

1400 2 1 62

CONTRACTING AGENCY: Ala. V. State Dept. Highway & Transit
CONTRACT NUMBER(S): SP 200 101101717
PRINCIPAL INVESTIGATOR: _____

CONTRACT PERIOD	\$ CONTRIBUTION		WORK DESCRIPTION	LOCATION	REMARKS
	DOE	STATE			
5/15/62 - 5/15/62	500.00	430.00	<p>Phase 1 - Survey of the existing site for proposed site work to be done for the proposed project.</p> <p>THURSDAY, 5/15/62 10:00 AM</p> <p>SPONSORED BY CONTRACT</p>	<p>STATEWIDE STATE WTB STATE WTB STATE WTB STATE WTB STATE WTB</p> <p>Highway 101 near Hwy 101</p> <p>Ala. V. State Dept. Highway & Transit</p>	

CONTRACTOR: REGENTS OF NEW MEXICO STATE UNIVERSITY

APPENDIX A

For the Contract Period March 15, 1978 through September 30, 1978.

Article A-1 - RESEARCH TO BE PERFORMED BY CONTRACTOR

The scope of the work under this contract is unclassified, and under this agreement with DOE will perform research consisting of the following in accordance with the Contractor's proposal No. NMSU-78-00287 incorporated herein and made a part hereof by reference:

(a) PHASE I

1. Subsurface Temperatures - The Contractor shall search the USGS WATSTORE file for all spring and well temperature in excess of 20°C. About 5000 data points for New Mexico are included in WATSTORE. The WATSTORE data will be supplemented by hot spring-well data from other published or unpublished reports and state and federal water resources file. The Contractor shall use the geothermistry information from hot well-spring data to calculate the inferred base temperatures of the geothermal system.

2. Water Quality - The Contractor shall use the data sources referred to above to tabulate TDS (total dissolved solids), fluoride, boron and other chemical constituents which may have deleterious environmental effects if that water is used. The Contractor shall store this data on magnetic tape for transfer to NOAA and USGS.

* 3. Seismicity - The Contractor shall prepare data on New Mexico seismicity from the USGS computerized file of worldwide epicenters, published seismic maps of New Mexico and, where applicable, from local microseismic surveys.

Subcontracted to Don Mack Tech. Swanberg P.I. \$4,800

* 4. Heat Flow - The Contractor shall compile heat flow data from published work and from unpublished work of several scientists who are presently working on this data collection.

Subcontracted to NMIEM/EMURK. M.A. Rafter P.I. \$10,000

* 5. Thermal Gradient - The Contractor shall make a systematic attempt to measure temperatures in existing wells throughout the geothermally promising areas in New Mexico. Particular attention will be placed on available wells located near suspected geothermal targets which are also near major user markets such as Santa Fe, Socorro, Albuquerque, Las Cruces, Alamogordo, etc.

030278

* Refer to Subcontract document sent to the Gov. of New Mexico State on Jan 15, 1978. We will incorp. Subcontract.

* 6. Volcano-tectonics - The Contractor shall collect data on quaternary volcanism and tectonism and mapping of locations of hot spring deposits (extinct hot springs), active faults, cinder cones, diatremes, maar craters, recent volcanics (particularly silicic) and deep sedimentary basins which may contain large volumes of geothermal fluids.

Subcontracted
to Univ. of NM
As is part 7.
≤ \$16,975 estimated

* 7. Geoelectric Investigations - Many of the state's major geothermal targets have been subject to some type of geoelectric prospecting including dipole-dipole and roving dipole soundings, magnetotelluric, audit-magnetotelluric sites, magnetic variation studies and self potential studies. The Contractor shall compile this data where available and conduct additional studies in other geothermally promising areas.

Subcontracted
to Univ. New Mex.
J.E. Colvander, P.I.

8. Geothermal Hydrologic Investigations - The Contractor shall analyze and plot existing well data in order to understand the geothermal hydrology of the promising sites in New Mexico. At suitable sites, some pumping tests shall be conducted to quantify the aquifer characteristics of shallow geothermal aquifers.

9. The Contractor shall make all of the above data available to NOAA and the USGS and other participating agencies in this study, viz., DOE, USFS, and BLM.

(b) PHASE I

1. The Contractor shall drill two 4-inch diameter, 1,000 ft. deep wells, one in Las Alturas area near Las Cruces and the other in the Socorro peak geothermal field west of NMTM campus at Socorro. Each of these wells will be completed by placing a 1-inch metal pipe as casing, leaving the drilling mud around the casing and cementing the top 10 feet around the pipe. The holes will be used primarily to measure temperature at various depths to calculate the geothermal gradient. The site for each well will be selected on the basis of available geological, geophysical, and terrain information. After temperature measurements, the holes will be sealed at the top.

