STANDARD FORM 26, JULY 1966
GENERAL SERVICES ADMINISTRATION
FED PROC REG (41CFR) 1-16.101

AWARD/CONTRACT

PAGE 1 OF 40

1. CONTRACT (Proc. Inst. Ident.) NO: NRC-02-81-037

2. EFFECTIVE DATE:

3. REQUISITION/PURCHASE REQUEST/PROJECT NO: NMS-81-037

4. CERTIFIED FOR NATIONAL DEFENSE UNDER BDSA REG. 2 AND/OR DMS REG. 1. RATING:

5. ISSUED BY: CODE:
U.S. Nuclear Regulatory Commission
Division of Contracts
Washington, D.C. 20555

6. ADMINISTERED BY (If other than block 5) CODE:

7. DELIVERY
[XX] FOB DESTINATION
[ ] OTHER (See below)

8. CONTRACTOR NAME AND ADDRESS (Street, city, county, State, and ZIP code) CODE: FACILITY CODE:
Golder Associates, Inc.
10628 N.E. 38th Place
Kirkland (Seattle), WA 98033

9. DISCOUNT FOR PROMPT PAYMENT

10. SUBMIT INVOICES (4 copies unless otherwise specified) TO ADDRESS SHOWN IN BLOCK
As specified in the attached Billing Instructions

11. SHIP TO/MARK FOR CODE:

12. PAYMENT WILL BE MADE BY CODE:
U.S. Nuclear Regulatory Commission
Office of the Controller
Washington, D.C. 20555

13. THIS PROCUREMENT WAS [ ] ADVERTISED, [X] NEGOTIATED, PURSUANT TO
[ ] 10 U.S.C. 2304 (a)( )
[X] 41 U.S.C. 252 (c)(10)

14. ACCOUNTING AND APPROPRIATION DATA
B&R: 50-19-03-01 FIN No: B-6983-1 Obligate $400,000.00

15. ITEM NO.	16. SUPPLIES/SERVICES	17. QUANTITY	18. UNIT	19. UNIT PRICE	20. AMOUNT
	Technical Assistance for Repository Design This contract is to be performed in accordance with the statement of work delineated herein, contractor's revised technical proposal, dated April 7, 1981, and contractor's letter, dated May 15, 1981. Cost-Plus-Fixed-Fee Contract Incrementally Funded			Estimated Cost Fixed Fee Cost-Plus-Fixed-Fee	$582,068.00 52,386.00 $634,454.00

21. TOTAL AMOUNT OF CONTRACT $ 634,454.00

CONTRACTING OFFICER WILL COMPLETE BLOCK 22 OR 26 AS APPLICABLE

22. [X] CONTRACTOR'S NEGOTIATED AGREEMENT (Contractor is required to sign this document and return 3 copies to issuing office.) Contractor agrees to furnish and deliver all items or perform all the services set forth or otherwise identified above and on any continuation sheets for the consideration stated herein. The rights and obligations of the parties to this contract shall be subject to and governed by the following documents: (a) this award/contract, (b) the solicitation, if any, and (c) such provisions, representations, certifications, and specifications, as are attached or incorporated by reference herein. (Attachments are listed herein.)

23. NAME OF CONTRACTOR
BY: L. J. West
(Signature of person authorized to sign)

24. NAME AND TITLE OF SIGNER (Type or print): L. J. West, Vice President — 25. DATE: 6/5/81

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

27. UNITED STATES OF AMERICA
BY: _____ (Signature of Contracting Officer)

28. NAME OF CONTRACTING OFFICER (Type or print): Mary Jo Mattia — 29. DATE SIGNED: J...

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TABLE OF CONTENTS

This Contract Consists of:

TECHNICAL ASSISTANCE FOR REPOSITORY DESIGN

ARTICLE I-STATEMENT OF WORK

1.0 BACKGROUND

The U.S. Nuclear Regulatory Commission (NRC) has requested in the proposed Procedural Rule, 10 CFR 60, pertaining to Criteria for Regulating Geologic Disposal High-Level Radioactive Waste that site-specific conceptual design information be submitted by the Department of Energy (DOE) in their Site Characterization Reports. The DOE has also been requested to identify the appropriate testing techniques to be performed during the site characterization program in order to develop the design information needed to advance the site-specific conceptual design to a final design for the geologic repository.

