this Supplemental Agreement shall commence on June 1, 1980 and expire on May 31, 1981. The period of time for performing the research work under Appendix A1 may be extended for additional periods by mutual written agreement of the parties."</p>					
(Cont'd)					
Except as provided herein, all terms and conditions of the document referenced in block 8, as heretofore changed, remain unchanged and in full force and effect.					
13. <input type="checkbox"/> CONTRACTOR/OFFEROR IS NOT REQUIRED TO SIGN THIS DOCUMENT <input checked="" type="checkbox"/> CONTRACTOR/OFFEROR IS REQUIRED TO SIGN THIS DOCUMENT AND RETURN <u>3</u> COPIES TO ISSUING OFFICE					
14. NAME OF CONTRACTOR/OFFEROR BY <u>Truman F. Cook</u> (Signature of person authorized to sign)			17. UNITED STATES OF AMERICA BY <u>J. P. Anderson</u> (Signature of Contracting Officer)		
15. NAME AND TITLE OF SIGNER (Type or print) Truman F. Cook, Asst. V-P. for Research		16. DATE SIGNED 5-22-80	18. NAME OF CONTRACTING OFFICER (Type or print) J. P. Anderson, Chief Contract Operations Branch		19. DATE SIGNED 5/28/80

Modification No. A001 (Cont'd)
Supplemental Agreement to
Contract No. DE-AS07-79ID12037

- (c) ARTICLE III - CONSIDERATION, paragraph A. is hereby revised to increase the contract Support Ceiling by One Hundred Sixty-Eight Thousand Thirty-Nine Dollars (\$168,039.00) to a new total Support Ceiling of Three Hundred Thirty-Five Thousand Thirty-Nine Dollars (\$335,039.00).

CONTRACTOR: SOUTHERN METHODIST UNIVERSITY

APPENDIX A1

For the contract period June 1, 1980 through May 31, 1981

Article A-1 - RESEARCH TO BE PERFORMED BY CONTRACTOR

(a) The scope of work under this modification is unclassified, and the Contractor under this modification with the Department of Energy will provide heat flow and geothermal evaluation expertise to the Washington Department of Natural Resources, the Oregon Department of Geology and Mineral Industries, and the Idaho Department of Water Resources in order to assist them in their low temperature geothermal resource assessment programs. The work will include:

- (1) Assistance in site selection and drilling consultation.
- (2) Assistance in locating and evaluating free hole (or scrounge) information, and development of processes for collection of the appropriate data, and analyses of these holes and data.
- (3) Logging of drill holes and scrounge holes using the Contractor's equipment.
- (4) Supplying portable temperature-depth equipment to the three state resource teams for temporary use.
- (5) Field selection and aquisition of representative samples for thermal conductivity and radioactive studies as needed by the state resource teams.
- (6) Conduct measurements of thermal conductivity and radioactivity on core, cuttings and samples, terrain corrections, etc., as necessary to produce heat flow calculations and geothermal interpretations.
- (7) Interpret results from (6) above, assist in interpretation of data and development of recommendations for development and exploration of geothermal resources within each state.
- (8) Submit all data and interpretive reports to DOE and the three state resource teams.

Article A-II - WAYS AND MEANS OF PERFORMANCE

(a) The items to be supported include the following:

Salaries - on campus	\$ 64,654
Salaries - off campus	13,315
Employee Benefits (excluding students)	7,415
Indirect Costs	47,085
65% on campus salaries of \$64,654	
38% off campus salaries of \$13,315	
Supplies	4,300
Travel and Per Diem	19,270
Computer	10,000
Publication	2,000
	<u>\$168,039</u>

(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 cost and fringe benefits contributed by the Contractor but excluded from computation of Support Cost and consideration in proportioning costs:

None

(d) All subcontracts and consultant agreements require the review and written approval of the Contracting Officer.

Article A-III - FUNDING

The total estimated cost of items under A-II(a) above, for the contract period stated in this Appendix A1 is \$168,039.00; DOE will pay 100% of the actual costs of these items incurred during the contract period stated in this Appendix A1 subject to the provisions of Article III and Article B-V. The estimated DOE Support Cost for the contract period stated in this Appendix A1 is \$168,039.00.