2. On the basis of data obtained from Phase I effort and through temperature measurement in 1-inch holes, the Contractor shall decide whether to drill a deeper (2,500 feet), 7-inch hole at one of the two areas listed in (b)1., above. This hole will be used to collect detailed geologic

data through sample collection and through geophysical well logging, e.g., electric resistivity and x-ray and neutron logging. The hole will also be used to conduct pumping tests to determine the characteristics of the geothermal aquifer(s). Water samples from this well will be collected to determine the quality of geothermal water.

Article A-II - WAYS AND MEANS OF PERFORMANCE

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

<u>Phase I</u>	<u>DOE</u>	<u>CONTRACTOR</u>
Professional Staff and Faculty	\$26,700	
Student Salaries	5,350	
Overhead (67% of salaries and wages)	21,473	
Fringes (14% of professional salaries)	3,738	
Travel for Field Work	15,000	
Supplies	1,239	
Publication Costs	1,500	
SUBTOTAL	<u>\$75,000</u>	
 <u>Phase II</u>		
Drill two temperature gradient wells and collect data	15,000	15,000
Drill one 7", 2,500 ft. depth test hole log geophysical data	<u>60,000</u>	<u>20,000</u>
SUBTOTAL	<u>\$75,000</u>	<u>\$35,000</u>
TOTALS	<u>\$150,000</u>	<u>\$35,000</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) Costs contributed by the Contractor but excluded from computation of Support Ceiling:

\$35,000.00



Department of Energy
 Idaho Operations Office
 550 Second Street
 Idaho Falls, Idaho 83401

SEP 20 1978

Regents, New Mexico State University
 Office of Grants and Contracts
 P.O. Box 3699
 Las Cruces, New Mexico 88003

Attention: Betty Stevenson, Director, Grants and Contracts

Subject: CONTRACT NO. FW-78-S-07-1717

Gentlemen:

The "Support Ceiling" set forth in Article III-~~Consideration~~, paragraph (a) is hereby increased from \$100,000.00 to \$151,000.00, and the amount obligated under Article A-III-~~Funding of Appendix A~~ is also increased from \$100,000.00 to \$150,000.00.

Total
 FY 78

The scope of work set forth under Article A-f-~~Research To Be Performed By Contractor~~, paragraph (b) of Appendix A is hereby changed to show that the two 1300 foot deep slim holes and the one 1300 foot deep x 7 inch diameter hole under Phase II will all be drilled at the Las Alturas Cathedral Field, Las Cruces, New Mexico.

The period of performance for the work is hereby extended from September 30, 1978 to September 30, 1979.

Please indicate receipt and acceptance of the above changes by signing in the place indicated below and returning two copies to this office.

First Endorsement

To: R. E. Simonds, Director
 From: Betty L. Stevenson, Director

Very truly yours,

R. E. Simonds
 R. E. Simonds, Director
 Contract Management Division

ACCEPTED:
 The Regents of New Mexico State University

By: *Carl S. Hill*

TITLE: Acting President

DATE: 25 September 1978

cc: R. L. San Martin

In accordance with the above instructions the original and one copy of this letter is returned accepted.

CONTRACTOR: REGENTS OF NEW MEXICO STATE UNIVERSITY

APPENDIX A1

For the contract period May 15, 1979 through December 31, 1979.

Article A-I - RESEARCH TO BE PERFORMED BY CONTRACTOR

(a) The scope of the work under this contract is unclassified, and the Contractor under this agreement with DOE will perform research consisting of the following in accordance with the Contractor's proposal No. NMSU-79-20-214 as revised July 23, 1979, incorporated herein and made a part hereof by reference:

Task 1 - Las Alturas

A seismic profile of the Las Alturas geothermal reservoir will be conducted to define subsurface structures controlling the geothermal system. Funding will cover operating expenses for data collection, reduction, and interpretation, and for purchase of reflection geophones as outlines in the proposal. The principle investigator for this task will be Dr. Paul Morgan of New Mexico State University. The product of this research will be a seismic profile map and report of findings in the Las Alturas geothermal reservoir area, and recommendations for future development of the resource.

