

ORDER FOR SUPPLIES OR SERVICES

IMPORTANT: Mark all packages and papers with contract and/or order numbers.

BPA NO.

1. DATE OF ORDER 6/14/05	2. CONTRACT NO. (if any) NRC-04-04-065	6. SHIP TO:
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3. ORDER NO. T005	MODIFICATION NO.	4. REQUISITION/REFERENCE NO. RES-04-065 DTD, 4/28	a. NAME OF CONSIGNEE U.S. Nuclear Regulatory Commission ATTN: Michael B. Rubin
5. ISSUING OFFICE (Address correspondence to) U.S. Nuclear Regulatory Commission Division of Contracts Mail Stop: T-7-I-2 Contract Management Branch 2 Washington, DC 20555			b. STREET ADDRESS M/S: T-10K8
c. CITY Washington		d. STATE DC	e. ZIP CODE 20555

7. TO:	f. SHIP VIA
a. NAME OF CONTRACTOR INFORMATION SYSTEMS LABORATORIES	b. TYPE OF ORDER

b. COMPANY NAME	<input type="checkbox"/> a. PURCHASE Reference your _____ Please furnish the following on the terms and conditions specified on both sides of this order and on the attached sheet, if any, including delivery as indicated.	<input checked="" type="checkbox"/> b. DELIVERY Except for billing instructions on the reverse, this delivery/task order is subject to instructions contained on this side only of this form and is issued subject to the terms and conditions of the above-numbered contract.
c. STREET ADDRESS 11140 ROCKVILLE PIKE STE 500	d. CITY ROCKVILLE MD 208522310	e. STATE f. ZIP CODE

9. ACCOUNTING AND APPROPRIATION DATA B&R: 56015111203 Job Code: N6201 BOC: 252A 31X0200.560 FFS No: RES-C05-036 OBLIGATE: \$158,000.00	10. REQUISITIONING OFFICE RES Office of Nuclear Regulatory Research
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11. BUSINESS CLASSIFICATION (Check appropriate box(es))	12. F.O.B. POINT N/A
<input type="checkbox"/> a. SMALL <input checked="" type="checkbox"/> b. OTHER THAN SMALL <input type="checkbox"/> c. DISADVANTAGED <input type="checkbox"/> g. SERVICE-DISABLED VETERAN-OWNED <input type="checkbox"/> d. WOMEN-OWNED <input type="checkbox"/> e. HUBZone <input type="checkbox"/> f. EMERGING SMALL BUSINESS	

13. PLACE OF	14. GOVERNMENT B/L NO.	15. DELIVER TO F.O.B. POINT ON OR BEFORE (Date)	16. DISCOUNT TERMS N/A
a. INSPECTION	b. ACCEPTANCE		

17. SCHEDULE (See reverse for Rejections)

ITEM NO. (A)	SUPPLIES OR SERVICES (B)	QUANTITY ORDERED (C)	UNIT (D)	UNIT PRICE (E)	AMOUNT (F)	QUANTITY ACCEPTED (G)
	SEE ATTACHED PAGE 2 OF 2 FOR DESCRIPTION OF TASK ORDER NO. 005 UNDER NRC-04-04-065 Title: Gravity Reflood and SBLOCA TRACE Assessment Period of Performance: Date of Award through 12/15/2005 Reimbursable Costs: \$156,051.00 Fixed Fee: \$12,418.00 Total Costs and Fee: \$168,469.00 This task order is incrementally funded. Contractor Signature Required on Page 2 of 2					

SEE BILLING INSTRUCTIONS ON REVERSE	18. SHIPPING POINT	19. GROSS SHIPPING WEIGHT	20. INVOICE NO.	\$158,000.00	17(h) TOTAL (Cont. pages)
21. MAIL INVOICE TO:					
a. NAME U.S. Nuclear Regulatory Commission Div. of Contracts, Mail Stop: T-7-I-2					
b. STREET ADDRESS (or P.O. Box) ATTN: NRC-04-04-065, Task Order No. 005					
c. CITY Washington		d. STATE DC	e. ZIP CODE 20555	\$158,000.00	17(i) GRAND TOTAL