The estimated DOE 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>168,039.00</u>

Article A-IV - ADMINISTRATION AND REPORTS

(a) Principal Investigator - Dr. David D. Blackwell
Southern Methodist University
Department of Geological Studies
Telephone (214) 692-2745

Technical Administrator - Margaret A. Widmayer
(DOE's Program Manager) DOE-ID
Energy & Technology Division
Resource Definition Branch
Telephone (208) 526-1466

The Principal Investigator shall be responsible for directing the work within the scope of Article A-I above, as outlined in discussions and in periodic letters from the Technical Administrator.

(b) The Principal Investigator is responsible for the preparation and submission of reports to the Technical Administrator in accordance with the attached DOE Form CF-537, which is made a part hereof by this reference.

**U. S. DEPARTMENT OF ENERGY
REPORTING REQUIREMENTS CHECKLIST**

DOE Form CR-537
(1-78)

(See Instructions on Reverse)

FORM APPROVED
OMB NO. 38R-0194

1. IDENTIFICATION Southern Methodist University	2. OBLIGATION INSTRUMENT: MODIFICATION NO. A001 CONTRACT NO. DE-AS07-79ID12037
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3. REPORTING REQUIREMENTS

A. PROJECT MANAGEMENT	Frequency	B. TECHNICAL INFORMATION REPORTING	Frequency
1. <input type="checkbox"/> Management Plan		1. <input type="checkbox"/> Notice of Energy RD&D Project (SSIE)	
2. <input type="checkbox"/> Milestone Schedule & Status Report		2. <input checked="" type="checkbox"/> Technical Progress Report	M
3. <input type="checkbox"/> Cost Plan		3. <input checked="" type="checkbox"/> Topical Report	Y
4. <input type="checkbox"/> Manpower Plan		4. <input checked="" type="checkbox"/> Final Technical Report	Y
5. <input checked="" type="checkbox"/> Contract Management Summary Report	M	C. PMS/MINI-PMS	
6. <input checked="" type="checkbox"/> Project Status Report	M		
7. <input type="checkbox"/> Cost Management Report			
8. <input type="checkbox"/> Manpower Management Report			
9. <input type="checkbox"/> Conference Record			
10. <input type="checkbox"/> Hot Line Report		1. Cost Performance Report	
		<input type="checkbox"/> Format 1 WBS	
		<input type="checkbox"/> Format 2 Functional	
		<input type="checkbox"/> Format 3 Baseline	
		<input type="checkbox"/> Format 5 Problem Analysis	
		2. <input type="checkbox"/> Cost/Schedule Status Report	
		3. <input type="checkbox"/> Management Control System Description	
		4. <input type="checkbox"/> Summary System Description	
		5. <input type="checkbox"/> WBS Dictionary	

FREQUENCY CODES:

A - As Required	Q - Quarterly
C - Contract Change	S - Semi-Annually
F - Final (End of Contract)	X - Mandatory for Delivery with Proposals/Bid
M - Monthly	Y - Yearly or Upon Contract Renewal
O - One Time (Soon After Contract Award)	

4. SPECIAL INSTRUCTIONS

A.5. and A.6. - Copies are due within fifteen days after end of the calendar month.

B.2. - Copies are due within fifteen days after end of the calendar month.

B.3. - Submit 2 copies in draft forty-five days prior to completion of the yearly term. After DOE approval is received, submit copies as required on attached "Report Distribution List."

B.4. - Submit 2 copies in draft forty-five days prior to completion date of the work. After DOE approval is received, submit eleven copies including one camera-ready copy.

