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AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT			1. CONTRACT ID CODE NRC-04-96-041	PAGE OF PAGES 1 2
2. AMENDMENT/MODIFICATION NO. Three (3)	3. EFFECTIVE DATE SEP 25 1996	4. REQUISITION/PURCHASE REQ. NO. RFPA dated 7/5/96	5. PROJECT NO. (If applicable) RES-C96-131	
6. ISSUED BY U.S. Nuclear Regulatory Commission Division of Contracts Washington, DC 20555	CODE	7. ADMINISTERED BY (If other than Item 6)	CODE	
8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP code) Scientech, Inc. 11140 Rockville Pike Suite 500 Rockville, MD 20852 Principal Investigator/Technical Contact: Daniel Prelewicz Phone: (301) 468-6426			9A. AMENDMENT OF SOLICITATION NO.	
			9B. DATED (SEE ITEM 11)	
			10A. MODIFICATION OF CONTRACT/ORDER NO. X NRC-04-96-041	
			10B. DATED (SEE ITEM 13) 11/13/95	
CODE			FACILITY CODE	

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

☐ The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of offers ☐ is extended, ☐ is not extended. Offerors must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods: (a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required)

B&R 66015122010 JCN W6460 APPN: 31X0200.660
BOC 252A Obligate: \$141,913.00

13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS,
IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

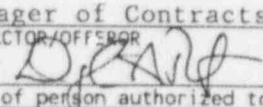
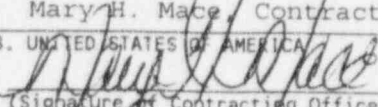
	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation data, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).
	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:
X	D. OTHER (Specify type of modification and authority) FAR 52.243-2 and mutual agreement of the parties.

E. IMPORTANT: Contractor ☐ is not, ☒ is required to sign this document and return 2 copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

See page 2 for description of modification.

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print) Douglas A. Knight Manager of Contracts and Administration	16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print) Mary H. Mace, Contracting Officer
15B. CONTRACTOR/OFFEROR  (Signature of person authorized to sign)	15C. DATE SIGNED 9/25/96
	16B. UNITED STATES OF AMERICA BY  (Signature of Contracting Officer)
	16C. DATE SIGNED 9-24-96

NSN 7540-01-152-8070
PREVIOUS EDITION UNUSABLE

30-105

STANDARD FORM 30 (REV. 10-83)
Prescribed by GSA
FAR (48 CFR) 53.243

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NRC-04-96-041 PDR

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The purpose of this modification is to accommodate issuance of the NRC change order dated September 9, 1996, by (1) incorporating a within-scope change in accordance with the attached statement of work and Scientech's technical proposal dated September 12, 1996, (2) increase the ceiling of the contract by \$174,965 from 638,087 to \$813,052 and (3) obligate funds in the amount of \$141,913. Accordingly, the contract is modified as follows:

Under Section B.3, "Consideration and Obligation -- Cost Plus Fixed Fee," paragraphs a, e, and f are deleted in their entirety and replaced with the following in lieu thereof:

- "a. The total estimated cost to the Government for full performance of this contract is \$813,052.00, of which the sum of \$767,204.00 represents the estimated reimbursable costs and of which \$45,848.00 represents the fixed fee.
- e. The amount presently obligated by the Government with respect to this contract is \$780,000.00.
- f. It is estimated that the amount currently allotted will cover performance through March 13, 1998."

Section C, "Statement of Work" is revised to incorporate Task 2 as set forth in the attachment to this modification.

A summary of obligations for this contract from award date through the date of this action is given below:

Total FY96 Obligations:	\$780,000.00
Cumulative total of NRC obligations:	\$780,000.00

This modification obligates FY96 funds in the amount of \$141,913.00

All other terms and conditions of this contract remain unchanged.

Attachment: (1)

Statement of Work
NRC-04-96-041, "Integral Test Facility Calculations
Using RELAP5/MOD3," Task 2, Revision 1

Task 2, Revision 1 - Data Analyses for ALWR

The contractor shall produce energy and inventory plots for advanced light water reactor (ALWR) systems, provide technical support and consultation services for data analyses for ALWRs, and provide technical support in the area of ALWR beyond-design-basis accident (BDBA) analysis and development of new reactor system analysis tools.