22. UNITED STATES OF AMERICA BY (Signature)	23. NAME (Typed) Sharon D. Stewart Contracting Officer TITLE: CONTRACTING/ORDERING OFFICER
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AUTHORIZED FOR LOCAL REPRODUCTION PREVIOUS EDITION NOT USABLE

TEMPLATE - ADM001

SISP REVIEW COMPLETE

OPTIONAL FORM 347 (REV. 3/2005) PRESCRIBED BY GSA/FAR 48 CFR 63.213(e)
ADM002

In accordance with Section G.4, Task Order Procedures, of contract number NRC-04-04-065, this definitizes Task Order No. 005. The effort shall be performed in accordance with the enclosed Statement of Work.

Task Order No. 005 shall be in effect from date of award through December 15, 2005, with a cost ceiling of \$168,469.00. The amount of \$156,051.00 represents the estimated reimbursable costs, and the amount of \$12,418.00 represents the fixed fee.

Funds in the amount of \$158,000.00 are being obligated under this task order. The obligated amount shall, at no time, exceed the task order ceiling. When and if the amount(s) paid and payable to the Contractor hereunder shall equal the obligated amount, the Contractor shall not be obligated to continue performance of the work unless and until the Contracting Officer shall increase the amount obligated with respect to this task order. Any work undertaken by the Contractor in excess of the obligated amount specified above is done so at the Contractor's sole risk.

The following individuals are considered to be essential to the successful performance of work hereunder: [REDACTED] The Contractor agrees that such personnel shall not be removed from the effort under the task order without compliance with Contract Clause H.1, Key Personnel.

The issuance of this task order does not amend any terms or conditions of the subject contract.

Your contacts during the course of this task order are:

Technical Matters: Michael Rubin
Project Officer
(301) 415-6769

Contractual Matters: Mona Selden
Contract Specialist
(301) 415-7907

Acceptance of Task Order No. 005 should be made by having an official, authorized to bind your organization, execute three copies of this document in the space provided and return two copies to the Contract Specialist. You should retain the third copy for your records.

ACCEPTED: NRC-04-04-065, Task Order No. 005

NAME John F. [Signature]
TITLE V.P.
DATE 6/15/05

Enclosure: Statement of Work

**STATEMENT OF WORK
NRC-04-04-065 TASK ORDER NO. 5**

TITLE: Gravity Reflood and SBLOCA TRACE Assessment

I. BACKGROUND

The TRACE code is being developed by the NRC to perform large and small break loss of coolant accident and system transient analysis for a wide range of nuclear plants. This code will be used as an audit tool to analyze transient and accident analyses submitted by the vendors for licensing of reactors. Predictions of the TRACE code need to be assessed by comparing simulation results to experimental data. These comparisons help to quantify the conservatism of licensing calculations and ability of TRACE to model and simulate various thermal-hydraulic events.

II. OBJECTIVE

The objective of this work is to perform a part of the developmental assessment of thermal-hydraulic capabilities of the TRACE code to calculate thermal-hydraulic phenomena simulated in the LOFT, CCTF and SCTF test facilities and to quantify margins between code predictions and experimental data. Verify TRACE updates by re-running SCTF, CCTF gravity reflood tests, and LOFT small break LOCA cases.

III. SCOPE OF WORK

Task 1: Re-run CCTF Reflood Experiments Using TRACE

A series of experiments performed in the Cylindrical Core Test Facility (CCTF) are to be simulated with the latest version of TRACE (Version 4.155 or later, depending on availability). Input decks and AvScript to simulate the following experiments and make comparisons to data have been generated previously:

- (A) Test C2-01 (Run 55) "High pressure test"
- (B) Test C2-04 (Run 62) "Reproducibility test"
- (C) Test C2-05 (Run 63) "Low power test"
- (D) Test C2-06 (Run 64) "Flat radial profile test"
- (E) Test C2-08 (Run 67) "Low pressure test"
- (F) Test C2-AA2 (Run 58) "Downcomer and CL combined injection test"
- (G) Test C2-12 (Run 71) "Best Estimate Reflood Test"

These cases are to be re-run, and the results compared to applicable experimental data.