Media-specific preconceptual designs have been published by the DOE in report Y/OWI/TM-36 - Technical Support for GEIS: Radioactive Waste Isolation in Geologic Formations (Vol. 8 and 9, salt; Vol. 10 and 11, granite; Vol. 12 and 13, shale; Vol. 14 and 15, basalt). Previous NRC technical assistance with Lawrence Livermore Laboratory has identified factors which influence repository design, UCRL 15203 - Geologic, Stratigraphic, Thermal and Mechanical Factors Which Influence Repository Design in the Bedded Salt Environment, UCRL 15204 - Geologic, Structural, Thermal and Mechanical Factors Which Influence Repository Design in Granitic and

Basaltic Rocks, and UCRL 15141 - Review of Geotechnical Measurement Techniques for a Nuclear Waste Repository in Bedded Salt.

As part of the NRC review of the Site Characterization Reports (SCR), the NRC will have to evaluate key issues related to the design and construction of any underground test facility and the final geologic repository. In addition, the NRC will have to evaluate the site characterization program to establish that there is reasonable expectation that the in situ testing program will result in resolution of the key issues in design and construction and will provide all the information necessary to conduct a review of a license application for construction authorization.

A complementary technical assistance interagency agreement is currently in progress with Lawrence Berkeley Laboratory (DOE) to address key issues and in situ testing for site suitability aspects of a geologic repository.

The contractor shall provide the necessary facilities, materials, and services needed to accomplish the work set forth in the Statement of Work.

2.0 WORK REQUIRED

The contractor shall provide technical assistance to the NRC by performing six tasks related to the safety review of the design and construction of a geologic repository. These include identification of factors which influence repository design in shale and domal salt, recommendations for

in situ testing for design and construction-related aspects of a geologic repository, evaluation of alternative shaft sinking techniques, identification of trade-offs in the location of an underground test facility with respect to the geologic repository, evaluation of methods for placement and compaction of backfill and direct technical assistance to the NRC.

3.0 TASK DESCRIPTIONS

Task 1 - Identification of Factors Which Influence Repository Design

The contractor shall describe how the factors designated below influence design and construction of a geologic repository. The contractor should recommend measures to mitigate their effects and possible interaction with other engineered systems or host rock identified for repository design. The design considerations shall include an evaluation and analysis of the effects and influence of tectonic activity, geologic structure, rock mechanic properties, thermal properties, and hydrologic properties. The concepts of constructibility and optimization of design shall also be included in the report.

Contractor shall prepare two final reports which discuss the above factors as they influence repository design in domal salt (Report 1) and shale (Report 2). The scope, format, and titles of the report shall be as included in UCRL 15203 and 15204, such that these reports will be companion documents. The reports shall also recommend how the information could be applied by the NRC in the review of site characterization reports and license applications. Task 1 will be completed when report 1 and 2 are issued in final form.

Task 2 - Media-Specific In Situ Testing to obtain data for Design and Construction

Proposed licensing procedures for the isolation of high-level radioactive wastes in geologic repositories require site characterization of several candidate sites in alternative rock types. Prior to the start of site characterization (the site screening period), geotechnical investigations will consist primarily of regional studies and surface, borehole, and laboratory testing. Site characterization may include excavation and examination of exploratory shafts and drifts, subsurface exploratory borings, in-hole and cross-hole testing, and other in situ testing of the rock mass and groundwater system to establish the suitability of the site and verification of the conceptual design.

The contractor shall identify in situ testing necessary to analyze and design a geologic repository. The types of testing shall be restricted to those large-scale investigations of geologic conditions, such as the rock mass and groundwater systems which cannot be defined and tested by available surface exploration, borehole or laboratory testing techniques. The types of tests shall also include those that are needed to define site conditions related to the review and finalization of design and construction of the repository. This includes the design and construction of safety-related surface and subsurface facilities. The contractor shall identify in situ testing needed to define present site conditions that will be the basis for the analysis of projected and actual effects of construction and the emplaced waste, particularly thermal loading, mechanical response, and radiation.

As different rock types have different mechanical properties, each geologic setting will require different types of investigations. The contractor shall develop specific testing programs for each of the media presently under consideration, (i.e., basalt, bedded salt, domal salt, granitic rocks, tuff, and shale). Design factors related to a repository in basalt, granitic rock, and bedded salt shall be taken from Lawrence Livermore Laboratory Reports UCRL 15141, 15203 and 15204. Factors related to each design of a repository in domal salt and shale shall be taken from Task 1. For each specific geologic medium, the contractor shall indicate whether the design of a test should be site-specific or generic.