Subtask 2.1 - ALWR Data Analyses

The contractor shall produce energy and inventory plots for systems in advanced light water reactor (ALWR) test facilities from experiment data provided by the NRC. Approximately 25 data sets will be provided under this subtask. Systems to be analyzed under this subtask will be identified by the Project Officer.

The contractor shall prepare plots of energy versus time, inventory versus time, and energy versus inventory for the systems identified. The plot files shall be delivered to NRC on 3.5-inch diskettes suitable for additional analysis on UNIX-based workstations. Each diskette shall be scanned for viruses by the contractor and verified to be free of viruses prior to delivery to the NRC. The type of software likely to be used to create the plot files is defined as Level 3 Software by the NRC. Thus, the QA guidelines discussed in NUREG/BR-0167 do not apply. However, the NRC reserves the right to review the software, the software and application documentation, and any qualification testing.

A description of the system partition and of the relevant instrumentation used in the analyses of the experiment data shall be provided, as well as, assumptions used in calculating the system (i.e. partitions) internal energy, inflow and outflow enthalpies, and inventory. Checks shall be performed to ensure adequacy of the computational scheme (i.e., initial inventory, full draining conditions, etc.).

In consultation with NRC, the contractor shall develop and implement schemes to compare results from different experiments and/or calculations. Close interaction with NRC and a number of meetings in Rockville are required.

Estimated completion time: 9 months after receipt of all data sets.

Deliverables under Subtask 2.1:

The information from Subtask 2.1 shall be fully documented in a draft report to be submitted in five copies, along with the diskette, after completing the analysis of each data set (test).

A final report, suitable for publication as a NUREG/CR, shall be prepared in

accordance with Handbook 3.8 and corresponding guidelines in NUREG-0650 Revision 1 (see Section J for List of Attachments). The report shall summarize the procedures, lessons learned, and results. A draft of the final report shall be submitted for NRC review and comment 30 days after completion of the analyses of the last information set under Subtask 2.1. The final report shall be submitted 30 days after receipt of NRC comments. (See Section F.)

Subtask 2.2 - Technical Support for ALWR Data Analyses

The contractor shall develop, test, and verify data analysis techniques that provide a unified approach to characterizing reactor system thermal-hydraulic response to the entire range of Design Basis Accidents (DBA) and BDBA in the AP600 and scaled test facilities. The techniques should emphasize system responses relevant to core cooling and be capable of showing the effects of normal, degraded, and delayed operation of safety systems. The analysis results will be used to assess the adequacy and robustness of passive safety systems designed to maintain core cooling in the AP600 reactor design. The analysis techniques should be demonstrated on data from the selected AP600 experiments.

Estimated completion time: 9 months from initiation of subtask.

Deliverables under Subtask 2.2:

The results of Subtask 2.2 shall be fully documented in a draft letter report to be submitted for NRC review and comment upon completion of the subtask. The final report shall be submitted 30 days after receipt of NRC comments. (See Section F.)

Subtask 2.3 - Technical Support for Data Analyses Tool Development

The contractor shall critically evaluate code improvement needs of the current version of RELAP5 and prioritize the needs in view of both perspectives: ability of the code to simulate the important phenomena and the current state-of-the-art technology in measurements. In certain areas, model improvements may be limited by the lack of measuring techniques which need to be used for obtaining data. In addition, the contractor shall provide detailed guidelines for developing software for the current or forthcoming computer hardware architecture such as parallel processing and multithreading and guidelines for developing software that will allow efficient yet convenient user interface.

Estimated completion time: 3 months from initiation of subtask.

Deliverables under Subtask 2.3:

The results of Subtask 2.3 shall be fully documented in a draft letter report to be submitted for NRC review and comment upon completion of the subtask. The final report shall be submitted 30 days after receipt of NRC comments. (See Section F.)

NRC FURNISHED MATERIAL

The NRC will provide scaled ALWR test data and design information.

ESTIMATED LEVEL OF EFFORT TASK 2, REVISION 1

The estimated level of effort for Task 2, Revision 1 is 15 staff-months.

DURATION OF TASK 2, REVISION 1

Task 2, Revision 1 shall be completed within 20 months of initiation.