

SOLICITATION/CONTRACT/ORDER FOR COMMERCIAL ITEMS
OFFEROR TO COMPLETE BLOCKS 12, 17, 23, 24, & 30

1. REQUISITION NO. RES-04-069	BPA NO.
5. SOLICITATION NO.	6. SOLICITATION ISSUE DATE
b. TELEPHONE NO. (No Collect Calls)	8. OFFER DUE DATE/LOCAL TIME

2. CONTRACT NO. GS-23F-0060L	3. AWARD/EFFECTIVE DATE See Bk 30c	4. ORDER NO. DR-04-04-069	MODIFICATION NO.
7. FOR SOLICITATION INFORMATION CALL:		a. NAME	

9. ISSUED BY U.S. Nuclear Regulatory Commission Div of Contracts Two White Flint North - MS T-7-I-2 Attn: Rachel Glaros (301) 415-0115 Washington, DC 20555	CODE 3100	10. THIS ACQUISITION IS <input type="checkbox"/> UNRESTRICTED <input type="checkbox"/> SET ASIDE: % FOR <input type="checkbox"/> SMALL BUSINESS <input type="checkbox"/> HUBZONE SMALL BUSINESS <input type="checkbox"/> B(A) NAICS: 541330 SIZE STANDARD:	11. DELIVERY FOR FOB DESTINATION UNLESS BLOCK IS MARKED <input type="checkbox"/> SEE SCHEDULE 13a. THIS CONTRACT IS A RATED ORDER UNDER DPAS (15 CFR 700) 13b. RATING N/A 14. METHOD OF SOLICITATION <input type="checkbox"/> RFO <input type="checkbox"/> IFB <input type="checkbox"/> RFP	12. DISCOUNT TERMS N/A
--	-----------	---	--	---------------------------

5. DELIVER TO U.S. Nuclear Regulatory Commission Office of Research Attn: John Lane Mail Stop T-10-E-50 Washington DC 20555	CODE	16. ADMINISTERED BY U.S. Nuclear Regulatory Commission Div of Contracts Two White Flint North - MS T-7-I-2 Attn: Rachel Glaros (301) 415-0115 Washington, DC 20555	CODE 3100
--	------	---	-----------

7a. CONTRACTOR/OFFEROR INFORMATION SYSTEMS LABORATORIES, INC 10070 BARNES CANYON ROAD SAN DIEGO CA 921212722 TELEPHONE NO. (301) 468-6425 - James Meyer	CODE	FACILITY CODE	18a. PAYMENT WILL BE MADE BY U.S. Nuclear Regulatory Commission Payment Team, Mail Stop T-9-H-4 Attn: DR-04-04-069 Washington DC 20555	CODE
---	------	---------------	--	------

17b. CHECK IF REMITTANCE IS DIFFERENT AND PUT SUCH ADDRESS IN OFFER

18b. SUBMIT INVOICES TO ADDRESS SHOWN IN BLOCK 18a UNLESS BLOCK BELOW IS CHECKED
 SEE ADDENDUM

19. ITEM NO.	20. See CONTINUATION Page SCHEDULE OF SUPPLIES/SERVICES	21. QUANTITY	22. UNIT	23. UNIT PRICE	24. AMOUNT
	<p>The contractor shall provide technical support to the NRC with rulemaking to risk-inform 10 CFR 50.46 dated March 31, 2003. All professional engineering services shall be performed in accordance with GS-23F-0060L and Attachment One - Statement of Work.</p> <p>Billing Instructions are found as Attachment Two.</p> <p>Labor-Hour Order with fixed ceiling of \$402,604.10 Refer to following page for delivery order labor rates/estimated labor hours</p> <p>Funds in the amount of \$200,000.00 are presently obligated.</p> <p>The period of performance is date of award through the following 18 months.</p> <p>NRC Project Officer: John Lane, 301-415-6442 VENDOR DUNS 107928806</p>				

5. ACCOUNTING AND APPROPRIATION DATA B&R Number: 46015110203 Job Code: Y6492 BOC: 252A Appropriation No. 31X0200.460 Amount: \$200,000.00	26. TOTAL AWARD AMOUNT (For Govt. Use Only) \$200,000
---	--

