DOE/ID/12079-114
ESL-131

U.S. DEPARTMENT OF ENERGY

STATE COUPLED RESOURCE ASSESSMENT PROGRAM

FINAL REPORT FOR FY 1982

by

Duncan Foley
Earth Science Laboratory
391 Chipeta Way, Suite C
Salt Lake City, Utah 84108

February, 1983

EARTH SCIENCE LABORATORY
University of Utah Research Institute
Salt Lake City, Utah

Prepared for
U.S. Department of Energy
Division of Geothermal Energy

DISCLAIMER

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During FY 1982, ESL/UURI tasks under the DOE State Coupled Program included:

2.1 Technical Assistance: Provide assistance to DOE through communicating program objectives, acting as liason among state contractors and other program participants, and writing periodic status reports. Promote coordination of this program with other federal geothermal programs.

2.2 Technical Services: Provide geological, geochemical, and geophysical expertise and support as requested by state teams and other program participants to the extent made possible by funding.

2.3 Publications: Document and publish technical aspects of this program that are otherwise not documented in state contractor or other reports. Provide DOE with semi-annual technical and status reports.

This status report summarizes activities under 2.1 and 2.3 above. Technical services provided by ESL/UURI to individual state resource assessment teams are summarized in a separate technical support memorandum.

ESL/UURI has assisted DOE in tracking the progress of technical contract deliverables for the resource assessment teams in 18 western states and New England. ESL tracking efforts have included in-person meetings, telephone calls, and several meetings with DOE personnel in Idaho Falls. Summaries of the state team contracts for this program are included in Appendix A of this status report. These summaries are updated through 30 November, 1982.

Several members of the ESL staff have been involved in revie of state team final reports. These reviews for DOE have focused on ESL's technical

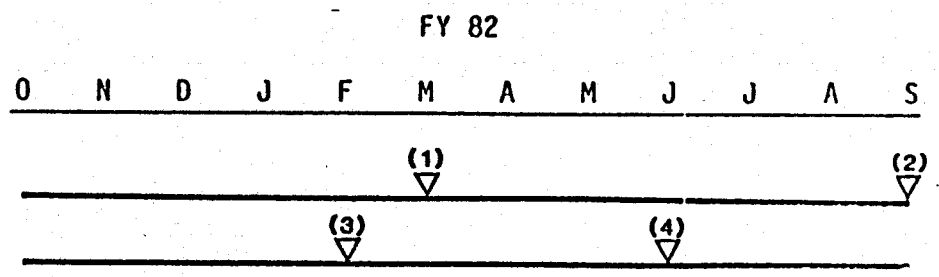
interpretation of the adequacies of the report in meeting a specific state task. When requested by the state teams, ESL has provided technical reviews and editorial comments for the state reports, including detailed comments on format, content, interpretation and presentation of project results.

ESL has been very active during FY 1982 in assuring that DOE will receive quality geothermal maps for states in the western U.S. Map project activities have included coordination of NOAA, state and DOE efforts review by ESL staff and subcontractors of draft and proof maps, and establishment of philosophical and pragmatic map production decisions. The map program will be completed in FY 1982. Current status of the mapping program is shown in Figure 1.

The U.S. Geological Survey assessment of low-temperature geothermal resources has been the major non-DOE program with which ESL has continued coordination in FY 1982. ESL's role in this assessment have been to provide hydrologic models for large area reservoirs in the Great Plains, to develop background data for assessment of resources along the Snake River Plain, and to evaluate, in conjunction with the state team, resources along the Balcones trend of central Texas. ESL professions also provided general input to the methodology of assessment and format for presentation of the data.

During the past two years, the ESL has organized a meeting of all the state teams and published a two volume report of the proceedings. During FY 1982, the final State Coupled Program meeting was held in Salt Lake City. Volume I of the proceedings consists of 18 articles by program participants. Volume II is an updated bibliography of state team reports. These volumes make data available to the geothermal community that otherwise might not be released until completion of state team final reports.

2.0 TASK 2.0 STATE LOW TEMPERATURE RESOURCE ASSESSMENT PROGRAM



Task
2.1 and 2.2 Technical Assistance and Services
2.2 Write and Distribute Reports

Deliverables

Status Reports

(1) ▽

(2) ▽

Technical Support Memos

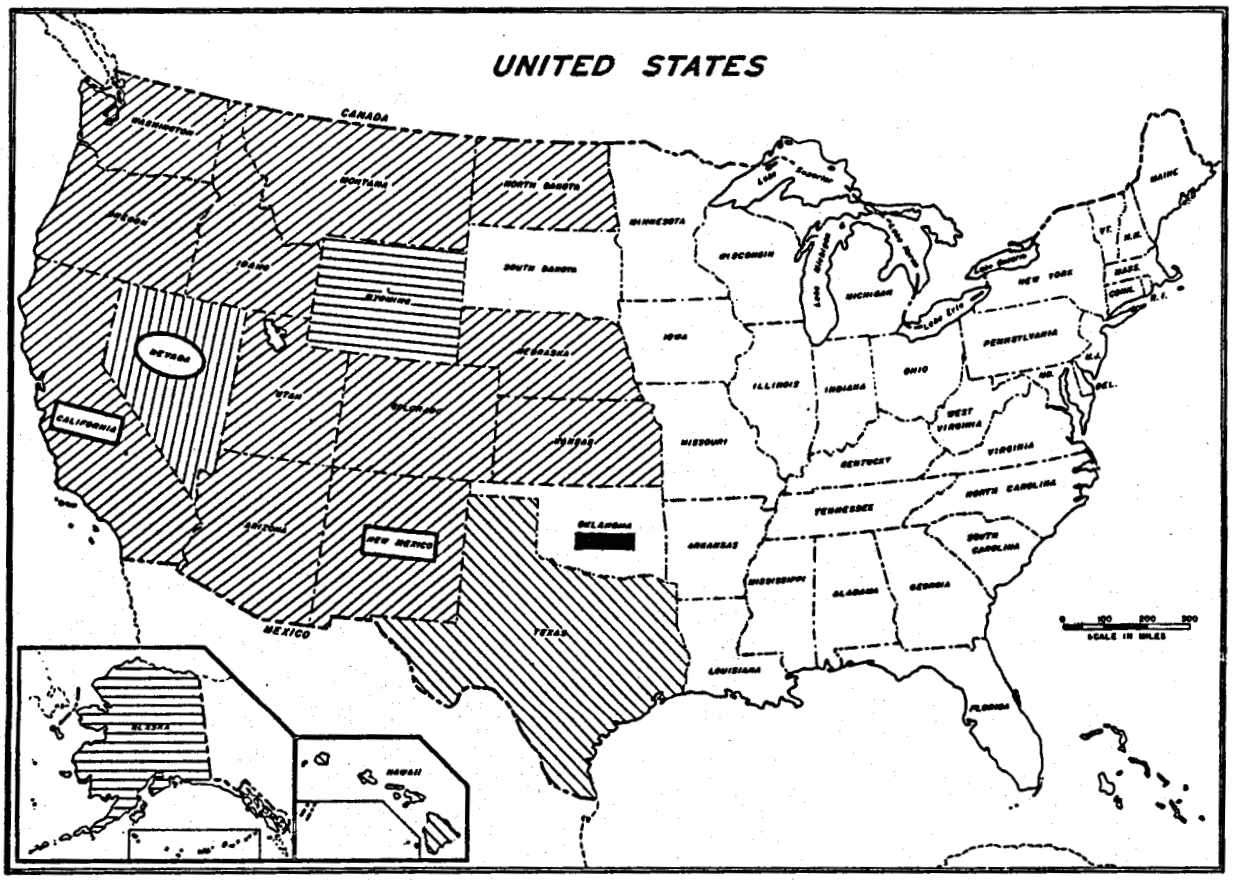
(3) ▽

(4) ▽

Progress Reported Submitted Monthly

STATE COUPLED PROGRAM MAP STATUS

DECEMBER 1982



User Map Published or in press (NOAA)

State Printed Map

User Proof in Review

User Map in preparation

Update in preparation

Technical Map in Production

Other Map Through State Program

SC-046
Revised Dec/82

APPENDIX A

STATE TEAM CONTRACT SUMMARIES

STATE: Alaska

ORGANIZATION: U. Alaska/Geophysical Institute PHONE: 907-479-7576

PRINCIPAL INVESTIGATOR/CONTACT: Don L. Turner/Gene Wescott

CONTRACT NO.: DE-AS07-78ID01720 DATE: 3/17/78

EST. COMPLETION: 9/30/78 ORIGINAL AMOUNT OBLIGATED DOE: $75,000

CONTRACTOR: -

TOTAL: $75,000

MODIFICATIONS:

NUMBER	DATE	DESCRIPTION	AMOUNT DOE	AMOUNT CONTRACTOR
-	7/31/78	Increase funds and scope	$25,000	-
001	9/8/78	T.E. to 12/31/78-fund increase	25,000	-
002	9/27/78	T.E. to 6/30/79-fund increase	45,000	-
003	6/30/79	N.C.T.E. to 9/30/79	-	-
004	7/17/79	Change Contract Number and T.E. to 12/30/79: Funds Increase	20,000	-
005	9/30/79	N.C.T.E. to 12/31/79	-	-

DELIVERABLE STATUS:

TASK NO.	DESCRIPTION	DATE DUE	RECEIVED
01	Assess Geoth. Resources of Alaska	9/30/78	
	Incl. Geoth. Resource Map and updated Spring and Well list. Extension by Mod 5	12/31/79	Sep 80
	Contract completed		
	Copy of Final Report on File at ESL		
	Turner, D.L., Forbes, R.B., Albanese, M., Macbeth, J. Lockhart, A.B., and Seed, S.M. Sept 1980. Geothermal Energy Sources of Alaska: U. of Alaska, Geophysical Institute, Fairbanks, AK.		

(CONTRACT COMPLETED)

CONTRACT COMPLETION DATE: Sept., 1980

TOTAL FUNDS EXPENDED DOE: $190,000

CONTRACTOR: -

TOTAL: $190,000

STATE: Alaska

ORGANIZATION: AK Geophysical Institute PHONE: 907-474-7576

PRINCIPAL INVESTIGATOR/CONTACT: Don L. Turner/Gene Wescott

CONTRACT NO.: DE-FC07-79ET27034 DATE: 3/7/79

EST. COMPLETION: 3/6/80 ORIGINAL AMOUNT OBLIGATED DOE: $320,081

CONTRACTOR: 8,357

TOTAL: $328,438

MODIFICATIONS:

NUMBER	DATE	DESCRIPTION	AMOUNT DOE	AMOUNT CONTRACTOR
001	3/7/80	Add Tasks #6 & 7. T.E. to 3/6/81	$149,271	5,410
		Increase funding TOTAL	$154, 681	
002	5/16/80	Revise Task #7-No Cost Increase	-	-
003	5/21/80	Add Task #8-Cost Increase	$ 23,200	5,075
		TOTAL	$ 28,275	
004	3/6/81	N.C.T.E. to 4/15/81	-	-
005	4/15/81	Add Task #9,10&11. Cost Increase	$159,400	14,081
		T.E. to 4/15/82 TOTAL	$173,481	
		Total Contract	$561,952	$32,923
		TOTAL	$594,875	

DELIVERABLE STATUS:

TASK NO.	DESCRIPTION	DATE DUE	RECEIVED
1:	Continue RA Program - new areas		
2:	Add Temp. & Gravity around prospect reservoirs	Orig.	
3:	Geochronologic studies around prospect areas.	3/6/80	See Mods.
4:	Active seismic probing around selected areas.		
5:	Electromagnetic studies around selected areas.		
6:	Regional Recon. Chena Hot Springs.	Rept. on file at ESL	
7:	Geological/Geophysical Recon. Unalaska Island	3/6/81	* V 5/82
	Revised to recon. of Rift System - Seward Peninsula and Pilgrim Springs areas. MOD 002.	3/6/81	V 5/82
8:	Purchase Equipment per requests 4/10 & 4/14		
9:	Recon. of Lower Susitna Basin	3/15/82	V 5/82
10:	Coop. w/ DGGS: Akutan and Unalaska Surveys		
11:	Recon. Manley Hot Springs		

(Cont'd on P. 2)

* V: Verified on file at Idaho Falls and/or ESL.