Prepare a report to document any necessary input or code changes, and comparison of the simulations to data. As part of the code to data comparisons, code accuracy is to be quantified using performance metrics which will be defined by the Technical Monitor. All TRACE input and output files are to be retained for archival in the NRC data bank.

Estimated Completion Date: on, or about, 10/31/05 (draft);
on, or about 11/30/05 (final report)

Task 2: Re-run SCTF Reflood Experiments Using TRACE

A series of experiments performed in the Slab Core Test Facility (SCTF) are to be simulated with the latest version of TRACE, (Version 4.155 or later, depending on availability). Input decks and AvScript to simulate the following experiments and make comparisons to data have been generated previously:

- (A) Test S2-SH1 (Run 604) "Gravity reflood base case"
- (B) Test S2-SH2 (Run 605) "Gravity reflood, flat radial profile case"
- (C) Test S2-1 (Run 606) "Gravity reflood, steep radial profile test"
- (D) Test S2-02 (Run 607) "Gravity reflood, low pressure"
- (E) Test S2-06 (Run 611) "Gravity reflood, low pressure, steep radial profile"
- (F) Test S2-16 (Run 621) "Forced reflood test, counterpart to Run 611"
- (G) Test S2-17 (Run 622) "Forced reflood test, flat power profile"

These cases are to be re-run, and the results compared to applicable experimental data.

Prepare a report to document any necessary input or code changes, and comparison of the simulations to data. As part of the code to data comparisons, code accuracy is to be quantified using performance metrics which will be defined by the Technical Monitor. All TRACE input and output files are to be retained for archival in the NRC data bank.

Estimated Completion Date: on, or about 10/31/05 (draft report);
on, or about 11/30/05 (final report)

Task 3: Re-run LOFT Small Break LOCA Experiments Using TRACE

A series of experiments performed in the LOFT facility are to be simulated with the latest version of TRACE (Version 4.155 or later, depending on availability). Input decks and AvScript to simulate the following experiments and make comparisons to data have been generated previously (see ISL-NSAD-TR-03-06):

- (A) Test L3-7 "One inch cold leg SBLOCA"
- (B) Test L3-1 "Four inch cold leg SBLOCA"

These cases are to be re-run, and the results compared to applicable experimental data.

Prepare a report to document any necessary input or code changes, and results of the simulations. The report should include comparisons of TRACE results for these cases to applicable experimental data. As part of the code to data comparisons, code accuracy is to be quantified using performance metrics which will be defined by the Technical Monitor. All TRACE input and output files are to be retained for archival in the NRC data bank.

Estimated Completion Date : on, or about, 10/31/05 (draft report);
on, or about, 11/30/05 (final report)

IV. REPORTING REQUIREMENTS

1. A Monthly Letter Status Report is to be submitted to the NRC Project Officer by the 20th of the month with copies provided to the following:

Office of Nuclear Regulatory Research Project Manager and Technical Monitor

Division of Systems Analysis and Regulatory Effectiveness Management Analyst, (Kim Jones, Mail Stop T-10E32)

Contracting Officer, Division of Contracts, Office of Administration (Mail Stop T-7-I-2)

The Monthly Letter Status Report 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. 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.

V. DELIVERABLES AND DELIVERY SCHEDULE

1. Letter reports documenting the results from the TRACE calculations described in Tasks 1, 2, and 3 are to be prepared and provided to the staff on, or about, 11/30/05.

Note:

- (1) NRC has implemented a new document management system, Agencywide Documents Access and Management System (ADAMS). For the present, contractors' mail will not be placed in ADAMS. All documents mailed to NRC (e.g., letters, technical reports, monthly letter reports, 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.

VI. MEETINGS AND TRAVEL REQUIREMENTS

One trip for one person for two days from Idaho Falls, ID to Rockville, MD. Travel such as technical professional society meetings to present papers may be considered if needed, but must be approved by the NRC Project Manager. Foreign travel must be approved by processing

NRC Form 445, in addition to being provided as part of the approved proposal.

VII. PERIOD OF PERFORMANCE

The period of performance of this task order is date of award through December 15, 2005.

