

660091001

15 Feb 83

JFcopy

STATE: Idaho
 ORGANIZATION: Department of Water Resources PHONE: 208-334-4480
 PRINCIPAL INVESTIGATOR/CONTACT: John Mitchell/Frank Sherman
 CONTRACT NO.: DE-AS07-77ET28407* DATE: 1/28/77
 EST. COMPLETION: 7/1/77 ORIGINAL AMOUNT OBLIGATED DOE: \$152,329
 CONTRACTOR: -
 TOTAL: \$152,329

MODIFICATIONS:

<u>NUMBER</u>	<u>DATE</u>	<u>DESCRIPTION</u>	<u>DOE</u>	<u>CONTRACTOR</u>	<u>AMOUNT</u>
*NOTE: Original Contract EG-77-S-07-1663 for					
		\$6,000 changed by Mod 1 (7/29/77) to amount	\$152,329		
		and expanded task definition and scope.			
002	6/12/78:	Additional Tasks - Funds - Time Extension			
		to 9/30/78 - Increase Support to	\$282,329		
003	12/13/78:	Add Tasks, T.E. to 9/30/79 - Funds to Total	\$557,329		
		Change Contract No. to Above			
004	9/28/79:	Add Task: T.E. to 9/30/80 - Support to Total	\$610,454		
005	10/9/79:	N.C.T.E. Mod 001 to 1/31/80: Mod 002-003 to 4/31/80.			
006	5/1/80:	Add Tasks: T.E. to 4/31/81: Support raised to	\$860,454		
007	4/30/80:	N.C.T.E. Mod 002 & 003 to 7/31/80: Mod 001 to 6/15/80.			
008	9/30/80:	T.E. Mod 004 to 1/31/81: Support Increase to	\$864,694		
009	5/1/81:	Add Tasks: T.E. to 4/30/82: " " "	\$1,012,304		

DELIVERABLE STATUS:

<u>TASK NO.</u>	<u>DESCRIPTION</u>	<u>DATE DUE</u>	<u>RECEIVED</u>
I-A	Per Mod 1 - Provide Data to Geotherm File	6/30/78	
I-B	Per Mod 1 - Statewide Compilation Geothermal Data	6/30/78	
	Geochemical on springs and wells, etc.	6/30/78	
I-C	Per Mod 1 - Water Quality Field Data Collection	6/30/78	
I-D	Per Mod 1 - 1:100,000 Thermal Water Occurrence	6/30/78	
	Data from B & C Map/Well List Chem Anal. Etc.	6/30/78	
I-E	Per Mod 1 - Linament Data Area Maps	6/30/78	
I-F	Per Mod 1 - Basin by Basin Geophysical Data Interp.	6/30/78	
I-G	Per Mod 1 - Land Ownership & Lease Status KGRA's --DELETED--		
I-H	Per Mod 1 - Site Selection for Future Evaluation	6/30/78	
I-I	Per Mod 1 - Prelim. Environmental Assessment Report	6/30/78	
I-J	Per Mod 1 - Final Report w/maps and tables	6/30/78	

.. See Appendix A - Mod 001 for Complete Task Descriptions.

(Cont'd on P. 2)

CONTRACT COMPLETION DATE: _____
 TOTAL FUNDS EXPENDED DOE: _____
 CONTRACTOR: _____
 TOTAL: _____

STATE: Idaho (Cont'd)

ORGANIZATION: _____ PHONE: _____

PRINCIPAL INVESTIGATOR/CONTACT: _____

CONTRACT NO.: DE-AS07-77ET28407 DATE: _____

EST. COMPLETION: _____ ORIGINAL AMOUNT OBLIGATED DOE: _____

CONTRACTOR: _____

TOTAL: _____

MODIFICATIONS: _____ AMOUNT

<u>NUMBER</u>	<u>DATE</u>	<u>DESCRIPTION</u>	<u>DOE</u>	<u>CONTRACTOR</u>
---------------	-------------	--------------------	------------	-------------------

<u>011</u>	<u>9/30/82</u>	<u>T.E. To 12/31/82: Add Task INCREASE FUNDS</u>	<u>\$ 5,000</u>	<u>-</u>
		<u>NEW TOTAL SUPPORT CEILING</u>	<u>\$ 1,017,304</u>	<u>-</u>

DELIVERABLE STATUS:

<u>TASK NO.</u>	<u>DESCRIPTION</u>	<u>DATE DUE</u>	<u>RECEIVED</u>
<u>A-I</u>	<u>Per Mod 002: Area Recon. Studies: Pocatello-Tyhee Area & Nampa-Caldwell.</u>	<u>9/30/78</u>	
<u>A-I</u>	<u>Per Mod 003: Same as Mod 002 - More time & \$ (Task remained exactly the same as in Mod 2.)</u>	<u>9/30/79</u>	
<u>A-I</u>	<u>Per Mod 004: Effect of Thermal Fluid Production and Reinjection - Raft River Valley Groundwater</u>	<u>9/30/79</u>	
<u>--</u>	<u>Per Mod 005: N.C.T.E. Mod 1</u>	<u>1/31/80</u>	
	<u>N.C.T.E. Mod 2 & 3</u>	<u>4/30/80</u>	
<u>A-I</u>	<u>Per Mod 006: Wood River Valley: Weaser Area - S.E. Idaho State wide direct use report</u>	<u>4/31/81</u>	
<u>A-I</u>	<u>Per Mod 009 (1) Boise Study (2) State Data Base Update (3) Eastern ID Study (4) Geoth. Info. Disseminate (5) S.E. Idaho Water Sampling</u>	<u>4/30/82</u>	

(Cont'd on P. 3)

CONTRACT COMPLETION DATE: _____

TOTAL FUNDS EXPENDED DOE: _____

CONTRACTOR: _____

TOTAL: _____

STATE: Idaho

CONTRACT NO.: DE-AS07-77ET28407

SUMMARY OF DELIVERABLES STATUS

<u>DESCRIPTION</u>	<u>TASK NO.</u>	<u>DATE RECEIVED</u>
• Provide Data to Geotherm File A/M001		
• Map-Thermal Water Occurrence/Idaho D/M001 1:100,000		
• Table of 280 Thermal Water Analysis " "		
• Table of 125 Trace Metal Thermal Water Analysis		
• Table of Calculate Aquifer Temp. Geochem. Data		
• Table of Selected Geoth. Sites, Discharge, T, use.		
• Map showing Chemical Quality Parameters		
• Area Lineament Maps (Included in Final Report) E/M001		
• Area Recon. Study: Pocatello-Tyhee Area (F/M002)		6/82
• Area Recon. Study: Nampa-Caldwell Area (F/M002)		12/81
• Raft River Reservoir/Groundwater Model (ModA004)		
• Add Studies for; Wood River Valley: Weaser Area and Southeastern Idaho: Include in final report.		
• Add; Geologic Study of Boise Area: N. Idaho Recon. add to Data Base: Eastern ID Study w/U. of Idaho: Southeast ID water sampling. All to be included in final report.		
Deliverables rec'd as of 2/10/82: 1:500,000 User Map		1/81
GEOTHERMAL INVESTIGATIONS IN IDAHO: PART 9, POTENTIAL FOR DIRECT HEAT APPLICATION OF GEOTHERMAL RESOURCES, IDWR BULL #30		6/80
PART 11: Geological, Hydrological, Geochemical and Geophysical INVESTIGATIONS OF NAMPA-CALDWELL AND ADJACENT AREAS: IDWR BULL #30 (Copy rec'd at ESL 8/5/82).		12/81
• CONTINUE BIENNIAL MONITOR OF WELLS IN VICINITY OF RAFT RIVER PROJECT SITE (Mod011)		-

COMMENTS AND ACTION ITEMS:

STATE: IDAHO

CONTRACT NO.: DE-AS07-77ET28407

DELIVERABLES STATUS (CONT'D)

TASK NO. DESCRIPTION DATE DUE DATE RECEIVED

AT / MOD 002: ~~SLMPA-Catalwell final report rec'd~~
~~AT ID FALLS AND SLD (PART II: WATER DOL. 436)~~ 13 JUN 82
- PART 10, WATER INFORMATION BULLETIN
NO. 30; "AN EVALUATION OF THERMAL WATER OCCURRENCES
IN THE TYHEE AREA, BANNOCK COUNTY, IDAHO". REC'D.
AT ESL & DOE/ID. 6 AUG 82

UURI

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

February 23, 1983

MEMORANDUM

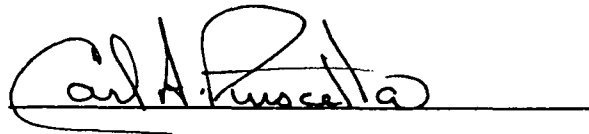
TO: Frank Sherman
FROM: Carl A. Ruscetta, Technical Program Coordinator
SUBJECT: Final Report and Deliverables: Contract DE-AS07-77ET28407

Dear Frank:

At the request of DOE/Idaho, I am in the process of reviewing all of the state team geothermal contracts still in force with respect to deliverables.

I have enclosed a copy of the contract summary for Idaho that shows, to the best of my knowledge, the reports thus far published against the subject contract. I understand from Duncan Foley that your final project report is nearly finished and that many of the topics/reports listed on the summary as not yet submitted will in fact be included in your final report. He also mentioned that the Weiser report is now in press and the Boise and Wood River reports are scheduled to go to press in the next 2-3 weeks.

To insure that credit for reports published or in press is given and the contract can be completed upon actual publication, I would appreciate it if you would mark up the enclosed summary showing reports published that I may have missed, reports now in press or final preparation and those topics which will be covered in the final report. Please return the updated summary to me as soon as possible, since this information will greatly facilitate the contract completion procedure. Thank you.



Carl A. Ruscetta

CAR:jp
enclosure

cc: Susan Prestwich
D. Foley

STATE: Idaho

ORGANIZATION: Department of Water Resources PHONE: 208-334-4480

PRINCIPAL INVESTIGATOR/CONTACT: John Mitchell/Frank Sherman

CONTRACT NO.: DE-AS07-77ET28407* DATE: 1/28/77

EST. COMPLETION: 7/1/77 ORIGINAL AMOUNT OBLIGATED DOE: \$152,329

CONTRACTOR: -

TOTAL: \$152,329

MODIFICATIONS:

<u>NUMBER</u>	<u>DATE</u>	<u>DESCRIPTION</u>	<u>DOE</u>	<u>AMOUNT</u>	<u>CONTRACTOR</u>
*NOTE: Original Contract EG-77-S-07-1663 for					
		\$6,000 changed by Mod 1 (7/29/77) to amount		\$152,329	
		and expanded task definition and scope.			
002	6/12/78:	Additional Tasks - Funds - Time Extension to 9/30/78 - Increase Support to		\$282,329	
003	12/13/78:	Add Tasks, T.E. to 9/30/79 - Funds to Total Change Contract No. to Above		\$557,329	
004	9/28/79:	Add Task: T.E. to 9/30/80 - Support to Total		\$610,454	
005	10/9/79:	N.C.T.E. Mod 001 to 1/31/80: Mod 002-003 to 4/31/80.			
006	5/1/80:	Add Tasks: T.E. to 4/31/81: Support raised to		\$860,454	
007	4/30/80:	N.C.T.E. Mod 002 & 003 to 7/31/80: Mod 001 to 6/15/80.			
008	9/30/80:	T.E. Mod 004 to 1/31/81: Support Increase to		\$864,694.	
009	5/1/81:	Add Tasks: T.E. to 4/30/82: " " " "		\$1,012,304	

DELIVERABLE STATUS:

<u>TASK NO.</u>	<u>DESCRIPTION</u>	<u>DATE DUE</u>	<u>RECEIVED</u>
I-A	Per Mod 1 - Provide Data to Geotherm File	6/30/78	
I-B	Per Mod 1 - Statewide Compilation Geothermal Data Geochemical on springs and wells, etc.	6/30/78	
I-C	Per Mod 1 - Water Quality Field Data Collection	6/30/78	
I-D	Per Mod 1 - 1:100,000 Thermal Water Occurrence Data from B & C Map/Well List Chem Anal. Etc.	6/30/78	
I-E	Per Mod 1 - Linament Data Area Maps	6/30/78	
I-F	Per Mod 1 - Basin by Basin Geophysical Data Interp.	6/30/78	
I-G	Per Mod 1 - Land Ownership & Lease Status KGRA's --DELETED--		
I-H	Per Mod 1 - Site Selection for Future Evaluation	6/30/78	
I-I	Per Mod 1 - Prelim. Environmental Assessment Report	6/30/78	
I-J	Per Mod 1 - Final Report w/maps and tables	6/30/78	

.. See Appendix A - Mod 001 for Complete Task Descriptions.