The contractor shall recommend in each testing program what tests are needed, what parameter is to be measured, why the tests are needed, how each test is performed, reliability of tests, applicability of measurements to value of desired parameters, duration of tests, previous experiences with the tests, instrumentation and data recording requirements, how the data will be used in the design and analysis of the repository, limitations on the test or data, necessary refinements to advance the state-of-the-art, suggested quality assurance procedures and estimated costs of tests. A discussion shall also be included as to how the information could be used by the NRC for the review of site characterization reports and license applications. Contractor shall describe the various tests only up to, but not including, the engineering design and specifications for the tests.

The Task 2 report shall be organized in three parts (Part A, B and C

Part A Surface Exploration

The contractor shall compare and correlate the types and uses of design and construction related data obtainable from surface, borehole, and laboratory studies with that obtained from exploratory excavations, subsurface borings, and other in situ testing. Separate sections will be prepared for each of the six media.

Part B Testing Programs

The contractor will develop separate testing programs that are typical for various rock types in the following order of priority:

(1) basalt
(2) bedded salt
(3) domal salt
(4) granitic rocks
(5) tuff
(6) shale

The possibility of preparing a combined plan for any of the above rock types will be reviewed jointly between contractor and the NRC Project officer within the first six months following the award of contract.

The contractor shall develop the testing programs to identify recommended in situ testing and design verification programs and shall include but

not be limited to the following design and construction-related aspects of the repository:

a. stability of openings
b. room and pillar dimensions, configuration, thermal-mechanical influence, etc.
c. groundwater control
d. ventilation
e. hoisting
f. construction techniques for shafts, tunnels, etc.
g. retrievability
h. flexibility of design
i. modular design.

Part C Research needs

The contractor shall make recommendations of research needs pertaining to the testing techniques identified and analized in Parts A and B. The contractor shall include a recommended program plan which identifies the current and future research. The status of ongoing studies and key investigators for these studies shall be identified. The contractor shall determine the priority of research needs not currently being addressed, techniques to be used, estimated costs, and time needed to resolve these needs. The contractor shall determine specific applicability of current and future research to the review of repository design and construction in a license application or SCR.

Task 3 - Evaluation of Media-Specific Alternative Shaft Sinking Techniques

The contractor shall evaluate alternate shaft sinking techniques including vertical shafts, inclined shafts which includes "spiral shafts", and lateral drifts, for each of the six media identified in Task 2. The contractor shall evaluate the techniques with respect to:

a. availability of exposures of representative areas of the rock mass for geologic mapping and testing during excavation

b. methods and techniques to minimize the damage to the surrounding rock

c. methods to control groundwater inflow

d. safety during construction and geologic investigations

e. estimated time and cost requirements

f. effect on the retrievability requirement.

Contractor shall include in the Task 3 report the results of the evaluations of two alternate shaft sinking techniques for all six media.

Task 4 - Trade-offs in the Relationship of the Underground Test Facility to the Final Geologic Repository

Based upon the types of and projected effects of the in situ testing for design and construction-related aspects (Task 2) and the evaluation of shaft-sinking techniques (Task 3), the contractor shall evaluate trade-offs in design of the underground test facility proposed for site characterization to be separate from the final geologic repository or to be an integral part of the final geologic repository. The trade-offs to be considered center around the key question of how to assure that the site characterization tests do not compromise the integrety of the site or repository. Two possible considerations are to have the underground test facility located sufficiently far from the final geologic repository so as to be outside the volume of rock expected to be affected by construction of the repository and the thermal load of the repository, or to have the test facility design to meet test requirements and construction requirements as an integral part of the repository. The contractor shall, based upon the technical criteria for 10 CFR 60, prepare and discuss a list of issues related to the effects of the construction and testing in the underground test facility on the site performance objectives. This list shall be prepared within 6 months after award of the contract. The NRC Program Manager (PM) shall review and approve this or a revised list within two weeks after the receipt of the list by NRC. The contractor shall incorporate the review comments, then reevaluate these issues and prepare a Task 4 report. This report shall also document the issues evaluated and recommend a preferred relationship between the underground test facility and repository.

Task 5 Evaulation of Engineering Aspects of Backfill Placement

Backfill is expected to be used in a geologic repository for the following purposes: (1) retardation of the rate of groundwater flow; (2) retardation of the rate of radionuclide transport; (3) creation of a controlled environment for the waste package, such as reducing conditions, which limit the solubility of the waste and corrosion of the waste package; and (4) mitigation of rock movement or deformation by providing structural support. The contractor shall consider the term "backfill" to be that material placed around the waste container, in the mined openings and in tunnels but not including shafts. The contractor shall evaluate the engineering aspects of the specific materials and the specific additives being considered by DOE with respect to how they will be prepared, placed, compacted, and tested. The contractor shall also identify appropriate equipment for the placement and compaction of backfill at each of these steps. This will consider excavation options as reprocessing backfill material within the repository, on the surface and/or designing a material different from but compatible with the host rock.