27a. SOLICITATION INCORPORATES BY REFERENCE FAR 52.212-1, 52.212-4. FAR 52.212-3 AND 52.212-5 ARE ATTACHED. ADDENDA <input type="checkbox"/> ARE <input type="checkbox"/> ARE NOT ATTACHED.	27b. CONTRACT/PURCHASE ORDER INCORPORATES BY REFERENCE FAR 52.212-4. FAR 52.212-5 IS ATTACHED. ADDENDA <input checked="" type="checkbox"/> ARE <input type="checkbox"/> ARE NOT ATTACHED.
---	---

3. CONTRACTOR IS REQUIRED TO SIGN THIS DOCUMENT AND RETURN 2 COPIES TO ISSUING OFFICE. CONTRACTOR AGREES TO FURNISH AND DELIVER ALL ITEMS SET FORTH OR OTHERWISE IDENTIFIED ABOVE AND ON ANY ADDITIONAL SHEETS SUBJECT TO THE TERMS AND CONDITIONS SPECIFIED HEREIN	29. AWARD OF CONTRACT: REFERENCE _____ OFFER DATED _____ YOUR OFFER ON SOLICITATION (BLOCK 5), INCLUDING ANY ADDITIONS OR CHANGES WHICH ARE SET FORTH HEREIN IS ACCEPTED AS TO ITEMS:
---	---

29. SIGNATURE OF OFFEROR/CONTRACTOR 	31a. UNITED STATES OF AMERICA (SIGNATURE OF CONTRACTING OFFICER)
b. NAME AND TITLE OF SIGNER (TYPE OR PRINT) James F. Meyer, V.P.	30c. DATE SIGNED 6/18/04
31b. NAME OF CONTRACTING OFFICER (TYPE OR PRINT) ROBERT B. WEBBER	30e. DATE SIGNED 6/18/04

Engineering Fellow - [REDACTED]
 Research Engineer - [REDACTED]
 Principal Engineer - [REDACTED]
 Sr. Engineer - [REDACTED]
 Jr. Info Techno - [REDACTED]
 Total Estimated Labor Hours - [REDACTED]
 Total Labor Costs - \$402,604.10

The address provided in Block 17A is the address carried under the Contractor's DUNS number, 107928806. The contractor's local address is:
 11140 Rockville Pike, Suite 500
 Rockville, MD 20852

32a. QUANTITY IN COLUMN 21 HAS BEEN

RECEIVED INSPECTED ACCEPTED, AND CONFORMS TO THE CONTRACT, EXCEPT AS NOTED: _____

32b. SIGNATURE OF AUTHORIZED GOVERNMENT REPRESENTATIVE	32c. DATE	32d. PRINTED NAME AND TITLE OF AUTHORIZED GOVERNMENT REPRESENTATIVE
--	-----------	---

2e. MAILING ADDRESS OF AUTHORIZED GOVERNMENT REPRESENTATIVE	32f. TELEPHONE NUMBER OF AUTHORIZED GOVERNMENT REPRESENTATIVE
32g. E-MAIL OF AUTHORIZED GOVERNMENT REPRESENTATIVE	

3. SHIP NUMBER	34. VOUCHER NUMBER	35. AMOUNT VERIFIED CORRECT FOR	36. PAYMENT <input type="checkbox"/> COMPLETE <input type="checkbox"/> PARTIAL <input type="checkbox"/> FINAL	37. CHECK NUMBER		
<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:50%; text-align: center;">PARTIAL</td> <td style="width:50%; text-align: center;">FINAL</td> </tr> </table>	PARTIAL	FINAL	39. S/R VOUCHER NUMBER	40. PAID BY		
PARTIAL	FINAL					

41a. I CERTIFY THIS ACCOUNT IS CORRECT AND PROPER FOR PAYMENT	42a. RECEIVED BY (Print)
b. SIGNATURE AND TITLE OF CERTIFYING OFFICER	41c. DATE
42b. RECEIVED AT (Location)	
42c. DATE REC'D (YYMMDD)	42d. TOTAL CONTAINERS

A.1 NRC ACQUISITION CLAUSES - (NRCAR) 48 CFR CH. 20

A.2 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.