CONTRACT COMPLETION DATE: August 1982

TOTAL FUNDS EXPENDED DOE: $331,871

CONTRACTOR: $ 24,556

TOTAL: $356,437

STATE: Alaska CONTRACT NO.: DE-FC07-79ET27034

SUMMARY OF DELIVERABLES STATUS

DESCRIPTION	TASK NO.		DATE RECEIVED
•Final Report	1 - 5		8/82
•Chena Hot Spring: Regional Recon.	6		1980 V 5/82
Preliminary Report Rec'd: Wescott, E., and Turner, D.L. A Geological and Geophysical Study of the Chena Hot Springs Geothermal Area, Alaska: U. of Alaska, Geophysical Institute. (On file at ESL).			
•Unalaska Geological/Geophysical Recon.	7		
Revised to Recon. Seward Penn. Rift System and Pilgrim Springs Area (PER MOD 002).			1980 V 5/82
•Lower Susitna Basin Recon.	9		Feb 1982 V 5/82
•Akutan and Unalaska Survey w/DGGS	10	Joint Report	In preparation
•Manley Hot Springs Reconnaisance	11	Report	V 7/82

NOTE: Preliminary Manley Hot Springs Report received at Idaho Falls 7/82. No copy received at ESL (Task II).

Task 10: Akutan and Unalaska geophysical surveys and Helium/Mercury surveys are reported in the Geophysical Institute final report "Geothermal Energy Resource Assessment of Parts of Alaska" by Eugene M. Wescott and Donald L. Turner, August 1982. The joint report will be published by the Alaska Department of Natural Resources as part of Contract DE-FC07-79ET27105. Final report included complete bibliography of geothermal publications.

COMMENTS AND ACTION ITEMS:

A previous contract (DE-AC03-79SF1049) was completed by Don R. Markle, Geoheat Utilization Center, Klamath Falls, Oregon 97601: Geothermal Energy in Alaska: Site Data Base and Development Status. (April, 1979). Volumes I & II. This work was under DOE/San Francisco Supervision. Copy on file at ESL.

STATE: Alaska

ORGANIZATION: Dept. Nat. Resources/Div. Geol. Geophys. Surveys PHONE: 907-474-7147

PRINCIPAL INVESTIGATOR/CONTACT: Ross Schaff/Roman Motyka

CONTRACT NO.: DE-FC07-79ET27105 DATE: 6/1/79

EST. COMPLETION: 5/31/80 ORIGINAL AMOUNT OBLIGATED DOE: $165,450

CONTRACTOR: 75,285

TOTAL: $240,735

MODIFICATIONS:

NUMBER	DATE	DESCRIPTION	AMOUNT DOE	AMOUNT CONTRACTOR
001	6/1/80	Add Tasks #3-6: T.E. to 3/31/81	$ 77,450	$213,738
		TOTAL	$291,188	
002	6/15/81	Add Tasks #7-14: T.E. to 5/31/82	115,000	140,946
			$255,946	
		Total Contract To Date	$357,900	$429,969
		TOTAL	$787,869	
003	5/21/82	N.C.T.E. to 1/15/83	---	---

DELIVERABLE STATUS:

TASK NO.	DESCRIPTION	DATE DUE	RECEIVED
1:	Continue RA of Low-Temp. Reservoirs in Alaska	5/31/80 -	
2:	Ground Water of Geochemistry Wells & Springs - Selected		
3:	Assemble all data - known Geoth. Springs in AK		
4:	Acquire Temp. & Water Samples Ak Geoth. Wells & Springs	3/31/81 -	
5:	Chem. Anal. Rock Samples from Task #4		
6:	Reporting - Art. VII of Contract		
•7:	Akutan: Geol. Mapping - Geochem. He and VLF Survey and Shallow Hole. Open File Report		
•8:	N. Unalaska: He and VLF Summer Bay Area - Open File Rept.	5/31/82 -	
•9:	N.E. Atka: Recon. Water and Gas Anal. - Open File Report #144----	Jan 82	
10:	Willow Area, Lower Sustina Basin. DGGS Project Assistance to Geophys. Institute, Geophysical and Geochemical Studies.		
•11:	Manley Hot Springs same as #10: Joint Report w/GI		

see continuation- P. 2

CONTRACT COMPLETION DATE:

TOTAL FUNDS EXPENDED DOE:

CONTRACTOR:

TOTAL:

STATE: Alaska (Cont'd)

ORGANIZATION: DGGS PHONE:

PRINCIPAL INVESTIGATOR/CONTACT:

CONTRACT NO.: DE-FC07-79ET27105 DATE:

EST. COMPLETION: ORIGINAL AMOUNT OBLIGATED DOE:

CONTRACTOR:

TOTAL:

MODIFICATIONS:

NUMBER	DATE	DESCRIPTION	AMOUNT DOE	AMOUNT CONTRACTOR

DELIVERABLE STATUS: (Cont'd)

TASK NO.	DESCRIPTION	DATE DUE	RECEIVED
12:	Geochem. Anal. Water, Rock and Mineral Samples, Coop. with USGS on Isotope and Gasses.	-	
•13:	Goddard and Tenakee Hot Spring Prelim. Investigations Report.		
•14:	Year End Final Report		

see continuation- P. 3

CONTRACT COMPLETION DATE:

TOTAL FUNDS EXPENDED DOE:

CONTRACTOR:

TOTAL:

STATE: Alaska CONTRACT NO.: DE-FC07-79ET27105

SUMMARY OF DELIVERABLES STATUS

DESCRIPTION	TASK NO.	DATE RECEIVED
• Open File Report 127: Assessment of Thermal 1 & 2 Spring sites in Southern Southeastern Alaska Preliminary Results and Evaluation. Motyka, R.J. et. al.		June 1980 (ESL File)
• Open File Report 144: Assessment of Thermal Springs Sites Aleutian Arc, Atka Island to Becherof Lake. Prelim. results and	Task 9 (?)	Jan 1982

COMMENTS AND ACTION ITEMS:

STATE: Arizona

ORGANIZATION: U. of Arizona (LANL Supervision) PHONE: 602-626-4391

PRINCIPAL INVESTIGATOR/CONTACT: Claudia Stone/AZ Bureau of Geology & Mineral Technology

CONTRACT NO.: DE-FC07-79ID42009 DATE: 1/16/79

EST. COMPLETION: 1/15/80 ORIGINAL AMOUNT OBLIGATED DOE: $312,515

CONTRACTOR: -

NOTE: Performance under this contract under the supervision of Los Alamos National Laboratory

TOTAL: $312,515

MODIFICATIONS:

NUMBER	DATE	DESCRIPTION	AMOUNT DOE	AMOUNT CONTRACTOR
001:	7/1/79	Nine Heat Flow Holes w/USGS. Art. IIIA	$ 44,455	-
		Add Tasks and Equipment - Art. IIIC	$130,231	-
002:	7/11/79	T.E. to 5/31/80: Realocate Funds from Drilling to Geophys. Studies-White Mtns. & Ft. Apache Reservation.		
003:	1/16/80	T.E. to 1/15/81: Add Tasks & Funding	+$300,000	-
004:	1/21/81	Funding Increase	+$ 6,000	-
005:	2/23/81	T.E. to 1/15/82: Add 7 Tasks, Funding	+$275,918	-
006:	11/3/81	N.C.T.E. to 3/31/82	-	-
007:	3/9/82	N.C.T.E. to 6/30/82	-	-

DELIVERABLE STATUS:

TASK NO.	DESCRIPTION	DATE DUE	RECEIVED
1:	Develop Exploration Technique - Low to Mod. Temp.	1/15/80	
2:	Conduct Site Specific Investigations of Recon. Survey Areas	1/15/80	
3:	Compile and Publish Geothermal Map Per Mod 001	7/1/79	
4:	Drill Nine (9) Heat Flow Holes w/USGS and Log.		
7/11/79	Per Mod 002: Funds from Drilling to Geophys. Study of White Mtns. and Ft. Apache Reservation	5/31/80	
	*Per Mod 003 1/16/80: 11 Tasks added as follows:		
*5:	Add Area Studies: Avra Valley; AZ Hot Springs; Clifton and Yuma, San Pedro Gillard Hot Springs; Compile Heat Flow Map-Recon. of N. Hassayampa Plain (Grav.; Geol. and HG maps); Hot Well Water Samples not previously studied; Area Studies Papago and Yuma Areas; same for San Pedro Valley; Safford, San Simon Area;	7/82	

(Cont'd on P. 2)

CONTRACT COMPLETION DATE:

TOTAL FUNDS EXPENDED DOE:

CONTRACTOR:

TOTAL:

STATE: Arizona (Cont'd)

ORGANIZATION: _____ PHONE: _____

PRINCIPAL INVESTIGATOR/CONTACT: _____

CONTRACT NO.: DE-FC07-79ID12009 DATE: _____

EST. COMPLETION: _____ ORIGINAL AMOUNT OBLIGATED DOE: _____

CONTRACTOR: _____

TOTAL: _____

MODIFICATIONS:

NUMBER	DATE	DESCRIPTION	AMOUNT DOE	AMOUNT CONTRACTOR

DELIVERABLE STATUS:

TASK NO.	DESCRIPTION	DATE DUE	RECEIVED
(Cont'd)	Area Study Tucson; 1:500,000 Geoth. Map.	1/15/81	
	(*Note: Mod 003 added 11 Tasks with a new SOW)		
6:	(Per Mod 005: 2/23/81) Added 7 Tasks as follows	1/15/82	
	Thermal Grad Studies; Wells of opportunity; Colorado Plateau &		
	Transition zone studies; same for Phoenix Area; Tucson Area; Wilcox Area;		
	Safford Area; Reporting requirements per DOE Form CR537.		
	Mod 6: 11/3/81 - N.C.T.E. to	3/31/82	

(Cont'd on P. 3)

CONTRACT COMPLETION DATE: _____

TOTAL FUNDS EXPENDED DOE: _____

CONTRACTOR: _____

TOTAL: _____

STATE: Arizona CONTRACT NO.: DE-FC07-79ID12009

SUMMARY OF DELIVERABLES STATUS

DESCRIPTION (On file at ESL)	TASK NO.	DATE RECEIVED
• Progress Report - Jan 16 - Nov 1, 1979	1 - 4/ Mod 0	Dec 1979
"Geothermal Reservoir Site Evaluation in AZ", Hahman, W.R.		
Note: Progress Report Only - Does not complete contract requirements.		
• As of 3/5/82: Updated Geothermal Map in final proof review stage per Task #5 Mod 005.		Published 7/82
" The Complete Residual Bouguer Gravtiy Anomaly Map" by J.C. Lysonski, C.L.V. Aiken and J.S. Sumner. Published (Dated October 1981) Received at ESL August 1982.		

COMMENTS AND ACTION ITEMS:

No Monthly Progress Reports on file at ESL. (U. of Arizona).
No Bibliography of Geothermal Publications on file at ESL.

A number of reports concerning Geothermal Resource Assessment and Exploration Technology for Arizona and New Mexico are on file at ESL Library.

