

ORDER FOR SUPPLIES OR SERVICES

PAGE OF PAGES

1 11

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

BPA NO.

1. DATE OF ORDER 9/26/86	2. CONTRACT NO. (If any) NRC-04-06-068	6. SHIP TO:
3. ORDER NO. TASK ORDER 001	4. REQUISITION/REFERENCE NO. RES-06-068 RES-C06-654	a. NAME OF CONSIGNEE U.S. Nuclear Regulatory Commission

5. ISSUING OFFICE (Address correspondence to) U.S. Nuclear Regulatory Commission Div. of Contracts Attn: Jeffrey R. Mitchell, 301-415-6465 Mail Stop T-7-I-2 Washington, DC 20555	b. STREET ADDRESS Attn: William Krotiuk Mail Stop: T10-K8
c. CITY Washington	d. STATE DC
e. ZIP CODE 20555	

7. TO:	f. SHIP VIA
a. NAME OF CONTRACTOR INFORMATION SYSTEMS LABORATORIES, INC	8. TYPE OF ORDER

b. COMPANY NAME ATTN: DR. JAMES F. MEYER	<input type="checkbox"/> a. PURCHASE	<input checked="" type="checkbox"/> b. DELIVERY
c. STREET ADDRESS 11140 ROCKVILLE PIKE, SUITE 500	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.	
d. CITY ROCKVILLE	e. STATE MD	f. ZIP CODE 20852

9. ACCOUNTING AND APPROPRIATION DATA SEE BELOW IN BLOCK 17C. Contractors DUNS: 107928806	10. REQUISITIONING OFFICE RES
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11. BUSINESS CLASSIFICATION (Check appropriate box(es))	12. F.O.B. POINT Destination
<input type="checkbox"/> a. SMALL <input type="checkbox"/> d. WOMEN-OWNED <input checked="" type="checkbox"/> b. OTHER THAN SMALL <input type="checkbox"/> e. HUBZone <input type="checkbox"/> c. DISADVANTAGED <input type="checkbox"/> f. EMERGING SMALL BUSINESS <input type="checkbox"/> g. SERVICE-DISABLED VETERAN-OWNED	

13. PLACE OF	14. GOVERNMENT B/L NO.	15. DELIVER TO F.O.B. POINT ON OR BEFORE (Date) As Stated	16. DISCOUNT TERMS Net 30
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)
	Issuance of Task Order No. 001, under Contract No. NRC-04-06-068. Title: "Development of Plant Input Models for TRACE Code" See attached pages for a description of the Task Order No. 1. (Statement of Work) ACCOUNTING AND APPROPRIATION DATA: Note: \$90,000 previously obligated as part of the minimum guarantee under the basic contract is to be allotted for Task Order No. 1. (Acct-transfer the funds) 66015111205 N6254 252A 31x0200.660 Obligate \$310,000					

SEE BILLING INSTRUCTIONS ON REVERSE	18. SHIPPING POINT	19. GROSS SHIPPING WEIGHT	20. INVOICE NO.	17(h) TOTAL (Cont. pages)
	21. MAIL INVOICE TO:			
	a. NAME U.S. Nuclear Regulatory Commission Payment Team, Mail Stop T-7-I-2			17(i). GRAND TOTAL
	b. STREET ADDRESS (or P.O. Box) Attn: (NRC-04-06-068 Task Order 001)			
	c. CITY Washington	d. STATE DC	e. ZIP CODE 20555	

22. UNITED STATES OF AMERICA BY (Signature) 	23. NAME (Typed) Donald A. King Contracting Officer TITLE: CONTRACTING/ORDERING OFFICER
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AUTHORIZED FOR LOCAL REPRODUCTION

TEMPLATE - ADM001

SUNSI REVIEW COMPLETE

OPTIONAL FORM NO. 347 (REV. 3/2005)
PREPARED BY: JAN 48 CFR 53.213(e)

ADM002

In accordance with Section G.4, Task Order Procedures, of contract no. NRC-04-04-068, this definitizes Task Order No. 01. The effort shall be performed in accordance with the attached Statement of Work.

Task Order No. 01 shall be in effect from October 1, 2006 through October 15, 2007.

The total contract cost ceiling for Task Order No. 1 is \$492,650.00. The amount of \$457,510.00 represents the estimated reimbursable costs, and the amount of \$35,140.00 represents the fixed fee (7.68%).

The amount currently obligated by the Government with respect to this contract is \$400,000.00 of which the sum of \$371,471.00 represents the estimated reimbursable costs, and \$28,529.00 represents the fixed fee (7.68%).

