

1 CONTRACT (Proc. Inst. Ident.) NO. NRC-04-79-185
2 EFFECTIVE DATE 15 Jun 1979
3 REQUISITION/PURCHASE REQUEST/PROJECT NO. RES-79-185
4 CERTIFIED FOR NATIONAL DEFENSE UNDER BDSA REG. 2 AND/OR DMS REG. 1
ISSUED BY U.S. Nuclear Regulatory Commission
Division of Contracts
Washington, D. C. 20555
FOR DEST. NATION
OTHER (below)

8 CONTRACTOR NAME AND ADDRESS CGS, Incorporated
P.O. Box 2801
Champaign, IL 61820
FACILITY CODE
9 DISCOUNT FOR PROMPT PAYMENT NET
10 SUBMIT INVOICES (4 copies unless otherwise specified) TO ADDRESS SHOWN IN BLOCK 10

11 SHIP TO/MARK FOR U.S. Nuclear Regulatory Commission
Office of Nuclear Regulatory Research
Washington, D. C. 20555
12 PAYMENT WILL BE MADE BY U.S. Nuclear Regulatory Commission
Office of the Controller
Washington, D. C. 20555
CODE

13 THIS PROCUREMENT WAS ☐ ADVERTISED, ☒ NEGOTIATED, PURSUANT TO ☐ 10 U.S.C. 2504 (a)(1) ☒ 41 U.S.C. 252 (a)(10)

14 ACCOUNTING AND APPROPRIATION DATA
B&R NO. 60-19-40-01 FIN NO. B6693 \$139,260.00

15 ITEM NO.	16 SUPPLIES/SERVICES	17 QUANTITY	18 UNIT	19 UNIT PRICE	20 AMOUNT
	A RESEARCH STUDY ENTITLED "SCENARIO DEVELOPMENT AND EVALUATION RELATED TO THE RISK ASSESSMENT OF HIGH LEVEL RADIOACTIVE WASTE REPOSITORIES"				\$139,260.00

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21 FIRM FIXED PRICE TOTAL AMOUNT OF CONTRACT \$ 139,260.00
CONTRACTING OFFICER WILL COMPLETE BLOCK 22 OR 26 AS APPLICABLE

22 ☒ CONTRACTOR'S NEGOTIATED AGREEMENT (Contractor is required to sign this document and return 4 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 William G. Goodman
(Signature of person authorized to sign)
24 NAME AND TITLE OF SIGNER (Type or print)
William G. Goodman
Vice President
25 DATE SIGNED
8/7/79
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 acceptance 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]
(Signature of Contracting Officer)
28 NAME OF CONTRACTING OFFICER (Type or print)
Kerling V. Morton 1041 280
29 DATE SIGNED
8-27-79

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SCOPE OF WORK, TERMS AND CONDITIONS

ARTICLE I - OBJECTIVE

The objective of this research project shall be to provide insights into the relative importance of different release modes, groundwater pathways, and retardation factors in radionuclide transport from a waste isolation facility so as to:

1. Provide guidance to the formulation of licensing review procedures,
2. Provide guidance to more detailed ongoing modeling studies of radionuclide transport in geologic systems.

ARTICLE II - STATEMENT OF WORK

1. The Contractor shall furnish personnel, facilities, equipment, materials, supplies, and services necessary for the performance of the work set forth in Appendix A, which Appendix A is attached hereto and made a part hereof; and therewith perform, utilizing its best efforts, the work provided for therein and report thereon pursuant to the provisions of this contract.
2. The Contractor's performance hereunder shall be under the direction of Dr. Fred A. Donath, shall be accomplished by qualified, careful and efficient personnel, and shall accord with high standards.

ARTICLE III - PERIOD OF PERFORMANCE

The performance of the work described in Appendix A hereof shall commence on June 15, 1979, and shall be completed by June 30, 1980.

ARTICLE IV - CONSIDERATION AND PAYMENT

1. In full consideration of the Contractor's performance hereunder, NRC shall pay the Contractor the sum of \$139,260.00 in accordance with paragraph 2. below.
2. Payments will be made by the Commission as follows:

Upon submission and acceptance of the reports specified in ARTICLE V - REPORTS, below in the following installments:

- a. \$20,000.00
- b. 14,815.00
- c. 34,814.00
- d. 34,815.00
- e. 34,815.00

3. In the event that the Contractor satisfactorily completes the work prior to the scheduled completion date, the full amount remaining unpaid shall become due and payable upon the Commission's acceptance of the Contractor's final report.

