

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

2. AMENDMENT/MODIFICATION NO. 4
3. EFFECTIVE DATE SEP 24 2003
4. REQUISITION/PURCHASE REQ. NO. RPPA DTD 8/15/03
5. PROJECT NO. (If applicable)
6. ISSUED BY U.S. Nuclear Regulatory Commission
7. ADMINISTERED BY U.S. Nuclear Regulatory Commission

8. NAME AND ADDRESS OF CONTRACTOR Oregon State University
9A. AMENDMENT OF SOLICITATION NO.
9B. DATED (SEE ITEM 11)
10A. MODIFICATION OF CONTRACT/ORDER NO. NRC-04-03-049
10B. DATED (SEE ITEM 13) 03-19-2003

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. Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods: (a) By completing Items 8 and 15, and returning copies of the amendment; (b) By acknowledging receipt of this amendment of 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.

12. ACCOUNTING AND APPROPRIATION DATA (If required) APPN: 31X0200.360 B&R: 36060401710 JOB CODE: F6939 BOC: 252A RES ID #: RES-C03-450 OBLIGATED AMT.: \$45,000

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 date, 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:
D. OTHER (Specify type of modification and authority) 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 attached page.

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 STEVEN D. GOODE Sr. Contract Officer
15B. CONTRACTOR/OFFEROR
15C. DATE SIGNED 9/24/03
16A. NAME AND TITLE OF CONTRACTING OFFICER Stephen Pool Contracting Officer
16B. UNITED STATES OF AMERICA
16C. DATE SIGNED 9/17/03

The purpose of this modification is to (1) increase the contract ceiling amount by \$44,983 from \$599,971 to \$644,954 in accordance with the contractor's proposal dated 9/9/03 and the attached Modification No.4 Statement of Work, and (2) provide incremental funding in the amount of \$45,000 from 299,971 to \$344,971. Accordingly, the contract is hereby modified as follows:

1. Under Section B.3 Consideration and Obligation, paragraphs (a) and (b) are revised as follows:
  - "(a) The total estimated cost to the Government for full performance of the base period under this contract is \$644,954.
  - (b) The amount presently obligated by the Government with respect to this contract is \$344,971."
2. The attached Modification No. 4, Statement of Work entitled "APEX Thermal Hydraulic Test Program is hereby incorporated and made a part of this contract.

All other terms and conditions remain the same.

A summary of obligations from the award date through the date of this modification are provided below:

FY03 Obligations:	\$344,971
Cumulative:	\$344,971

This modification obligates FY03 funds in the amount of \$45,000.

Modification No. 4 to NRC Contract No. NRC-04-03-049  
Statement of Work

Title: APEX Thermal Hydraulic Test Program

**I. BACKGROUND**

Under NRC Contract No. NRC-04-03-049 the Oregon State University (OSU) is conducting a series of 11 tests in its Advanced Plant Experiment (APEX) facility which was modified to conform to the AP1000 design. The NRC needs to assess the RELAP5 code against the APEX/AP1000 data to help judge the results of AP1000 audit calculations which will be obtained using the RELAP5 code. The RELAP5 calculation results and the test data will provide a technical basis for regulatory decisions on AP1000. It is most expeditious and economical for OSU to perform RELAP5 assessment studies because of its familiarity with the APEX facility and the RELAP5 code and the availability of graduate students.

**II. OBJECTIVE**

The objective of this work is to perform 3 RELAP5 calculations and to assess the RELAP5 code against the APEX/AP1000 test data.

**III. SCOPE OF WORK**

**Task 1A. RELAP5 Assessment Studies**

The contractor shall perform 3 RELAP5 calculations and assessment studies for the four selected tests as recommended by the NRC using the latest released version of the RELAP5 code. The assessment results shall be documented and submitted to the NRC along with the input decks and notebooks used for preparing or modifying the input decks.

Estimated Level of Effort: 4 man-months

**IV. REPORTING REQUIREMENTS**

1. A report shall be prepared and submitted to the NRC on the calculation and the assessment of the RELAP5 code for each selected test.
2. An input deck used in each calculation and a notebook used for developing an input deck or modifying the input deck shall be submitted to the NRC.
3. **Monthly Letter Status Report (MLSR)**

A MLSR is to be submitted to the NRC Project Manager by the 20<sup>th</sup> of the month following the month to be reported with copies provided to the following:

Division Management Analyst, (Barbara A. Stehlin, Mail Stop T-10E32)

Division of Contracts, Office of Administration (Mail Stop T-712)

The MLSR will identify the title of the project, the job code, the Principal Investigator, the period of performance, the reporting period, summarize each month's technical progress, list monthly spending, total spending to date, and the remaining funds and will contain information as shown in Exhibit 10 of NRC Management Directive 11.7. Any administrative or technical difficulties which may affect the schedule or costs of the project shall be immediately brought to the attention of the NRC project manager.