STATE: Colorado

ORGANIZATION: Colorado Geological Survey PHONE: 303-866-2611

PRINCIPAL INVESTIGATOR/CONTACT: Richard Pearl

CONTRACT NO.: DE-AS07-77ET28365 DATE: 8/29/77

EST. COMPLETION: 6/26/78 ORIGINAL AMOUNT OBLIGATED DOE: $154,130

Formerly EG-77-S-07-1678

CONTRACTOR: -

TOTAL: $154,130

MODIFICATIONS:

NUMBER	DATE	DESCRIPTION	AMOUNT DOE	AMOUNT CONTRACTOR
001:	3/20/78:	Add Tasks. T.E. to 12/31/78: Add Funds	$164,621	-
002:	3/23/79:	Change contract no.; Add Tasks. T.E. to 12/31/79 - - - - - - - - - - - Add Funds:	100,000	
		(Revised) TOTAL New Support Ceiling	$418,751	
003:	6/21/79:	Increase support ceiling and funds	100,000	
004:	11/5/79:	N.C.T.E. to 3/1/80		
005:	3/1/80:	Add Tasks. T.E. to 2/28/81. Add Funds	$199,995	
006:	6/25/80:	Increase Funding	5,000	
007:	8/10/81:	Add Tasks. T.E. to 2/28/82: Add Funds	173,675	
008:	11/16/81:	N.C.T.E. to 8/31/82	-	
009:	8/23/82:	N.C.T.E. to 12/31/82	-	

DELIVERABLE STATUS:

TASK NO.	DESCRIPTION	DATE DUE	RECEIVED
1a/Mod 0:	Preliminary synthesis of existing data - low to moderate temp. geothermal resources. Add to GEOTHERM.	6/26/78	
2/Mod 0:	Coop. with USGS, USDA & ERDA site selection for RA studies.	6/26/78	
	a) Geological and Hydrological mapping.		
	b) Geophysical investigations.		
	c) Heat Flow Drilling and Measurement.		
3/Mod 0:	Subcontract preliminary environmental assessments	6/26/78	
4/Mod 0:	Recommend confirmation drilling sites.	6/26/78	
1-4/Mod 1:	Same as Mod 0 (above)		
1b/Mod 1:	Test Drill Wells 300-600 meter depth.	12/31/78	
2b/Mod 1:	Hydrological Assessment: Acuifer testing Isotope determination, Recharge areas and rates, Affect on water resources of area.	12/31/78	

(Cont'd on P. 2)

CONTRACT COMPLETION DATE:

TOTAL FUNDS EXPENDED DOE:

CONTRACTOR:

TOTAL:

STATE: Colorado CONTRACT NO.: DE-AS07-77ET28365

DELIVERABLES STATUS (CONT'D)

TASK NO.	DESCRIPTION	DATE DUE	DATE RECEIVED
1/Mod 2:	Coop. with USGS, Geophys. investigations of San Luis Valley, specifically the Alamosa area.	12/31/79	✓1981 O.F. 80-12
2/Mod 2:	Canyon City area goethermal resource evaluate	12/31/79	1981 O.F. 80-12
3/Mod 2:	Geophys. studies including Waunita Hot Springs - Ranger Hot Springs, Glenwood and Pagosa Springs	1981 "	Sp. Pub. #16 " (Pagosa 1980)
4/Mod 2:	Complete testing/analysis, Pagosa Springs in coop. with Coury & Assoc. and City of Pagosa Springs.	PON "	"
Mod 004:	N.C.T.E. to	3/1/80	
1/Mod 5:	Canon City: Resistivity and Seismic Profile	2/28/81	
2/Mod 5:	San Luis Valley: Resistivity and Seismic survey in vicinity of Shaw Hot Springs.	2/28/81	
3/Mod 5:	Idaho Springs area: Reconn. study and Resistivity survey in vicinity of the hot spring.	2/28/81	Jul 1982
4/Mod 5:	Ouray: Reconnaissance study.	2/28/81	✓1981
5/Mod 5:	Animas Valley: Reconn. in Tripp-Trimble-Pinkerton Hot Springs Area.	2/28/81	8/11/82
6/Mod 5:	Acquire available thermal grad. measurements, existing Colorado wells.	2/28/81	
7/Mod 5:	Continue groundwater temp. assessment, prepare preliminary field map, obtain BHT from O & G wells in Eastern CO.	2/28/81	
8/Mod 5:	Acquire and interpret statewide geophys. data as available.	2/28/81	
9/Mod 5:	Hot Sulphur, Cement Creek, Ranger and Waunita Hot Springs Soil Hg Surveys.	2/28/81	
10/Mod 5:	Coop. w/NOAA-Publish state Geothermal Map	2/28/81	✓1981
1/Mod 7:	Steamboat-Routt, Hot Sulphur, Ranger and Wagon Wheel Gap Hot Springs - Resistivity surveys.	2/28/82	11/82
2/Mod 7:	Heat Flow Map, 1:100,000 Scale, state of CO	2/28/82	✓1981
3/Mod 7:	Ground Water Temperature Map, 1:500,000 of CO	2/28/82	✓1981
4/Mod 7:	Temperature Gradient Map; 1:500,000 of CO	2/28/82	✓1981
5/Mod 7:	Temp. Profile Measurements, add to Task 4 Data Base	2/28/82	
6/Mod 7:	Series of State-wide Geophysical Compilation Maps 1:500,000	2/28/82	
7/Mod 7:	Evaluate Thermal Waters, Ouray Mining District Sites.	2/28/82	9/1/82
8/Mod 7:	Reports per DOE Form 537	2/28/82	
9/Mod 7:	Disseminate Geothermal Information	2/28/82	

(Cont'd on P. 3)

STATE: Colorado CONTRACT NO.: DE-AS07-77ET28365
(Formerly EG-77-S-07-1678)

SUMMARY OF DELIVERABLES STATUS

DESCRIPTION	TASK NO.	DATE RECEIVED
• Geothermal Reservoir Assessment and Confirmation Program for Direct Heat Application-Annual Report June 26, 1977 - Dec. 31, 1978-under contract #1678	1-4/Mod 0	Dec 1978
• Colorado's Hydrothermal Resource Base-An Assessment Pearl, R.H., 1979. (Summary of data, descriptions of 58 Hot Springs and Wells in Colo.).	Possibly Tasks 1-4/Mod 1	Jan 1980
• Hydrogeologic and Geothermal Investigation of Pagosa Springs, CO. Galloway, M.J. (1980)	Task 4/Mod 2	1980
• Summary of the Geology of the San Luis Basin with emphasis on Geothermal Potential-Monte Vista Graben. Burroughs, R.L. (1981) CO Geological Survey Special Pub. #17 -	Possibly Task 1/Mod 2	1981
• Temp-Depth Profiles in the San Luis Valley and Cannon City Area, Co. CO Geol. Survey Open File Rept. 80-12 (by Ringvose, C.D.)	Task 2/Mod 2	1980
• Geoth. Resource Assessment of Ouray, CO. CO Geol. Survey Resource Series 15 (1981) Zacharakis, T.G. et.al.	Task 4/Mod 5	1981
• Geoth. Resource Assessment of Waunita Springs, CO. CO Geol. Survey Spec. Pub. #16 (1981) Zacharakis, T.G.	Possibly Task 3/Mod 2 (Part) Task 9/Mod 5	1981

(Cont'd on P. 4)

COMMENTS AND ACTION ITEMS:

- Annual Year End Report 1979 (Revised). Pearl, R.H. — Sep 1981
- Monthly Progress Reports have been received at ESL.

(Cont'd on P. 4)

STATE: Colorado CONTRACT NO.: DE-AS07-77ET28365

DELIVERABLES STATUS (CONT'D)

TASK NO.	DESCRIPTION	DATE DUE	DATE RECEIVED
2/Mod 7	Heat Flow Map of Colorado 1:100,000 Scale		1981
3/Mod 7	Groundwater Temperature Map, CO 1:500,000		1981
4/Mod 7	Temp. Gradient Map of CO 1:500,000		1981
10/Mod 5	Geothermal User Map of Colo.		1981
	TASK 7 MOD 7: Received Open File Report 82-5 "Geothermal Implications Of Warm Mine Water Drainage At Lake City And Cripple Creek, Colorado" by Kevin P. McCarthy. This is not specifically in the Ouray mining district but no task listed refers to Lake City or Cripple Creek.		9-82
	MOD 007: Received Report DOE/ET/28365-19 "Geothermal Resource Assessment of Hartsel, CO" by Kevin McCarthy, T. G. Zacharakis and R. H. Pearl		11-82
	: Received Report DOE/ET/28365-21 "Helium and Ground Temperature Surveys at Steamboat Springs, CO by Kevin P. McCarthy, J. Been, G. M. Reimer, C. G. Bowles and D. G. Murrey		11-82

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:

NUMBER	DATE	DESCRIPTION	AMOUNT DOE	AMOUNT CONTRACTOR
*NOTE:		Original Contract EG-77-S-07-1663 for $6,000 changed by Mod 1 (7/29/77) to amount and expanded task definition and scope.	$152,329	
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:

TASK NO.	DESCRIPTION	DATE DUE	RECEIVED
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:

NUMBER	DATE	DESCRIPTION	AMOUNT DOE	AMOUNT CONTRACTOR
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:

TASK NO.	DESCRIPTION	DATE DUE	RECEIVED
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

DESCRIPTION	TASK NO.	DATE RECEIVED
• 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: Eastem 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 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:

STATE: IDAHO CONTRACT NO.: DE-AS07-77ET28407

DELIVERABLES STATUS (CONT'D)

TASK NO.	DESCRIPTION	DATE DUE	DATE RECEIVED
AI/MOD002:	Part 10, Water Information Bulletin, No. 30, "An Evaluation of Thermal Water Occurrences In Teh Tyhee Area, Bannock County, Idaho". Rec'd at ESL & DOE/ID.		6 Aug '82

STATE: Kansas

ORGANIZATION: Kansas Geological Survey PHONE: 913-864-4991

PRINCIPAL INVESTIGATOR/CONTACT: Don Steeples/Sandy Stavnes

CONTRACT NO.: DE-AS07-79ET27204 DATE: ≈ 8/6/79

EST. COMPLETION: 3/31/80 ORIGINAL AMOUNT OBLIGATED DOE: $85,642

CONTRACTOR: 6,251

TOTAL: $91,893

MODIFICATIONS:

NUMBER	DATE	DESCRIPTION	AMOUNT DOE	AMOUNT CONTRACTOR
001	4/1/80:	N.C.T.E. to 8/30/80	-	-
002	4/1/80:	T.E. to 3/31/81. Add Tasks	$123,835	-
003	7/8/80:	List Government Propery ($34,960)	-	-
004	4/10/81:	N.C.T.E. to 6/15/81.	-	-
005	9/22/81:	Add Tasks. T.E.to 6/30/82. Inc. Funds	$164,009	$22,301
006	5/5/82:	N.C.T.E. to 9/20/82	-	-

DELIVERABLE STATUS:

TASK NO.	DESCRIPTION	DATE DUE	RECEIVED
1A/Mod 0:	Revise and Update KS Geoth. Grad. Map	3/31/80	6/15/82
B/Mod 0:	Conduct Aeromag. Survey. Northwest KS.	3/31/80	"
C/Mod 0:	Correlate major geol. feature w/geoth. anomalies.	3/31/80	"
D/Mod 0:	Design/Construct thermal conductivity probes	3/31/80	"
2 /Mod 0:	Coop. w/USGS-2 research holes into Arbuckle Formation Basement - assess hydroth. potential	3/31/80	"
1/Mod 2:	Statewide Thermal Gradient Map	3/31/81	"
2/Mod 2:	Statewide Contour Map - Aeromag Study interpreted.	3/31/81	"
3/Mod 2:	Gravity Survey 2-3000 points. Southeastern KS.	3/31/81	"
4/Mod 2:	Tabulate Geochem. data. Analyze new samples	3/31/81	"
5/Mod 2:	Provide Data to GEOTHERM	3/31/81	"
6/Mod 2:	Reports per DOE Form CF-537		
Mod 4	N.C.T.E. to - - - - - - - - - - - - - - - -	6/15/81	"

(Cont'd on P. 2)

CONTRACT COMPLETION DATE: _____

TOTAL FUNDS EXPENDED DOE: _____

CONTRACTOR: _____

TOTAL: _____

STATE: Kansas CONTRACT NO.: DE-AS07-79ET27204

DELIVERABLES STATUS (CONT'D)

TASK NO.	DESCRIPTION	DATE DUE	DATE RECEIVED
1/Mod 5:	Thermal Gradient Studies: Log wells in Southwestern and Northwestern KS.	6/30/82	6/15/82
2/Mod 5:	Gravity Surveys: Northwestern corner KS and extention of FY80 work in Southcentral KS.	6/30/82	"
3/Mod 5:	Survey Geochemical Data on file. Complete FY80 analysis.	6/30/82	"
4/Mod 5:	Coop. with SMU: Temp. meas. on holes too deep for KS equipment. Complete HT Flow/Grad. work.	6/30/82	See below
5/Mod 5:	Geothermal User Map w/NOAA Assistance	6/30/82	See below

Final Report: "Assessment of the Geothermal Resources of Kansas" Volume I, Text (3 Sections) and Volume II - Appendices (5 sections), Steeples, D.A. and Stavnes, S.A., Editors, Kansas Geological Survey, Lawrence, KS, June, 1982. Received June 15, 1982, at ESL and DOE/Idaho Falls, ID.