The contractor shall prepare a report on Task 5 summarizing the optimum methods and equipment for preparing, placing, compacting, and testing the various materials and the impact of backfill to the construction requirements. The report shall supply appropriate conclusions and recommendations for use of this information in the review by the NRC in SCR or license applications.

Task 6 - Direct Technical Assistance to NRC Staff

This task requires the contractor to provide direct technical assistance in the form of attendance at meetings, site visits, or the review of technical reports and design reports associated with performance of tasks 1 through 5 as directed by the NRC. This task shall be estimated at 0.75 man-years for the period of performance. The review or meeting, if required, shall be coordinated with the NMSS project officer. The NRC has received preconcept design reports from DOE for BWIP (RHO-BWI-CD-35) and test plan for Exploratory Shaft Test Facility (ESTF) in basalt (BWIP-RHO-BWI-CD-49, Rev. 1). Preconcept design reports for bedded salt have been completed but not officially submitted. A concept design report (draft) for BWIP is anticipated in early 1981. These reports shall be reviewed under this task.

4.0 REPORTING REQUIREMENTS

4.1 MONTHLY PROGRESS REPORTS

Each month the contractor shall submit thirteen (13) copies of a letter report (progress report) which summarizes: (1) the technical work performed during the previous month; (2) the personnel assigned and their time expenditures for each task during the previous month; and (3) costs and uncosted obligations, listed separately for each task, (a) during the previous month, (b) cumulative to date fiscal year and total, and

(c) projection by month for the current fiscal year. The first monthly report shall provide an initial cost projection and detailed schedule of work for each task. Subsequent reports shall either provide revised projections or indicate "no change in the cost and uncosted obligation or schedule projection."

Monthly reports shall also include such items as activities in progress or completed, key milestones achieved, anticipated problem areas and their effects on other activities and the project schedule, memoranda or meetings held or attended, and peer review group recommendations. The reports shall be due in the project officer's office by the 15th of each month.

4.2 TASK REPORTS

The contractor shall prepare a draft and final report as identified in each task. Draft and final reports shall be prepared in accordance with NRC Manual Appendix 3202 "Formal Contractor Documents." All reports, both draft and final, shall be of publishable quality.

4.3 REPORT DISTRIBUTION

The monthly progress reports and final task reports shall be distributed by the contractor as follows:

bibliography, a summary of memoranda and minutes of meetings, and a summary of any subcontract reports developed to augment this Statement of Work. A system of cross references between text and the bibliography of each report will be used. Typical examples of these items are attached as attachments A and B to this project. In all areas where "work by others" is reviewed and used, the contractor shall specify which conclusions are his and which are those of the original author. The contractor's comments shall not only address others' efforts individually, but also include a synthesis of them so as to present an estimate of the state-of the-art in the subject area. The final report shall be submitted to the PM not more than 30 working days after the review comments have been received from NRC. The final report shall not be acceptable until all review comments are resolved.

4.5 REPORTS UNDER TASK 6

A draft written report shall be submitted by the contractor within five (5) working days after the completion of the specified review or meeting. The final report for each trip or meeting. The final report for each trip or meeting may be in letter form and shall incorporate comments by NRC reviewers. The report shall serve as a record of the trip or meeting and shall, as a minimum, identify the purpose, participant(s), cost break out, and important or significant findings.

	MONTHLY PROGRESS REPORTS	TASK REPORTS	
		REPRODUCED COPIES	CAMERA-READY COPIES (FINAL REPORT ONLY)
Project Officer	10	20	1
Director, Office of NMSS (ATTN: Program Support Branch)	1	1	0
Director, Division of WM, John B. Martin	1	1	0
Contracting Officer (ATTN: Mary Jo Mattia)	1	1	0

4.4 DRAFT AND FINAL TASK REPORTS

The draft report for each task shall be received by the project officer not later than the required number of days after contract award as specified in the milestone schedule listed below. The draft reports called for in this project shall be submitted in ten (10) copies to the project officer not later than the specified number of days from effective date of the contract. NRC will review each of the draft reports and return with review comments to the contractor within 15 working days after it is received. The contractor shall reflect the NRC review comments in the final report.