5. ATTACHED HEREWITH:

<input type="checkbox"/> Report Distribution List	<input type="checkbox"/>
<input type="checkbox"/> WBS/Reporting Category	<input type="checkbox"/>

6. PREPARED BY (Signature and date):	7. REVIEWED BY (Signature and date):
--------------------------------------	--------------------------------------



ID F-129 (Rev. 08-79)
 Ref. DOE 13302
 (use with DOE CR-537)

U.S. DEPARTMENT OF ENERGY
 IDAHO OPERATIONS OFFICE
 REPORT DISTRIBUTION LIST

Contract No.
 DE-AS07-79ID12037

- Milestone Schedule & Status Report Management Plan
- Contract Management & Status Report
- Cost Plan
- Manpower Summary Report
- Project Status Report
- Cost Management Report
- Manpower Management Report
- Conference Report
- Notice of Energy RD&D Project (SSIE)
- HoI Line Report
- Technical Progress Report
- Final Technical Report
- Cost/Schedule Status Report
- Summary System Description
- Management Control System Report
- WBS Dictionary

Addressees

Number of Report Copies

M. A. Widmayer, Program Manager
 Resource Definition Branch
 U.S.D.O.E.
 Idaho Operations Office
 550 Second Street
 Idaho Falls, ID 83401

2 2

2 2 11

Bob Gray
 U.S.D.O.E.
 Division of Geothermal
 Energy MS 3344
 Federal Building
 12th and Penn., N.W.
 Washington, D. C. 20461

2 2

2 2

Duncan Foley
 UURI
 420 Chipeta Way
 Suite 120
 Salt Lake City, UT 84108

1 1

1 1

Earl G. Jones, Director
 Financial Management Division
 Idaho Operations Office
 550 Second Street
 Idaho Falls, ID 83401

1

Special Instructions

STANDARD FORM 30, JULY 1966 GENERAL SERVICES ADMINISTRATION FED. PROC. REG. (41 CFR) 1-16.101		AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT		PAGE 1	OF 1
1. AMENDMENT/MODIFICATION NO. M002		2. EFFECTIVE DATE	3. REQUISITION/PURCHASE REQUEST NO. 07-81ID12037.503	4. PROJECT NO. (If applicable)	
5. ISSUED BY U. S. Department of Energy Idaho Operations Office 550 Second Street Idaho Falls, Idaho 83401		6. ADMINISTERED BY (If other than block 5)		CODE	
7. CONTRACTOR NAME AND ADDRESS Southern Methodist University SMU Box 302 Dallas, Texas 75275		FACILITY CODE		8. AMENDMENT OF SOLICITATION NO. _____ DATED _____ (See block 9) <input checked="" type="checkbox"/> MODIFICATION OF CONTRACT/ORDER NO. DE-AS07-79ID12037 DATED 7-27-79 (See block 11)	
9. THIS BLOCK APPLIES ONLY TO AMENDMENTS OF SOLICITATIONS <input type="checkbox"/> The above numbered solicitation is amended as set forth in block 12. The hour and date specified for receipt of Offers <input type="checkbox"/> is extended, <input type="checkbox"/> is not extended. Offerors must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation, or as amended, by one of the following methods: (a) By signing and returning _____ copies of this amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGEMENT TO BE RECEIVED AT THE ISSUING OFFICE PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If, by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided such telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.					
10. ACCOUNTING AND APPROPRIATION DATA (If required)					
11. THIS BLOCK APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS (a) <input type="checkbox"/> This Change Order is issued pursuant to _____ The Changes set forth in block 12 are made to the above numbered contract/order. (b) <input type="checkbox"/> The above numbered contract/order is modified to reflect the administrative changes (such as changes in paying office, appropriation data, etc.) set forth in block 12. (c) <input checked="" type="checkbox"/> This Supplemental Agreement is entered into pursuant to authority of <u>Public Law 95-91, and other applicable laws</u> It modifies the above numbered contract as set forth in block 12.					
12. DESCRIPTION OF AMENDMENT/MODIFICATION ARTICLE II - THE PERIOD OF PERFORMANCE is amended as follows: "The period of performance for the work performed under this Contract is extended through June 22, 1981."					
Except as provided herein, all terms and conditions of the document referenced in block 8, as heretofore changed, remain unchanged and in full force and effect.					
13. <input type="checkbox"/> CONTRACTOR/OFFEROR IS NOT REQUIRED TO SIGN THIS DOCUMENT. <input checked="" type="checkbox"/> CONTRACTOR/OFFEROR IS REQUIRED TO SIGN THIS DOCUMENT AND RETURN <u>2</u> COPIES TO ISSUING OFFICE					
14. NAME OF CONTRACTOR/OFFEROR Truman F. Cook, Assistant Vice President for Research			17. UNITED STATES OF AMERICA BY <u>William C. Drake</u> (Signature of Contracting Officer)		
15. NAME AND TITLE OF SIGNER (Type or print) Truman F. Cook, Assistant Vice President for Research		16. DATE SIGNED 5/29/81	18. NAME OF CONTRACTING OFFICER (Type or print) William C. Drake		19. DATE SIGNED 5/26/81