(Cont'd on P. 2)

CONTRACT COMPLETION DATE: _____

TOTAL FUNDS EXPENDED DOE: _____

CONTRACTOR: _____

TOTAL: _____

STATE: Idaho (Cont'd)

ORGANIZATION: _____ PHONE: _____

PRINCIPAL INVESTIGATOR/CONTACT: _____

CONTRACT NO.: DE-AS07-77ET28407 DATE: _____

EST. COMPLETION: _____ ORIGINAL AMOUNT OBLIGATED DOE: _____

CONTRACTOR: _____

TOTAL: _____

MODIFICATIONS:

<u>NUMBER</u>	<u>DATE</u>	<u>DESCRIPTION</u>	<u>DOE</u>	<u>AMOUNT</u>	<u>CONTRACTOR</u>
011	9/30/82 T.E. to 12/31/82:	Add Task Increase Funds		\$5,000	
		New Total Support Ceiling		\$1,017,304	

DELIVERABLE STATUS:

<u>TASK NO.</u>	<u>DESCRIPTION</u>	<u>DATE DUE</u>	<u>RECEIVED</u>
A-I	Per Mod 002: Area Recon. Studies: Pocatello-Tyhee Area & Nampa-Caldwell.	9/30/78	
A-I	Per Mod 003: Same as Mod 002 - More time & \$ (Task remained exactly the same as in Mod 2.)	9/30/79	
A-I	Per Mod 004: Effect of Thermal Fluid Production and ReInjection - Raft River Valley Groundwater	9/30/79	
--	Per Mod 005: N.C.T.E. Mod 1	1/31/80	
	N.C.T.E. Mod 2 & 3	4/30/80	
A-I	Per Mod 006: Wood River Valley: Weaser Area - S.E. Idaho State wide direct use report	4/31/81	
A-I	Per Mod 009 (1) Boise Study (2) State Data Base Update (3) Eastern ID Study (4) Geoth. Info. Disseminate (5) S.E. Idaho Water Sampling	4/30/82	
	(Cont'd on P. 3)		

CONTRACT COMPLETION DATE: _____

TOTAL FUNDS EXPENDED DOE: _____

CONTRACTOR: _____

TOTAL: _____

STATE: Idaho

CONTRACT NO.: DE-AS07-77ET28407

SUMMARY OF DELIVERABLES STATUS

<u>DESCRIPTION</u>	<u>TASK NO.</u>	<u>DATE RECEIVED</u>
• Provide Data to Geotherm File A/M001		
• Map-Thermal Water Occurrence/Idaho D/M001 1:100,000		
• Table of 280 Thermal Water Analysis " "		
• Table of 125 Trace Metal Thermal Water Analysis		
• Table of Calculate Aquifer Temp. Geochem Data		
• Table of Selected Geoth. Sites, Discharge, T, use.		
• Map showing Chemical Quality Parameters		
• Area Lineament Maps (Included in Final Report) E/M001		
• Area Recon. Study: Pocatello-Tyhee Area (F/M002)		6/82
• Area Recon. Study: Nampa-Caldwell Area (F/M002)		12/81
• Raft River Reservoir/Groundwater Model (ModA004)		
• Add Studies for; Wood River Valley: Weaser Area and Southeastern Idaho: Include in final report.		
• Add; Geologic Study of Boise Area: N. Idaho Recon. add to Data Base: EastemID Study w/U. of Idaho: Southeast ID water sampling. All to be included in final report.		
Deliverables rec'd as of 2/10/82: 1:500,000 User Map		1/81
-Geothermal Investigations In Idaho. Part 9, Potential for Direct Heat Application of Geothermal RESources, IDWR Bull. #30		6/80
-Part II: Geological, Hydrological, Geochemical and Geophysical Investigations of NAMPA - Caldwell and Adjacent Areas: IDWR Bull. #30 (Copy rec'd at ESL 8/5/82).		12/81
• Continue Biannual Monitor of Wells in Vicinity of Raft River Project Site (MOD 011)		-

COMMENTS AND ACTION ITEMS:

File 4m2.3

Contract No. EG-77-S-07-1663

CONTRACT BETWEEN
IDAHO DEPARTMENT OF WATER RESOURCES
AND

ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION

THIS AGREEMENT, entered into the 11th day of April, 1977 (effective as of the 28th day of January 1977) by and between the UNITED STATES OF AMERICA (hereinafter called the "Government"), acting through the ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION (hereinafter called "ERDA") and the IDAHO DEPARTMENT OF WATER RESOURCES, (hereinafter called the "Contractor") with its principal office at Boise, Idaho;

WITNESSETH THAT:

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

WHEREAS, this agreement is authorized by and executed under the Energy Reorganization Act of 1974 (P.L. 93-438), and other applicable laws:

NOW, THEREFORE, the parties hereto agree as follows:

ARTICLE I - THE RESEARCH TO BE PERFORMED

The Contractor shall, to the best of its ability, furnish personnel, facilities, equipment, material, 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.

ARTICLE II - THE PERIOD OF PERFORMANCE

The period of performance under this contract shall commence on January 28, 1977, and expire on July 1, 1977. 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, ERDA shall furnish the equipment, supplies, material, and services, if any, listed in Article A-II(b) and pay the Contractor the sum of Six Thousand Dollars (\$6,000), hereinafter called the "Support Ceiling" which sum shall be subject to adjustment as hereinafter provided.

(b) Payments to the Contractor shall equal the "Cumulative Support Cost" of the performance of this contract, as the term "Cumulative Support Cost" is defined in Article B-XXVIII; Provided, however, and notwithstanding any other provision of this contract, that the Government's monetary liability under this contract shall not exceed the Support Ceiling specified in (a) above. ERDA 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 ERDA 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 ERDA to that effect, at any time when or after the Cumulative Support Cost equals or exceeds the Support Ceiling.

(c) The Support Ceiling specified in (a) above may be increased unilaterally by ERDA by written notice to the Contractor and may be increased or decreased by written agreement of the parties (whether or not by formal modification to this contract). In the event the stated period of contract performance is extended, the Support Ceiling will be revised to reflect any increased ERDA support for the extended period or periods.

(d) Upon termination, or expiration of the total period of performance, the Contractor shall promptly refund to ERDA (or make such disposition as ERDA may in writing direct) any sums paid by ERDA to the Contractor under this contract, through direct payment or under letter of credit, in excess of the Cumulative Support Cost incurred in performance of 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 - 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 Agreement as of the day and year first above written.

THE UNITED STATES OF AMERICA

BY THE ENERGY RESEARCH AND DEVELOPMENT
ADMINISTRATION

By /s/ R. E. Simonds

R. E. Simonds, Director
Contracts and Procurement Division
Idaho Operations Office
Contracting Officer

Witnesses as to signature
of Contractor:

Phyllis M. Smith

Statehouse, Boise, Idaho

(Address)

Betty J. Slairck

Statehouse, Boise, Idaho

(Address)

IDAHO DEPARTMENT OF WATER RESOURCES

By /s/C. Stephen Allred

Title Director

Statehouse, Boise, Idaho

(Business Address)

CONTRACTOR: IDAHO DEPARTMENT OF WATER RESOURCES

APPENDIX A

For the contract period January 28, 1977 through July 1, 1977.

Article A-I RESEARCH TO BE PERFORMED BY CONTRACTOR

(a) The scope of work under this contract is unclassified, and the Idaho Department of Water Resources, under this Agreement with the U. S. Energy Research and Development Administration, will develop a comprehensive plan for the State of Idaho's participation in a coordinated systematic study of the low temperature geothermal resources in Idaho.

The Contractor will:

1. Develop a plan for the compilation and synthesis of data relevant to direct heat application of the low to moderate geothermal resources.
2. Develop a technical plan for the involvement of the State of Idaho in the reservoir assessment and confirmation programs being planned for southern Idaho by the U. S. Geological Survey and ERDA.

The scope of work is further detailed in the Contractor's proposal (attached) identified as "State of Idaho Geothermal Resource Low Temperature Assessment - Phase 0 Study."

(b) The scope of work shall include such other studies, investigations, and services as may be mutually agreed upon.

Article A-II WAYS AND MEANS OF PERFORMANCE

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

Four trips to Denver, CO., for 4 days each	\$1,350
Five trips to Menlo Park, CA, for 4 days each	1,450
Four trips to Wash. D.C., for 4 days each	<u>2,200</u>
Total	\$5,000
Overhead (telephone, typing, etc.)	<u>1,000</u>
Total	<u>\$6,000</u>

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

None

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

(c) Time or effort of Energy Coordinator and Technical Project Group including indirect costs and fringe benefits contributed by the Contractor but excluded from computation of Support Cost and from consideration in proportioning costs:

Contractor will absorb all costs except those listed in A-II (a) above.

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 \$6,000; ERDA will pay 100% of the actual costs of these items incurred during the contract period, subject to the provisions of Article III and Article B-XXVIII. The estimated ERDA Support Cost for the contract period stated in this Appendix A is \$6,000.

The estimated ERDA Support Cost is funded as follows:

- (a) Estimated unexpended balance from prior period(s) \$ 0
- (b) New funds for the current period \$ 6,000

Article A-IV ADMINISTRATION AND REPORTS

(a) The Contractor will provide a Coordinator for the work.

J. L. Griffith, or his designee, of ERDA's Office of Geothermal Energy, will be ERDA's Technical Representative.

(b) The Contractor will deliver the following reports:

	<u>Frequency</u>	<u>Draft to ERDA Technical Representative for Concurrence</u>	<u>Distribution ERDA Technical Representative</u>	
Administrative Letter Report	Monthly	N/A	10	
Final Report	Completion of contract effort	3 weeks after end of reporting period	10	plus one camera- ready copy
Topical Reports	As required	As agreed with ERDA Technical Representative	10	plus one camera- ready copy

One copy of each report will be submitted to the ERDA Contracting Officer.

Article A-IV ADMINISTRATION AND REPORTS (Cont'd)

Report Formats

The following will apply to all technical progress reports, topical reports and final reports:

- (a) The cover page will be supplied by ERDA/DGE unless the Contractor intends to use its corporate cover.
- (b) Reports under this contract will all carry the number IDO/1663-1, 2, etc. Report numbers will be assigned sequentially.

Specific aspects covered in the final report shall be:

1. A preliminary data file for the low to moderate temperature geothermal resources in Idaho, containing copies of relevant maps, reports and data sets.
2. A final report which describes a technical plan for the State of Idaho's participation in a systematic resource assessment and reservoir confirmation program for southern Idaho.

The plan will detail technical tasks and objectives, possible technical participants, anticipated costs, and milestones for the recommended program.

In addition to the above, all materials collected during the contract period will be maintained on open-file status for inspection by interested parties.