The contractor shall respond to these comments in writing within 20 working days or sooner following receipt of NRC comments and shall meet with the NMSS project officer if necessary to discuss their responses. The contractor shall utilize the following system in responding to NRC written comments on project deliverables. Agreement with a comment should be indicated as

"A", i.e., accepted and should be reflected in deliverables. If the comment cannot be accepted, the comment would be designated "E", i.e., exception and shall be supported by the contractor's position. Any comment to which the contractor takes exception shall be discussed over the phone or in a follow-up meeting, within 10 working days of receipt of the contractor's responses to provide for prompt guidance and resolution. Any comment may be mutually withdrawn following these discussions and will then be noted "D", i.e., deleted in the revised comments. For comments which could not be resolved, the contractor will be advised in writing of the NMSS project officers' position. Responses to comments and the resolution of comments shall be maintained in NRC contract files.

The draft and final report for each task shall include conclusions and recommendations specifically addressing the design technical requirements, objectives and objective questions. All conclusions and recommendation shall be supported with appropriate field experience, measurements, tests, calculations, referenced standards, published research data, modeling methodology, routine industry procedures. It is understood that portions of a particular design issue may not yet be defined or a method developed to measure or evaluate the issue. These gaps of information are to be identified and specific recommendations made to resolve these deficiencies. The recommendations shall be included with each task report.

Special care will be taken to clearly define and reference all terms used in this project. Each draft and final task report will also include a

5.0 MEETINGS AND TRAVEL

The first meeting will be held in Silver Spring, Maryland four weeks after award of the contract to discuss technical details related to performance of the tasks.

It is anticipated that eighteen (18) three day meetings shall occur at NRC offices in Silver Spring, Maryland. It is further anticipated that up to eight (8) of these meetings shall be related to technical progress under the tasks and that two (2) shall be devoted to a management level review of all work in progress. Although it is not possible to designate the meeting or reviews that will be required under Task 6, it is anticipated that the equivalent of eight (8) additional trips to NRC, Silver Spring, Maryland will be necessary in this regard. It is understood that the actual sites or meetings shall be designated by NRC should the need for same actually materialize.

6.0 NRC FURNISHED MATERIAL

The NRC project officer will provide updated drafts of the technical rule 10 CFR 60 and supporting rationale as they are developed. NRC will provide a schedule of major events in the DOE selection of a geologic respository at the kick-off meeting. NRC PM will provide necessary information on geologic media and geographic locations for Task 5 by July 1, 1981. NRC project officer will provide types of earth material and the size, shape and configuration of openings for Task 6 by September 1, 1981. The contractor is expected to utilize reports prepared for the NRC by other contractors and to maintain technical contact with Lawrence Berkeley Laboratory on Task 2. The NRC project officer will provide contractor with the appropriate assistance. If the government-furnished property, suitable for its intended use, is not so delivered to the contractor by the agreed date, the Contracting Officer shall, upon timely written request made by the contractor, and if the facts warrant such action, equitably adjust any affected provision of the contract pursuant to the procedures of the "Changes" clause.

7.0 QUALITY ASSURANCE

For all draft and final technical reports delivered under this contract, the contractor shall assure that an independent review and verification of all numerical computations and mathematical equations and derivations are performed by qualified contractor personnel other than the original author(s) of the reports. If the contractor proposes to verify/check less than 100 percent of all computations and mathematical equations and derivations in the report(s), (such as might be the case when there are a large number of routine, repetitive calculations), the contractor must first obtain written approval from the NRC Project Officer. Computer-generated calculations will not require verification where the computer program has already been verified.

In addition, for all reports, including those which do not contain numerical analyses, a management review shall be conducted by the contract Project Manager prior to submission to the NRC.

All reports shall be annotated to indicate that the review and verification has been accomplished prior to their submission to the NRC. (This may be accomplished by use of a cover letter accompanying the report if preferable).

ARTICLE II - PERIOD OF PERFORMANCE, MILESTONES & DELIVERABLES

The performance of work described in ARTICLE I hereof shall commence as of the effective date of this contract and shall continue to completion thereof, estimated to occur within 18 months after said contract is effective.

The following summarizes project milestones and deliverable products:

	MILESTONES AND PRODUCTS	SCHEDULE
1.	Effective Date of Contract	DAY 1
2.	Mobilization and Organization	BY DAY 30
3.	Quarterly Technical Review	90
4.	Semiannual Technical Review and Management Review	180
5.	Draft Report Task 1	180
6.	Draft Report Task 2	240
7.	Quarterly Technical Review	305
8.	Draft Report Task 3	305
9.	Draft Report Task 4	410
10.	Quarterly Technical Review and Management Review	470
11.	Draft Report Task 5	470
12.	Final Contract Review	540

ARTICLE III - CONSIDERATION AND PAYMENT (Incrementally Funded CPFF)

A. Estimated Cost, Fixed Fee and Obligation

1. It is estimated that the total cost to the Government for full performance of this contract will be $634,454.00 , of which the sum of $582,068.00 represents the estimated reimbursable costs, and of which $ 52,386.00 represents the fixed fee.