STANDARD FORM 30, JULY 1966 GENERAL SERVICES ADMINISTRATION FED. PROC. REG. (41 CFR) 1-16.101		AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT		PAGE 1	OF 2
1. AMENDMENT/MODIFICATION NO. A003		2. EFFECTIVE DATE	3. REQUISITION/PURCHASE REQUEST NO. 07-311012037.502	4. PROJECT NO. (If applicable)	
5. ISSUED BY U. S. Department of Energy Idaho Operations Office 550 Second Street Idaho Falls, Idaho 83401		CODE	6. ADMINISTERED BY (If other than block 5)		CODE
7. CONTRACTOR NAME AND ADDRESS Southern Methodist University SMU Box 302 Dallas, Texas 75275		CODE	FACILITY CODE	8. AMENDMENT OF SOLICITATION NO. <input type="checkbox"/> DATED _____ (See block 9) MODIFICATION OF CONTRACT/ORDER NO. <u>0E-AS07-791012037</u> <input checked="" type="checkbox"/> DATED <u>7-27-79</u> (See block 11)	
9. THIS BLOCK APPLIES ONLY TO AMENDMENTS OF SOLICITATIONS <input type="checkbox"/> The above numbered solicitation is amended as set forth in block 12. The hour and date specified for receipt of Offers <input type="checkbox"/> is extended. <input type="checkbox"/> is not extended. Offerors must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation, or as amended, by one of the following methods: (a) By signing and returning _____ copies of this amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGEMENT TO BE RECEIVED AT THE ISSUING OFFICE PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If, by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided such telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.					
10. ACCOUNTING AND APPROPRIATION DATA (If required) AM 15-10 Estimated Cost DOE \$163,653 SMU \$14,087 Total \$177,740 Increase Support Ceiling and Obligations by \$163,653 to \$498,692					
11. THIS BLOCK APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS (a) <input type="checkbox"/> This Change Order is issued pursuant to _____ The Changes set forth in block 12 are made to the above numbered contract/order. (b) <input type="checkbox"/> The above numbered contract/order is modified to reflect the administrative changes (such as changes in paying office, appropriation data, etc.) set forth in block 12. (c) <input checked="" type="checkbox"/> This Supplemental Agreement is entered into pursuant to authority of <u>Public Law 95-91, and other applicable laws.</u> It modifies the above numbered contract as set forth in block 12.					
12. DESCRIPTION OF AMENDMENT/MODIFICATION (a) <u>ARTICLE I - THE RESEARCH TO BE PERFORMED</u> is amended by adding a new paragraph as follows: "Appendix A3, 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." (b) <u>ARTICLE II - THE PERIOD OF PERFORMANCE</u> is amended as follows: "The period of performance for the work performed under this Supplemental Agreement shall commence on June 22, 1981 and expire on May 31, 1982. The period of time for performing the research work under Appendix A3 may be extended for additional periods by mutual written agreement of the parties." (c) <u>ARTICLE III - CONSIDERATION</u> , paragraph A. is hereby revised to increase the contract Support Ceiling by One Hundred Sixty-Three Thousand Thirty-Nine Dollars ⁶⁵³ Dollars (\$163,653.00) to a new total Support Ceiling of Four Hundred Ninety-Eight Thousand Six Hundred Ninety-Two Dollars (\$498,692.00). (?)					
EXCEPT AS PROVIDED HEREIN, ALL TERMS AND CONDITIONS OF THE DOCUMENT REFERENCED IN BLOCK 9, AS HERETOFORE CHANGED, REMAIN UNCHANGED AND IN FULL FORCE AND EFFECT.					
13. <input type="checkbox"/> CONTRACTOR/OFFEROR IS NOT REQUIRED TO SIGN THIS DOCUMENT <input checked="" type="checkbox"/> CONTRACTOR/OFFEROR IS REQUIRED TO SIGN THIS DOCUMENT AND RETURN <u>3</u> COPIES TO ISSUING OFFICE					
14. NAME OF CONTRACTOR/OFFEROR BY _____ (Signature of person authorized to sign)			17. UNITED STATES OF AMERICA BY <u>William C. Drake</u> (Signature of Contracting Officer)		
15. NAME AND TITLE OF SIGNER (Type or print) Mildred B. Haenel, Director Research Administration		16. DATE SIGNED Sept. 18, 1981	18. NAME OF CONTRACTING OFFICER (Type or print) William C. Drake		19. DATE SIGNED 9/22/81

