ORDER FOR SUPPLIES OR SERVICES

PAGE OF PAGES: 1 | 2

IMPORTANT: Mark all packages and papers with contract and/or order numbers. BPA NO.

1. DATE OF ORDER: JUL 25 2005	2. CONTRACT NO. (If any): NRC-03-03-038
3. ORDER NO.: T014	MODIFICATION NO.:	4. REQUISITION/REFERENCE NO.: NRR0303814

5. ISSUING OFFICE (Address correspondence to):
U.S. Nuclear Regulatory Commission
Division of Contracts
Contract Management Branch 2
Mail Stop T-7-I-2
Washington, DC 20555

6. SHIP TO:
a. NAME OF CONSIGNEE: U.S. Nuclear Regulatory Commission
Ofc. of Nuclear Reactor Regulation
b. STREET ADDRESS: Attn: Lawrence Ruth
MailStop: OWF 10A1
c. CITY: Washington | d. STATE: DC | e. ZIP CODE: 20555

7. TO:
a. NAME OF CONTRACTOR: INFORMATION SYSTEMS LABORATORIES
b. COMPANY NAME:
c. STREET ADDRESS: 11140 ROCKVILLE PIKE STE 500
d. CITY: ROCKVILLE MD 208522310 | e. STATE | f. ZIP CODE

f. SHIP VIA:

8. TYPE OF ORDER
[ ] 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.
[X] 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.

9. ACCOUNTING AND APPROPRIATION DATA
520-15-111-113 J-3231 252A 31X0200.520
FFS#: NRR03038014 OBLIGATE: $48,903.00

10. REQUISITIONING OFFICE: NRR
Ofc. of Nuclear Reactor Regulation

11. BUSINESS CLASSIFICATION (Check appropriate box(es))
[ ] a. SMALL [X] b. OTHER THAN SMALL [ ] c. DISADVANTAGED [ ] g. SERVICE-DISABLED VETERAN-OWNED
[ ] d. WOMEN-OWNED [ ] e. HUBZone [ ] f. EMERGING SMALL BUSINESS

12. F.O.B. POINT: N/A

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

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. 014 UNDER NRC-03-03-038 TITLE: RISK-INFORMED AND PERFORMANCE-BASED FIRE PROTECTION RULE IMPLEMENTATION - REVIEW OF THE VERIFICATION AND VALIDATION STUDY FOR FIRE MODELS IN NUCLEAR POWER PLANT APPLICATIONS PERIOD OF PERFORMANCE: AWARD DATE THROUGH JANUARY 31, 2006 ESTIMATED REIMBURSABLE COSTS: $46,424.00 FEE: $2,479.00 TOTAL COSTS AND FEE: $48,903.00 SEE ATTACHED PAGE 2 FOR DESCRIPTION OF TASK ORDER					

SEE BILLING INSTRUCTIONS ON REVERSE

18. SHIPPING POINT	19. GROSS SHIPPING WEIGHT	20. INVOICE NO.	$46,903.00	
21. MAIL INVOICE TO:				17(h) TOTAL (Cont. pages)
a. NAME: U.S. Nuclear Regulatory Commission Division of Contracts				
b. STREET ADDRESS (or P.O. Box): MailStop: T-7-I-2				17(i). GRAND TOTAL
c. CITY: Washington	d. STATE: DC	e. ZIP CODE: 20555	$48,903.00	

22. UNITED STATES OF AMERICA
BY (Signature): Stephen M. Pool

23. NAME (Typed): Stephen M. Pool
Contracting Officer
TITLE: CONTRACTING/ORDERING OFFICER

AUTHORIZED FOR LOCAL REPRODUCTION
PREVIOUS EDITION NOT USABLE

OPTIONAL FORM 347 (REV. 3/2005)
PRESCRIBED BY GSA/FAR 48 CFR 53.213(e)

TEMPLATE - ADM001

SISP REVIEW COMPLETE

ADM002

In accordance with Section G.4, Task Order Procedures, of contract number NRC-03-03-038, this definitizes Task Order No. 014. The effort shall be performed in accordance with the enclosed Statement of Work.

Task Order No. 014 shall be in effect from the award date through January 31, 2006, with a cost ceiling of $48,903.00. The amount of $46,424.00 represents the estimated reimbursable costs, and the amount of $2,479.00 represents the fixed fee. Funds in the amount of $48,903.00 are being obligated at this time. This task order is fully funded.