2. There shall be no adjustment in the amount of the contractor's fixed fee by reason of differences between any estimate of cost for performance of the work under this contract and the actual cost performance of that work.

3. The amount presently obligated by the Government with respect to this contract is $400,000.00 It is estimated that the funding presently provided will cover the work to be performed under this contract through June 30, 1982.

B. Payment

The Government shall render payment to the contractor in approximately thirty (30) days after submission of proper and correct invoices or vouchers.

Additional provisions relating to payment are contained in Clause 5.3 of the General Provisions hereto.

ARTICLE IV - OVERHEAD/GENERAL AND ADMINISTRATIVE RATES

A. Pending the establishment of final overhead rates which shall be negotiated based on audit of actual costs, the contractor shall be reimbursed for allowable indirect costs hereunder at the provisional rate of 20.8% percent of direct labor.

B. Pending the establishment of final general and administrative rates which shall be negotiated based on audit of actual costs, the contractor shall be reimbursed for allowable indirect costs hereunder at the provisional rate of 80.7% percent of direct labor and labor overhead costs.

C. Notwithstanding A. and B. of this Article, said provisional overhead and G&A rates may be adjusted as appropriate during the term of the contract upon the acceptance of such revised rates by the Contracting Officer.

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C. Notwithstanding A. and B. of this Article, said provisional overhead and G&A rates may be adjusted as appropriate during the term of the contract upon the acceptance of such revised rates by the Contracting Officer.

ARTICLE V - PRIVATE USE AND PROTECTION OF UNCLASSIFIED GOVERNMENT INFORMAT

A. Except as specifically authorized by this contract, or as otherwise appro by the Contracting Officer, records or other information, documents and material furnished by the Commission to the contractor in the performance this contract, or information developed by the contractor in the course o the work hereunder, shall be used only in connection with the work perfor under this contract. The contractor shall, upon completion or terminatio this contract, transmit to the Commission all records or other informatio documents and material, and any copies thereof, furnished by the Commissi to the contractor or developed by the contractor in the performance of th contract.

B. The contractor shall be responsible for safeguarding from unauthorized di closure any information or other documents and material exempt from public disclosure by the Commission's regulations and made available to the contractor in connection with the performance of work under this contract. contractor agrees to conform to all regulations, requirements, and direct of the Commission with respect to such material.

C. The contractor's duties under this clause shall not be construed to limit or affect in any way the contractor's obligation to conform to all securit regulations and requirements of the Commission pertaining to classified information and material.

ARTICLE VI - KEY PERSONNEL

Pursuant to this ARTICLE (Key Personnel), the following individuals are conside to be essential to the successful performance of the work hereunder and shall n be replaced without the prior approval of the Contracting Officer. In such eve the contractor agrees to substitute persons possessing substantially equal abil and qualifications satisfactory to the Contracting Officer.

Name/Staff Designation*	Project Roles
David Pentz Principal (P/A)	Project Review Board
Lawrence West Principal (P/A)	Project Review Board
Dr. Richard Gates Senior Consultant (P/A)	Project Manager; Leader, Tasks 4 & 6
Marcia McEwen Quality Assurance (Q)	Quality Assurance Officer
Graham Rawlings Associate (P/A)	Leader, Tasks 1 & 5; Technical Specialist-Engineering Geology
Leigh Raaddy Associate (P/A)	Technical Specialist-Geology

Oscar Nair Specialist (S/S)	Leader, Task 3; Technical Specialist- Mining Engineering
Richard Talbot Specialist (S/S)	Leader, Task 2; Technical Specialist- Instrumentation
Dr. Gary Anttonen Specialist (S/S)	Technical Specialist- Geochemistry
Dr. William Roberds Senior (S/S)	Assistant Project Manager; Technical Specialist- Rock Mechanics

* Staff Designations:
  (P/A) Principal/Associate
  (S/S) Specialist/Senior
  (Q) Quality Assurance

ARTICLE VII - TECHNICAL DIRECTION

A. Performance of the work under this contract shall be subject to the technical direction of the NRC Project Officer named in ARTICLE VIII of this contract. The term "Technical Direction" is defined to include the following:

1. Technical direction to the contractor which shifts work emphasis between areas of work or tasks, requires pursuit of certain lines of inquiry, fills in details or otherwise serves to accomplish the contractual scope of work.

2. Providing assistance to the contractor in the preparation of drawings, specifications or technical portions of the work description.