UNITED STATES
ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION

IDAHO OPERATIONS OFFICE
550 Second St
Idaho Falls, Idaho 83401

JUL 27 1977

812
JUL 20 1977

JUL 20 1977

Department of Water Resources

Idaho Department of Water Resources
Statehouse
Boise, Idaho 83720

Attention: Murland Packer

Subject: EXTENSION OF CONTRACT NO. EG-77-S-07-1663

Gentlemen:

This letter supersedes ID letter dated July 1, 1977. Recent discussions between representatives of your office and ERDA resulted in the conclusion that the term of the subject contract should be extended through October 30, 1977. Such extension will provide additional time for travel related to data collection and other associated work.

By signing this letter, ERDA grants its approval for an extension of the term through October 30, 1977. IDWR may indicate approval by having an authorized representative sign a copy of this letter in the space provided below and returning such copy to the undersigned.

Very truly yours,

R. E. Simonds, Director
Contracts and Procurement Division

C&P

APPROVED:

By

Murland Packer
Title Chief, Project Studies Bureau

Date August 10, 1977

John Griffith
Maggie M2.3

JUN 20 1978

RECEIVED

JUN 26 1978

GEOTHERMAL ENERGY
BRANCH

State of Idaho
Department of Water Resources
State House
Boise, Idaho 83720

Attention: Murland R. Packer, Chief
Project Studies Bureau

Subject: MODIFICATION NO. A002 TO CONTRACT NO. EG-77-S-07-1663

Gentlemen:

Enclosed is conformed copy of the subject contract. As requested in your letter dated June 15, 1978, I have initialed the change under Article A-IV(a) of Appendix A.

Title to Government Property under Article IV will vest with the Government until the Idaho Operations Office receives a memorandum of determination from DOE Headquarters stating that title should vest with IDWR.

Very truly yours,
ORIGINAL SIGNED BY
W. C. Kendall

W. C. Kendall, Assistant Director
for Contracts, Contracts Management
Division

Enclosure:
As stated above

cc: John L. Griffith
Earl G. Jones
Roy Minka, DOE HQ

CAB CMB
JOLee:ak
JPAnderson WCKendall
6-20-78 *WCK*

SUPPLEMENTAL AGREEMENT

THIS SUPPLEMENTAL AGREEMENT, entered into the 12th day of June 1978, (effective May 15, 1978) by and between the UNITED STATES OF AMERICA (hereinafter called the "Government"), acting through the DEPARTMENT OF ENERGY (hereinafter called "DOE")(formerly the Energy Research and Development Administration "ERDA"), and the IDAHO DEPARTMENT OF WATER RESOURCES, agency of the State of Idaho (hereinafter called IDWR and/or the "Contractor") with its principal office at Boise, Idaho;

WITNESSETH THAT:

WHEREAS, on April 11, 1977, effective as of the 28th day of January 1977, the Government and the Contractor entered into Contract No. EG-77-S-07-1663 for the Contractor to perform certain research work; and

WHEREAS, the contract has been modified by Modification No. A001; and

WHEREAS, the parties desire to further modify said contract as herein-after provided; and

WHEREAS, DOE certifies that this Supplemental Agreement is authorized by and executed under Section 302(c)(11) 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, said contract is hereby amended as follows:

- A. ARTICLE I, "THE RESEARCH TO BE PERFORMED," is amended by adding a new paragraph as follows:

"Appendix A2, 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. 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 May 15, 1978, and expire on September 30, 1978. The period of time for performing the research work under Appendix A2 may be extended for additional periods by the mutual written agreement of the parties."

C. ARTICLE III, "CONSIDERATION," paragraph (a), is hereby revised to increase the contract Support Ceiling to a total of Two Hundred Eighty-Two Thousand Three Hundred Twenty-Nine Dollars (\$282,329.00) which sum shall be subject to adjustment as hereinafter provided.

D. ARTICLE IV, "GOVERNMENT PROPERTY" is amended as follows:

"The following items of property procured or fabricated by the Contractor are hereby listed as "Government Property."

1. Remote Water Quality Monitoring System
2. Well Pressure Transducer, Recorder and Meter
3. Temperature Compensating Conductivity Meter
4. Small Programmable Calculator

E. ARTICLE V, "ADDITIONAL CONTRACT PROVISIONS," is amended as follows:

The following article is incorporated herein and made a part of this contract: PRICE REDUCTION FOR DEFECTIVE COST OR PRICING DATA

If any price, including profit or fee negotiated in connection with this contract or any cost reimbursable under this contract, was increased by any significant sums because:

- (a) The Contractor furnished cost or pricing data which was not accurate, complete and current as certified in the Contractor's Certification of Current Cost or Pricing Data;
- (b) A subcontractor, pursuant to the article of this contract entitled "Subcontractor Cost or Pricing Data" or "Subcontractor Cost or Pricing Data--Price adjustments" or any subcontract article therein required, furnished cost or pricing data which was not accurate, complete and current as certified in the subcontractor's Certification of Current Cost or Pricing Data;
- (c) A subcontractor or prospective subcontractor furnished cost or pricing data which was required to be accurate, complete and current and to be submitted to support a subcontract cost estimate furnished by the Contractor but which was not accurate, complete and current as of the date certified in the Contractor's Certification of Current Cost or Pricing Data;

- (d) The Contractor or a subcontractor or prospective subcontractor furnished any data, not within (a), (b), or (c) above, which was not accurate as submitted;

then the price or cost shall be reduced accordingly and the contract shall be modified in writing as may be necessary to reflect such reduction; however, any reduction in the contract price due to defective subcontract data of a prospective subcontractor when the subcontract was not subsequently awarded to such subcontractor, will be limited to the amount (plus applicable overhead and profit mark-up) by which the actual subcontract, or actual cost to the Contractor if there was not subcontract, was less than the prospective subcontract cost estimate submitted by the Contractor: Provided, the actual subcontract price was not affected by defective cost or pricing data.

Except only to the extent modified by this Supplemental Agreement or to the extent rendered inconsistent herewith, all of the terms and provisions of said Contract No. EG-77-S-07-1663 shall remain unchanged and continue in full force and effect.

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

THE UNITED STATES OF AMERICA

BY THE DEPARTMENT OF ENERGY

By /s/ W. C. Kendall

W. C. Kendall, Asst. Director for Contracts
Contracts Management Division
Idaho Operations Office
Contracting Officer

Modification No. A002 (Cont'd)
Supplemental Agreement to
Contract No. EG-77-S-07-1663

IDAHO DEPARTMENT OF WATER RESOURCES

Witnesses as to signature of
Contractor:

/s/ A. Kenneth Dunn
(Signature)

A. KENNETH DUNN
Name (typed)

373 W. Franklin Street
Boise, Idaho 83720
(Address)

/s/ Murland R. Packer
(Signature)

MURLAND R. PACKER
Name (typed)

373 W. Franklin Street
Boise, Idaho 83720
(Address)

By /s/ C. Stephen Allred

C. STEPHEN ALLRED
Name (typed)

Director, Department of
Title Water Resources

373 W. Franklin Street
Boise, Idaho 83720
(Business Address)

I, M. Russell Bosch, certify that I am the Fiscal
Officer of the Contractor named under this document,
that C. Stephen Allred, who signed this document on
behalf of the Contractor, was then Director, Department of Water Resources
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 hand and the seal of
said Contractor this 8th day of June 1978.

/s/ M. Russell Bosch

(SEAL)

CONTRACTOR: IDAHO DEPARTMENT OF WATER RESOURCES

APPENDIX A2

For the Contract Period May 15, 1978 through September 30, 1979. ⁸

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 contract with The Department of Energy will perform research consisting of the following. The work set forth below shall be performed in accordance with the Contractor's proposal entitled, "Municipal, Commercial, and Industrial Geothermal Potential in Idaho, Phase II Contract No. EG-77-S-07-1663 Proposed Reservoir Confirmation and Engineering Evaluation by Idaho Department of Water Resources," incorporated by reference and made a part hereof. The Contractor shall conduct two area reconnaissance studies to identify local geothermal potential. The two areas of research are the Pocatello-Tyhee area and the Nampa-Caldwell area. The areas of research shall include:

1. Comprehensive evaluation of geological, geophysical, geochemical, and hydrological information as it relates to geothermal occurrences in the study areas.
2. Geophysical testing will be conducted and shall include gravity, seismic reflection, and heat flow information.
3. Aerial photographs and satellite imagery photographs will be examined to augment geological and structural understanding of the geothermal areas.
4. Water chemistry and trace element studies will be conducted to estimate aquifer temperatures, and to determine approximate boundaries and size of the hydrologic system.
5. Spring deposits within the state will be mapped and analyzed as potential exploration tools in the identification of low temperature geothermal occurrences.
6. Field checking of well locations and flow data will continue as originally outlined in Phase I of this contract work.
7. A final report shall be written containing all pertinent data, maps, evaluations, and conclusions of the geothermal potential in the study areas.

(b) The scope of work shall include such other studies, investigations, and services as may be mutually agreed upon.

Article A-II WAYS AND MEANS OF PERFORMANCE

(a) Items for which support will be provided as indicated in Article A-III for the period from May 15, 1978 through September 30, 1978 under Phase II:

1. Salaries

Mitchell	3 months	\$ 4,608
L. Johnson	3 months	2,898
Additional Geologist	4 months	5,375
Aide - Full Time	5 months	3,435
Mellin	5 months (50%)	5,077
Packer	5 months (15%)	1,599
Three Field Checkers	3 months	6,187
District Office	2 months	2,400
Graham	1 1/4 months	1,830
Ondrechen	1 month	1,464
	Subtotal	<u>\$34,873</u>

Add Miscellaneous Division Support - (1 mo.)	1,744
Add Fringe Benefits - 20%	<u>7,323</u>
	Subtotal \$ <u>9,067</u>

Add Aide for 1/2 Time - 1 month (September) 344

Total Salaries \$44,284

2. Operating Expenses

Travel	\$ 1,652
Vehicle rental	9,275
Disposable Supplies for Sample Collection	1,000
Computer Time & Software	5,000
Miscellaneous Supplies	1,000
Vehicle Ownership Costs (operating costs in indirect costs)	1,250
Miscellaneous & Preliminary Report Publication Costs	<u>1,000</u>

Total Operating Expenses \$20,177

3. Subcontracts

Geologic Mapping, Nampa-Caldwell	\$ 10,000
Pump Test, Pocatello	2,000
Gravity Survey, Nampa-Caldwell & Pocatello	17,000
Graduate Student to Gather Heat Flow Temperature Data in Existing Wells, Nampa-Caldwell, under Guidance of Southern Methodist University	10,000

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

Map Spring Deposits - ISU - Two Graduate Students	\$ 15,000
Standard Water Quality Analysis by USGS, Nampa-Caldwell	<u>11,528</u>
Total Subcontracts	\$ 65,528

TOTAL DIRECT COSTS \$129,989

TOTAL INDIRECT COSTS (29.5% of Direct Costs) 38,347

4. Permanent Equipment

Remote Water Quality Monitoring System	\$ 12,000
Well Pressure Transducer, Recorder & Meter	8,000
Temperature Compensating Conductivity Meter	1,000
Small Programmable Calculator	<u>700</u>

Total Permanent Equipment \$ 21,700

5. Support Contracts Arranged by DOE-ID

Isotope Tests, Nampa-Caldwell & Pocatello	4,924
Neutron Activation Analysis by EG&G Nampa-Caldwell & Pocatello	<u>11,040</u>

Total Support Contracts \$ 15,964

TOTAL COST FOR PERIOD FROM MAY 15, 1978
THROUGH SEPTEMBER 30, 1978 \$206,000

(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:

Article A-III FUNDING

(a) The total estimated cost to DOE for the performance of all work under Article A-II above is \$206,000.00. An amount of \$130,000.00 is hereby obligated for the period from May 15, 1978 through September 30, 1978 to start the work. The balance of \$76,000.00 will be obligated when and if such funds become available. The Contractor shall perform the

Article A-III FUNDING (Cont'd)

research set forth under Article A-I until 90% of the \$130,000.00 is obligated. At that time if additional funds have not been authorized, the Contractor shall discontinue work and notify DOE that work has been stopped until additional funds are authorized. If additional funds will not be authorized, DOE will notify the Contractor in writing within 30 days and at that time the Contractor shall submit a final report for the work that has been performed. DOE will pay 100% of the actual costs enumerated in Article A-II subject to the provisions contained in this article, Article III, and Article B-V.