KS Geothermal Map, Task 5 Mod 005, Bid Opening 7/30/82. To be printed and distributed early September 1982.

Task 4 Mod 005: Blackwell work (SMU Sub-contract) to be completed July and August 1982 and added to data base prior to 9/20/82 contract completion date.

STATE: Massachusetts

ORGANIZATION: Amherst College PHONE: 413-542-2233

PRINCIPAL INVESTIGATOR/CONTACT: Gerry Brophy

CONTRACT NO.: DE-FC07-80RA50272 DATE: 7/1/80

EST. COMPLETION: 7/1/82 ORIGINAL AMOUNT OBLIGATED DOE: $65,422

CONTRACTOR: -

TOTAL: $65,422

MODIFICATIONS:

NUMBER	DATE	DESCRIPTION	AMOUNT DOE	AMOUNT CONTRACTOR
- None -				
001	3/15/82	N.C.T.E. to 1/1/83	-	-

DELIVERABLE STATUS:

TASK NO.	DESCRIPTION	DATE DUE	RECEIVED
1:	Lit. Search and Field Investigations. Connecticut River Valley - elevated temp. areas, water samples.	7/1/82	
2:	Extend to hydroth. activity, W. New England OVERTHRUST BELT.	7/1/82	
3:	Compile Hydrothermal Resource inventory, New England.	7/1/82	
4:	Area Investigations - geology and hydrology promising sites.	7/1/82	
5:	Submit well and spring data to GEOTHERM	7/1/82	
6:	Reports as required	7/1/82	

CONTRACT COMPLETION DATE:

TOTAL FUNDS EXPENDED DOE:

CONTRACTOR:

TOTAL:

STATE: Montana

ORGANIZATION: Col. Mineral Science & Technology PHONE: 406-496-4159

PRINCIPAL INVESTIGATOR/CONTACT: John Sonderegger/Charles Wideman

CONTRACT NO.: DE-FC07-79ID12033* DATE: 2/15/79

EST. COMPLETION: 2/14/80 ORIGINAL AMOUNT OBLIGATED DOE: $99,917

*Orig. EY-S-06-2426 (5/17/76) $19,688 CONTRACTOR: 10,778

•Changed to DE-AS07-76ID12029 (R.E. Simonds Letter of 12/19/78). Have letter and a Mod 005 to this Contract No. TOTAL: $110,695

•Changed to DE-FC07-79ID12033 ? No Documentation.

MODIFICATIONS:

NUMBER	DATE	DESCRIPTION	AMOUNT DOE	AMOUNT CONTRACTOR
002	10/1/77	(#2426) Add Tasks - Increase Funds	$ 86,400	-
003	5/1/78	Request - Modify Tasks - Increase Funds	Not DOE Approved?	Have
		no DOE Documentation of Mod 003 on this contract.		
		New Contract (12033) issued 2/15/79	$ 99,917	$10,778
001	?	Additional Funds (Equipment?)	1,868	202
002	1/1/80	Add Tasks 8-12: Add Funds: T.E. to 9/2/81	414,963	64,696
003	9/15/80	Increase Funding	14,000	4,800
004	4/6/81	Doe Funds Allocated to Total	$617,148	$80,476
005	9/4/81	N.C.T.E. to 2/28/82		
006	2/8/82	T.E. to 9/30/83. Add Tasks and Funds	$143,097	27,450

DELIVERABLE STATUS:

TASK NO.	DESCRIPTION	DATE DUE	RECEIVED or Item #
Per Mod 002 (2426)	1. Madison/Red Rock Springs & Wells	9/30/79	7,4
Per Mod 002 (2426)	2. Compile Geologic/Geophysical Data Madison/Red Rock Springs & Wells	9/30/79	7,3
Per Mod 002 (2426)	3. Model Red Rock Creek-Madison Riv. Val.	9/30/79	7,3,4
Per Mod 002 (2426)	4. Geotherm File Input	9/30/79	Geoth 790
Per Mod 002 (2426)	5. Geothermal User Map	9/30/79	1/82
New Contract (12033) 2/15/79			8
1. 2/15/79 - Complete Centennial Valley Project.		2/14/80	7
2. 2/15/79 - Provide Geophys. (Seismic) & Hydrology around known Hot Springs		2/14/80	1-12,15,17,19
3. Complete Groundwater data transfer to USGS		2/14/80	In Fed 200 Sys.
4. Begin Yellowstone Geoth. Study		2/14/80	Delete SP 7/14/82
5. Meet deadlines on Temp. Grad. Studies - Map data		2/14/80	6/23/82
6. Evaluate Airborn-Heat Sensing Imagery - Thermal discharge to major streams.			

(Cont'd on P. 2)

CONTRACT COMPLETION DATE: _____

TOTAL FUNDS EXPENDED DOE: _____

CONTRACTOR: _____

TOTAL: _____

STATE: Montana (Cont'd)

ORGANIZATION: _____ PHONE: _____

PRINCIPAL INVESTIGATOR/CONTACT: _____

CONTRACT NO.: DE-FC07-79ID12033 DATE: _____

EST. COMPLETION: _____ ORIGINAL AMOUNT OBLIGATED DOE: _____

CONTRACTOR: _____

TOTAL: _____

MODIFICATIONS:

NUMBER	DATE	DESCRIPTION	AMOUNT DOE	AMOUNT CONTRACTOR

DELIVERABLE STATUS:

TASK NO.	DESCRIPTION	DATE DUE	RECEIVED
New Contract (Cont'd)			
7.	Conduct Test Drilling at Ennis or Deer Lodge	2/14/80	
Per Mod 002: 1/1/80 Time Extension to		9/2/81	
8.	Complete West Yellowstone-Little Bitterroot-Radersberg	9/2/81	
9.	Complete Heat Sensing Imagery Study	9/2/81	6/23/82
10.	Provide Data to Geotherm.	9/2/81	
11.	Acquire Geoscience Data on Eastern Montana Drill Holes	9/2/81	
12.	Geol./Geophys. studies: Deer Lodge - Anaconda, Helena Valleys and third site to be chosen.		
	Mod 005 N.C.T.E. to	2/28/82	
8/7/81 Revised SOW for FY82: Add Geoscience Study - White Sulphur Springs: Norris Area: Predictive model for geoth. w/without surface manifestations.			

(Cont. on P. 3)

CONTRACT COMPLETION DATE: _____

TOTAL FUNDS EXPENDED DOE: _____

CONTRACTOR: _____

TOTAL: _____

STATE: Montana (Cont'd) CONTRACT NO.: DE-FC07-79ID12033

SUMMARY OF DELIVERABLES STATUS

DESCRIPTION	TASK NO.	DATE RECEIVED
• Drilling Report: State Nursery Test Well #1. Sonderegger		2/16/82
• Sub-Surface Investigation - Bozeman Hot Spring - Donovan, et.al.		2/16/82
• Structure of Centennial and Madison Valleys - Schofield.		2/16/82
• Geol. & Geoth. Resources - E. Centennial Valley - Sonderegger		2/16/82
• Drilling of Campaqua Geoth. #1 - Hot Springs MT. - Donovan, et.al.		2/16/82
• Geothermal User Map		1/82
13. Per Mod 006: Project Management and Reporting per DOE-CR-537		-
14. User Assistance referrals to be accepted		-
15. Geothermal State Map through NOAA		
16. White Sulphur Springs geology, geophysics and geochemistry study, assistance of MT Dept. Natural Resources for test drilling.		
17. Norris Area Study. Identify resources beyond presently known, final report to be published.		
18. Summary Study: Coherent Geothermal Model for MT; identify controls for types of systems; speculative discussion of areas w/out surface manifestations where resource possible. Publication in MBMG or Technical Journal format constitutes Final Report.		

COMMENTS AND ACTION ITEMS:

STATE: Nebraska

ORGANIZATION: U. of Nebraska PHONE: 402-554-2457

PRINCIPAL INVESTIGATOR/CONTACT: William Gosnold/Duane Eversoll (472-3471)
NB Geol. Survey

CONTRACT NO.: DE-AS07-79ET27205 DATE: 4/1/79

EST. COMPLETION: 3/31/81 ORIGINAL AMOUNT OBLIGATED DOE: $161,843

CONTRACTOR: 17,000

TOTAL: $178,843

MODIFICATIONS:

NUMBER	DATE	DESCRIPTION	AMOUNT DOE	AMOUNT CONTRACTOR
001	6/26/80	Increase Funding	$ 84,603	-
		(Note: Page 2 of Mod 001 could not be found)		
002	3/31/81	N.C.T.E. to 4/21/81		
003	9/21/81	Add Tasks: T.E. to 3/31/83 Increase Funds	$249,969	26,000

DELIVERABLE STATUS:

TASK NO.	DESCRIPTION	DATE DUE	RECEIVED
1/Mod 0:	Establish temp. data bank - 13,000 O & G wells	3/31/81	
	Collect info. on aquifer temp. and water quality from files.		
2/Mod 0:	Drill 30-150m Th. Grad. Holes. Run geophys. logs and analyze borehole cuttings.	3/31/81	
3/Mod 0:	Prepare maps and cross-sections to display data	3/31/81	
4/Mod 0:	Reports per DOE requirements.		
1/Mod 3:	Complete BHT survey. Produce BHT Map 1:500,000	3/31/83	
2/Mod 3:	Continue HT Flow/Temp. Grad. Survey. Summary Interpretation.	3/31/83	
3/Mod 3:	Generate Computer Programs define data relationships.	3/31/83	
4/Mod 3:	Gravity Map of NB: 1:500,000 Scale: 5 milligal contour.	3/31/83	
5/Mod 3:	Compile all Geoscience Data by 4 Substate Regions	3/31/83	
6/Mod 3:	Outreach: Data to Users. Coop. w/EG&G, NMEI, UURI.	3/31/83	
7/Mod 3:	Compile and Publish Geoth. User Map. NOAA assist.	3/31/83	
8/Mod 3:	Reports Per DOE Form 537.		