3. Review and where required by the contract, approval of technical reports, drawings, specifications and technical information to be delivered by the contractor to the Government under the contract.

B. Technical direction must be within the general scope of work stated in the contract. The Project Officer does not have the authority to and may not issue any technical direction which:

1. Constitutes an assignment of additional work outside the general scop of the contract.

2. Constitutes a change as defined in the clause of the General Provisio entitled "Changes."

3. In any way causes an increase or decrease in the total estimated contract cost, the fixed fee, if any, or the time required for contract performance.

4. Changes any of the expressed terms, conditions or specifications of the contract.

C. ALL TECHNICAL DIRECTIONS SHALL BE ISSUED IN WRITING BY THE PROJECT OFFICER OR SHALL BE CONFIRMED BY SUCH PERSON IN WRITING WITHIN TEN (10) WORKING DAYS AFTER VERBAL ISSUANCE. A copy of said written direction shall be submitted to the Contracting Officer.

The contractor shall proceed promptly with the performance of technical directions duly issued by the Project Officer in the manner prescribed by this article and within such person's authority under the provisions of this article.

If, in the opinion of the contractor, any instruction or direction issued by the Project Officer is within one of the categories as defined in B(1) through (4) above, the contractor shall not proceed but shall notify the Contracting Officer in writing within five (5) working days after the receipt of any such instruction or direction and shall request the Contract Officer to modify the contract accordingly. Upon receiving such notificatio from the contractor, the Contracting Officer shall issue an appropriate contract modification or advise the contractor in writing that, in the Contracting Officer's opinion, the technical direction is within the scope of this article and does not constitute a change under the Changes Clause.

D. Any unauthorized commitment or direction issued by the Project Officer may result in an unnecessary delay in the contractor's performance, and may even result in the contractor expending funds for unallowable costs under the contract.

E. A failure of the parties to agree upon the nature of the instruction or direction or upon the contract action to be taken with respect thereto shall be subject to the provisions of the contract clause entitled "Disputes.

ARTICLE VIII - PROJECT OFFICER

Ludwig Hartung is hereby designated as the Contracting Officer's authori representative (hereinafter called Project Officer) for technical aspects of t contract. The Project Officer is not authorized to approve or request any act which results in or could result in an increase in contract cost; or terminate settle any claim or dispute arising under the contract; or issue any unilatera directive whatever.

The Project Officer is responsible for: (1) monitoring the contractor's techn progress, including surveillance and assessment of performance, and recommendi to the Contracting Officer changes in requirements; (2) interpreting the scope work; (3) performing technical evaluation as required; (4) performing technica inspections and acceptances required by this contract; and (5) assisting the contractor in the resolution of technical problems encountered during performa Within the purview of this authority, the Project Officer is authorized to rev all costs requested for reimbursement by contractors and submit recommendation for approval, disapproval, or suspension for supplies, services required unde the contract. The Contracting Officer is responsible for directing or negotia any changes in terms, conditions, or amounts cited in the contract.

For guidance from the Project Officer to the contractor to be valid, it must: (1) be consistent with the description of work set forth in the contract; (2) constitute new assignment of work or change to the expressed terms, condition or specifications incorporated into this contract; (3) not constitute a basi an extension to the period of performance or contract delivery schedule; ar stated above, (4) not constitute a basis for any increase in the contract

ARTICLE IX - CONFLICT OF INTEREST

(a) Purpose. The primary purpose of this article is to aid in ensuring that the contractor:

(1) is not placed in a conflicting role because of current or planned interest (financial, contractual, organizational, or otherwise) which relates to the work under this contract, and

(2) does not obtain an unfair competitive advantage over other parties by virtue of its performance of this contract.

(b) Scope. The restrictions described herein shall apply to performance or participation by the contractor as defined in 41 CFR §20-1.5402(f) in the activities covered by this article.

(c) Work for others. Notwithstanding any other provision of this contract during the term of this contract, the contractor agrees to forego entering into consulting or other contractual arrangements with any firm or organization, the result of which may give rise to a conflict of interest with respect to the work being performed under this contract. The contractor shall ensure that all employees who are employed full time under this contract and employees designated as key personnel, if any, under this contract abide by the provision of this article. If the contractor believes with respect to itself or any such employee that any proposed consultant or other contractual arrangement with any firm or organization may involve a potential conflict of interest, the contractor shall obtain the written approval of the Contracting Officer prior to execution of such contractual arrangement.

(d) Disclosure after award.

(1) The contractor warrants that to the best of its knowledge and belief and except as otherwise set forth in this contract, it does not have any organizational conflicts of interest, as defined in 41 CFR §20-1.5402(a).