Task 2 - Socorro

Three tasks will be conducted at Socorro:

- a) A seismic study will be conducted to determine the thickness of tertiary sediments on the New Mexico Institute of Mining and Technology (NMIMT) land as outlined in the proposal. Dr. Allan Sanford and Dr. John Schlue from NMIMT will be the co-principle investigators of this task. The product of this research will be a seismic profile map and report of findings on the NMIMT land and recommendations for future development of the potential resource.
- b) A tritium study will be conducted by sampling and analysis of water from springs and wells in the Socorro Mt., NMIMT, and Snake Ranch Flats areas. In addition, previous tritium and water well data will be compiled and interpreted to determine water quality and groundwater circulation patterns. Dr. Gerardo Gross of NMIMT will be the principle investigator. The product will be in the form of a report with maps defining the findings and recommendations about the nature of groundwater circulation in the Socorro area.

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

- c) Hydrology studies will be conducted. Standard pump tests will be conducted on available wells in order to determine flow rate, draw down, and recharge. Numerical modeling will be employed to determine the heat production capacity and longevity of the geothermal reservoir.

Task 3 - Truth or Consequences

Work under this task shall include:

- compilation and synthesis of all available geoscience data for the Truth or Consequences area.
- geologic mapping of hot spring deposits, recent tectonics, faults, and lineaments on the western side of the Elephant Butte Reservoir.
- continued gravity studies to define faults and geometry of the geothermal reservoirs.
- detailed studies of the aquifer characteristics.
- temperature logging of all available wells in the Truth or Consequences area; in addition, chemical analyses will be performed on waters from selected wells to determine nature of contaminants and the presence of corroding or scaling ions.

Faculty at the University of New Mexico will conduct all but the last item under this task. Dr. C. A. Swanberg and Dr. Paul Morgan will conduct the temperature logging.

Task 4 - Chamberino and Mesquite

A Schlumberger, dipole-dipole and magnetotelluric survey will be conducted in an area near Mesquite and Chamberino, New Mexico, as outlined in the proposal. The low resistivity zone associated with known warm water will be delineated, as well as the zone's thickness. Dr. Charles Young of New Mexico State University will conduct this project.

Task 5 - Southcentral New Mexico Counties

Existing wells will be thermally logged in southcentral portions of the state including Mesquite/Berino, Columbus, Tularosa Basin, Albuquerque, Socorro, Las Alturas, Radium Springs, San Diego Mountains

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

Task 5 - Southcentral New Mexico Counties (Cont'd)

and other promising areas in southern New Mexico. Dr. C. A. Swanberg and Dr. Paul Morgan of New Mexico State University will be co-principle investigators for this project.

Task 6 - Columbus, Black Range, Potrillo Mountains and Southern Tularosa Basin

Detailed mapping of faults associated with Basalt Lavas will be undertaken in the Columbus, Black Range, Potrillo Mountains and Southern Tularosa Basin areas. Basalt samples will be collected and dated by K-Ar methods. Dr. William Seager of New Mexico State University will conduct this project.

Task 7 - Northwest New Mexico Counties

A reconnaissance study will be conducted to identify promising geothermal areas which are related to near-term applications to industrial, agricultural, and municipal uses. Faculty members of the New Mexico State University will perform this task.

(b) The Contractor shall perform such other tasks as may be mutually agreeable among the parties.

Article A-II - WAYS AND MEANS OF PERFORMANCE

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

	<u>DOE Share</u>	<u>New Mexico* Cost Sharing</u>
1. <u>Salaries, Wages and Fringe Benefits</u>		
Faculty Salaries:		
Project Manager		\$20,811
Las Alturas	\$ 1,960	
T or C and SCNM	5,020	
Chamberino & Mesquite, FY79	708	
Chamberino & Mesquite, FY80	5,486	
Columbus	2,600	
NWNM, FY79	2,105	
NWNM, FY80	<u>2,095</u>	
Total Faculty Salaries	\$19,974	<u>\$20,811</u>