A.3 COMPLIANCE WITH U.S. IMMIGRATION LAWS AND REGULATIONS

NRC contractors are responsible to ensure that their alien personnel are not in violation of United States Immigration and Naturalization (INS) laws and regulations, including employment authorization documents and visa requirements. Each alien employee of the Contractor must be lawfully admitted for permanent residence as evidenced by Alien Registration Receipt Card Form I-151 or must present other evidence from the Immigration and Naturalization Services that employment will not affect his/her immigration status. The INS Office of Business Liaison (OBL) provides information to contractors to help them understand the employment eligibility verification process for non-US citizens. This information can be found on the INS website, <http://www.ins.usdoj.gov/graphics/services/employerinfo/index.htm#obl>.

The NRC reserves the right to deny or withdraw Contractor use or access to NRC facilities or its equipment/services, and/or take any number of contract administrative actions (e.g., disallow costs, terminate for cause) should the Contractor violate the Contractor's responsibility under this clause.

(End of Clause)

A.4 2052.209-72 CONTRACTOR ORGANIZATIONAL CONFLICTS OF INTEREST (JAN 1993)

(a) Purpose. The primary purpose of this clause is to aid in ensuring that the contractor:

(1) Is not placed in a conflicting role because of current or planned interests (financial, contractual, organizational, or otherwise) which relate to the work under this contract; and

(2) Does not obtain an unfair competitive advantage over other parties by virtue of its performance of this contract.

(b) Scope. The restrictions described apply to performance or participation by the contractor, as defined in 48 CFR 2009.570-2 in the activities covered by this clause.

(c) Work for others.

(1) Notwithstanding any other provision of this contract, during the term of this contract, the contractor agrees to forego entering into consulting or other contractual arrangements with any firm or organization the result of which may give rise to a conflict of interest with respect to the work being performed under this contract. The contractor shall ensure that all employees under this contract abide by the provision of this clause. If the contractor has reason to believe, with respect to itself or any employee, that any proposed consultant or other contractual arrangement with any firm or organization may involve a potential conflict of interest, the contractor shall obtain the written approval of the contracting officer before the execution of such contractual arrangement.

(2) The contractor may not represent, assist, or otherwise support an NRC licensee or applicant undergoing an NRC audit, inspection, or review where the activities that are the subject of the audit, inspection, or review are the same as or substantially similar to the services within the scope of this contract (or task order as appropriate) except where the NRC

licensee or applicant requires the contractor's support to explain or defend the contractor's prior work for the utility or other entity which NRC questions.

(3) When the contractor performs work for the NRC under this contract at any NRC licensee or applicant site, the contractor shall neither solicit nor perform work in the same or similar technical area for that licensee or applicant organization for a period commencing with the award of the task order or beginning of work on the site (if not a task order contract) and ending one year after completion of all work under the associated task order, or last time at the site (if not a task order contract).

(4) When the contractor performs work for the NRC under this contract at any NRC licensee or applicant site,

(i) The contractor may not solicit work at that site for that licensee or applicant during the period of performance of the task order or the contract, as appropriate.

(ii) The contractor may not perform work at that site for that licensee or applicant during the period of performance of the task order or the contract, as appropriate, and for one year thereafter.

(iii) Notwithstanding the foregoing, the contracting officer may authorize the contractor to solicit or perform this type of work (except work in the same or similar technical area) if the contracting officer determines that the situation will not pose a potential for technical bias or unfair competitive advantage.

(d) Disclosure after award.

(1) The contractor warrants that to the best of its knowledge and belief, and except as otherwise set forth in this contract, that it does not have any organizational conflicts of interest as defined in 48 CFR 2009.570-2.

(2) The contractor agrees that if, after award, it discovers organizational conflicts of interest with respect to this contract, it shall make an immediate and full disclosure in writing to the contracting officer. This statement must include a description of the action which the contractor has taken or proposes to take to avoid or mitigate such conflicts. The NRC may, however, terminate the contract if termination is in the best interest of the Government.