Article A-IV ADMINISTRATION AND REPORTS

(a) Principal Investigator - Murland Packer

DOE Technical Administrator - Maggie Widmayer
 GEB-DOE
 550 Second Street
 Idaho Falls, ID 83401

The Principal Investigator shall direct the work as outlined in discussions and in periodic letters. ~~from the Technical Administrator.~~ *Mutually agreed and w²*

(b) The Principal Investigator shall prepare and submit reports to the Technical Administrator as follows:

	<u>Frequency</u>	<u>Draft to Technical Administrator for Concurrence</u>	<u>Distribution Technical Administrator</u>	<u>TIC</u>
Administrative and Technical Progress Report	Monthly	N/A	8	N/A
Final Report	Completion of contract effort	3 weeks after end of reporting period	8	1 camera-ready copy

1. Reports

The following will apply to all technical progress reports, topical reports and final reports:

(a) The cover page will be supplied by DOE unless the Contractor intends to use its corporate cover.

Article A-III FUNDING (Cont'd)

research set forth under Article A-I until 90% of the \$130,000.00 is obligated. At that time if additional funds have not been authorized, the Contractor shall discontinue work and notify DOE that work has been stopped until additional funds are authorized. If additional funds will not be authorized, DOE will notify the Contractor in writing within 30 days and at that time the Contractor shall submit a final report for the work that has been performed. DOE will pay 100% of the actual costs enumerated in Article A-II subject to the provisions contained in this article, Article III, and Article B-V.

Article A-IV ADMINISTRATION AND REPORTS

(a) Principal Investigator - Murland Packer

DOE Technical Administrator - Maggie Widmayer
GEB-DOE
550 Second Street
Idaho Falls, ID 83401

The Principal Investigator shall direct the work as ^{mutually agreed and} outlined in discussions and in periodic letters. ~~from the Technical Administrator~~

/s/ AKD
/s/ WCK

(b) The Principal Investigator shall prepare and submit reports to the Technical Administrator as follows:

	<u>Frequency</u>	<u>Draft to Technical Administrator for Concurrence</u>	<u>Distribution Technical Administrator</u>	<u>TIC</u>
Administrative and Technical Progress Report	Monthly	N/A	8	N/A
Final Report	Completion of contract effort	3 weeks after end of reporting period	8	1 camera-ready copy

1. Reports

The following will apply to all technical progress reports, topical reports and final reports:

(a) The cover page will be supplied by DOE unless the Contractor intends to use its corporate cover.

Article A-IV ADMINISTRATION AND REPORTS (Cont'd)

- (b) Reports under this contract will all carry the number prescribed by the Technical Administrator. Report numbers will be assigned sequentially.
- (c) The distribution category for reports prepared under this contract will be UC-66A as defined on page 16 of ERDA-76/72.

2. Content of Reports

Administrative and Technical Progress Reports -- Administrative and progress report to Technical Administrator on personnel and fiscal matters, including such information as rate of expenditures, equipment ordering availability-receipt, loss of gain of personnel, etc. The report shall include a full account of progress, problems encountered, plans for future reporting periods, and an assessment of prospects for future progress, identifying clearly all facts with both positive and negative impact on expectations for completely achieving task objectives on schedule and within contract funds, should include, as appropriate, accounts of activities aimed at utilization of task results.

Final Report -- The final report should include all pertinent data, interpretations, graphs, maps and results of the work outlined in the scope of Contractor's proposal for Phase II research for the period from May 15, 1978 through September 30, 1979.

File 4m2.3

Modification No. A001
Supplemental Agreement to
Contract No. EG-77-S-07-1663

SUPPLEMENTAL AGREEMENT

THIS AGREEMENT, entered into the 29th day of July 1977, (effective as of the 1st day of July 1977), by and between the UNITED STATES OF AMERICA (hereinafter called the "Government"), acting through the ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION (hereinafter called "ERDA") and the IDAHO DEPARTMENT OF WATER RESOURCES, (hereinafter called "IDWR" and/or the "Contractor") with its principal office at Boise, Idaho;

WITNESSETH THAT:

WHEREAS, on April 11, 1977, effective as of the 28th day of January 1977, the Government and the Contractor entered into Contract No. EG-77-S-07-1663 for the Contractor to perform certain research work; and

WHEREAS, the parties desire to modify said contract as hereinafter provided; and

WHEREAS, this Supplemental Agreement is authorized by the Energy Reorganization Act of 1974 (Public Law 93-438) and other applicable laws;

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

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

"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."

2. ARTICLE III, "Consideration," is amended by substituting the sum of One Hundred Fifty-Two Thousand Three Hundred Twenty-Nine Dollars (\$152,329.00) for the sum of Six Thousand Dollars (\$6,000) as set forth in the basic contract.

Except only to the extent modified by this Supplemental Agreement or to the extent rendered inconsistent herewith, all of the terms and provisions of said Contract No. EG-77-S-07-1663, shall remain unchanged and continue in full force and effect.

Modification No. A001 (Cont'd)
Supplemental Agreement to
Contract No. EG-77-S-07-1663

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

THE UNITED STATES OF AMERICA

BY THE ENERGY RESEARCH AND DEVELOPMENT
ADMINISTRATION

By /s/ R. E. Simonds
R. E. Simonds, Director
Contracts and Procurement Division
Idaho Operations Office
Contracting Officer

Two witnesses:

/s/ Betty J. Slavick
Statehouse, Boise, Idaho 83720
[Address]

/s/ Phyllis Smith
Statehouse, Boise, Idaho 83720
[Address]

IDAHO DEPARTMENT OF WATER RESOURCES

By /s/ C. Stephen Allered
Title Director 7/27/77
Statehouse, Boise, Idaho 83720
[Business Address]

CONTRACTOR: IDAHO DEPARTMENT OF WATER RESOURCES

APPENDIX A1

For the contract period July 1, 1977 through June 30, 1978.

Article A-1 RESEARCH TO BE PERFORMED BY CONTRACTOR

(a) The scope of work under this Supplemental Agreement is unclassified. The objectives of this research work are to (1) describe, in a single reference, the thermal water chemistry and quality from existing and newly acquired data on thermal springs and wells in Idaho; (2) evaluate the statewide geothermal potential of Idaho from the standpoint of direct heat application; (3) pinpoint specific areas and general uses for direct heat application of geothermal water in Idaho; and (4) provide basic data on low temperature resources in Idaho for potential users.

The scope of work is detailed in Attachment I identified as Phase I, A Survey of Potential Direct Heat Applications of Geothermal Resources in Idaho, dated March 1977, which is made a part of this contract.

(b) The scope of work will include such other studies, investigations, and services as may be mutually agreed upon.

Article A-II - WAYS AND MEANS OF PERFORMANCE

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

1. Personnel Costs:

Salaries and Wages	\$ 42,000	
Division Administration and Support (16%)	<u>6,720</u>	
	\$ 48,720	
Fringe Benefits (22%)	<u>10,720</u>	
TOTAL PERSONNEL COSTS		\$ 59,440

2. Operating Expenses

Disposable supplies for sample collection	\$ 1,100	
Travel	5,000	
Computer time 4 hrs at \$330/hr.	1,320	
Vehicle costs (10,000 miles at 20 cents/mile)	2,000	
Report publication (approx. 700 copies at \$6.50/copy)	<u>4,600</u>	

TOTAL OPERATING COSTS \$ 14,020

TOTAL DIRECT COSTS \$ 73,460

3. Indirect Costs (15% of Direct Costs) 11,019

4. Subcontracts

Geophysical Interpretation of Unpublished Data	\$ 5,000	
Environmental Assessment	<u>11,500</u>	\$ 16,500

5. Permanent Equipment

Zoom transfer scope	\$ 5,600	
Digitizer	15,500	
Temperature Gradient Well measuring equipment	3,000	
Recording Water Quality Monitor System	<u>2,500</u>	26,600

6. Neutron Activation Analyses
 (to be provided by EG&G Idaho, Inc.) \$ 18,750

TOTAL ESTIMATED COST UNDER APPENDIX A1 \$146,329

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

None

(c) Time or effort of Principal Investigator(s) including indirect costs and fringe benefits contributed by 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 above, for the contract period stated in this Appendix A1 is \$146,329; ERDA 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-XXVIII. The estimated ERDA Support Cost for the contract period stated in this Appendix A1 is ~~\$127,579.~~ /s/ RES
 \$146,329. /s/ CSA

The estimated ERDA Support Cost for the research work being performed under this Appendix A1 is funded as follows:

- (a) Estimated unexpended balance from prior period(s) \$ -0-
- (b) New funds for the current period \$ 146,329

Article A-V - ADMINISTRATION AND REPORTS

(a) Administration

1. The Contractor's coordinator for the work will be Murland Packer, and/or a mutually acceptable designee.
2. Clayton Nichols or his designee, of ERDA's Headquarters Division of Geothermal Energy will be ERDA's Technical Representative.

(b) Deliverables and Reports

The Contractor will prepare and submit reports to the Technical Representative, the Contracting Officer, and John L. Griffith, Geothermal Energy Branch, Idaho Operations Office as provided in Attachment No. 1 and as set forth below:

	<u>Frequency</u>	<u>Draft to ERDA Tech. Representative for Concurrence</u>	<u>Distribution - ERDA Technical Representative</u>
Administrative Letter Report	Monthly	N/A	3
Final Report	Completion of contract effort	3 weeks after end of reporting period	10 plus one camera-ready copy
Topical Reports	As required	As agreed with ERDA Technical Representative	10 plus one camera-ready copy

Reporting Format:

The following will apply to all technical progress reports, topical reports, and final reports:

- (a) The cover page will be supplied by ERDA/DGE unless the Contractor intends to use its corporate cover.
- (b) Reports under this modification will carry the reporting designation UC-66-a.

All materials collected during the contract period will be maintained on open-file status for inspection by interested parties.

Attachment No. 1
Modification No. A001
Contract No. EG-77-S-07-1663

PHASE I
A SURVEY OF POTENTIAL DIRECT HEAT APPLICATIONS OF GEOTHERMAL
RESOURCES IN IDAHO

TASK I-A PROVIDE GEOTHERM DATA

The U. S. Geological Survey (USGS) has developed a computer information system for geothermal data called GEOTHERM. This data bank is useful for development of the resource as well as basic research for state and federal agencies and private interests.

Objectives: The objectives of this task are (1) to compare existing GEOTHERM data to geothermal data available to Idaho Department of Water Resources and (2) to provide the U. S. Geological Survey with any geothermal data not currently in GEOTHERM.

Procedure: Geothermal data available to IDWR will be evaluated with respect to data in the geothermal system as provided by USGS. Available data, above 35°C, not currently in GEOTHERM will be provided to the USGS in the format compatible with GEOTHERM.

Deliverables: The above mentioned geothermal data will be provided to USGS in a GEOTHERM compatible form.

TASK I-B STATEWIDE COMPILATION AND SYNTHESIS OF GEOTHERMAL DATA

This task is concerned with obtaining and synthesizing all available geochemical information on thermal springs and wells in Idaho.

Objectives: The objectives are (1) to determine what geothermal data is available in the State of Idaho and (2) to determine where additional data will be collected within data tasks of Phase I.