Modification No. A003 (Cont'd)
Supplemental Agreement to
Contract No. DE-AS07-79ID12037
Page 2

(d) A new ARTICLE VII is hereby added as follows:

"Date of Incurrence of Costs - The contractor shall be entitled to reimbursement for costs incurred in an amount not to exceed \$50,000 on or after June 22, 1981 which, if incurred after this modification had been entered into, would have been reimbursable under the provisions of this modification."

Contractor: SOUTHERN METHODIST UNIVERSITY

APPENDIX A-3

For the contract period June 22, 1981, through May 31, 1982.

ARTICLE A-1 - RESEARCH TO BE PERFORMED BY CONTRACTOR

The scope of work under this modification is unclassified, and the Contractor will provide a third year of logistical, technical, analytical and report preparation support relating to geothermal gradient and heat flow data collection for the low-temperature programs in the states of Oregon and Washington. Specific details of work to be performed are as follows:

1. Oregon

Services to be provided by SMU include supply and maintenance of two sets of portable temperature logging gear. A truck with a motorized winch capable of measuring temperatures to a depth of 3000 m and a truck capable of measuring temperatures to 1000 m as well as gamma-ray, SP and resistivity logs in wells, will be supplied and maintained for joint use by the states of Oregon and Washington. Each truck will be available approximately 50% of the time in each state during the field season. Personnel from the state of Oregon will collect the field data, which will be sent to SMU to be collated and combined with an extensive computer file of existing data from the state of Oregon. It is estimated that between 100 and 200 new holes will be logged during the 1981 field season.

Copies of computer-integrated temperature-depth information and plots for each hole will be submitted to the state of Oregon for open-file in the fall of 1981. Thermal conductivity measurements will be made on samples collected by the field parties in order to calculate heat flow values for holes, where possible, and to obtain better information on thermal properties of geothermal areas. Radioactivity measurement on well and surface samples, as well as terrain corrections, will be made as needed.

Reports will be prepared and personnel from the SMU geothermal laboratory will consult with personnel from the state of Oregon in the interpretation and reporting of the geothermal results. Special areas of study are listed Contracts Nos. DE-FC07-79ID12044 and DE-FC07-79ET27220 with the Oregon Division of Geology and Mineral Industries. Specific publications to be submitted by May 31, 1982, include: a report of geothermal gradient data, geothermal gradient and heat flow summary for special papers on high-priority resource

areas; a geothermal gradient and heat flow summary for a special paper summarizing the geothermal resource potential of all of the study areas; and a new edition of the statewide 1:1,000,000 heat flow map.