(2) The contractor agrees that if after award it discovers organizational conflicts of interest with respect to this contract, it shall make an immediate and full disclosure in writing to the Contracting Officer. This statement shall include a description of the action which the contractor has taken or proposes to take to avoid or mitigate such conflicts. The NRC may, however, terminate the contract for convenience if it deems such termination to be in the best interests of the government.

(e) Access to and use of information.

(1) If the Contractor in the performance of this contract obtains access to information, such as NRC plans, policies, reports, studies, financial plans, internal data protected by the Privacy Act of 1974 (Pub. L. 93-579), or data which has not been

released to the public, the contractor agrees not to: (i) use such information for any private purpose until the information has been released to the public; (ii) compete for work for the Commission based on such information for a period of six (6) months after either the completion of this contract or the release of such information to the public, whichever is first, (iii) submit an unsolicited proposal to the government based on such information until one year after the release of such information to the public, or (iv) release the information without prior written approval by the Contracting Officer unless such information has previously been released to the public by the NRC

(2) In addition, the contractor agrees that to the extent it receives or is given access to proprietary data, data protected by the Privacy Act of 1974 (Pub. L. 93-579), or other confidential or privileged technical, business, or financial information under this contract, the contractor shall treat such information in accordance with restrictions placed on use of the information.

(3) The contractor shall have, subject to patent and security provisions of this contract, the right to use technical data it produc under this contract for private purposes provided that all requir ments of this contract have been met.

(f) Subcontracts. Except as provided in 41 CFR §20-1.5402(h), the contractor shall include this article, including this paragraph, in subcontracts of any tier. The terms "contract," "contractor," and "Contracting Officer," shall be appropriately modified to preserve the government's rights.

(g) Remedies. For breach of any of the above proscriptions or for intentional nondisclosure or misrepresentation of any relevant interest required to be disclosed concerning this contract or for such erroneous representations as necessarily imply bad faith, the government may terminate the contract for default, disqualify the contractor from subsequent contractual efforts, and pursue other remedies as may be permitted by law or this contract.

(h) Waiver. A request for waiver under this clause shall be directed in writing through the Contracting Officer to the Executive Director for Operations (EDO) in accordance with the procedures outlined in §20-1.5411.

ARTICLE X TRAVEL REIMBURSEMENT

The contractor will be reimbursed for the following reasonable domestic trav costs incurred directly and specifically in the performance of this contract and accepted by the Contracting Officer:

1. Per diem shall be reimbursed at a daily rate not to exceed $75.00.

2. The cost of travel by privately owned automobile shall be reimbursed at t rate of 22 1/2 cents per mile.

3. The cost of travel by rented automobile shall be reimbursed on a reasonab actual expense basis not to exceed $38.99 per day.

4. All common carrier travel reimbursable hereunder shall be via economy clas rates when available. If not available, reimbursement vouchers will be annotated that economy class accommodations were not available. First-cla air travel is not authorized.

5. Receipts are required for common carrier transportation, lodging and miscellaneous items in excess of $15.00

ARTICLE XI - Order of Precedence

In the event of an inconsistency between the terms and conditions of the contract, the inconsistency shall be resolved by giving precedence in the following order:

1. The SCHEDULE: (Note: - Nothing contained in the Contractor's proposal, whether or not incorporated by reference, shall constitute a waiver of any terms or conditions provided in the SCHEDULE.)

2. The General Provisions

3. Other terms and conditions of the contract, whether incorporated by reference or otherwise.

ARTICLE XII- GENERAL PROVISIONS/ALTERATIONS

A. This contract is subject to the attached provisions of Appendix A, General Provisions, entitled "Cost Type Research and Development Contracts With Commercial Organizations," dated 11/80.

B. Alteration - The following clauses are hereby added to the general provisions:

5.8 UTILIZATION OF WOMEN-OWNED BUSINESS CONCERNS (Over $10,000)

(a) It is the policy of the United States Government that women-owned businesses shall have the maximum practicable opportunity to participate in the performance of contracts awarded by any Federal agency.

(b) The Contractor agrees to use his best efforts to carry out this policy in the award of subcontracts to the fullest extent consistent with the efficient performance of this contract. As used in this contract, a "woman-owned business" concern means a business that is at lease 51% owned by a woman or women who also control and operate it. "Control" in this context means exercising the power to make policy decisions. "Operate" in this context means being actively involved in the day-to-day management. "Women" mean all women business owners.

(reference Office of Federal Procurement Policy Letter 80/4 dated 4/29/80)