IX. TECHNICAL DIRECTION

Technical direction will be provided by the Project Officer (Michael B. Rubin) and the Technical Monitor (Imtiaz Madni), who can be reached at:

Mail Stop: (T-10 K08)
U. S. Nuclear Regulatory Commission
Washington DC 20555-0001
Phone: (301) 415-6763
Fax: (301) 415-5160
Email: ixm@nrc.gov

X. PUBLICATIONS

RES encourages the publication of the scientific results from RES-sponsored programs in refereed scientific and engineering journals as appropriate. If the contractor proposes to publish in the open literature or present the information at a meeting in addition to submitting the required technical reports, approval of the proposed paper or presentation should be obtained from the NRC Project Manager prior to expending effort on the writing of the paper or presentation. When the writing is completed, the NRC Project Manager shall either approve the material as submitted, approve it subject to NRC-suggested revisions, or disapprove it. In any event, the NRC Project Manager may disapprove or delay publication or presentation 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 paper or presentation is in addition to the required technical reports and the NRC Project Manager determines that it will benefit the NRC project, the Project Manager may authorize payment of publishing and/or travel costs, if any, from the project funds. If the Project Manager determines that the paper or presentation would not benefit the NRC project, the costs associated with the publication or presentation will be borne by the contractor. For any publications or presentations falling into this category, the NRC reserves the right to require that such publication or presentation 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) is capturing its official records electronically. These records will be saved electronically in the Agency-wide Documents Access and Management System, known as ADAMS. The NRC is currently scanning each final NUREG-

series publication from the printed copy. Therefore, submit your final manuscript that has been approved by your NRC Project Manager 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.

XI. QUALITY ASSURANCE

Section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001 (Public Law 106-554) directs the Office of Management and Budget (OMB) to issue government-wide guidelines (FR Vol. 67, No. 36, pp. 8452-8460) that "provide policy and procedural

guidance to federal agencies for ensuring and maximizing the quality, objectivity, utility, and integrity of information (including statistical information) disseminated by federal agencies." NRC Information Quality Guidelines are provided in FR Vol. 67, No. 190, pp. 61695-61699.

The Contractor shall cite contractor quality assurance procedures used in the conduct of this work that provide for compliance with OMB and NRC guidelines.

XII. NRC-FURNISHED MATERIALS

No materials are to be furnished by the NRC during the performance of this work.

XIII. TECHNICAL AND OTHER SPECIAL QUALIFICATIONS REQUIRED

ISL shall provide personnel that are experienced in thermal-hydraulic analysis.

It is the responsibility of the contractor to assign technical staff, employees, subcontractors, or specialists who have the required educational background, experience, or combination thereof to meet both the technical objectives of the work specified in this SOW. The NRC will rely on representations made by the contractor concerning the qualifications of the personnel assigned to this task order including assurance that all information contained in the technical and cost proposal, including resumes, is accurate and truthful. In addition, the contractor and personnel assigned to this work must be approved for handling and working with proprietary information.

The use of key personnel and any proposed change to key personnel on this contract is subject to the NRC Project Manager's approval. This includes proposed use of principal persons (i.e., key contributors) during the life of the contract.

For any work to be subcontracted or performed by consultants ISL shall obtain the NRC Project Manager's written approval of the subcontractor or consultant prior to initiation of the subcontract effort. Conflict of interest considerations shall apply to any subcontracted effort.

XIV. CONFLICT OF INTEREST

List any work in the proposal that is similar to that previously performed or is to be performed by the contractor on behalf of another sponsor that might give rise to an apparent (perceived) or actual organizational conflict of interest, including duplication of effort.

XV. SUBCONTRACT/CONSULTING INFORMATION

Describe any technical support effort that is proposed to be performed by a subcontractor or consultant. Identify the level of effort, by task, of any proposed subcontractor or consultant and provide an explanation of the need for subcontracting that portion of the effort. Note that "pass through" contracting is not allowed under the requirements of the DOE/NRC Memorandum of Understanding. For the purposes of this effort, a "pass through" contract is generally defined as subcontracting 50 percent or more of the technical effort. For any subcontract or consultant effort, describe the following:

-the necessity of subcontracting,

- the tasks and sub-tasks the subcontractor or consultant will perform,
- the level of effort proposed for the subcontract effort,
- the conflict of interest considerations to be taken into account,
- the status and expected time frame for selection,
- the method of selection of the subcontractor or consultant.