2. Washington

Under Contract No. DE-AC07-79ET27014 the Washington Department of Natural Resources (WDNR) plans to drill approximately 10 holes specifically for geothermal gradient-heat flow determinations in the southeastern Washington Cascade Range. SMU will log temperatures, gamma-ray, SP and resistivity in these holes as they are drilled. In addition, SMU will supply 9 man-months of field effort in support of the state of Washington program; 5 man-months of field effort will be involved with geothermal gradient scrounge studies, and 3 man-months will be involved in operating one of the mobilized logging systems. Two sets of portable temperature-depth equipment will be supplied for the field studies. The areas to be emphasized are the eastern border of the Cascade Range, the Columbia Plateau, and the boundary between the Columbia Plateau and Okanogan Highlands. In the field effort, approximately 100 to 150 holes will be logged, in addition to the holes which are to be drilled. Products to be delivered by May 31, 1982, include the following:

- (1) Depth-to-isotherm maps
 - (a) sketch map of entire state at 1:2,000,000
 - (b) Columbia Basin at 1:500,000
 - (c) more detailed maps in anomalous areas, such as Moses Lake, Walla Walla, or Yakima, at scales of 1:250,000 or 1:100,000 as data quantity and quality permit.

[Note: These maps might be formulated as depth-to-isotherm maps (probably depth to 200C and/or 300C) and/or temperature-at-fixed-depth maps (such as temperature at a depth of 1 km).]
- (2) Mean surface temperature maps for the areas listed under 1a, 1b and 1c, where data quantity and quality permit.
- (3) Heat flow and gradient maps of the entire state at 1:1,000,000.
- (4) Tabulated and graphical temperature-depth data for all wells in the state from which these data are available.

- (5) Tabulated gradients, thermal conductivities and heat flow (corrected and uncorrected) for all wells in the state from which these data are available.
- (5) An explanatory and interpretative text.

ARTICLE A-II - WAYS AND MEANS OF PERFORMANCE

- (a) The items to be supported include the following:

	<u>Total</u>	<u>DOE</u>	<u>SMU</u>
Salaries	\$ 80,510	\$ 71,606	\$ 8,904
Employee Benefits	8,968	7,810	1,158
Supplies	4,000	4,000	
Travel	27,950	27,950	
Computer	10,000	10,000	
Publication	1,500	1,500	
Total Direct Costs	<u>\$132,928</u>	<u>\$122,865</u>	<u>\$10,062</u>
Indirect Costs	44,812	40,787	4,025
Total Project Costs	<u>\$177,740</u>	<u>\$163,653</u>	<u>\$14,087</u>

- (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 cost and fringe benefits contributed by the Contractor but excluded from computation of Support Cost and consideration in proportioning costs:
 \$14,087
- (d) All subcontracts and consultant agreements require the review and written approval of the Contracting Officer.

ARTICLE A-III - FUNDING

The total estimated cost of items under A-II(a) above, for the contract period stated in this Appendix A-3 is \$163,653; DOE will pay 100% of the actual costs of these items incurred during the contract period stated in this Appendix A-3 subject to the provisions of Article III and Article B-V. The estimated DOE Support Cost for the contract period stated in this Appendix A-3 is \$163,653.

The estimate DOE 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>\$163,653</u> |

ARTICLE A-IV - ADMINISTRATION AND REPORTS

- (a) Principal Investigator - Dr. David D. Blackwell
Southern Methodist University
Department of Geological Studies
Telephone (214) 692-2745

Technical Administrator - Dr. L. L. Mink
(DOE's Program Manager) DOE-ID
Energy and Technology Division
Telephone (208) 525-0638

The Principal Investigator shall be responsible for directing the work within the scope of Article A-I above, as outlined in discussions and in periodic letters from the Technical Administrator.

- (b) The Principal Investigator is responsible for the preparation and submission of reports in accordance with the attached DOE Form CR-537, which is made a part hereof by this reference.