(Cont'd on P. 2)

CONTRACT COMPLETION DATE: _____

TOTAL FUNDS EXPENDED DOE: _____

CONTRACTOR: _____

TOTAL: _____

STATE: Nebraska CONTRACT NO.: DE-AS07-79ET27205

SUMMARY OF DELIVERABLES STATUS

DESCRIPTION	TASK NO.	DATE RECEIVED

COMMENTS AND ACTION ITEMS:

STATE: New Mexico

ORGANIZATION: N.M. Energy Institute PHONE: 505-646-1745

PRINCIPAL INVESTIGATOR/CONTACT: Larry Icerman

CONTRACT NO.: DE-AS07-78ID01717 DATE: 5/1/78

EST. COMPLETION: 9/30/78 ORIGINAL AMOUNT OBLIGATED DOE: $150,000

(Formerly EW-78-S-07-1717) CONTRACTOR: 35,000

TOTAL: $185,000

MODIFICATIONS:

NUMBER	DATE	DESCRIPTION	AMOUNT DOE	AMOUNT CONTRACTOR
0	9/20/78:	Raise support ceiling to 150,000. T.E. to 9/30/79	-	-
001	8/17/79:	Add Tasks. T.E. to 12/31/79 - Increase Funds	$200,000	$40,015
002	12/28/79:	N.C.T.E. to 5/15/80.	-	-
003	5/15/80:	N.C.T.E. to 7/1/80		
004	5/15/80:	Add Tasks. T.E. to 6/14/81 - Increase	$285,200	$56,506
005	8/6/81:	Add Tasks. T.E. to 6/14/82 - Increase Funds	$236,480	$100,329
006	5/6/82:	N.C.T.E. to 12/31/82		

DELIVERABLE STATUS:

TASK NO.	DESCRIPTION	DATE DUE	RECEIVED
PI-1/Mod 0:	Search WATSTORE for Spring/Well T>20°C.	9/30/78	
2/Mod 0:	Tabulate Water Chem. Data from above.	9/30/78	
3/Mod 0:	Compile Seismicity Data. NM Several Sources	9/30/78	
4/Mod 0:	Compile HT Flow Data. unpublished sources.	9/30/78	
5/Mod 0:	Ther. Grad.-Measure well temps., existing wells.	9/30/78	
	Note #3-5 Subcontracted to NMIMT/BMMR Swanberg/Reiter		
6/Mod 0:	Collect Data on quaternary volcanism & tectonism.	9/30/78	
7/Mod 0:	Compile Data on Geoelectric Investigations	9/30/78	
	Note #6-7 Subcontract to U. NM: J.E. Callender		
8/Mod 0:	Geothermal Hydrologic Data Compilation. pump tests	9/30/78	
9/Mod 0:			
PII-1/Mod 0:	Drill 2-4"/1000' Wells. Las Alturas and Socorro.	9/30/78	
2/Mod 0:	Determine from PI Data to drill 2500' Hole	9/30/78	

(Cont'd on P. 2)

CONTRACT COMPLETION DATE:

TOTAL FUNDS EXPENDED DOE:

CONTRACTOR:

TOTAL:

STATE: New Mexico CONTRACT NO.: DE-AS07-78ID01717

DELIVERABLES STATUS (CONT'D)

TASK NO.	DESCRIPTION	DATE DUE	DATE RECEIVED
1/Mod 1:	Las Alturas Seismic Profile (P. Morgan, NMSU)	12/31/79	
2/Mod 1:	Socorro; Seismic, Tritium and Hydrology Studies (Subcontract to NMIMT).	12/31/79	
3/Mod 1:	Truth or Consequences: Data compilation geologic mapping, gravity, T logging & aquifer characteristics.	12/31/79	
4/Mod 1:	Chamberino & Mesquite: Schlumberger and MT surveys (NMSU).	12/31/79	
5/Mod 1:	Southcentral N.M.: Thermal well logging (Sonderegger and Morgan).	12/31/79	
6/Mod 1:	Columbus; Black Range; Potrillo Mtns. South Tularosa Basin: Area Fault Mapping wrt Basaltic Lavas (NMSU).	12/31/79	
7/Mod 1:	Area Reconn. Northwest NM Counties (NMSU).	12/31/79	
/Mod 2:	Letter authorizing Las Alturas production well.		
/Mod 2:	N.C.T.E. to	5/15/80	
0/Mod 3:	N.C.T.E. to	7/1/80	
1/Mod 4:	Complete Public and Technical Geothermal Maps (Final proof public and draft of technical).	6/14/81	
2/Mod 4:	Complete O & G well data. Well location, etc. Map.	6/14/81	
3/Mod 4:	Data from NM research collated for NOAA maps	6/14/81	
4/Mod 4:	NM State Lineament Map and Data Report	6/14/81	
5/Mod 4:	Collect water well data, Southern Rio Grande Rift and southwestern NM; T. Grad Map 1:500,000, Heat Flow Map 1:500,000; County Maps 1:250,000 Tabulate all data and publish interpretive report.	6/14/81	
6/Mod 4:	West Mesa-Albuquerque: Mag Survey, 5-50 m Th. Grad Wells drill and log & Dipole-Dipole Mag. Survey	6/14/81	
7/Mod 4:	Southwestern NM Counties, Southwestern portion Sierra and Catron: Compile and interpret all geoscience data by county. Tabulate, interpret data, publish reports and maps for geothermal assessment 1:250,000.	6/14/81	
8/Mod 4:	Animas Valley/Lightening Dock KGRA: Computer simulation of hydrologic characteristics. Quarterly water quality sampling, compile data, water quality maps and report.	6/14/81	
9/Mod 4:	Reports per DOE Requirements.		

STATE: NEW MEXICO CONTRACT NO.: DE-AS07-78ID01717

DELIVERABLES STATUS (CONT'D)

TASK NO.	DESCRIPTION	DATE DUE	DATE RECEIVED
1/MOD 5:	NMEI/NMSU Project Administration Reporting		-
1/MOD 5:	Scientific Geothermal Resource Map with NOAA		
3/MOD 5:	Regional Map 1:250,000, Otero County overlay/Summary Report		
4/MOD 5:	Regional Map 1:250,000, N. Central N.M. overlay/Summary Report includes ht. flow and BHT data, Bouguer gravity surveys.		
5/MOD 5:	Mylar Overlay Aeromag map 1:500,000 and interpretation, N.M.		

STATE: North Dakota

ORGANIZATION: U. of North Dakota PHONE: 701-777-2231

PRINCIPAL INVESTIGATOR/CONTACT: Ken L. Harris

CONTRACT NO.: DE-FC07-79ID12030 DATE: 1/15/79

EST. COMPLETION: 1/14/80 ORIGINAL AMOUNT OBLIGATED DOE: $41,597

CONTRACTOR: 9,547

TOTAL: $51,144

MODIFICATIONS:

NUMBER	DATE	DESCRIPTION	AMOUNT DOE	AMOUNT CONTRACTOR
001	1/14/80:	N.C.T.E. to 3/8/80. Equipment Purchase	-	-
002	3/9/80:	Add Tasks 5-8: T.E. to 3/7/81. Add Funds	$102,169	$20,171
003	Increase Funding obligated by 4,578, FY80.		-	-
004	Add Task 9: No increase in Funds or Time extension		-	-
005	5/8/81:	N.C.T.E. to 5/1/81		
006	1/1/81:	Add Tasks 10-14: T.E. to 5/1/82	$144,500	$29,281
007	2/12/82L	N.C.T.E. to 8/1/82	-	-

DELIVERABLE STATUS:

TASK NO.	DESCRIPTION	DATE DUE	RECEIVED
1/Mod 0:	Summarize BH Data 6,500 Oil and Gas Wells ND.	1/14/80	5/80
2/Mod 0:	Maps showing location, depth, temp. potential Geoth. reservoirs.	1/14/80	"
3/Mod 0:	Evaluate Madison aquifer using existing data.	1/14/80	"
4/Mod 0:	Final Report and Maps: Geoth. potential of ND.	1/14/80	"
5/Mod 2:	Statewide Th. Grad. Map	3/7/81	7/81
6/Mod 2:	Detailed Geologic Maps-potential hydroth. aquifers.	3/7/81	"
7/Mod 2:	Collect Water Quality data and enter into data base.	3/7/81	"
8/Mod 2:	Known Geoth. Well data to GEOTHERM	3/7/81	Not Required
9/Mod 4:	Design base map coor. system. Modify GEOSTOR	3/7/81	See Summary
-/Mod 5:	N.C.T.E. to - - - - - - - - - - - - - - - - - -	5/1/81	-
10/Mod 6:	Log wells not previously studied. th. grad. info. about 4 holes of opportunity to be completed by ND team.	5/1/82	8/82

(Cont'd on P. 2)

CONTRACT COMPLETION DATE: 8/1/82

TOTAL FUNDS EXPENDED DOE: $246,669

CONTRACTOR: 49,452

TOTAL: $296,121

STATE: North Dakota

ORGANIZATION: _____ PHONE: _____

PRINCIPAL INVESTIGATOR/CONTACT: _____

CONTRACT NO.: DE-FC07-79ID12030 DATE: _____

EST. COMPLETION: _____ ORIGINAL AMOUNT OBLIGATED DOE: _____

CONTRACTOR: _____

TOTAL: _____

MODIFICATIONS:

NUMBER	DATE	DESCRIPTION	AMOUNT DOE	AMOUNT CONTRACTOR

DELIVERABLE STATUS:

TASK NO.	DESCRIPTION	DATE DUE	RECEIVED
11/Mod 6:	Fox Hills and Hell Creek Formations: Structure and Isopach maps (1:500,000). Characterize Pleistocene aquifers in Eastern & Northern ND.	5/1/82	8/82
12/Mod 6:	Summarize Water Qual Data: Inyan Kara and others	5/1/82	"
13/Mod 6:	Summary of depth, thickness, expected temp. & water quality. Publish report in national scientific journal	5/1/82	"
14/Mod 6:	Coop with ND Commercialization Team - Process User Requests	5/1/82	"

(Cont'd on P. 3)

CONTRACT COMPLETION DATE: _____

TOTAL FUNDS EXPENDED DOE: _____

CONTRACTOR: _____

TOTAL: _____

STATE: North Dakota CONTRACT NO.: DE-FC07-79ID12030

SUMMARY OF DELIVERABLES STATUS

DESCRIPTION	TASK NO.	DATE RECEIVED
- Phase I Final Technical Report	1-4	5/80
"An Evaluation of Hydrothermal Resources of North Dakota", K. L. Harris, L. M. Winczewski, H. R. Umphrey and S. B. Anderson. Bull. No. 80-03-EES-02, Engineering Experiment Station, U. of ND, Grand Forks, ND 58202		
- Phase II Final Technical Report	5-6-7-12	7/81
Bull. No. 81-05-EES-02	13-14 (partial)	
- Phase III Final Technical Report	10-11-12	8/82
Bull. No. 82-08-EES-01 (in press)	13-14 (complete)	

NOTE:

Task 8 Mod 1: GEOTHERM does not include general oil and gas well data that ND has acquired. This task was therefore not required.

Task 9 Mod 2: Data developed and entered into WELLFILE and WATERCAT computer files.

COMMENTS AND ACTION ITEMS:

All contract requirements were met with the publication of the Phase III Final Report and the State Geothermal Map.

Copies of all listed reports are on file at ESL/UURI.

Carl A. Ruscetta

STATE: Oklahoma

ORGANIZATION: University of (Geol. Survey) PHONE: 405-325-3032

PRINCIPAL INVESTIGATOR/CONTACT: William Harrison/Ken Luza

CONTRACT NO.: DE-AS07-80ID12172 DATE: 9/30/80

EST. COMPLETION: 10/1/81 ORIGINAL AMOUNT OBLIGATED DOE: $118,981

CONTRACTOR: 4,657

TOTAL: $123,638

MODIFICATIONS:

NUMBER	DATE	DESCRIPTION	AMOUNT DOE	AMOUNT CONTRACTOR
001	10/1/81	N.C.T.E. to 12/31/81	-	-
002	1/12/82	T.E. to 12/31/82 Add Tasks and increase funding	$125,000	$ 64,218

DELIVERABLE STATUS:

TASK NO.	DESCRIPTION	DATE DUE	RECEIVED
1/Mod 0:	Compile & Interpret Data on Electric Log Headings to produce geoth. grad. map.	12/31/81	
2/Mod 0:	Area Specific studies promising areas, (Pittsburgh and Haskell) A) Thermal equalib. study, B) Temp Logging - Holes of Opportunity. Detailed Report for each site specific area. (Use Equilibrated temp. data vs. Industry Data where possible).	12/31/81	10/81 (partial)
2/MOD 2:	Obtain equilibrated temp. data base, re-enter at least one well/county - Produce OK Temp. Gradient Map	12/31/82	

CONTRACT COMPLETION DATE:

TOTAL FUNDS EXPENDED DOE:

CONTRACTOR:

TOTAL:

STATE: Oregon (State of)

ORGANIZATION: Dept. Geology and Mineral Industries PHONE: (503) 229-5580

PRINCIPAL INVESTIGATOR/CONTACT: George Priest, Don Hull, Dave Brown

CONTRACT NO.: DE-FC07-79ET27220 DATE: 6/15/79

EST. COMPLETION: 12/31/80 ORIGINAL AMOUNT OBLIGATED DOE: 231,491

CONTRACTOR: 25,735

TOTAL: 257,226

MODIFICATIONS:

NUMBER	DATE	DESCRIPTION	AMOUNT DOE	AMOUNT CONTRACTOR
001	6/22/79	:Increase Funding	$ 6,752	-
002	12/4/79	:Increase Funding (Publish and distribute Geologic Map #11)	$ 10,000	
003	5/22/80	:Add Tasks, Funding and Time to 5/21/81--Reporting per CR-537	$400,000	$23,865
004	6/2/81	:Revise Responsibilities, Add Tasks and Funds, T.E. to 5/21/82	$274,492	$30,499
			$922,735	$80,099
005	3/8/82	:Reduce DOE Funds	(70,000)	-
			$852,735	$80,099
		Total Cost	$932,834	

DELIVERABLE STATUS:

TASK NO.	DESCRIPTION	DATE DUE	RECEIVED
1/MOD 0	Phase I Data Compilation (Belknap-Foley, Williamette Pass, Craig Mt. Cove, Western Snake River Plain, Glass Buttes, N. & S. Harney Basins Alvord and Lakeview	9/22/80	Yes 1980
2/ " "	Geologic Mapping of 8 Areas in Task 1	12/31/80	Yes 1980
3/ " "	Temp. Grad. Study: Minimum of 4-500' Holes Each Area	9/22/80	Yes 1980
4/ " "	Geochem Analysis of Samples From Study Areas and Submission to Geotherm File	9/22/80	Yes 1980
5/MOD 3	Compile Data, Geol., Geochem., Geophys., Heat Flow: Parkdale, Walla Walla, and McDermitt Areas	5/21/81	Yes 1980
6/ " "	Geologic Map--Task 5 Areas--Lineament Map Also	"	"
7/ " "	Temp. Grad. Study: Belknap-Foley, Williamette Pass, Parkdale and Harvey Basin-Drilling as Req'd and Water Sampling	"	"

CONTRACT COMPLETION DATE: July 1, 1982

TOTAL FUNDS EXPENDED DOE: $922,735

CONTRACTOR: $ 80,999

TOTAL: $932,834

STATE: Oregon (State of) CONTRACT NO.: DE-FC07-79ET27220

DELIVERABLES STATUS (CONT'D)

TASK NO.	DESCRIPTION	DATE DUE	DATE RECEIVED
9/MOD 3	State Wide Recon. Update DOGAMI and Geotherm	5/21/81	Yes 1981
10/" "	Reporting per Revised CR-537--Publications		Yes 1981
11/MOD 4	Refine Geol. Maps for N. Harney Basin, Parkdale, W. Snake River Plain and, if Possible, Lakeview Areas	5/22/82	Yes 1982
12/" "	Add. Recon. S. Central Cascades, Basin and Range Province, Structural Basins of Columbia Plateau and Portland-Clakmas River Area	5/22/82	Yes 1982
13/" "	Assess Corbett-Camp Collins Area	"	" "
14/" "	Summary Assessment of Task II Areas	"	7/1/82
15/" "	State Geothermal Map W/NOAA	"	7/1/82
16/" "	Reports Per CR-537 and Geol. Maps and Reports for Task II Areas; Statewide Recon. Summary Report; Summary Report for Areas Also Studied Earlier		Yes 1982 7/1/82

Also:

See attached list of publications which cover all of the areas called out in Tasks 1 through 16, state geothermal map approved for printing July 1, 1982. Publication/Distribution expected by Mid-August 1982.

Publications list taken from "Final Technical Report, Oregon Low Temperature Resource Assessment Program", G. R. Priest, et al., published July, 1982.

STATE: Oregon (State of) Cascades

ORGANIZATION: Dept. Geology and Mineral Industries PHONE: (503) 229-5580

PRINCIPAL INVESTIGATOR/CONTACT: George Priest, Don Hull, Dave Brown

CONTRACT NO.: DE-FC07-79ID12044 DATE: May 23, 1979

EST. COMPLETION: July 30, 1980 ORIGINAL AMOUNT OBLIGATED DOE: 662,447

CONTRACTOR: 30,472

TOTAL: 692,919

MODIFICATIONS:

NUMBER	DATE	DESCRIPTION	AMOUNT DOE	AMOUNT CONTRACTOR
001	1/1/80	:Add Tasks; Increase Funds: T.E. to 12/31/80	$123,842	-
002	3/6/80	:N.C.T.E. to 1/31/81	-	-
003	9/19/80	:Revise task 5: Add Funds:	29,233	-
004	1/27/81	:Add Tasks: Increase Funds: T.E. to 10/31/81:	30,000	-
005	10/30/81	:N.C.T.E. to 1/31/81 (note error in date) should be 1/31/82.	-	-
006	1/31/82	:N.C.T.E. to 2/28/82	-	-
007	3/8/82	:Add Tasks and Increase Funds: T.E. to 9/30/82	$120,000	$1,813
		Support Totals	$965,522	$32,285
008	10/2/82	N.C.T.E. to 9/30/83	-	-

DELIVERABLE STATUS:

TASK NO.	DESCRIPTION	DATE DUE	RECEIVED
1/MOD 0	:Geology and Lineament Study, Including K/Ar Dating, Upper Clackamas River Valley, Upper Mollala and Little N. Santiam Rivers. Also included:	7/30/80	
	a) Comparative mapping study of mines, tectonic structures, breccias and hydroth. alteration vs. plutonic and volcanic rock distribution.	"	
	b) K/Ar age of plutonic and hydroth. minerals.	"	
	c) Study and synthesis, petrochemistry of plutonic and host volcanic rocks.	"	
	d) Alteration and metallic minerals of hydroth. origin: trace elements in stream sediments, plutonic & volcanic rocks.	"	

CONTRACT COMPLETION DATE: _____

TOTAL FUNDS EXPENDED DOE: _____

CONTRACTOR: _____

TOTAL: _____

(#2 of 2 Contracts)

STATE: Oregon (State of) Cascades CONTRACT NO.: DE-FC07-79ID12044

DELIVERABLES STATUS (CONT'D)

TASK NO.	DESCRIPTION	DATE DUE	DATE RECEIVED
2/MOD 0	:Tectonic Framework Study in Western Cascades	"	
3/" "	:Thermal Grad. Drilling and Existing Well Logging	"	
4/MOD 0	:Geochemistry, sampling of thermal springs and wells, submit data to GEOTHERM	3 yr. total effort	
5/" "	:Publications. None required first year	-	
6/" "	:Gravity Survey--N. Oregon Cascades - Bouguer Grav. Maps 1:235,000 scale and report.		
7/" "	:Aeromag and Gravity, S. Cascades. - Map	4 yr. total effort	
8/Mod 1	:Supervise Mt. Hood Drilling Project	-	-
5/MOD 0	Revise: Publish final reports, geophysical geological and lineament maps, text, data	1/31/81	
9/MOD 3	:Recon. of geothermal resources S. Cascades Add new temp. grad. and water analysis data to DOGAMI reports	10/31/81	
10/MOD 3	:Reduce existing grav. data to residuals. Produce map series 1:250,000 and a report	10/31/81	
11/MOD 7	:Ashland Area Assessment. Shallow ther. grad. holes; Temp. Grad. and spring analysis data: 1:24,000 Outcrop Map	9/30/82	

STATE: Texas

ORGANIZATION: Bureau of Economic Geology PHONE: 512-471-1534

PRINCIPAL INVESTIGATOR/CONTACT: Charles Woodruff

CONTRACT NO.: DE-AS07-79ID12057 DATE: 7/1/79

EST. COMPLETION: 9/30/80 ORIGINAL AMOUNT OBLIGATED DOE: $327,202

CONTRACTOR: -

TOTAL: $327,202

MODIFICATIONS:

NUMBER	DATE	DESCRIPTION	AMOUNT DOE	AMOUNT CONTRACTOR
001	9/18/80:	Add Task 8. T.E. to 11/1/80. Add Funds	$ 50,077	-
002	9/24/80:	Add Tasks 1-5 modified. T.E. to 10/31/81-Funds		-
		Total Support Per Mod 2	257,901	-
003	3/6/81:	Support increase of funds	148,901	-
004	12/1/81:	T.E. to 2/28/83. Increase funds, add Tasks	249,756	-

DELIVERABLE STATUS:

TASK NO.	DESCRIPTION	DATE DUE	RECEIVED
1/Mod 0:	Quantitative hydrologic assessment of the Hosstom/Trinity; Paluxy; Woodbine Aquifers.	9/30/80	
2/Mod 0:	Statewide Lineament Survey	9/30/80	
3/Mod 0:	Apply Lineament Survey to faults affecting 3 aquifers.	9/30/80	
4/Mod 0:	Statewide Water Temp. Measurements. Balcones; Trans Pecos and High Plains	9/30/80	
5/Mod 0:	Statewide Geothermal Gradient Map	9/30/80	
6/Mod 0:	Data to Geotherm File	9/30/80	
7/Mod 0:	User Geothermal Map	9/30/80	
8/Mod 1:	Geoth. Potential: Selected Military Bases TX	11/1/80	
1/Mod 2:	Statewide Water Temp. Measurements	10/31/81	
2/Mod 2:	Geologic/Hydrologic Assessments (Dallas, Austin Marlin) Investigative Report.	10/31/81	

(Cont'd on P. 2)

CONTRACT COMPLETION DATE: _____

TOTAL FUNDS EXPENDED DOE: _____

CONTRACTOR: _____

TOTAL: _____

STATE: Texas (BEG)

ORGANIZATION: _____ PHONE: _____

PRINCIPAL INVESTIGATOR/CONTACT: _____

CONTRACT NO.: DE-AS07-79ID12057 DATE: _____

EST. COMPLETION: _____ ORIGINAL AMOUNT OBLIGATED DOE: _____

CONTRACTOR: _____

TOTAL: _____

MODIFICATIONS:

NUMBER	DATE	DESCRIPTION	AMOUNT DOE	AMOUNT CONTRACTOR

DELIVERABLE STATUS:

TASK NO.	DESCRIPTION	DATE DUE	RECEIVED
3/Mod 2:	Lineament Survey Digitation and Analysis - Report on use of technique for geoth. exploration - TX sediments	10/31/81	
4/Mod 2:	Continue Military Base Study ValVerde, Bexar & Travis Counties.	10/31/81	
5/Mod 2:	Reports	10/31/81	
1/Mod 4:	Complete Geothermal User Map: Due	1/1/82	
2/Mod 4:	Continue well temp. measurements: Add to State/ Geotherm	1/1/83	
3/Mod 4:	Compile State Geoth. Technical Map	2/20/83	
4/Mod 4:	Integrate Balcones/Ouachita Trend Data - Thematic Maps	2/20/83	
5/Mod 4:	Project Management and Reports	2/20/83	

(Cont'd on P. 3)

CONTRACT COMPLETION DATE: _____

TOTAL FUNDS EXPENDED DOE: _____

CONTRACTOR: _____

TOTAL: _____

STATE: Texas CONTRACT NO.: DE-AS07-79ID12057

SUMMARY OF DELIVERABLES STATUS

DESCRIPTION	TASK NO.	DATE RECEIVED

COMMENTS AND ACTION ITEMS:

STATE: Texas (SMU)

ORGANIZATION: Southern Methodist University PHONE: (214) 692-2745

PRINCIPAL INVESTIGATOR/CONTACT: Dr. David D. Blackwell

CONTRACT NO.: DE-AS07-79ID12037 DATE: 7/27/79

EST. COMPLETION: 5/31/80 ORIGINAL AMOUNT OBLIGATED DOE: $167,000

CONTRACTOR:

TOTAL:

MODIFICATIONS:

NUMBER	DATE	DESCRIPTION	AMOUNT DOE	AMOUNT CONTRACTOR
001	6/1/80:	New Tasks. T.E. to 5/31/81 Fund Increase	$168,039	-
002	5/29/81:	N.C.T.E. to 6/22/81	-	-
003	9/22/81:	T.E. to 5/31/82: Add Tasks and Funds	163,653	
004	4/23/82:	N.C.T.E. to 8/31/82		