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

	<u>DOE Share</u>	<u>New Mexico* Cost Sharing</u>
1. <u>Salaries, Wages and Fringe Benefits</u> (Cont'd)		
Student Salaries:		
Las Alturas	\$ 3,600	
T or T and SCNM	8,430	
Chamberino & Mesquite, FY79	700	
Chamberino & Mesquite, FY80	2,546	
NWNM, FY79	1,200	
NWNM, FY80	<u>2,256</u>	
Total Student Salaries	\$18,732	<u>0</u>
Fringe Benefits		
Faculty F.B. (15.13% of \$19,974 and \$20,811)	\$ 2,558	\$ 3,613
Student F.B. (2% of \$18,732)	<u>375</u>	<u>0</u>
	\$ <u>2,933</u>	\$ <u>3,613</u>
Total S,W, and F.B.	\$41,639	\$ 3,613
2. <u>Travel</u>		
Project Manager		\$ 750
Las Alturas	\$ 1,125	
SCNM Counties	6,200	
Chamberino & Mesquite	1,874	
Columbus, etc	1,830	
NWNM, FY79	2,460	
NWNM, FY80	<u>1,420</u>	
Total Travel	\$14,909	\$ 705
3. <u>Permanent Equipment</u>		
Las Alturas	\$ 4,500	
T or C and SCNM	5,000	
Chamberino & Mesquite, FY79	3,150	
NWNM, FY80	<u>800</u>	
Total Equipment	\$13,450	<u>0</u>

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

	<u>DOE Share</u>	<u>New Mexico*</u> <u>Cost Sharing</u>
4. <u>Expendable Supplies</u>		
Project Manager		\$ 790
Las Alturas	\$ 700	
SCNM Counties	650	
Chamberino & Mesquite	500	
NWNM, FY79	200	
NWNM, FY80	286	
Total Supplies	<u>\$ 2,226</u>	<u>\$ 790</u>
5. <u>Computing Costs</u>		
Las Alturas	\$ 470	\$
T or C and SC NM	650	
Chamberino & Mesquite	200	
Total Computing Costs	<u>\$ 1,320</u>	<u>0</u>
6. <u>Other Direct Costs</u>		
Publication Costs Project Manager		\$ 4,500
T or C and SCNM: Telephone, drafting, reports (\$500)		
Drilling shallow wells (\$4,000)	\$4,500	
Chamberino & Mesquite, FY80: Report, drafting, photography (\$300)		
Columbus: Publications, photos, thin sections (\$729)	300	
Basalt dating (\$4,500)	5,229	
NW NM, FY79: Publications, drafting (\$620)	620	
NW NM, FY80: Publications, drafting (\$650)	650	
Total Other Direct Costs	<u>\$11,349</u>	<u>\$ 4,500</u>
7. <u>Subcontracting</u>		
NMIMT	\$39,800	0
University of NM	54,945	0
Total Subcontracts	<u>\$94,745</u>	<u>0</u>

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

	<u>DOE Share</u>	<u>New Mexico*</u> <u>Cost Sharing</u>
8. Indirect Costs		
Las Alturas (77% of \$5,560)	\$ 4,281	\$ 0
T or C and SC NM (77% of \$13,450)	10,357	0
Chamberino & Mesquite, FY79 (77% of \$1,408)	0	1,084
Chamberino & Mesquite, FY80 (77% of 8,032)	365	5,819
Columbus (77% of \$2,600)	279	1,723
NW NM, FY79 (77% of \$3,305)	1,620	925
NW NM, FY80 (77% of \$4,351)	3,350	0
Total Indirect Costs	<u>\$20,252</u>	<u>\$ 9,551</u>
TOTAL	\$200,000	\$40,015

* Salary and Fringe Benefits of Project Manager are not subject to NMEI overhead as funds are contributed by State of New Mexico.

Article A-III - FUNDING

The total estimated cost for the performance of work under Article A-II above is \$240,015.00. DOE's share of this total budget is \$200,000.00 and the Contractor's share is \$40,015.00. DOE will pay 100% of its share of the actual costs enumerated in Article A-II subject to the provisions of Article B-V.

Article A-IV - ADMINISTRATION AND REPORTS

(a) Principal Investigator - Harold A. Daw

DOE Program Manager - L. L. Mink, Resource Definition Branch
U.S. Department of Energy
Idaho Operations Office
550 Second Street
Idaho Falls, Idaho 83401

(b) All Project Information Reports, as required by DOE Uniform Contractor Reporting System, Volume I, dated September 1978, and as indicated on the attached DOE Form CF-537, shall be submitted to the DOE Program Officer in accordance with the special instructions.