Procedure: All published data on geochemistry, geology and water quality from existing thermal springs and wells and relevant geophysical data for important geothermal sites in Idaho will be obtained and studied to determine where additional data collection will be necessary within this study. In addition, the USGS GEOTHERM data bank will be utilized to obtain data not available to IDWR. This data will be synthesized with computer programs currently available at IDWR.

Deliverables: Information gained from this task will be used to guide work throughout the remainder of this project. Data will be included in final report.

TASK I-C FIELD DATA COLLECTION

This task will include the gathering of additional major element chemical analyses, trace metal analyses, and other water quality parameters.

Objectives: The objectives of this task are to gain needed water quality data on existing thermal springs and wells from areas in Idaho where it is lacking or limited.

Procedure: There are over 380 thermal water occurrences listed by Ross (1971). Only about 240 good quality major element chemical analyses exist from an estimated 180 sampled locations. For purposes of this study it is vital that 130 of the 240 sampled sites be resampled to obtain data on possible contaminants (As, B, Hg, Li). These data exist for the remaining 110 sampled locations. Thirty to forty additional samples in selected areas will be obtained for major element analyses including contaminants. These will be taken in potential use areas such as Burley, Blackfoot, and Pocatello.

It is desirable to obtain trace metal analyses on as many springs and wells as possible for which chemical analyses on major constituents are available. Trace metals give insight into the likelihood of mineral extraction from thermal waters as valuable metals are known to be associated with geothermal brines in certain parts of the world. Knowledge of trace metal constituents is also valuable in engineering design for hot water use, and certain elements could represent potential pollution hazards if present in sufficient quantities. Trace element samples will be taken in conjunction with contaminants. Trace element sampling costs will involve only containers, preservation, and analyses.

The 30-40 total analyses samples would be analyzed by standard wet chemical or atomic absorption techniques for the following elements and dissolved constituents: Si, Na, K, Ca, Mg, SO₄, Cl, F, NO₃+NO₂, P, NH₃, As, B, Li, Hg. Collection and preservation techniques of Presser and Barnes (1974) will be followed on the samples to be run by standard analyses. The 50-60 trace metals include: Al, Sb, Ba, Bi, Cd, Cs, Cr, Co, Cu, Au, Fe, Se, Mn, Mo, Ni, Pl, Pu, Rb, Sc, Ag, Sr, V, W, Zn, Zr as well as others and would be run by neutron activation analyses at the Idaho National Engineering Laboratory near Arco, Idaho.

Field data to be collected on major element samples would include CO₃, HCO₃ determinations, pH, surface temperatures, specific conductance and discharge measurements where these are not available. Idaho Department of Water Resources has available for field data collection a modern, well-equipped mobile laboratory capable of the above mentioned determinations as well as others.

Deliverables: The results of the sample collection will provide the most complete chemical analyses on about 200 thermal water occurrences in Idaho. Data will be included in the final report.

TASK I-D COMPUTERIZATION, REDUCTION AND INTERPRETATION OF GEOCHEMICAL DATA

The data from Tasks I-B and I-C, will be computerized, synthesized and reduced using existing programs and computer facilities available to IDWR.

Objectives: The objectives of this task are to tabulate surface temperatures at each site and summarize thermal water discharges, water quality characteristics, and possible uses for geothermal water.

Procedure: Aquifer temperatures have been estimated for some of the known geothermal water occurrences. The data available represent the springs and wells in Idaho with the highest known surface temperatures and silica concentrations and, in many instances, may preclude the possibility of mixing the hot geothermal and cold groundwater. In addition, previous data on subsurface or aquifer temperature might be in error, in some cases, due to lack of knowledge of mineral constituents responsible for controlling certain dissolved chemical constituents found in thermal waters. Ways have recently been devised to overcome, in large measure, many of these difficulties. Therefore, a reinterpretation of previously acquired data on approximately 200 lower temperature springs and wells must be accomplished to complete the data necessary for a statewide assessment of direct heat application of geothermal resources.

The synthesis of the data will include calculation of subsurface, aquifer or reservoir temperatures using the following methods: Silica (Si) assuming equilibrium with quartz, chalcedony and amorphous phases; mixing models assuming equilibrium with quartz and chalcedony phases; Na-K-Ca and Na/K methods and determining atomic and molar ratios of elements. Dissolved solids, sodium adsorption ratios, salinity hazards and other water quality parameters will also be calculated. These data, along with measured surface temperatures and discharges, will be interpreted to determine potential uses for geothermal water at a specific site.

Deliverables: The results of the data synthesis and analysis will include the following information in the final report:

- (1) Map of Idaho showing all known thermal water occurrences at 1:1,000,000 scale. Such a map is not available at present.

- (2) A table giving chemical analyses for approximately 280 thermal water analyses in Idaho.
- (3) A table giving trace metal chemical analyses for approximately 280 thermal water analyses in Idaho. /s/ RE: CS:
- (4) A table of calculated aquifer temperatures at each sample site using six different geochemical thermometers and two mixing models. In addition, the table will contain calculated atomic ratios of selected chemical constituents which are useful in interpreting the geochemical thermometers.
- (5) A table of selected geothermal sample sites, discharges, surface and aquifer temperatures and uses that could be made for these particular waters.
- (6) A map or maps showing chemical quality parameters: i.e., areas of high fluoride concentrations, areas of high total dissolved solids and areas of high sodium adsorption ratios and/or salinity hazards.

TASK I-E LINEAMENT DATA

LANDSAT satellite imagery and high altitude U-2 photography (currently available for most spring and well areas in Idaho) will be studied. These have proven useful in the discovery of geologic structures previously unrecognized by conventional surface and photogeologic mapping techniques, Mitchell (1975a, 1975b, 1975c) and Day (1974).

Objectives: The objective of this study is to utilize remote sensing data for linear and curvilinear geologic features in the analysis of the individual sites being examined in the overall study.

Procedure: Existing lineament data will be obtained from Idaho Bureau of Mines and Geology. False color LANDSAT satellite imagery will also be studied with the help of a zoom transfer scope. This device enables super-position of various scale photos upon different types of base maps and photos. High altitude U-2 photos and regular air mapping photos will also be employed. These have never been employed in Idaho in a study of this type and will help refine existing lineament data. Spring and well location maps will also be viewed in order to determine lineament-thermal water discharge relationships. For example, do thermal water discharges have preferred locations with respect to lineaments? Do they occur on lineaments of preferred length, where lineaments cross, die out or intersect other types of structures which may be visible on the photo? These studies, integrated with the data from available geologic publications and geophysical data from Task K-F, should enable the gross lithology and structural control of many springs and wells to be determined. Good quality lineament maps will be necessary to target drillholes in follow-on work, if any.

Deliverables: Area-by-area maps showing linear features and thermal water occurrences will be included in the final report. A discussion will also be included of structural controls of thermal water discharges, area by area, based on lineaments, geological and geophysical data.

TASK I-F CONTRACTED GEOPHYSICAL DATA INTERPRETATION

Studies of existing unpublished geophysical data will be made on a basin-by-basin basis in selected areas of geothermal water occurrences.

Objectives: The objective of this task is to interpret geologic and geophysical data from existing maps and reports to further define structural controls for geothermal water in Idaho.

Procedure: Existing unpublished geophysical data will be studied by consultants to interpret geologic and other data. The geophysicists who contract to perform this task will furnish IDWR an open-file report. Its conclusions, area by area, would be incorporated into the data interpretation to help define gross structural control of thermal spring and well areas.

Deliverables: The results will be utilized with the lineaments data to further define the structural control for thermal water occurrences in Idaho. This information will be extremely valuable to help locate possible drill sites for follow-on work, if any.

TASK I-G LAND OWNERSHIP AND LEASE STATUS OF KNOWN GEOTHERMAL OCCURRENCES

D E L E T E D

TASK I-H RECOMMENDATION OF SITES FOR DETAILED FUTURE EVALUATION, IF ANY

Objectives: The objectives of this task are (1) to recommend those sites in Idaho which show definite promise of early implementation of geothermal energy as an energy source for existing and potential facilities and (2) recommend those methods of site-specific resource inventory evaluation and conformation tasks which will be best suited to each selected site.

Procedure: Site selection and a general outline of target areas will be determined from an evaluation of the data gathered in the preceding tasks. Site selection will be made by evaluating the following parameters: (1) water quality and quantity, (2) surface temperature, (3) estimated subsurface or reservoir temperature, (4) location of potential use sites with respect to discharge area and potential discovery areas, (5) type of use best suited to a particular area, and (6) potential of a site for large-scale geothermal development.

The methods to be employed for further site-specific evaluation in follow-on work, if any, will probably vary from site to site depending on geological and hydrological conditions in each area. Evaluation methods will be chosen from those which have been proven to be effective in other geothermal areas. These methods will include in many instances, but not be limited to, any or all of the following: (1) geophysical, including gravity, magnetics, resistivity, seismic, heat flow, infrared, earth temperature, remote sensing; (2) geological, including surface mapping, rock type identification, structural identification, delineation of areas or zones of rock alteration, etc.; (3) geochemical, including more water quality isotope (H/D and O^{16}/O^{18} and other isotope ratios); (4) hydrologic, including pump tests, water level measurements, aquifer characteristics such as storage coefficients, porosity, permeability and other hydrologic parameters, and (5) economic evaluation of the feasibility of direct heat use at specific sites.

Deliverables: Sites recommended for further reservoir conformation and site-specific studies will be listed in table form and shown on a map. This will be included in the final report. Site-specific recommendations as to the evaluation techniques to be employed at each site will be tabulated or included in a discussion of each area.

TASK I-I PRELIMINARY ENVIRONMENTAL ASSESSMENTS

The objective of this study is to provide a preliminary assessment of environmental considerations at sites being considered for selection as future reservoir confirmation sites.

Deliverables: A report summarizing preliminary environmental assessments based on an examination of existing data will be prepared for areas being considered as candidates for selection as future reservoir confirmation sites, in accordance with ERDA-DGE environment reporting guidelines.

TASK I-J REPORT WRITING AND ILLUSTRATIONS PREPARATION

The final Phase I task will include report writing, preparation of illustrations, tables, maps, and editing for publication.

Objectives: Prepare the final report.

Procedure: The final report, including maps and tables, will be prepared as specified under Article A-V(b), Deliverables and Reports.

11/9/78

J. L. Griffith

Modification No. A003
Supplemental Agreement to
Contract No. DE-AS07-77ET28407

File m.2.3

SUPPLEMENTAL AGREEMENT

THIS SUPPLEMENTAL AGREEMENT, entered into the 13th day of December 1978, by and between the UNITED STATES OF AMERICA (hereinafter called the "Government"), acting through the DEPARTMENT OF ENERGY (hereinafter called "DOE") (formerly the Energy Research and Development Administration "ERDA"), and the IDAHO DEPARTMENT OF WATER RESOURCES, agency of the State of Idaho (hereinafter called "IDWR" and/or the "Contractor"), with its principal office at Boise, Idaho

RECEIVED
JAN 19 1978
GEO THERMAL ENERGY
BRANCH

WITNESSETH THAT:

WHEREAS, on April 11, 1977, effective as of the 28th day of January 1977, the Government and the Contractor entered into Contract No. EG-77-S-07-1663 for the Contractor to perform certain research work; and

WHEREAS, said contract has been amended by Modifications Nos. A001 and A002; and

WHEREAS, the parties desire to further modify said contract as hereinafter provided; and

WHEREAS, DOE certifies that this Supplemental Agreement is authorized by and executed under 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, said contract is hereby amended as follows:

A. The Contract Number is hereby changed from "EG-77-S-07-1663" to "DE-AS07-77ET28407."

B. ARTICLE I, "THE RESEARCH TO BE PERFORMED," 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."

C. 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, 1978 and expire on September 30, 1979. The period of

110978
br:4L-B-19

Modification No. A003 (Cont'd)
Supplemental Agreement to
Contract No. DE-AS07-77ET28407

time for performing the research work under Appendix A3 may be extended for additional periods by the mutual written agreement of the parties."