DELIVERABLE STATUS:

TASK NO.	DESCRIPTION	DATE DUE	RECEIVED
1/Mod 0:	Coop with WA/OR. Cascade Range heat flow	5/31/80	
2/Mod 0:	Field measurements of Temp., Natural λ, Conductance Resistivity and Sonic Velocity, Core Th. Conductivity.	5/31/80	
3/Mod 0:	Integrate all data. Determine Regional HT Flow and Geoth. Potential - select target areas.	5/31/80	
4/Mod 0:	Report magnitude and Location Geoth. Res. in Cascade Range and Basin and Range Area of OR.	5/31/80	
1/Mod 1:	Assist in Site Selection and Drilling Consultation	5/31/81	
2/Mod 1:	Assist in locating and evaluating "scrounge" info.	5/31/81	
3/Mod 1:	Log drill and scrounge hole info.	5/31/81	
4/Mod 1:	Loan Temp/Depth instruments to WA/OR	5/31/81	
5/Mod 1:	Select and Acquire Th. Cond. & Radioactivity samples	5/31/81	
6/Mod 1:	Conduct measurements for (5) and interpret data	5/31/81	

(Cont'd on P. 2)

CONTRACT COMPLETION DATE:

TOTAL FUNDS EXPENDED DOE:

CONTRACTOR:

TOTAL:

STATE: Texas (SMU)

ORGANIZATION: _____ PHONE: _____

PRINCIPAL INVESTIGATOR/CONTACT: _____

CONTRACT NO.: DE-AS07-79ID12037 DATE: _____

EST. COMPLETION: _____ ORIGINAL AMOUNT OBLIGATED DOE: _____

CONTRACTOR: _____

TOTAL: _____

MODIFICATIONS:

NUMBER	DATE	DESCRIPTION	AMOUNT DOE	AMOUNT CONTRACTOR

DELIVERABLE STATUS:

TASK NO.	DESCRIPTION	DATE DUE	RECEIVED
7/Mod 1:	Interpret Results. Recommend Geoth. Exp. & Dev.	5/31/81	
8/Mod 1:	Data and Reports to ID/WA/OR state teams	5/31/81	
Mod 2:	N.C.T.E. to - - - - - - - - - - - - - - - -	6/22/81	
1/Mod 3:	Provide 2 Well Log Trucks to OR/WA. Joint use. Consult with OR team on Data Int. & Reports	5/31/82	
2/Mod 3:	Log WA Wells. Provide field support. Depth to Isotherm Maps; Mean Surface T. Maps; Heat Flow & Grad. Maps. Tab. and Graphical TD Data State Wells; Tab. Gradients, Ther. Cond. and HT Flow Data-State Wells	5/31/82	
3/Mod 3:	Explanitory Interpretive Text.	5/31/82	

(Cont'd on P. 3)

CONTRACT COMPLETION DATE: _____

TOTAL FUNDS EXPENDED DOE: _____

CONTRACTOR: _____

TOTAL: _____

STATE: Texas (SMU) CONTRACT NO.: DE-AS07-79ID12037

SUMMARY OF DELIVERABLES STATUS

DESCRIPTION	TASK NO.	DATE RECEIVED

COMMENTS AND ACTION ITEMS:

STATE: Texas

ORGANIZATION: TENRAC PHONE: 512-475-5588

PRINCIPAL INVESTIGATOR/CONTACT: C.D. Rau

CONTRACT NO.: DE-FC07-79ID12080 DATE: 9/28/79

EST. COMPLETION: 9/30/81 ORIGINAL AMOUNT OBLIGATED DOE: $170,000

CONTRACTOR: 50,000

TOTAL: $220,000

MODIFICATIONS:

NUMBER	DATE	DESCRIPTION	AMOUNT DOE	AMOUNT CONTRACTOR
001	7/31/80	Change P.I. to C.D. Rau	-	-
002	6/2/81	N.C.T.E. to 3/30/82	-	-
003	3/30/82	N.C.T.E. to 7/31/82	-	-
004	8/26/82	N.C.T.E. to 11/30/82	-	-

DELIVERABLE STATUS:

TASK NO.	DESCRIPTION	DATE DUE	RECEIVED
1/Mod 0:	Review Data/Establish Geol. Setting: Hueco Tanks and Presidio Bolson Sub-Regions	9/30/81	
2/Mod 0:	12-50m and 3-300m Holes (Th. Grad.) Hueco 1-750m Hole Year 2. 10-50m Holes	9/30/81	
	Presidio Year 2 - 1-300m Hole also	9/30/81	
3/Mod 0:	Data Acquisition: Th. Grad., Grav Survey (100 Station) Microearthquake, Chem. Anal. Fluids, Resistivity. Hueco and Presidio Areas.	9/30/81	
4/Mod 0:	Data Analysis & Synthesis	9/30/81	
5/Mod 0:	Project Reporting.	3/30/82	

CONTRACT COMPLETION DATE: _____

TOTAL FUNDS EXPENDED DOE: _____

CONTRACTOR: _____

TOTAL: _____

STATE: Utah

ORGANIZATION: Utah Geological and Mineral Survey PHONE: 801-581-3065

PRINCIPAL INVESTIGATOR/CONTACT: Archie Smith/Robert Klauk

CONTRACT NO.: DE-AS07-77ET28393 DATE: 8/19/77 (Original)

EST. COMPLETION: 6/30/78 ORIGINAL AMOUNT OBLIGATED DOE: $93,630

CONTRACTOR: -

TOTAL: $93,630

MODIFICATIONS:

NUMBER	DATE	DESCRIPTION	AMOUNT DOE	AMOUNT CONTRACTOR
001	2/9/78:	T.E. to 12/31/78: Fund Increase of	$ 81,500	$14,950
	4/23/79:	Letter: Change No., T.E. to 5/31/79		
	Authorize	$1,000 for Mag Survey (R.E. Simonds, DOE)	-	-
002≈	7/12/79:	Add Tasks and Funds. T.E. to 4/31/80.	$207,000	-
003	5/31/80:	N.C.T.E. to 12/31/80. Revise Tasks. Add DOE Property (Equipment purchased).	-	36,558
004	12/31/80:	T.E. to 2/28/81: Add Tasks and Funds	$ 10,000	-
005	2/27/81:	Supplemental Funding ($50,000) 3/1/81 Authorized.		
	(To continue work until new modification executed.)			
006	3/1/81:	Add Tasks (A6; 1-9). T.E. to 2/28/82. Inc. Funds	$250,728	
007-? 008		NCTE to 6/30/82 Total	$642.858	$51,508
009	7/1/82	T.E. to 3/31/83: Add Tasks and Funds	155,446	20,953

DELIVERABLE STATUS:

TASK NO.	DESCRIPTION	DATE DUE	RECEIVED
1/Mod 0:	Preliminary data collection/synthesis	6/30/78	
2/Mod 0:	Prelim. Field Surveys - Drill 70-100m Th. Grad Holes	6/30/78	
3/Mod 0:	Subcontract for Environ. Assessment	6/30/78	
4/Mod 0:	Provide Project Coordinator	6/30/78	
5/Mod 1:	Specified HG Survey - 15; 100m Th. Grad. Holes	12/31/78	
1/Mod 2:	Jordan Valley Field Survey: Geol.; Water, Geophys.	5/31/80	
2/Mod 2:	Utah Hot Sprgs., Crystal Madsen, Little Mtn. South and Udy Hot Sprgs. Gravity and Aeromag Survey	5/31/80	
3/Mod 2:	Verify 650 Geotherm Entries Submit 1600 Records	5/31/80	
4/Mod 3:	Utah Valley Survey and Field Reconn.	12/31/80	
5/Mod 4:	MX Geoth. Resource Assessment - Plan/Proposal	2/28/81	
1/Mod 6:	Complete Utah and Jordan Valleys Project	2/28/82	
2/Mod 6:	Collect Selected Grad. Data - Wells	2/28/82	

(Cont'd on P. 2)

CONTRACT COMPLETION DATE: _____

TOTAL FUNDS EXPENDED DOE: _____

CONTRACTOR: _____

TOTAL: _____

STATE: Utah (Cont'd)

ORGANIZATION: _____ PHONE: _____

PRINCIPAL INVESTIGATOR/CONTACT: _____

CONTRACT NO.: DE-AS07ET28393 DATE: _____

EST. COMPLETION: _____ ORIGINAL AMOUNT OBLIGATED DOE: _____

CONTRACTOR: _____

TOTAL: _____

MODIFICATIONS:

NUMBER	DATE	DESCRIPTION	AMOUNT DOE	AMOUNT CONTRACTOR

DELIVERABLE STATUS:

TASK NO.	DESCRIPTION	DATE DUE	RECEIVED
3/Mod 6:	Compile all Geol/Geophys Data for Area Specific Investigations	2/28/82	
4/Mod 6:	Grav. Sur. Promising Areas - Model/Interpret Data	2/28/82	
5/Mod 6:	Reporting: Jordan Valley and Wasatch Front Areas	2/28/82	
6/Mod 6:	Fugro Data Evaluation: Explor. Plans Milford and Delta Areas (MX Project)	2/28/82	
7/Mod 6:	Meas. Th. Grad. and Water Chem. (Fugro Evaluation)	2/28/82	
8/Mod 6:	Transmit data from 6 & 7 to ESL	2/28/82	
9/Mod 6:	Provide MX Planning Assistance to ESL	2/28/82	
1/MOD 9:	Well descriptions/verification,Chem Analysis samples Utah and Jordan Valleys.	3/31/83	
1/MOD 9:	Thermal Gradients - selected wells in study area	3/31/83	
1/MOD 9:	Compile/interpret data - plan area specific invest.	3/31/83	

(Cont'd on P. 3)

CONTRACT COMPLETION DATE: _____

TOTAL FUNDS EXPENDED DOE: _____

CONTRACTOR: _____

TOTAL: _____

STATE: Utah CONTRACT NO.: DE-AS07ET28393

SUMMARY OF DELIVERABLES STATUS

DESCRIPTION	TASK NO.	DATE RECEIVED
4/MOD 9: Model areomag and gravity data, integrate models		
5/MOD 9: Report on Jordan Valley and Utah Valley, Site specific addenda on Utah, Crystal Hot Springs and Warm Springs fault area.		
6/MOD 9: Geotherm File Correction and Update.		
7/MOD 9: Milford - Beryl area: Well data and geochem. analysis		
8/MOD 9: Thermal gradient data, Milford - Beryl area.		
9/MOD 9: Resource Assessment report, Milford - Beryl area. Limited study.		
10/MOD 9: Cache Valley Well data and Chem. analysis.		
11/MOD 9: Cache Valley Thermal gradient data.		
12/MOD 9: Cache Valley Resource Assessment Report.		
13/MOD 9: Davis and Weber counties Well Data, Chem analysis and Thermal gradients.		
14/MOD 9: RA report on Davis, Weber and Box Elder counties		
15/MOD 9: RA report on Wasatch Front area.		