U. S. DEPARTMENT OF ENERGY
REPORTING REQUIREMENTS CHECKLIST

DOE Form CR-537
 (1-78)

(See Instructions on Reverse)

FORM APPROVED
 OMB NO. 38R-0190

1. IDENTIFICATION Southern Methodist University		2. OBLIGATION INSTRUMENT: Modification A003 Contract No. DE-AS07-79ID12037											
3. REPORTING REQUIREMENTS													
A. PROJECT MANAGEMENT 1. <input type="checkbox"/> Management Plan 2. <input type="checkbox"/> Milestone Schedule & Status Report 3. <input type="checkbox"/> Cost Plan 4. <input type="checkbox"/> Manpower Plan 5. <input checked="" type="checkbox"/> Contract Management Summary Report 6. <input checked="" type="checkbox"/> Project Status Report 7. <input type="checkbox"/> Cost Management Report 8. <input type="checkbox"/> Manpower Management Report 9. <input type="checkbox"/> Conference Record 10. <input type="checkbox"/> Hot Line Report	Frequency M M	B. TECHNICAL INFORMATION REPORTING 1. <input type="checkbox"/> Notice of Energy RD&D Project (SSIE) 2. <input type="checkbox"/> Technical Progress Report 3. <input checked="" type="checkbox"/> Topical Report 4. <input checked="" type="checkbox"/> Final Technical Report C. PMS/MINI-PMS 1. Cost Performance Report <input type="checkbox"/> Format 1 WBS <input type="checkbox"/> Format 2 Functional <input type="checkbox"/> Format 3 Baseline <input type="checkbox"/> Format 5 Problem Analysis 2. <input type="checkbox"/> Cost/Schedule Status Report 3. <input type="checkbox"/> Management Control System Description 4. <input type="checkbox"/> Summary System Description 5. <input type="checkbox"/> WBS Dictionary	Frequency A Y										
FREQUENCY CODES: <table style="width:100%; border: none;"> <tr> <td style="width:50%;">A - As Required</td> <td style="width:50%;">Q - Quarterly</td> </tr> <tr> <td>C - Contract Change</td> <td>S - Semi-Annually</td> </tr> <tr> <td>F - Final (End of Contract)</td> <td>X - Mandatory for Delivery with Proposals/Bid</td> </tr> <tr> <td>M - Monthly</td> <td>Y - Yearly or Upon Contract Renewal</td> </tr> <tr> <td>O - One Time (Soon After Contract Award)</td> <td></td> </tr> </table>				A - As Required	Q - Quarterly	C - Contract Change	S - Semi-Annually	F - Final (End of Contract)	X - Mandatory for Delivery with Proposals/Bid	M - Monthly	Y - Yearly or Upon Contract Renewal	O - One Time (Soon After Contract Award)	
A - As Required	Q - Quarterly												
C - Contract Change	S - Semi-Annually												
F - Final (End of Contract)	X - Mandatory for Delivery with Proposals/Bid												
M - Monthly	Y - Yearly or Upon Contract Renewal												
O - One Time (Soon After Contract Award)													
4. SPECIAL INSTRUCTIONS A.5. and A.6. - Copies are due within fifteen days after end of the calendar month. B.3. - Submit 2 copies in draft after completion of work as indicated in the Statement of Work. After DOE approval is received, submit copies as required on attached "Report Distribution List." B.4. - Submit 2 copies in draft forty-five days prior to completion date of the work. After DOE approval is received, submit in final including one camera-ready copy.													
5. ATTACHED HEREWITH: <table style="width:100%; border: none;"> <tr> <td style="width:50%;"><input checked="" type="checkbox"/> Report Distribution List</td> <td style="width:50%; text-align: center;">=</td> </tr> <tr> <td><input type="checkbox"/> WBS/Reporting Category</td> <td style="text-align: center;">=</td> </tr> </table>				<input checked="" type="checkbox"/> Report Distribution List	=	<input type="checkbox"/> WBS/Reporting Category	=						
<input checked="" type="checkbox"/> Report Distribution List	=												
<input type="checkbox"/> WBS/Reporting Category	=												
6. PREPARED BY (Signature and date):		7. REVIEWED BY (Signature and date):											