- D. ARTICLE III, "CONSIDERATION", paragraph (a), is hereby revised to increase the contract Support Ceiling to a total of Five Hundred Fifty-Seven Thousand Three Hundred Twenty-Nine Dollars (\$557,329.00).
- E. For this modification the Indirect Cost rate shall be limited to 44.1% of Direct Costs, excluding subcontracts.

Except only to the extent modified by this Supplemental Agreement or to the extent rendered inconsistent herewith, all of the terms and provisions of said Contract No. DE-AS07-77ET28407, as previously amended, shall remain unchanged and continue in full force and effect.

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

THE UNITED STATES OF AMERICA

BY THE DEPARTMENT OF ENERGY

By /s/ R. E. Simonds
R. E. Simonds, Director
Contracts Management Division
Idaho Operations Office
Contracting Officer

Modification No. A003 (Cont'd)
Supplemental Agreement to
Contract No. DE-AS07-77ET28407

IDAHO DEPARTMENT OF WATER RESOURCES

Witnesses as to signature of
Contractor:

/s/ Eleanor J. Woods
(Signature)
Eleanor J. Woods
Name (typed)
Statehouse
Boise, Idaho 83720
(Address)

/s/ Phyllis M. Smith
(Signature)
Phyllis M. Smith
Name (typed)
Statehouse
Boise, Idaho 83720
(Address)

By /s/ C. Stephen Allred
C. Stephen Allred
Name (typed)
Title Director, Dept. of Water Resources
Statehouse
Boise, Idaho 83720
(Business Address)

I, M. Russell Bosch, certify that I am the Fiscal
Officer of the Contractor named under this document, that
C. Stephen Allred, who signed this document on
behalf of the Contractor, was then Director, Dept. of Water Resources
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 hand and the seal of
said Contractor this 6th day of December 1978.

/s/ M. Russell Bosch

(SEAL)

CONTRACTOR: IDAHO DEPARTMENT OF WATER RESOURCES

APPENDIX A3

For the contract period October 1, 1978 through September 30, 1979.

Article A-I - 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 shall complete the following research which was started under Modification No. A002 to this contract. The work set forth below shall be performed in accordance with the Contractor's proposal entitled, "Municipal, Commercial, and Industrial Geothermal Potential in Idaho, Phase II Contract No. EG-S-07-1663 Proposed Reservoir Confirmation and Engineering Evaluation by Idaho Department of Water Resources," incorporated by reference and made a part hereof. The Contractor shall conduct two area reconnaissance studies to identify local geothermal potential. The two areas of research are the Pocatello-Tyhee area and the Nampa-Caldwell area. The areas of research shall include:

1. Comprehensive evaluation of geological, geophysical, geochemical, and hydrological information as it relates to geothermal occurrences in the study areas.
2. Geophysical testing will be conducted and shall include gravity, seismic reflection, and heat flow information.
3. Aerial photographs and satellite imagery photographs will be examined to augment geological and structural understanding of the geothermal areas.
4. Water chemistry and trace element studies will be conducted to estimate aquifer temperatures, and to determine approximate boundaries and size of the hydrologic system.
5. Spring deposits within the state will be mapped and analyzed as potential exploration tools in the identification of low temperature geothermal occurrences.
6. Field checking of well locations and flow data will continue as originally outlined in Phase I of this contract work.
7. A final report shall be written containing all pertinent data, maps, evaluations, and conclusions of the geothermal potential in the study areas.

(b) The scope of work shall include such other studies, investigations, and services as may be mutually agreed upon.

Article A-II WAYS AND MEANS OF PERFORMANCE

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

1. Salaries

Bureau Chief	12 months (15%)	\$ 4,111	
Section Chief	12 months (75%)	18,981	
Project Leader	12 months (100%)	18,663	
Geologist	12 months (100%)	16,864	
Geologist	12 months (100%)	13,920	
Clerk	4 months (100%)	2,260	
Aid	3 months (summer)	2,061	
Water Quality Specialist	1-1/4 months	2,017	
	Subtotal	\$78,877	
Add Miscellaneous Division Support - (5%)		3,944	
	Subtotal	82,821	
Add Fringe Benefits of 20%		16,564	
	Subtotal	99,385	
Add Aide for 19 hrs./wk for 39 wks at \$3.96/hr. with 10% fringe benefits		3,227	
Add Second Aide for 19 hrs/wk for 5 wks at \$3.96/hr. with 10% fringe benefits		414	
	Total Salaries		\$103,026

2. Operating Expenses

Travel	\$ 3,940	
Computer Time & Software	2,800	
Miscellaneous and report publishing costs costs (includes \$3,000 to reprint previous geothermal reports now out of print)	4,500	
	Total Operating Costs	\$ 11,240
Total Direct Costs, excluding Subcontracts		114,266

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

3. <u>Indirect Costs FY 1979</u> (44.1% of Direct Costs Less Subcontracts)	\$50,391
4. <u>Subcontracts</u>	
Standard water quality analysis by USGS - 50 samples @ \$100 each	\$ 5,000
Isotope tests, Nampa-Caldwell & Pocatello, delayed payment from 1978 budget subject to finding a laboratory to run tests	4,924
Geophysical surveys (likely to include a magnetic survey of the Nampa-Caldwell area at \$5,000 each - totals \$10,000). Also to include medium depth and/or deep electrical resistivity surveys and/or seismic surveys.	<u>47,459</u>
Total Subcontracts	\$57,383
5. <u>Other Expenditures</u> (Books including catalog on oil field equipment and supplies	<u>1,000</u>
TOTAL COSTS FROM OCTOBER 1, 1978 THROUGH SEPTEMBER 30, 1979	<u>\$223,040</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 costs 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 A3, is \$223,040.00. DOE will pay 100% of

Article A-III FUNDING (Cont'd)

the actual costs of these items incurred during the contract period stated in this Appendix A3, subject to the provisions of Article III and Article B-XXVIII. The estimated DOE Support Cost for the contract period stated in this Appendix A3 is \$223,040.00.

The estimated DOE Support Cost is funded as follows:

- (a) Estimated unexpended balance from prior period(s) \$ 23,040.00
- (b) New funds for the current period \$200,000.00

Article A-IV ADMINISTRATION AND REPORTS

- (a) Principal Investigator - Murland Packer

DOE Program Manager - L. L. Mink
 Resource Definition Branch, DOE-ID
 550 Second Street
 Idaho Falls, Idaho 83401

The Principal Investigator shall direct the work as outlined in discussions and in periodic letters.

- (b) The Principal Investigator shall prepare and submit reports to the Technical Administrator as follows:

	<u>Frequency</u>	<u>Draft to Program Manager for Concurrence</u>	<u>Distribution Program Manager</u>	<u>TIC</u>
Administrative and Technical Progress Report	Monthly	N/A	8	N/A
Final Report	Completion of contract effort	3 weeks after end of reporting period	8	1 camera- ready copy

Article A-IV ADMINISTRATION AND REPORTS (Cont'd)

Content of Reports

Administrative and Technical Progress Reports -- Administrative and progress report to Technical Administrator on personnel and fiscal matters, including such information as rate of expenditures, equipment ordering availability-receipt, loss of gain of personnel, etc. The report shall include a full account of progress, problems encountered, plans for future reporting periods, and an assessment of prospects for future progress, identifying clearly all facts with both positive and negative impact on expectations for completely achieving task objectives on schedule and within contract funds, should include, as appropriate, accounts of activities aimed at utilization of task results.

Final Report -- The final report should also include all pertinent data, interpretations, graphs, maps, and results of the work outlined in the scope of Contractor's proposal for Phase II research for the period from May 15, 1978 through September 30, 1979.

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

AMENDMENT/MODIFICATION NO. A004		2. EFFECTIVE DATE 9/28/79	3. RESOLUTION/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	
7. CONTRACTOR NAME AND ADDRESS <i>(Street, city, county, state, and ZIP Code)</i> Idaho Department of Water Resources Statehouse Boise, Idaho 83720 Attn: C. Stephen Allred		CODE	FACILITY CODE	8. AMENDMENT OF SOLICITATION NO. _____ DATED _____ (See block 9) MODIFICATION OF CONTRACT/ORDER NO. DE-AS07-77ET28407 DATED 4/11/77 (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>mutual agreement between the parties</u> . It modifies the above numbered contract as set forth in block 12.				
12. DESCRIPTION OF AMENDMENT/MODIFICATION 1. The contract is hereby changed from a "Special Research Support Agreement" to a "Special Research Contract." Wherever the words "Special Research Support Agreement" are used, they shall mean "Special Research Contract." 2. Article I, " <u>THE RESEARCH TO BE PERFORMED</u> ," is amended by adding a new paragraph as follows: "Appendix A4, 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." 3. Article II, " <u>THE PERIOD OF PERFORMANCE</u> ," is amended as follows: "The period of performance for the work performed under this Supplemental Agreement shall commence on September 28, 1979, and expire on September 30, 1980. The period of time for performing the research work under Appendix A4 may be extended for additional periods by the mutual written agreement of the parties."				
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 BY <i>C. Stephen Allred</i> (Signature of person authorized to sign)		17. UNITED STATES OF AMERICA BY <i>J. P. Anderson</i> (Signature of Contracting Officer)		
15. NAME AND TITLE OF SIGNER (Type or print) C. Stephen Allred Director		16. DATE SIGNED 9-28-79	18. NAME OF CONTRACTING OFFICER (Type or print) J. P. Anderson, Chief Contract Administration Branch	19. DATE SIGNED 9-26-79

4. Article III, "CONSIDERATION," paragraph (a), is hereby revised to increase the contract Support Ceiling to a total of \$610,454.00. This includes \$6,000.00 obligated by the original contract; \$146,329.00 obligated by Modification No. A001; \$130,000.00 obligated by Modification No. A002; \$75,000.00 obligated by DOE letter dated July 12, 1978; \$200,000.00 obligated by Modification No. A003; and \$53,125.00 obligated by this Modification No. A004.

CONTRACTOR: IDAHO DEPARTMENT OF WATER RESOURCES

APPENDIX A4

For the contract period September 28, 1979 through September 30, 1980.

Article A-I - 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 shall perform the following work:

The Contractor shall assist DOE/EG&G in collection and monitoring efforts of the geothermal and groundwater system in the Raft River Valley at and near the Raft River Geothermal Site. The Contractor shall be involved in determining the effect of production and injection of geothermal fluids on the groundwater system of the Raft River Valley. The Contractor shall also assist in development of a reservoir/groundwater model to describe the Raft River Geothermal system.

Article A-II WAYS AND MEANS OF PERFORMANCE

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

1. Salaries and Fringe Benefits

Salaries	\$26,000
Fringe Benefits (22%)	<u>5,720</u>

Total Salaries & Fringe Benefits \$31,720

2. Vehicle Rental (9,600 miles at 22¢/mi.) 2,200

3. Perdiem (125 days at \$32/day) 4,000

4. Publication Costs 1,000

Total Direct Costs 38,920

5. Overhead (36.5% of Total Direct Costs) 14,205

Total Costs 53,125

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

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

None

(c) Time or effort of Principal Investigator(s) including indirect costs and fringe benefits contributed by 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 A4, is \$53,125.00. DOE will pay 100% of the actual costs of these items incurred during the contract period stated in this Appendix A4 subject to the provisions of Article III and Article B-XXVIII. The estimated DOE Support Cost for the contract period stated in this Appendix A4 is \$53,125.00.