(3) It is recognized that the scope of work of a task-order-type contract necessarily encompasses a broad spectrum of activities. Consequently, if this is a task-order-type contract, the contractor agrees that it will disclose all proposed new work involving NRC licensees or applicants which comes within the scope of work of the underlying contract. Further, if this contract involves work at a licensee or applicant site, the contractor agrees to exercise diligence to discover and disclose any new work at that licensee or applicant site. This disclosure must be made before the submission of a bid or proposal to the utility or other regulated entity and must be received by the NRC at least 15 days before the proposed award date in any event, unless a written justification demonstrating urgency and due diligence to discover and disclose is provided by the contractor and approved by the contracting officer. The disclosure must include the statement of work, the dollar value of the proposed contract, and any other documents that are needed to fully describe the proposed work for the regulated utility or other regulated entity. NRC may deny approval of the disclosed work only when the NRC has issued a task order which includes the technical area and, if site-specific, the site, or has plans to issue a task order which includes the technical area and, if site-specific, the site, or when the work violates paragraphs (c)(2), (c)(3) or (c)(4) of this section.

(e) Access to and use of information.

(1) If in the performance of this contract, the contractor obtains access to information, such as NRC plans, policies, reports, studies, financial plans, internal data protected by the Privacy Act of 1974 (5 U.S.C. Section 552a (1988)), or the Freedom of Information Act (5 U.S.C. Section 552 (1986)), the contractor agrees not to:

(i) Use this information for any private purpose until the information has been released to the public;

(ii) Compete for work for the Commission based on the information for a period of six months after either the completion of this contract or the release of the information to the public, whichever is first;

(iii) Submit an unsolicited proposal to the Government based on the information until one year after the release of the information to the public; or

(iv) Release the information without prior written approval by the contracting officer unless the information has previously been released to the public by the NRC.

(2) In addition, the contractor agrees that, to the extent it receives or is given access to proprietary data, data protected by the Privacy Act of 1974 (5 U.S.C. Section 552a (1988)), or the Freedom of Information Act (5 U.S.C. Section 552 (1986)), or other confidential or privileged technical, business, or financial information under this contract, the contractor shall treat the information in accordance with restrictions placed on use of the information.

(3) Subject to patent and security provisions of this contract, the contractor shall have the right to use technical data it produces under this contract for private purposes provided that all requirements of this contract have been met.

(f) Subcontracts. Except as provided in 48 CFR 2009.570-2, the contractor shall include this clause, including this paragraph, in subcontracts of any tier. The terms contract, contractor, and contracting officer, must be appropriately modified to preserve the Government's rights.

(g) Remedies. For breach of any of the above restrictions, or for intentional nondisclosure or misrepresentation of any relevant interest required to be disclosed concerning this contract or for such erroneous representations that necessarily imply bad faith, the Government may terminate the contract for default, disqualify the contractor from subsequent contractual efforts, and pursue other remedies permitted by law or this contract.

(h) Waiver. A request for waiver under this clause must be directed in writing to the contracting officer in accordance with the procedures outlined in 48 CFR 2009.570-9.

(i) Follow-on effort. The contractor shall be ineligible to participate in NRC contracts, subcontracts, or proposals therefor (solicited or unsolicited), which stem directly from the contractor's performance of work under this contract. Furthermore, unless so directed in writing by the contracting officer, the contractor may not perform any technical consulting or management support services work or evaluation activities under this contract on any of its products or services or the products or services of another firm if the contractor has been substantially involved in the development or marketing of the products or services.

(1) If the contractor, under this contract, prepares a complete or essentially complete statement of work or specifications, the contractor is not eligible to perform or participate in the initial contractual effort which is based on the statement of work or specifications. The contractor may not incorporate its products or services in the statement of work or specifications unless so directed in writing by the contracting officer, in which case the restrictions in this paragraph do not apply.

(2) Nothing in this paragraph precludes the contractor from offering or selling its standard commercial items to the Government.

A.5 2052.215-70 KEY PERSONNEL (JAN 1993)

(a) The following individuals are considered to be essential to the successful performance of the work hereunder:



The contractor agrees that personnel may not be removed from the contract work or replaced without compliance with paragraphs (b) and (c) of this section.