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

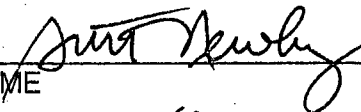
Your contacts during the course of this task order are:

Technical Matter: William Krotiuk
Project Officer
301-415-6839

Contractual Matters: Jeffrey R. Mitchell
Contract Specialist
301-415-6465

Acceptance of Task Order No. 01 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 at the address identified in Block No. 5 of the OF 347. You should retain the third copy for your records.

ACCEPTANCE:


NAME
VP

TITLE

9/26/06
DATE

RECEIVING REPORT

SHIPMENT NUMBER	PARTIAL		DATE RECEIVED	SIGNATURE OF AUTHORIZED U.S. GOV'T REP.	DATE
	FINAL				
TOTAL CONTAINERS		GROSS WEIGHT	RECEIVED AT	TITLE	

REPORT OF REJECTIONS

OPTIONAL FORM 347 (REV. 3/2005) BACK

TASK ORDER TERMS AND CONDITIONS

NOT SPECIFIED IN THE CONTRACT

A.1 NRC Acquisition Clauses - (NRCAR) 48 CFR Ch. 20

A.2 Other Applicable Clauses

☐ See Addendum for the following in full text (if checked)

☐ 52.216-18, Ordering

☐ 52.216-19, Order Limitations

☐ 52.216-22, Indefinite Quantity

☐ 52.217-6, Option for Increased Quantity

☐ 52.217-7, Option for Increased Quantity Separately Priced Line Item

☐ 52.217-8, Option to Extend Services

☐ 52.217-9, Option to Extend the Term of the Contract

A.3 SEAT BELTS

Contractors, subcontractors, and grantees, are encouraged to adopt and enforce on-the-job seat belt policies and programs for their employees when operating company-owned, rented, or personally owned vehicles.

**STATEMENT OF WORK
NRC-04-06-068 TASK ORDER NO. 1**

TITLE: Development of Plant Input Models for TRACE Code

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 vendors for licensing reactors. TRACE code predictions 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.

The USNRC Office of Nuclear Reactor Regulation (NRR) and Office of Nuclear Regulatory Research (RES) perform nuclear power plant safety analyses and desire enhanced capability to better address safety issues. The NRC staff intends to transition from using RELAP5 to using the TRACE code for all thermal-hydraulic analyses, including a new initiative called the Risk Assessment Standardization Project (RASP). There are TRAC-BWR and TRAC-PWR input decks available for operating reactors. There is also a range of available input decks comparable to those available for the RELAP5 code. Although TRACE can run TRAC-PWR and TRAC-BWR input decks, the input decks need to be upgraded to the TRACE native input format. Some models were also designed solely to compute specific transients or events so they may need to be upgraded to be applicable to a wider variety of transients.

Plant safety analyses in support of licensing require a broad range of accident and transient scenarios to be analyzed to help understand the limiting conditions for safe operation of the plant. The analyses of these scenarios are performed with advanced computer codes. Timely response of the staff to analytic needs of the agency necessitate a source of input models from which to choose in performing systems safety analyses.

II. OBJECTIVE

The objective of this work is to establish a library of TRACE nuclear plant input models, with documentation, for use by NRR and other NRC staff in addressing plant safety issues. Thirteen representative plants have been identified as priorities. This initial effort will develop plant input models for at least four plants, and scope the level of effort required for the remaining nine plants.

III. SCOPE OF WORK

Task 1: Scope Data Requirements for Initial Four Plants

The initial four plants, in priority, are: Browns Ferry, RESAR 412 (Model F SGs), HB Robinson (Model 44 SGs) and Calvert Cliffs. All four have RELAP5 and either TRAC-BWR or TRAC-PWR code input decks and documentation, although RESAR 412 has less extensive plant modeling than the other three. A review of current plant modeling and documentation is required. Identification of additional data requirements is necessary to prepare complete TRACE code input decks to

be used for future staff analyses of LBLOCA, SBLOCA and anticipated plant transients. If requests for information from licensees or reactor vendors are required, they need to be identified during this initial review and time allowed to obtain the information for subsequent input deck preparation.

The broad spectrum of accidents and transients requiring modeling of reactor protection system controls and other features for a complete plant input deck include the following:

- For PWRs: LBLOCA, SBLOCA, loss of feedwater (LOFW), turbine trip, feedwater line break (FWLB), main steam line break (MSLB), steam generator tube rupture (SGTR), station blackout (SBO), and anticipated transient without scram (ATWS). Additionally, for RASP support: power-operated relief valve (PORV) success criteria for feed-and-bleed capability, SGTR event tree modeling and timing for refueling water storage tank refill, time to core uncover for SBO sequences (e.g., reactor coolant pump LOCA, stuck-open relief valve (SORV), failure of AC-dependent emergency feedwater, failure of high pressure coolant injection pumps, etc.), dependency of PWR small LOCA mitigation on containment heat removal system design and sump recirculation, and accumulator injection success criteria for small/medium LOCA.
- For BWRs: LBLOCA, SBLOCA, turbine trip, main steam isolation valve (MSIV) closure, recirculation pump trip, SBO, and ATWS. Additionally, for RASP support: BWR suppression pool heatup (e.g., loss of offsite power (LOOP), loss of suppression pool cooling transients, etc.), and SORV RCIC injection success criteria to maintain core cooling