The estimated DOE Support Cost is funded as follows:

(a) Estimated unexpended balance from prior period(s)	\$ -0-
(b) New Funds for the current period	\$53,125.00

Article A-IV ADMINISTRATION AND REPORTS

(a) Principal Investigator - Frank Sherman

DOE Program Manager - L. L. Mink
Resource Definition Branch, DOE-ID
550 Second Street
Idaho Falls, Idaho 83401

The Principal Investigator shall direct the work as outlined in discussions and in periodic letters.

Article A-IV ADMINISTRATION AND REPORTS (Cont'd)

(b) The Principal Investigator shall prepare and submit reports to the Technical Administrator as follows:

	<u>Frequency</u>	<u>Draft to Program Manager for Concurrence</u>	<u>Distribution Program Manager</u>
Administrative and Technical Progress Report	Quarterly	N/A	8
Final Report	Completion of contract effort	3 weeks after end of reporting period	8

Content of Reports

Administrative and Technical Progress Reports -- Administrative and progress report to Technical Administrator on personnel and fiscal matters, including such information as rate of expenditures, equipment ordering availability-receipt, loss of gain of personnel, etc. The report shall include a full account of progress, problems encountered, plans for future reporting periods, and an assessment of prospects for future progress, identifying clearly all facts with both positive and negative impact on expectations for completely achieving task objectives on schedule and within contract funds, should include, as appropriate, accounts of activities aimed at utilization of task results.

Final Report -- The final report should also include all pertinent data, interpretations, and results of the water quality monitoring effort for the period from September 28, 1979 through September 30, 1980.

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. AMENDMENT/MODIFICATION NO. M005	2. EFFECTIVE DATE 10/9/79	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	6. ADMINISTERED BY (If other than block 5)
---	--

7. CONTRACTOR NAME AND ADDRESS Idaho Department of Water Resources Statehouse Boise, Idaho 83720	8. AMENDMENT OF SOLICITATION NO. [] DATED _____ (See block 9) MODIFICATION OF CONTRACT/ORDER NO. DE-AS07-77ET28407 [X] DATED 4/11/79 (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 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) 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

- As requested in your letter dated August 31, 1979, the completion date for Modification No. A001 is extended from September 1, 1979, to January 31, 1980.
- The Contractor is authorized to decrease the number of report copies from 1,500 copies to 315 copies.
- As requested in your letter dated September 7, 1979, the completion date for Modification Nos. A002 and A003 is extended from September 30, 1979, to April 31, 1980.

Except as provided herein, all terms and conditions of the document referenced in block 3, as heretofore changed, remain unchanged and in full force and effect.

13. <input checked="" type="checkbox"/> CONTRACTOR/OFFEROR IS NOT REQUIRED TO SIGN THIS DOCUMENT		<input type="checkbox"/> 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 <u>J.P. Anderson</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)	19. DATE SIGNED
		J. P. Anderson, Chief Contract Administration Branch	10-9-79

MAW,
FILE MAR 3

RECEIVED
NOV 9 1979
REGISTRY & TECHNOLOGY
DIVISION

November 9, 1979

State of Idaho
Department of Water Resources
Statehouse
Boise, Idaho 83720

Attention: John C. Mitchell

SUBJECT: CONTRACT NO. DE-AS07-77ET28407; MODIFICATIONS NOS. .
A002 AND A003: SUBCONTRACT WITH BOISE STATE UNIVERSITY

Gentlemen:

The subject subcontract is approved provided the attached Appendix B entitled "General Provisions For Special Research Contracts" is substituted for the Appendix B that is currently in the subcontract.

If you have any questions, please contact J. O. Lee of my staff.

Very truly yours,

/s/ J. P. Anderson

J. P. Anderson
Contracting Officer
Chief, Contract Administration Branch
Contracts Management Division

Attachment

bcc: M. A. Widmayer ✓

RECORD NOTE: Approvals and comments from
OCC, FMD, and RDB are attached.

CAB
JOLee:mh
11/9/79

CAB
JPAnderson

File M. 2.3

RECEIVED

APR 15 1980

GEOTHERMAL ENERGY
BRANCH

April 10, 1980

Idaho Department of Water Resources
Statehouse
Boise, Idaho 83720

ATTENTION: Darrell Clapp

SUBJECT: MODIFICATION NO. A006 TO CONTRACT NO. DE-AS07-77ET28407

Gentlemen:

Enclosed is a draft copy of the subject modification. Please review the modification and let J. O. Lee of my staff know whether it is acceptable.

Please note: The "Payments" article has been changed. Due to the size of the modification, we can no longer make payments of 45% and 45% as we have previously done. It will be necessary for IDWR to bill DOE monthly.

Also enclosed is a "Certificate of Current Cost or Pricing Data." Please sign and return the certification as soon as possible as it certifies to the accuracy of the costs in your proposal.

If you have questions, please contact J. O. Lee of my staff.

Very truly yours,

/s/ J. P. Anderson

J. P. Anderson
Contracting Officer
Chief, Contract Administration Branch
Contracts Management Division

Enclosures

bcc: L. L. Mink, w/encl. ✓

CAB
JOLee:mh
4/10/80

CAB
JPAnderson

May 15, 1980

Idaho Department of Water Resources
Statehouse
Boise, Idaho 83720

ATTENTION: Darrel Clapp

SUBJECT: CONTRACT NO. DE-AS07-77ET28407
MODIFICATION NO. A006

Gentlemen:

The subcontracting with the University of Idaho Water Resources
Research Institute is approved for a maximum of \$47,236.

Very truly yours,

/s/ J. P. Anderson

J. P. Anderson
Contracting Officer
Chief, Contract Operations Branch
Contracts Management Division

bcc: M. A. Widmayer

RECEIVED

RECORD NOTE: Approvals and comments from ~~KHK~~
RDB and FMD are attached.

MAY 16 1980

**GEOHERMAL ENERGY
BRANCH**

COB
JOLee:mh
5/15/80

COB
JPAnderson

1. AMENDMENT/MODIFICATION NO. M007	2. EFFECTIVE DATE 4-30-80	3. REQUISITION/PURCHASE REQUEST NO. 07-80ET28407.503	4. PROJECT NO. (If applicable)
5. ISSUED BY U.S. Department of Energy Idaho Operations Office 550 Second Street Idaho Falls, Idaho 83401		4. ADMINISTERED BY (If other than block 5) M.2.3	

7. CONTRACTOR NAME AND ADDRESS Idaho Department of Water Resources Statehouse Boise, Idaho 83720 Attn: C. Stephen Allred Director	8. AMENDMENT OF SOLICITATION NO. _____ DATED _____ (See block 9) MODIFICATION OF CONTRACT/ORDER NO. DE-AS07-77ET28407 DATED 4-11-77 (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 a copy 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 number. 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 closing 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 between the parties.
It modifies the above numbered contract as set forth in block 12.

12. DESCRIPTION OF AMENDMENT/MODIFICATION

As requested in your letter dated May 1, 1980, the completion date for Modifications Nos. A002 and A003 is hereby extended from April 30, 1980, to July 31, 1980. As requested verbally by Darrel Clapp on May 5, 1980, the completion date for Modification NO. A001 is extended from January 31, 1980, to June 15, 1980.

Contract as provided herein, all terms and conditions of the documents referenced in block 3, as heretofore changed, remain unchanged and in full force and effect.

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

4. NAME OF CONTRACTOR/OFFEROR	17. UNITED STATES OF AMERICA		
BY _____ (Signature of person authorized to sign)	BY _____ (Signature of Contracting Officer)		
5. NAME AND TITLE OF SIGNER (Type or print)	16. DATE SIGNED	18. NAME OF CONTRACTING OFFICER (Type or print) J. P. Anderson, Chief Contract Operations Branch	19. DATE SIGNED

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 3
1. AMENDMENT/MODIFICATION NO. A008		2. EFFECTIVE DATE 9-30-80	3. REQUISITION/PURCHASE REQUEST NO. 07-ET28407.504	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 Idaho Department of Water Resources Statehouse Boise, Idaho 83720 ATTN: C. Stephan Allred Director		CODE	FACILITY CODE	8.	
(Street, city, county, state, and ZIP Code)				<input type="checkbox"/> AMENDMENT OF SOLICITATION NO. _____ DATED _____ (See block 9) <input checked="" type="checkbox"/> MODIFICATION OF CONTRACT/ORDER NO. DE-AS07-77ET28407 DATED 4-11-77 (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 et. al.</u> It modifies the above numbered contract as set forth in block 12.					
12. DESCRIPTION OF AMENDMENT/MODIFICATION					
1. ARTICLE II, " <u>THE PERIOD OF PERFORMANCE</u> ," is amended as follows: The period of performance for the work performed under Appendix A4 to Supplemental Agreement A004 is extended from September 30, 1980 to January 31, 1981. 2. ARTICLE III, " <u>CONSIDERATION</u> ," paragraph (a) is revised to increase the contract Support Ceiling to a new total of Eight Hundred Sixty-Four Thousand Six Hundred Ninety-Four Dollars (\$864,694.00). Funding obligations are summarized as follows: Continued.... H-83					
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 BY <u>C. Stephen Allred</u> (Signature of person authorized to sign)			17. UNITED STATES OF AMERICA BY <u>J. F. Marmo</u> (Signature of Contracting Officer)		
15. NAME AND TITLE OF SIGNER (Type or print) C. STEPHEN ALLRED, Director		16. DATE SIGNED 9/30/80	18. NAME OF CONTRACTING OFFICER (Type or print) J. F. Marmo	19. DATE SIGNED 9/29/80	

Original Contract	\$ 6,000
Increase per Mod. A001	146,329
Increase per Mod. A002	130,000
Increase per letter of July 12, 1978	75,000
Increase per Mod. A003	200,000
Increase per Mod. A004	53,125
Increase per Mod. M005	0
Increase per Mod. A006	250,000
Increase per Mod. A007	0
Increase per Mod. A008	4,240
	<u>\$864,694</u>

3. ARTICLE IV, GOVERNMENT PROPERTY is hereby amended to add the following items as Government property.

1 Beckman Model 39 Printer with cable	\$2,200.00
1 Beckman Silent Sipper installed	\$2,040.00

4. ARTICLE A-I - RESEARCH TO BE PERFORMED BY CONTRACTOR, of Appendix A4 to Modification No. A004 is revised to add the following:

"Perform sampling and chemical analyses of the irrigation well network and four points along the Raft River. Analyze samples for the same chemical constituents as in previous samplings. This work will be performed once before the end of the irrigation season.

5. ARTICLE A-II - WAYS AND MEANS OF PERFORMANCE, of Appendix A4 to Modification No. A004 is revised to read as follows:

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

	DOE	IDWR
(1) Salaries and Fringe Benefits		
Salaries	\$26,000	\$2,213
Fringe Benefits (22%)	5,720	487
(2) Travel	6,200	390
(3) Laboratory Fees	-	550
(4) Publication Costs	1,000	-
(5) Expendable Equipment - 2 electrodes	-	473
Modified Total Direct Costs	\$38,920	\$4,113
(6) Indirect Costs (36.5%)	14,205	(33%) 1,357
(7) Capital Equipment	4,240	
1 Beckman Model 39 Printer with cable	\$2,200.00	
1 Beckman Silent Sipper installed	\$2,040.00	
	<u>\$57,365</u>	<u>\$5,470</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:

All direct and indirect costs incurred from October 1, 1980, to January 31, 1981 except capital equipment costs.

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

Any and all time incurred from October 1, 1980 to January 31, 1981.

6. Article A-III - FUNDING, of Appendix A4 to Modification No. A004 is revised to read as follows:

"The total estimated cost of items under A-II(a) above, for the contract period stated in this Appendix A4, is \$62,835.00. DOE will pay \$57,365.00 of the actual costs of these items incurred during the contract period stated in this Appendix A4, subject to the provisions of Article III and Article B-XXVIII. The estimated DOE Support Cost for the contract period stated in this Appendix A4 is \$57,365.00.