JAN 30 1980

130 PA. 2.6

STANDARD FORM 30, JULY 1966
GENERAL SERVICES ADMINISTRATION
REG. PROC. REG. (41 CFR) 1-16.101

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

PAGE 1 OF 1

1. AMENDMENT/MODIFICATION NO. A002	2. EFFECTIVE DATE	3. REQUISITION/PURCHASE REQUEST NO.	4. PROJECT NO. (If applicable)
ISSUED BY H. S. Department of Energy Idaho Operations Office 550 Second Street Idaho Falls, Idaho 83401	CODE	5. ADMINISTERED BY (If other than block 5) CODE	

CONTRACTOR NAME AND ADDRESS Regents of New Mexico State University Office of Grants and Contracts P.O. Box 3699 Las Cruces, NM 88003 Attn: Betty Stevenson, Director Office of Grants and Contracts	CODE	FACILITY CODE	6. AMENDMENT OF SOLICITATION NO. DATED _____ (See block 9)
(Street, city, county, state, and ZIP code)			<input checked="" type="checkbox"/> MODIFICATION OF CONTRACT/ORDER NO. DE-AS07-78ID01717 (Formerly EW-78-S-07-1717) DATED 5/9/78 (See block 11)

7. 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 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 amending _____ 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)

9. 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.

10. DESCRIPTION OF AMENDMENT/MODIFICATION

The period of performance for Modification No. A001 is hereby extended from December 31, 1979 to May 15, 1980.

Except as provided herein, all terms and conditions of the document referenced in block 6, 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 2 COPIES TO ISSUING OFFICE

14. NAME OF CONTRACTOR/OFFEROR The Regents of New Mexico State University (Signature of person authorized to sign)	17. UNITED STATES OF AMERICA BY J. F. Marino (Signature of Contracting Officer)
15. NAME AND TITLE OF SIGNER (Type or print) B.C. Roush, Acting President	16. DATE SIGNED 10 Jan 80
18. NAME OF CONTRACTING OFFICER (Type or print) J. F. Marino	19. DATE SIGNED 12/18/79

U. S. DEPARTMENT OF ENERGY

MALU

PROCUREMENT/FINANCIAL ASSISTANCE REQUEST-AUTHORIZATION

TO: J. P. Anderson, Chief, Contract Administration Branch

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

INITIAL: UPDATE: 4. PROCUREMENT: FINANCIAL ASSISTANCE:

PR NUMBER: _____ 5. PR CORRECTION LETTER: _____ 7. RELATED PR NUMBER: _____

TITLE: Geothermal Resource Assessment in New Mexico
DEVELOP, OBTAIN MONEY

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

AWARD PLANNING
AWARD AS ORDER UNDER B/M: DE-AC07-781001717 IF CODE Y
DESIRED AWARD DATE: 05 15 80 21. KIND OF AWARD ACTION: 1 22. TYPE OF AWARD: 1 ATTACH DETAILS.
IF MULTI-YEAR AWARD, INDICATE NUMBER OF YEARS: _____ 24. TYPE SOLICITATION INSTRUMENT: _____
EXTENT OF COMPETITION: _____ IF COMPETITIVE, ATTACH TECHNICAL EVALUATION PLAN. IF NON-COMPETITIVE, ATTACH JUSTIFICATION. REF: DOE-PR 9-3,305,51 or 9-4,909(1).
SOURCE SELECTION PROCEDURE: 1 1-A-E 2-SEB 3-OTHER 4-NONE
FOR A-E, SHOW ESTIMATED CONSTRUCTION COST IN DOLLARS: _____

IF COMPETITIVE, HAS LIST OF SOURCES BEEN ATTACHED? YES NO IF NON-COMPETITIVE, COMPLETE 23-25
NAME: New Mexico State University 29. ADDRESS: New Mexico State University
DIVISION: New Mexico Energy Institute Las Cruces, NM
GOCO/LAB: D A - GOCO/LAB B - GOCO/NON-LAB C - NON-GOCO/LAB D - NOT APPLICABLE

FINANCIAL
AWARD VALUE
COMMIT SHARE: \$200,000
TOTAL: \$450,000
CONSIDERATION IN KIND, LOAN, OR LOAN
GUARANTEE DATA REPORTED ON PR-799C:
PROJECT PERIOD: FROM 05 15 80 THRU 05 15 81

CURRENT FY FUNDS COMMITTED			
36.	37.	38.	
BAR NUMBER	FUND CLASS	DOLLAR AMOUNT	
<u>AM1510</u>	<u>-</u>	<u>\$200,000</u>	
FROM PR-799B (PART A)			
TOTAL THIS PR		<u>\$200,000</u>	
FUNDING PERIOD: FROM	<u>05 15 80</u>	THRU	<u>05 15 81</u>
APPROPRIATION SYMBOL:			
ALLOTMENT SYMBOL:			
OBJECT CLASS:			

PROJECT MANAGER
35. NAME: M. A. Widmeyer
36. SIGNATURE: M. A. Widmeyer
37. DATE: 04 07 80 38. OFFICE CODE: _____
39. FTS TELEPHONE NUMBER: _____

PROGRAM OFFICIAL
40. NAME: R. E. Wood
41. SIGNATURE: R. E. Wood
42. DATE: 04 07 80

CERTIFYING OFFICIAL
43. NAME: F. S. Brown
I HEREBY CERTIFY THAT THE FUNDS LISTED IN ITEM 36 ARE AVAILABLE.
44. SIGNATURE: _____
45. DATE: 04 07 80

STATEMENT OF WORK

Task 1.