COMMENTS AND ACTION ITEMS:

STATE: Washington

ORGANIZATION: Dept. Natural Resources PHONE: 206-459-6372

PRINCIPAL INVESTIGATOR/CONTACT: J. Eric Schuster/Mike Korosec

CONTRACT NO.: DE-AC07-79ET27014 DATE: 11/1/78

EST. COMPLETION: 10/31/79 ORIGINAL AMOUNT OBLIGATED DOE: $296,894

CONTRACTOR: 12,984

TOTAL: $309,878

MODIFICATIONS:

NUMBER	DATE	DESCRIPTION	AMOUNT DOE	AMOUNT CONTRACTOR
001	11/19/79:	N.C.T.E. to 6/1/80	-	-
002	6/17/80:	N.C.T.E. to 6/30/80	-	-
003	7/1/80:	Add Tasks: 1-9; T.E. to 5/31/81. Add Funds	$294,217	$ 12,867
004	6/22/81:	N.C.T.E. to 7/31/81	-	-
005	8/1/81:	Add Tasks. T.E. to 7/31/82	-	-
006	9/29/81:	Modify Tasks: T.E. to 7/31/83	203,637	186,641

DELIVERABLE STATUS:

TASK NO.	DESCRIPTION	DATE DUE	RECEIVED
A/Mod 0:	Establish Geothermal Data Bank (Existing Data)	-	
B/Mod 0:	Technical Advice to State Interagency Geoth. Council	-	
C/Mod 0:	Conduct Geothermal Resource Assessment Projects	-	
D/Mod 0:	Develop Comprehensive RA Plans	-	
• Specific Deliverables:	Open-File Reports	End of FY79	
a)	Progress Report: Inventory of thermal and mineral springs in Washington, covering 25-33% of the state's springs.		
b)	Selected annotated bibliography, geoscience reports pertaining to RA in Washington.		
c)	Present 5 year plan, technical program, for RA in Washington		
Mod 001:	Time Extension to	6/1/80	
Mod 002:	Time Extension to	6/30/80	

(Cont'd on P. 2)

CONTRACT COMPLETION DATE: _____

TOTAL FUNDS EXPENDED DOE: _____

CONTRACTOR: _____

TOTAL: _____

STATE: Washington CONTRACT NO.: DE-AC07-79ET27014

DELIVERABLES STATUS (CONT'D)

TASK NO.	DESCRIPTION	DATE DUE	DATE RECEIVED
1/Mod 3:	Southern Cascades. 8-500' Heat Flow Holes	(All 5/31/81)	-
2/Mod 3:	Southeastern Cascades, Yakima Valley & southwestern Columbia Valley. Measure Temp. and Th. Grad. Produce prelim. map.		
3/Mod 3:	Detailed Geologic Mapping, lithology and structures, rock analysis and age dating. Preliminary maps and data interpretation.		
4/Mod 3:	Central and northern Cascades gravity survey & Subcontract.		
5/Mod 3:	Consultant Geophysical Interpretations.		
6/Mod 3:	Geochemistry: Th. Springs and Wells. Columbia and Wind Rivers and southeast Cascades. Water samples and soil mercury and radon studies.		
7/Mod 3:	South Cascades and Southwest Columbia Basin Lineament Map.		
8/Mod 3:	Provide data to GEOTHERM file.		
9/Mod 3:	Reports per DOE Form CF-537		
Mod 004	Time Extension to 7/31/81		
1/Mod 5:	State Geothermal Map w/NOAA assistance.		
2/Mod 5:	Geochemistry. Additional Springs and Wells, final report, Soil Hg determinations, selected sites, submit report.		
3/Mod 5:	Augment, interpret and publish Resource assessment and exploration data sets. Publish Final Report: "Geothermal Potential of Washington."		
4/Mod 5:	Project Management and Subcontract Surveilance:		
	1) Cascade Range Regional Gravity: Danes Research Associates.		
	2) Yakima Area Geothermal Studies: WA State University.		
	3) Wind River Geology: Fortland State University		
	4) Low-Temperature Geothermal, Moses Lake - Ritaville - Connel Area.		
	Also Incorporate Blackwell/SMU Heat Flow-Gradient data into reports.		

SUMMARY OF DELIVERABLES PER MOD 005 (8/1/81)

	Deliverable	Date Due	Received
1.	Final Report: Yakima Area Geothermal Investigations	1/31/82	
2.	Final Report: Cascade Range Regional Gravity	5/31/82	
3.	Data Sets	7/1/82	
4.	Final Report: Thermal Springs and Wells Sampling	7/1/82	
5.	Final Report: Soil Mercury Determinations near selected Springs	7/1/82	
6.	Final Report: Wind River Geology	7/1/82	
7.	Final Report: Low-Temp. Resources, Moses Lake, etc. areas	7/1/82	
8.	Final Report: Geothermal Potential of Washington (Draft)	6/15/82	
	(Final)	7/31/82	

Note:

Revised Work Statement and Deliverables Accomplished by Mod 006, 9/29/81 - following.

(Cont'd on P. 3)

STATE: Washington CONTRACT NO.: DE-AC07-79ET27014

DELIVERABLES STATUS (CONT'D)

TASK NO.	DESCRIPTION	DATE DUE	DATE RECEIVED
1/Mod 6:	State Geothermal Public Map w/NOAA.		
2/Mod 6:	Geochemistry: Additional Springs and Wells. Soil Hg Determinations selected springs.		
3/Mod 6:	Augment, interpret and publish RA and exploration data sets. Publish "Geothermal Potential of Washington."		
4/Mod 6:	Project Management and Subcontract Surveilance. (same as Mod 005 #1-4) ADD		
	5. Walla Walla Area Geologic-hydrologic assessment		
	6. Heat Flow and T Grad. study, Columbia Basin.		
	7. Mount Baker Heat Flow and Gradient - 2-500' Holes		
	8. K-Ar Dating Quartenary rock from Cascade area.		

MODIFIED DELIVERABLES SUMMARY FROM MOD 006:

Deliverable	Date Due	Received
1. Final Report: Cascade Range Regional Gravity	8/1/83	
2. Final Report: Yakima Area Geothermal Investigations	1/31/82	
3. Final Report: Wind River Geology	7/31/82	
4. Final Report: Low-Temp. Resources, Moses Lake, etc. area.	7/31/82	
5. Final Report: Low-Temp. Resources, Walla Walla area.	8/1/83	
6. Summary Report: K-Ar Dating	8/1/83	
7. Final Report: Thermal Springs and Wells Sampling	7/1/82	
8. Final Report: Soil Hg Determinations around selected springs.	7/1/82	
9. Data Sets	8/1/83	
10. Final Report: Geothermal Potential of Washington. (Draft)	8/15/83	
(Final)	9/30/83	

(Cont'd on P. 4)

STATE: Washington CONTRACT NO.: DE-AC07-79ET27014

SUMMARY OF DELIVERABLES STATUS

DESCRIPTION	TASK NO.	DATE RECEIVED
State Geothermal Public Map	1/Mod 5	1/82

COMMENTS AND ACTION ITEMS:

STATE: Wyoming

ORGANIZATION: U. of Wyoming PHONE: 307-766-3278

PRINCIPAL INVESTIGATOR/CONTACT: Henry Heasler

CONTRACT NO.: DE-FC07-79ID12026 DATE: 12/11/78

EST. COMPLETION: 9/30/79 ORIGINAL AMOUNT OBLIGATED DOE: $ 99,439

CONTRACTOR: 7,048

TOTAL: $106,487

MODIFICATIONS:

NUMBER	DATE	DESCRIPTION	AMOUNT DOE	AMOUNT CONTRACTOR
001	6/13/79:	Change Scope of Work - Add Funding	$ 16,039	$ 1,137
002	8/1/79:	Add item 7 to SOW. Add Funds	34,671	2,458
003	8/13/79:	N.C.T.E. to 1/31/80.	-	-
004	1/2/80:	Add item 8 to SOW. T.E. to 4/1/80. Add Funds.	69,828	4,950
005	4/1/80:	N.C.T.E. to 6/1/80	-	-
006	6/1/80:	Add item 9-13 to SOW. T.E. to 5/31/81. Add Funds.	154,500	15,213
007	10/28/24:	H.P. Heasler named P.I. E.R. Decker removed.	-	-
008	6/10/81:	Revised SOW: T.E. to 5/31/82. Add Funds.	214,507	16,393
009	5/31/82:	N.C.T.E. to 10/7/81	-	-
010	8/12/82:	N.C.T.E. to 2/28/83	-	-

DELIVERABLE STATUS:

TASK NO.	DESCRIPTION	DATE DUE	RECEIVED
1/Mod 0:	Evaluate existing th. spring areas, existing data.	9/30/79	
2/Mod 0:	Measure Thermal Grad. Selected areas. Drill Grad. holes.	9/30/79	
3/Mod 0:	Gas Hills & Douglas areas - Detailed investigation.	9/30/79	
4/Mod 0:	Rio Grande Rift: Heat flux, radioactivity, young volcanics.	9/30/79	12/81
5/Mod 0:	Study existing oil well and other, esp. Madison formation.	9/30/79	
6/Mod 1:	Assess Gas Hills, Red Desert E. Central WY and Powder River Basin.	9/30/79	
7/Mod 2:	Site specific studies: Cody-Horse Ctr.; Thermopolis; Gillette Saratoga; WY border N. Northgate CO; Leucite Hills (Rock Springs)	9/30/79	
-/Mod 3:	N.C.T.E. -	1/31/80	

(Cont'd on P. 2)

CONTRACT COMPLETION DATE: _____

TOTAL FUNDS EXPENDED DOE: _____

CONTRACTOR: _____

TOTAL: _____

STATE: Wyoming

ORGANIZATION: _____ PHONE: _____

PRINCIPAL INVESTIGATOR/CONTACT: _____

CONTRACT NO.: DE-FC07-79ID12026 DATE: _____

EST. COMPLETION: _____ ORIGINAL AMOUNT OBLIGATED DOE: _____

CONTRACTOR: _____

TOTAL: _____

MODIFICATIONS:

NUMBER	DATE	DESCRIPTION	AMOUNT DOE	AMOUNT CONTRACTOR

DELIVERABLE STATUS:

TASK NO.	DESCRIPTION	DATE DUE	RECEIVED
8/Mod 4:	Cody, WY; 6 Geoth. Grad. Holes, Temp. & HT flow studies	4/1/80	
-/Mod 5:	N.C.T.E. -	6/1/80	
9/Mod 6:	WY Therm. Sprg. & Well Inventory incl. water qual. & prod.	5/31/81	
10/Mod 6:	WY Regional Therm. Grad. Maps & Interpretation	5/31/81	
11/Mod 6:	Saratoga; Casper-Midwest; Auburn & Dubois areas reservoir definition.	5/31/81	
12/Mod 6:	Chem. Anal. of 6 springs or spring systems. 70-75 samples of sub-surface waters from known grad. areas w/UURI.	5/31/81	
13/Mod 6:	Updated WY Regional HT Flow Map incl. 20 new stations.	5/31/81	12/81
1/Mod 8:	Regional Survey Maps: Wind River Basin, Green River Basin, Laramie Basin, WY portion of Thrust Belt	5/31/82	
2/Mod 8:	Thermal Grad. Studies. All holes measured in program.	5/31/82	
3/Mod 8:	Heat Flow studies: Compilation 87 values 1979-81.	5/31/82	

(Cont'd on P. 3)

CONTRACT COMPLETION DATE: _____

TOTAL FUNDS EXPENDED DOE: _____

CONTRACTOR: _____

TOTAL: _____

STATE: Wyoming

ORGANIZATION: _____ PHONE: _____

PRINCIPAL INVESTIGATOR/CONTACT: _____

CONTRACT NO.: DE-FC07-79ID12026 DATE: _____

EST. COMPLETION: _____ ORIGINAL AMOUNT OBLIGATED DOE: _____

CONTRACTOR: _____

TOTAL: _____

MODIFICATIONS:

NUMBER	DATE	DESCRIPTION	AMOUNT DOE	AMOUNT CONTRACTOR

DELIVERABLE STATUS:

TASK NO.	DESCRIPTION	DATE DUE	RECEIVED
4/Mod 8:	Geochemistry: 120 Samples analyzed. UURI Qual. Check	5/31/82	
5/Mod 8:	User Assistance Program. Coop. w/WY Energy Office	5/31/82	
6/Mod 8:	Geoth. User Map 1:500,000. Data to GEOTHERM		
7/Mod 8:	Reports		

(Cont'd on P. 4)

CONTRACT COMPLETION DATE: _____

TOTAL FUNDS EXPENDED DOE: _____

CONTRACTOR: _____

TOTAL: _____

STATE Wyoming CONTRACT NO. DE-FC07-79ID12026

SUMMARY OF GOVERNMENT EQUIPMENT ACQUIRED

STATE COUPLED RESOURCE ASSESSMENT PROGRAM

DESCRIPTION	DATE ACQUIRED	EST. COST

REMARKS