Estimated Completion Date: 1 month after start of contract

Task 2: Prepare TRACE Code Input Decks

Prepare complete TRACE code input decks to be used for analyses of LBLOCA, SBLOCA and transients, for Browns Ferry, RESAR 412, HB Robinson and Calvert Cliffs. All changes made to the code input models as a result of this work shall be documented in a calculation notebook. Prepare well-structured and formatted SNAP input files and animation models in addition to the ASCII input decks for the TRACE code. If no existing calculation notebook exists, one shall be prepared. All TRACE input files, AVScript files, calculation notebook files, SNAP input files and other extraneous scripts or files necessary to reproduce the work shall be retained for archival in the NRC data bank.

Estimated Completion Date: 9 months after start of contract

Task 3: Run Demonstration Calculations and Prepare Report(s)

Run representative analyses of LBLOCA, SBLOCA and 1-2 transients to be specified by the Technical Monitor for Browns Ferry, RESAR 412, HB Robinson and Calvert Cliffs. The cases associated with these TRACE code runs shall use AVScript input files and code input decks prepared for each plant. Where applicable, results shall be compared to applicable experimental data and/or previous code cases, and documented in a report written in Framemaker using a template to be provided by the Technical Monitor. All figures present in the Framemaker assessment report documents shall exist as separate files on disk and linked to the files using the "import by reference feature" of Framemaker. Exceptions to this requirement where it makes sense shall be approved by the NRC TRACE code caretaker.

Estimated Completion Date : 12 months after start of contract

Task 4: Estimate Level of Effort for Remaining Nine Plants

The nine other plants are (in no priority order): Oconee (OTSGs), Davis-Besse (OTSGs), Palo Verde, Dresden-3, Grand Gulf, Ginna (Model 44 SGs), North Anna (Model 51 SGs), South Texas (Model Delta-94 SGs), and AP-1000. All have some RELAP5, RETRAN, TRAC-BWR or TRAC-PWR code input decks and documentation available, but these plants will generally require more effort than the initial four. A review of current plant modeling and documentation is required, and an estimate made of the level of effort necessary to prepare complete TRACE code input decks, SNAP input files and AVScript files to be used for performing analyses of LBLOCA, SBLOCA and transients, and preparing assessment reports for representative analyses.

Estimated Completion Date: 9 months after start of contract

IV. REPORTING REQUIREMENTS

1. Monthly Letter Status Report (MLSR)

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

Office of Nuclear Regulatory Research Technical Monitor (Bill Macon, Mail Stop T-10 K08)

Division Management Analyst, (Janine Dehn, Mail Stop T-10E50)

Division of Contracts, Office of Administration – (Contract No., Mail Stop T7-I2)

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. 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. Requests for information as described in Task 1 for any additional data necessary to complete the TRACE code input decks to be used for representative analyses are to be prepared and provided to the staff by 1 month after start of contract.
2. Assessment reports documenting the results from the demonstration TRACE calculations as described in Task 3, as well as all modified AVScripts, TRACE input decks, SNAP input files, and calc notebooks are to be prepared and provided to the staff by 12 months after start of contract.
3. Estimates for the level of effort necessary to complete the TRACE code input decks as described in Task 4 are to be prepared and provided to the staff by 9 months after start of contract.

VI. MEETINGS AND TRAVEL REQUIREMENTS

None.

VII. PERIOD OF PERFORMANCE

The period of performance of this task order is October 1, 2006 through October 15, 2007.

IX. TECHNICAL DIRECTION

Technical direction will be provided by the Project Manager (William J. Krotiuk) and the Technical Monitor (William A. Macon, Jr.), who can be reached at:

Mail Stop: (T-10 G07)
U. S. Nuclear Regulatory Commission
Washington DC 20555-0001
Phone: (301) 415-3965
Fax: (301) 415-5160
Email: (wam1@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

Existing TRAC-BWR, TRAC-PWR and RELAP5 input decks for the thirteen representative plants are to be furnished by the NRC during the performance of this work. Existing input decks and documentation are available on the NRC's TRACE Developer Information Exchange website.

XIII. TECHNICAL AND OTHER SPECIAL QUALIFICATIONS REQUIRED

The contractor 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 to the contractor 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. REFERENCES AND ATTACHMENTS

None

XV. 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.

XVI. 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.

XVII. LICENSE FEE RECOVERY

The work specified in this SOW is not license fee recoverable.