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:	Lawrence Ruth Project Officer (301) 415-1211	Contractual Matters:	Mona Selden Sr. Contract Specialist (301) 415-7907

Acceptance of Task Order No. 014 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 below. You should retain the third copy for your records.

Enclosure: Statement of Work

ACCEPTED: NRC-03-03-038, Task Order No. 014

NAME

TITLE

DATE

STATEMENT OF WORK
NRC-03-03-038
TASK ORDER NO. 014

Title: Risk-Informed and Performance-Based Fire Protection Rule Implementation - Review of the Verification and Validation (V&V) Study for Fire Models in Nuclear Power Plant (NPP) Applications

JCN: TBD **B&R Number:** 520-15-111-113

NRC Project Manager: Lawrence C. Ruth

NRC Technical Monitors: Naeem Iqbal/Paul W. Lain

TAC Number: MC2584 **NRR Priority:** 1

BACKGROUND

The U.S. Nuclear Regulatory Commission (NRC) has amended its fire protection rule in Title 10 of the *Code of Federal Regulations* Section 50.48 (10 CFR 50.48) to allow NPP licensees to voluntarily adopt a risk-informed and performance-based rule. This alternate fire protection rule maintains safety while adding flexibility to the current fire protection requirements for existing nuclear power facilities.

A new paragraph 10 CFR 50.48(c) has been added to permit a reactor licensee to use the fire protection requirements contained in the National Fire Protection Association (NFPA) Standard 805, Performance-Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants, 2001 edition, with exceptions, as an alternative to complying with 10 CFR 50.48(b) or the licensee's fire protection license condition. In addition, this rule amends 10 CFR 50.48(f) to allow decommissioning plants the option to use NFPA 805. The alternate fire protection rule is part of an effort by the agency to incorporate risk information into its regulations.

NFPA 805 describes the fundamental fire protection program (FPP) elements and the minimum design requirements for the fire protection systems and features to satisfy the performance criteria. NFPA 805 standard provides greater use of risk insights, engineering analysis, fire modeling and fire probabilistic risk assessments (PRAs). Section 2.4.1.2 of NFPA 805 requires that only fire models acceptable to the NRC [(Authority Having Jurisdiction (AHJ)] shall be used in fire modeling calculations. Further, NFPA 805, Sections 2.4.1.2.2 and 2.4.1.2.3 state that the fire models shall only be applied within the limitations of that fire model, and shall be verified and validated.

The verification and validation (V&V) study for zone fire models, computational fluid dynamics (CFD) code, and empirical correlations has been conducted by the NRC's Office of Nuclear Regulatory Research (RES), in collaboration with the Electric Power Research Institute (EPRI) through an inter-agency memorandum of understanding (MOU). The purpose of this study was to conduct research to provide the necessary technical data and tools to support the use of fire models in NPP fire hazard analysis (FHA). The V&V documents for fire models provide technical

bases for regulatory positions to endorse these fire models within the NRC draft Regulatory Guide (RG) DG-1139, "Risk-Informed, Performance-Based Fire Protection for Existing Light-Water Nuclear Power Plants." RES/EPRI have developed V&V documents in accordance with the American Society of Testing and Materials (ASTM) E 1355-04, "Standard Guide for Evaluating the Predictive Capability of Deterministic Fire Models."

The draft RG states that to the extent the NRC finds certain fire models and calculational methods (empirical correlations) acceptable for use in performance-based analyses, licensees should only need to justify the models and methods that are appropriate for the specific applications. These analyses may use simple hand calculations, or more complex computer models depending on the specific conditions of the fire scenario being evaluated. The NRC has developed or endorsed V&V documents for specific fire models that will be acceptable to the NRC if they are used within the ranges identified in the V&V documents. The specific fire models are: (1) NRC NUREG-1805, Fire Dynamics Tools (FDT^S), (2) EPRI Fire-Induced Vulnerability Evaluation (FIVE) Revision 1, (3) National Institute of Standards and Technology (NIST) zone fire model, Consolidated Model of Fire Growth and Smoke Transport (CFAST), (4) the Electricite* de France (EdF) zone fire model MAGIC code, and (5) NIST CFD Fire Dynamics Simulator (FDS) code.