The estimated DOE Support Cost is funded as follows:

(a) Estimated unexpended balance from prior period(s)	\$ <u>-0-</u>
(b) Funds for the original period 9-28-79 thru 9-30-80	\$ <u>53,125.58</u>
(c) Funds for the period 10-1-80 thru 1-31-81	\$ <u>4,240.00</u>

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. A009		2. EFFECTIVE DATE 5-1-81	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		6. ADMINISTERED BY (If other than block 5)	CODE		
7. CONTRACTOR NAME AND ADDRESS Idaho Department of Water Resources Statehouse Boise, Idaho 83720		8. AMENDMENT OF SOLICITATION NO.	DATED _____ (See block 9)		
(Street, city, county, state, and ZIP Code)		9. MODIFICATION OF CONTRACT/ORDER NO. DE-AS07-77ET28407	DATED 4-11-77 (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. Offers 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) Increase in Obligations and Support Ceiling of \$147,610 to revised total of \$1,012,304. AM15-10 and 35 AM 15					
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</u> It modifies the above numbered contract as set forth in block 12.					
12. DESCRIPTION OF AMENDMENT/MODIFICATION					
1. ARTICLE I - " <u>THE RESEARCH TO BE PERFORMED</u> " is amended by adding the following new paragraph: "Appendix A9, attached to this Supplemental Agreement and made a part hereof, provides for the research to be performed by the Contractor during the period specified therein."					
2. ARTICLE II - " <u>THE PERIOD OF PERFORMANCE</u> ," is amended by adding the following new paragraph: "The period of performance for the work performed under this Supplemental Agreement A009 is extended to April 30, 1982."					
3. ARTICLE III - " <u>CONSIDERATION</u> ," paragraph (a) is revised to increase the contract Support Ceiling by One Hundred Forty-Seven Thousand Six Hundred Ten Dollars (\$147,610) to a new total of One Million Twelve Thousand Three Hundred Four Dollars (\$1,012,304). Funding obligations are summarized as follows: <p style="text-align: right;">CONTINUED.....</p>					
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>A. Kenneth Dunn</u> (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) A. Kenneth Dunn, Director		16. DATE SIGNED 8/11/81	18. NAME OF CONTRACTING OFFICER (Type or print) William C. Drake		19. DATE SIGNED 8/13/81

Original Contract	\$ 6,000
Increase per Mod. A001	146,329
Increase per Mod. A002	130,000
Increase per letter of July 12, 1978	75,000
Increase per Mod. A003	200,000
Increase per Mod. A004	53,125
Increase per Mod. M005	0
Increase per Mod. A006	250,000
Increase per Mod. A007	0
Increase per Mod. A008	4,240
Increase this Mod. A009	147,610
	<u>\$1,012,304</u>

4. ARTICLE IV - "GOVERNMENT PROPERTY," is hereby amended to add the following item as Government property.

One Temperature Probe \$5,000.00

5. A new ARTICLE VI is added as follows:

"ARTICLE VI - 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 May 1, 1981 which, if incurred after this modification had been entered into, would have been reimbursable under the provisions of this modification."

CONTRACTOR: IDAHO DEPARTMENT OF WATER RESOURCES

APPENDIX A9

For the contract period May 1, 1981 through April 30, 1982.

ARTICLE A-I - RESEARCH TO BE PERFORMED BY THE CONTRACTOR

- (a) The scope of work under this contract is unclassified, and the Contractor under this contract with the Department of Energy shall complete the following research:

Task 1 - Boise Area Study

A detailed geoscience investigation of the Boise area, extending from Boise to the eastern edge of the previously studied Nampa-Caldwell area, shall be performed.

The investigation shall include collecting and evaluating available geologic, geophysical, and geochemical data for the study area. Water chemistry and isotope data shall be generated to assist in the hydrologic interpretation. A detailed technical report shall be prepared to describe the nature, extent, and controlling factors of the geothermal resource in the area.

Task 2 - Data Base Update

A statewide reconnaissance effort shall be maintained to gather any available thermal springs and well data to augment the existing data base for the state. Emphasis shall be placed on northern Idaho where there is currently a lack of data.

Task 3 - Eastern Idaho Study

Under a subcontract to the University of Idaho, the area from the Utah/Idaho border to Island Park shall be investigated for geothermal potential. This is a continuation of work done in the previous contract year by the Univeristy of Idaho. Reports from individual researchers, as well as a compilation report of the interpretation of results from this study shall be produced.

Task 4 - Information Dissemination

The Contractor shall review, update, and edit all USGS GEOTHERM data entries for the State of Idaho. Assistance shall be given by the Contractor in response to inquiries for information and technical assistance pertinent to geothermal development in the state. All user-assistance requests shall be coordinated with the Idaho State Office of Energy.

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

Task 5 - Southeast Idaho Sampling

The Contractor shall continue collecting water temperature data from available irrigation wells in Southeast Idaho in general and with concentrated efforts in the Raft River Valley to include both temperature and water quality.

- (b) The Scope of Work shall include such other studies, investigations, and services as may be mutually agreed upon.

ARTICLE A-II - WAYS AND MEANS OF PERFORMANCE

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

	<u>DOE</u>	<u>IDWR</u>
1. Salaries		
a. Senior Water Resource Analyst (2)	\$ 46,438	
b. Geologist I	13,835	
c. Section Supervisor (1/2 time)	7,491	\$ 7,491
d. Bureau Chief (1/4 time)		9,560
e. Other Staff	1,000	2,000
	<hr/>	<hr/>
Total Salaries	\$ 68,764	\$19,051
2. Fringe Benefits (23% of Total Salaries)	15,815	4,382
	<hr/>	<hr/>
Total Personnel	\$ 84,579	\$23,433
3. Travel	8,000	
4. Publication Costs	7,000	
5. Water Quality Analyses	12,300	
6. Staff Training	1,000	
7. Computer Services	2,500	
8. Subcontract (University of Idaho)	40,000*	
9. Miscellaneous	1,715	
	<hr/>	<hr/>
Total Other Direct Costs	\$ 72,515	
	<hr/>	<hr/>
Total Direct Costs	\$157,094	\$23,433
10. Indirect Costs @ 33%	38,641	20,933*
11. Capital Outlay (Equipment)	5,000	
	<hr/>	<hr/>
Contract Totals	\$200,735	\$44,366

* IDWR will assume indirect costs for subcontracts.

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

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

\$44,366

ARTICLE A-III - FUNDING

The total estimated cost of items under A-III(a) above, for the contract period stated in this Appendix A9 is \$245,101. DOE will pay \$200,735 of the actual costs of these items incurred during the contract period stated in this Appendix A9, subject to the provisions of Article III and Article B-XXVIII. The estimated DOE Support Cost for the contract period stated in this Appendix A9 is \$200,735.

The estimated DOE Support Cost is funded as follows:

- | | |
|---|-------------------|
| (a) Estimated unexpended balance from prior period(s) | \$ <u>53,125</u> |
| (b) New funds for the current period | \$ <u>147,610</u> |

ARTICLE IV - ADMINISTRATION AND REPORTS

- (a) Principal Investigator - Darrell Clapp

DOE Program Manager - L. L. Mink
Energy and Technology Division
Department of Energy
Idaho Operations Office
550 Second Street
Idaho Falls, Idaho 83401

The Principal Investigator shall direct the work as outlined in discussions and in periodic letters.

- (b) The Principal Investigator shall prepare and submit reports in accordance with the attached DOE Form CR-537 and Report Distribution.

REPORTING REQUIREMENTS CHECKLIST

(See Instructions on Reverse)

1. IDENTIFICATION Geothermal Resource Assessment in Idaho	2. OBLIGATION INSTRUMENT: Modification No. A009 to Contract No. DE-AS07-77ET28407
---	---

3. REPORTING REQUIREMENTS

A. PROJECT MANAGEMENT	Frequency	B. TECHNICAL INFORMATION REPORTING	Frequency
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	M M	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	A Y

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., 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 ofrty-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):
--------------------------------------	--------------------------------------



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 Categories																	
	Milestone Schedule & Status Report Management Plan	Contract Management & Status Report	Manpower Summary Report	Project Status Report	Manpower Plan	Cost Management Summary Report	Cost Status Report	Manpower Management Report	Notice of Energy RD&D Project (SSIE)	Conference Report	Hot Line Report	Technical Progress Report	Final Technical Report	Topical Report	Cost Performance Report	Cost Schedule Status Report	Summary System Description	WBS Dictionary
DE-AS07-77ET28407																		
Modification No. A009																		
Addressees	Number of Report Copies																	
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. A011 2. EFFECTIVE DATE 3. REQUISITION/PURCHASE REQUEST NO. 07-82ET28407.502 4. PROJECT NO. (If applicable) OCT 07 1982

5. ISSUED BY CODE 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 CODE FACILITY CODE 8. AMENDMENT OF SOLICITATION NO. DATED (See block 9) MODIFICATION OF CONTRACT/ORDER NO. DE-AS07-77ET28407 DATED 4/11/77 (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) See Below

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 Article II of the contract. It modifies the above numbered contract as set forth in block 12.

12. DESCRIPTION OF AMENDMENT/MODIFICATION 1. ARTICLE I - "THE RESEARCH TO BE PERFORMED" is amended by adding the following new paragraph: "The Contractor shall continue the biannual monitoring efforts of the various culinary and irrigation water wells in the immediate environs of the U. S. DOE's Raft River Geothermal Project Site." 2. ARTICLE II - THE PERIOD OF PERFORMANCE is amended to extend the term of the contract through December 31, 1982. 3. ARTICLE III- CONSIDERATION paragraph (a) is revised to increase the contract Support Ceiling by Five Thousand Dollars (\$5,000.00) to a new total of One Million Seventeen Thousand Three Hundred Four Dollars (\$1,017,304.00). The \$5,000 is hereby obligated to the contract.

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 2 COPIES TO ISSUING OFFICE

14. NAME OF CONTRACTOR/OFFEROR BY A. Kenneth Dunn (Signature of person authorized to sign) 17. UNITED STATES OF AMERICA BY Kent R. Hastings (Signature of Contracting Officer)

15. NAME AND TITLE OF SIGNER (Type or print) A. KENNETH DUNN, Director 16. DATE SIGNED 9/30/82 18. NAME OF CONTRACTING OFFICER (Type or print) Kent R. Hastings 19. DATE SIGNED 9/28/82

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. AMENDMENT/MODIFICATION NO. M012	2. EFFECTIVE DATE	3. REQUISITION/PURCHASE REQUEST NO. 07-84ET28407.501	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 Idaho Department of Water Resources Statehouse Boise, ID 83720	8. AMENDMENT OF SOLICITATION NO. _____ DATED _____ (See block 9) MODIFICATION OF CONTRACT/ORDER NO. DE-AS07-77ET28407 DATED 4/11/77 (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 number. 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)

No Change in Funding

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 **Article II of the Contract.**
It modifies the above numbered contract as set forth in block 12.

12. DESCRIPTION OF AMENDMENT/MODIFICATION

In accordance with the Contractor's request dated April 11, 1984, Article II - THE PERIOD OF PERFORMANCE is amended to extend the term of the contract through June 30, 1984.

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 checked="" type="checkbox"/> CONTRACTOR/OFFEROR IS NOT REQUIRED TO SIGN THIS DOCUMENT <input type="checkbox"/> 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 <i>Kent R. Hastings</i> (Signature of Contracting Officer)
15. NAME AND TITLE OF SIGNER (Type or print)	16. DATE SIGNED
	18. NAME OF CONTRACTING OFFICER (Type or print) Kent R. Hastings
	19. DATE SIGNED 5/4/84