Completion of public and technical maps of New Mexico geothermal potential. This will include: 1) final review and revision of the public map; 2) the completion of an initial draft of the scientific map, with additional reviews and updates of information acquired during FY80, prior to publication in 1981. Deliverables will include 1) mylar overlays (scale 1:500,000) of each data set shown on the two maps, and 2) draft copies of each map as specified by NOAA.

Task 2.

Completion of the collection of oil and gas well data for New Mexico. This will include: 1) bottomhole temperatures and well depths, 2) latitude-longitude and township-range of well locations, and 3) the bottomhole geological formation name and age, where available. Deliverables will consist of all tabulated data, and a map (scale 1:500,000) of all well locations, depths, bottomhole temperatures and formation name and age.

Task 3.

Data from on-going DOE and non-DOE funded research in New Mexico will be collected and collated to update the NOAA map publications. This new information will serve as addenda to the initial data sets used to develop the public and technical geothermal maps. The following data sets may be updated: seismic, water quality, electrical surveys, and thermal gradients. All data will be tabulated in the same format as the original data sets, and mylar overlays (1:500,000) will be developed indicating new data points.

Task 4.

A lineament map of the State of New Mexico will be constructed. Deliverables will include the map and mylar overlay (scale 1:500,000), a written report of the interpretations, and the photographs used to generate the final product.

Task 5.

All existing water well data in the southern Rio Grande Rift and the southwestern part of the State (parts of Soco, Lincoln, and ~~Other~~ Escondido counties, and all of Carron, Sierra, Grant, Hidalgo, Luna, and Dona Ana counties) will be collected. Data will include available temperature logs, lithologies, and drill cuttings. Deliverables will include a temperature gradient map and mylar overlay (1:500,000), a heat flow map and overlay to the same scale, county maps (1:250,000) for areas of high data density, tabulation of all data, and an interpretive report of the results.

Task 6.

West Mesa of Albuquerque The following will be accomplished on the West Mesa of Albuquerque:

- 1) completion of a magnetic survey
- 2) Five shallow (~50m) thermal gradient wells will be drilled and thermally logged
- 3) A dipole-dipole resistivity survey will be conducted.

Deliverables will include all data obtained, maps to the appropriate scale of each of the three data sets, and an interpretive report of the results of the surveys and the geothermal potential of the area.

Task 7.

Dona Ana and Luna Counties Twenty Shallow (~ 30 m) temperature gradient holes will be drilled; thermal gradient measurements will be acquired. A regional resistivity survey will be done in Dona Ana county.

Deliverables will include: 1) tabulated data, 2) a resistivity map (1:250,000), 3) a temperature gradient map (1:250,000), and ~~and~~ an interpretive report of the results and geothermal potential of the two counties.

Task 8.

Animas Valley Lightning Dock KGRA

Hydraulic data will be used to propose a preliminary computer simulated model for calibration of hydraulic properties of the groundwater reservoirs. Quarterly water quality samples and temperature measurements will be obtained from wells in the area. Deliverables will include 1) results of the groundwater computer simulation, 2) a compilation of available data, 3) maps of water quality analysis, water temperature, groundwater flow patterns, and watershed delineations, and 4) an interpretive report of the results and geothermal potential of the area.

Task 9.

All monthly, semi-annual, and final reports of these tasks shall be prepared and distributed in accordance with reporting standards set forth in this cooperative agreement and subsequent modifications.

CONTRACT MODIFICATION to:

Cooperative Agreement # DE-AS07-78ID01717

NEW MEXICO ENERGY INSTITUTE, NEW MEXICO STATE UNIV.

Period of Performance May 15, 1980 to May 15, 1981

Ways and Means:	DOE share	\$ 300,000
	Cost share	<u>43,254</u>
	Total costs	343,254

There is NO CAPITAL EQUIPMENT in this procurement