Licensees may propose the use of fire models that have not been specifically approved by the NRC (AHJ), however, the V&V for these fire models is the responsibility of the licensee and these fire models are subject to NRC review and approval in accordance with §50.48(c)(4). The users of a model must be able to judge the adequacy of the scientific and technical basis of the model, select models that are appropriate for a specific application, and understand the level of confidence that can be placed on the results. This requires sufficient evaluation of individual models to help prevent the unintentional misuse of fire models.

OBJECTIVES

The objective of this task order is to obtain technical expertise to assist Plant Systems Branch (SPLB) of the Division of Systems Safety and Analysis (DSSA), Office of Nuclear Reactor Regulation (NRR) in support of NFPA 805 rule implementation, in performing a detailed review of the V&V documents developed by RES and EPRI. This task also includes assistance in reviewing RES/EPRI comment dispositions and resolution of open items.

TECHNICAL AND OTHER SPECIAL QUALIFICATIONS REQUIRED

The contractor shall provide one to two fire protection engineers or equivalent, with experience in fire modeling, FHA, fire probabilistic risk assessments (PRAs), NRC fire protection requirements and NFPA codes and standards to perform this task.

It is the responsibility of the contractor to assign an engineer, scientist, technical staff member, or specialists who have the required educational background, experience, or combination thereof to meet both technical and regulatory objectives of the work specified in this Statement of Work (SOW).

If any work will be subcontracted or performed by the consultants, the contractor shall obtain the NRC Project Manager's written approval of subcontractor or consultant prior to initiation of the subcontract. Contractor and subcontractor/consultant should not have a conflict of interest by

having previously reviewed this specific matter for any stakeholder. The NRC will rely on the representations made by the contractor concerning the qualifications of the personnel assigned to this task including assurance that all information contained in the technical and cost proposals, including resumes, is accurate and truthful. The use of key personnel and any proposed change to key personnel on this task order is subject to the approval of the NRC Contracting Officer. This includes proposed use of principle personnel (i.e., key contributors) during the life of the task order. The proposal should include the names and resumes of the key contributors as well as the percentage of the time that each contributor will work on this task.

WORK REQUIREMENTS AND SCHEDULE

No.	Task	Completion Schedule
1	Receive and review RES/EPRI V&V study on CFAST, MAGIC, FDS, FDT^s, and FIVE, Revision 1 and other applicable documents from the NRC Technical Monitors. Develop detail comments on V&V documents. Prepare a letter report.	8 weeks after receiving NRC provided documents
2	Review RES/EPRI responses to the comments (disposition of comments) and identify those issues that have been resolved and those for which further discussion may be needed along with the basis for resolution. Prepare a letter report.	3 weeks after receiving NRC provided documents
3	If necessary, prepare for and attend meetings and conferences with RES/EPRI to assist SPLB in resolving open items.	As necessary

PERIOD OF PERFORMANCE

The period of performance is from date of award through January 31, 2006.

DELIVERABLES

- Letter report on detail comments on V&V documents.
- Letter report on RES/EPRI responses and identify those issues that have been resolved and those for which further discussion may be needed along with the basis for resolution.

MONTHLY BUSINESS LETTER REPORT

The monthly business letter report shall be delivered to the NRC Project Manager with a copy to the Technical Monitors.

TECHNICAL REPORTING REQUIREMENTS

The transmittal letter and cover page of each review report, or other deliverables as appropriate, shall contain the Job Code Number, Task Order Number and Title, and the NRC Tac Number.

The contractor shall submit all review reports and documents in draft form to the NRC Project

Officer with a copy to the Technical Monitors. The contractor shall incorporate NRC staff comments into the final review report and submit these to the NRC Project Officer with a copy to the Technical Monitors. The letter review reports shall be in WordPerfect file format and shall be provided in both hard copy and electronic form. Ten versions of the final review report shall be provided on CD media.

NRC FURNISHED MATERIALS

The documents to be furnished by the NRC and used by the contractor in the performance of this task order are: draft RG, V&V documents for CFAST, MAGIC, FDS, FDT^s, and FIVE, Revision 1, and ASTM E 1355-04, It is expected that the contractor will possess its own copy of NFPA 805 and the NFPA 805 fire protection rule language (10 CFR 50.48(c)).

MEETINGS AND TRAVEL

If necessary, one person, one work day trip to the NRC Headquarters in Rockville, Maryland to participate in meetings with RES/EPRI to assist in resolving open items.

OTHER APPLICABLE INFORMATION

License fee Recovery

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