DO E-129 Rev 08-79)
 Ref. DOE '3302
 Use with DOE CR-537

U.S. DEPARTMENT OF ENERGY
 IDAHO OPERATIONS OFFICE
 REPORT DISTRIBUTION LIST

Contract No.	Report Types										
	Milestone Schedule & Status Report Management Plan	Contract Management & Status Report Management Plan	Manpower Management Report Cost Management Report Project Status Report Manpower Plan	Notice of Energy R&D Project Final Line Report Conference Record	Technical Progress Report Topical Report	Management Control System Report Cost Performance Report Final Technical Report	Summary System Description Status Report	Web's Dictionary			
Modification No.	Number of Report Copies										
DE-AS07-79ID12037 A003											
U. S. Department of Energy Idaho Operations Office 550 Second Street Idaho Falls, Idaho 83401											
Attn: L. L. Mink, Program Manager Energy & Technology Division			2	2			2	12			
Attn: Nell W. Fraser, Director Contracts Management Division			1	1			1	1			
Attn: E. G. Jones, Director Financial Management Division			1	1							
Bob Gray U. S. Department of Energy, DGE MS 3344, Federal Building 12th and Penn. N.W. Washington, DC 20461			2	2			2	2			
Duncan Foley UURI 420 Chipeta Way, Suite 120 Salt Lake City, Utah 84108			1	1			1	1			
Special Instructions											

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. AMENDMENT/MODIFICATION NO. M004
2. EFFECTIVE DATE
3. REQUISITION/PURCHASE REQUEST NO. 07-82ID12037.501
4. PROJECT NO. (If applicable)

5. ISSUED BY U. S. Department of Energy
Idaho Operations Office
550 Second Street
Idaho Falls, Idaho 83401
6. ADMINISTERED BY (If other than block 5)

7. CONTRACTOR NAME AND ADDRESS Southern Methodist University
SMU Box 302
Dallas, Texas 75275
8. AMENDMENT OF SOLICITATION NO.
DATED (See block 9)
MODIFICATION OF CONTRACT/ORDER NO. DE-AS07-79ID12037
DATED 7/27/79 (See block 11)

9. THIS BLOCK APPLIES ONLY TO AMENDMENTS OF SOLICITATIONS
The above numbered solicitation is amended as set forth in block 12. The hour and date specified for receipt of Offers is extended, is not extended.
Offerors must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation, or as amended, by one of the following methods:
(a) By signing and returning copies of this amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGEMENT TO BE RECEIVED AT THE ISSUING OFFICE PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If, by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided such telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

10. ACCOUNTING AND APPROPRIATION DATA (If required)

11. THIS BLOCK APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS
(a) This Change Order is issued pursuant to
The Changes set forth in block 12 are made to the above numbered contract/order.
(b) The above numbered contract/order is modified to reflect the administrative changes (such as changes in paying office, appropriation data, etc.) set forth in block 12.
(c) This Supplemental Agreement is entered into pursuant to authority of Public Law 95-91, and other applicable laws.
It modifies the above numbered contract as set forth in block 12.

12. DESCRIPTION OF AMENDMENT/MODIFICATION
ARTICLE II - THE PERIOD OF PERFORMANCE is amended as follows:
"The period of performance for the work performed under this Supplemental Contract is extended through August 31, 1982."

Except as provided herein, all terms and conditions of the document referenced in block 8, as heretofore changed, remain unchanged and in full force and effect.

13. CONTRACTOR/OFFEROR IS NOT REQUIRED TO SIGN THIS DOCUMENT OR CONTRACTOR/OFFEROR IS REQUIRED TO SIGN THIS DOCUMENT AND RETURN 2 COPIES TO ISSUING OFFICE

14. NAME OF CONTRACTOR/OFFEROR BY Mildred B. Haenel
17. UNITED STATES OF AMERICA BY Kent R. Hastings

15. NAME AND TITLE OF SIGNER (Type or print) Mildred B. Haenel, Director
Research Administration
16. DATE SIGNED 4/23/82
18. NAME OF CONTRACTING OFFICER (Type or print) Kent R. Hastings
19. DATE SIGNED 4/16/82