NRC has developed a new document management system, Agencywide Documents Access and Management System (ADAMS). DOE mail will not be placed in ADAMS. All documents mailed from DOE to NRC (e.g., letters, technical reports, NRC Form 189s, MLSRs, and other mail) should have "Addressee Only" on the envelope to keep it from being entered into ADAMS. Send mail for the addressee and cc's as separate mailings. NRC Form 173, will be accepted by the OCFO with or without the "Addressee Only" designation.

#### PUBLICATIONS NOTE

RES encourages the publication of the scientific results from RES sponsored programs in refereed scientific and engineering journals as appropriate. If the laboratory proposes to publish in the open literature or present the information at meeting in addition to submitting the required technical reports, approval of the proposed article or presentation should be obtained from the NRC Project Manager. The RES Project Manager shall either approve the material as submitted, approve it subject to NRC suggested revisions, or disapprove it. In any event, the RES Project Manager may disapprove or delay presentation or publication of papers on information that is subject to Commission approval that has not been ruled upon or which has been disapproved. Additional information regarding the publication of NRC sponsored research is contained in NRC Management Directives 3.8, "Unclassified Contractor and Grantee Publications in the NUREG Series," and 3.9, "NRC Staff and Contractor Speeches, Papers, and Journal Articles on Regulatory and Technical Subjects."

If the presentation or paper is in addition to the required technical reports and the RES Project Manager determines that it will benefit the RES project, the Project Manager may authorize payment of travel and publishing costs, if any, from the project funds. If the Project Manager determines that the article or presentation would not benefit the RES project, the costs associated with the preparation, presentation, or publication will be borne by the contractor. For any publication or presentations falling into this category, the NRC reserves the right to require that such presentation or publication will not identify the NRC's sponsorship of the work.

#### NEW STANDARDS FOR CONTRACTORS WHO PREPARE NUREG-SERIES MANUSCRIPTS

The U.S. Nuclear Regulatory Commission (NRC) began to capture most of its official records electronically on January 1, 2000. The NRC will capture each final NUREG-

series publication in its native application. Therefore, commencing January 1, 2000, please submit your final manuscript that has been approved by your NRC Project Officer in both electronic and camera-ready copy.

All format guidance, as specified in NUREG-0650, Revision 2, will remain the same with one exception. You will no longer be required to include the NUREG-series designator on the bottom of each page of the manuscript. The NRC will assign this designator when we send the camera-ready copy to the printer and will place the designator on the cover, title page, and spine. The designator for each report will no longer be assigned when the decision to prepare a publication is made. The NRC's Publishing Services Branch will inform the NRC Project Officer for the publication of the assigned designator when the final manuscript is sent to the printer.

For the electronic manuscript, prepare the text in WordPerfect 8, and use any of the following file types for charts, spreadsheets, and the like.

File Types to be Used for NUREG-Series Publications	
File Type	File Extension
WordPerfect®	.wpd
Microsoft® PowerPoint®	.ppt
Corel® QuattroPro®	.wb3
Corel® Presentations	.shw
Lotus® 1-2-3	.wk4
Portable Document Format	.pdf

This list is subject to change if new software packages come into common use at NRC or by our licensees or other stakeholders that participate in the electronic submission process. If a portion of your manuscript is from another source and you cannot obtain an acceptable electronic file type for this portion (e.g., an appendix from an old publication), the NRC can, if necessary, create a tagged image file format (file extension.tif) for that portion of your report.

Note that you should continue to submit original photographs, which will be scanned, since digitized photographs do not print well.

If you chose to publish a compact disk (CD) of your publication, place on the CD copies of the manuscript in both (1) a portable document format (PDF); (2) a WordPerfect 8/9 file format, and (3) an Adobe Acrobat Reader, or, alternatively, print instructions for obtaining a free copy of Adobe Acrobat Reader on the back cover insert of the jewel box.

**V. DELIVERABLES AND DELIVERY SCHEDULE**

1. A report on the calculation and the assessment of the RELAP5 code against each selected test shall be submitted to the NRC within 6 months after completion of the test.
2. An input deck and a notebook used for preparing or modifying the input deck shall be submitted to the NRC within 6 months after completion of the test.

**VI. MEETINGS AND TRAVEL REQUIREMENTS**

A 3-day trip to the NRC should be planned for a program review and ACRS presentations.

**VII. LEVEL OF EFFORT**

The estimated level of effort for Task 1A is 4 man-months.

**VIII. PERIOD OF PERFORMANCE**

The period of performance is 18 months.