4. Said payments shall be made as soon as practicable upon submission by the Contractor of vouchers in form satisfactory to the Contracting Officer; provided however, that said payments shall not be deemed to prejudice any rights which the Government may have by law or under other provisions of this contract.

ARTICLE V - REPORTS

1. The Contractor shall submit the following reports to the Director, Office of Nuclear Regulatory Research, U. S. Nuclear Regulatory Commission, Washington, D. C. 20555:
 - a. A Progress Report due within thirty days of the effective date of Contract
 - b. A Progress Report due September 30, 1979
 - c. An Interim Report due December 15, 1979 as set forth in Appendix A, Statement of Work
 - d. A Recommendation Report for FY 1980 due March 15, 1980 as set forth in Appendix A, Statement of Work
 - e. A Final Report due June 15, 1980

All reports are to be submitted in six copies plus a reproducible master.

2. The Final Report shall document and summarize the results of the entire contract period, including recommendations and conclusions based on the experience and results obtained. The final report shall include tables, graphs, diagrams, curves, sketches, photographs, and drawings in sufficient detail to comprehensively explain the results achieved under the contract.

ARTICLE VI - GENERAL PROVISIONS

The General Provisions of this contract consist of the "General Provisions Fixed Price Research and Development Contract" dated February 15, 1978, attached hereto and, by this reference, made a part hereof.

APPENDIX A

STATEMENT OF WORK

The Contractor shall perform the work as set forth in its proposal entitled "Scenario Development and Evaluation Related to the Risk Assessment of High Level Radioactive Waste Repositories," dated September 25, 1978, which proposal is incorporated by reference and made a part hereof.

Specifically, in the course of the research project the Contractor shall perform the following tasks:

1. Evaluate the twenty-five cases shown on the attached Case Table as follows:
 - a. By December 15, 1979 particle distribution diagrams for Cases 1-7 and 14-19 shall be completed and submitted together with a covering discussion and analysis for each case.
 - b. By June 15, 1979 particle distribution diagrams for Cases 8-13 and 20-25 shall be completed and submitted together with a covering discussion and analysis for each case with respect to scenario screening for risk methodology development applications.
2. Prepare recommendations for additional scenario development and evaluation in FY 1980. This report shall be due March 15, 1980.
3. Address and discuss the applicability of the research project's modeling to site selection and evaluation.
4. Develop and deliver to the Commission the computer code for transport model together with user manual.

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- I. Typical layered media (e.g., salt, shale, basalt)
 - A. Homogeneous layered representation (case #1)
 - B. Presence of vertical zone of different characteristics than surrounding layered media
 1. high permeability vertical zone in discharge portion of basin
 - a. source up gradient (#2)
 - b. source in zone (#3)
 - c. source down gradient (#4)
 2. low permeability vertical zone in discharge portion of basin
 - a. source up gradient (#5)
 - b. source in zone (#6)
 - c. source down gradient (#7)
 3. high permeability vertical zone in central portion of basin
 - a. source up gradient (#8)
 - b. source in zone (#9)
 - c. source down gradient (#10)
 4. low permeability vertical zone in central portion of basin
 - a. source up gradient (#11)
 - b. source in zone (#12)
 - c. source down gradient (#13)
 5. high permeability vertical zone in recharge portion of basin
 - a. source up gradient (#14)
 - b. source in zone (#15)
 - c. source down gradient (#16)
 6. low permeability vertical zone in recharge portion of basin
 - a. source up gradient (#17)
 - b. source in zone (#18)
 - c. source down gradient (#19)
- II. Layered media disrupted and underlain by a massive unit of homogeneous properties (e.g., salt dome or granite)
 - A. Homogeneous disruptive unit
 1. high permeability
 - a. source moderate depth (#20)
 - b. source deeper (#21)
 2. low permeability
 - a. source moderate depth (#22)
 - b. source deeper (#23)
 - B. Zoned disruptive unit
 - a. source moderate depth (#24)
 - b. source deeper (#25)