(b) If one or more of the key personnel, for whatever reason, becomes, or is expected to become, unavailable for work under this contract for a continuous period exceeding 30 work days, or is expected to devote substantially less effort to the work than indicated in the proposal or initially anticipated, the contractor shall immediately notify the contracting officer and shall, subject to the concurrence of the contracting officer, promptly replace the personnel with personnel of at least substantially equal ability and qualifications.

(c) Each request for approval of substitutions must be in writing and contain a detailed explanation of the circumstances necessitating the proposed substitutions. The request must also contain a complete resume for the proposed substitute and other information requested or needed by the contracting officer to evaluate the proposed substitution. The contracting officer and the project officer shall evaluate the contractor's request and the contracting officer shall promptly notify the contractor of his or her decision in writing.

(d) If the contracting officer determines that suitable and timely replacement of key personnel who have been reassigned, terminated, or have otherwise become unavailable for the contract work is not reasonably forthcoming, or that the resultant reduction of productive effort would be so substantial as to impair the successful completion of the contract or the service order, the contract may be terminated by the contracting officer for default or for the convenience of the Government, as appropriate. If the contracting officer finds the contractor at fault for the condition, the contract price or fixed fee may be equitably adjusted downward to compensate the Government for any resultant delay, loss, or damage.

**United States Nuclear Regulatory Commission
Office of Nuclear Regulatory Research
STATEMENT OF WORK – ATTACHMENT 1 TO DELIVERY ORDER NO. DR-04-04-069**

**TITLE: SUPPORT IN RISK-INFORMING 10 CFR 50 PART 46 AND GENERAL DESIGN
CRITERION 35**

I. BACKGROUND

In NRC report, SECY-02-0057, "Update to SECY-01-0133, 'Fourth Status Report on Study of Risk-Informed Changes to the Technical Requirements of 10 CFR Part 50 (Option 3) and Recommendation on Risk-Informed Changes to 10 CFR 50.46, Emergency Core Cooling System (ECCS) Acceptance Criteria'," the staff recommended the development of risk-informed approaches to technical requirements in 10 CFR 50.46 concerning loss of coolant accident (LOCA) acceptance criteria and evaluation models.

In its March 31, 2003, staff requirements memorandum (SRM) on this paper, the Commission directed the staff to undertake a number of rulemakings, one of which was to prepare a proposed rule to allow, as a voluntary alternative, a redefinition of the design basis large break LOCA.

Significant challenges have been identified which must be resolved before rulemaking can be initiated. These challenges include: determining the alternate maximum break size risk metric, determining appropriate limitations on what can be modified in a plant, controlling the total risk change, establishing the potential for "reversal" of changes, establishing the appropriate Probabilistic Risk Assessment (PRA) scope, determining the extent to which redefinition of large break LOCA may effect other parts of 10 CFR Part 50, understanding what defense-in-depth considerations are important and deciding what mitigation capability should be retained for break sizes between the new maximum design basis LOCA size and the double-ended guillotine (DEG) break of the largest pipe in the system.

Successful development of the Part 46 rule also requires an understanding of how the maximum LOCA break size impacts the design of a nuclear plant. For design basis analysis, the number, size, capacity, response time, and design capacity of installed systems impacts the plant response to the full LOCA spectrum. The break spectrum is subjected to the most challenging postulated conditions (e.g., worst time in core life, worst single failure, coincident loss of offsite power (LOOP), worst break location). For design basis LOCAs, acceptable fuel performance must be demonstrated with these assumptions using evaluation models acceptable to the NRC.

Design basis LOCAs also play a role in radiological consequence assessment, containment pressure analyses, other structural analyses, and equipment environmental qualification. These Structures, Systems and Components (SSCs) also function to respond to a number of different design basis events. It is important, then, to understand how changes to the plant design basis, such as, changes to the required spectrum of LOCAs analyzed, would impact the need for and response of these SSCs.

II. OBJECTIVE

As indicated, risk-informing 10CFR50.46 raises many difficult technical issues that must be defined, understood and evaluated so as not to inadvertently authorize changes to the plants that were not intended and would not be authorized otherwise. The objective of this contract is to provide support to the Office of Research (RES) as they attempt to resolve the technical challenges associated with the development of a proposed rule. The support is expected to consist primarily of detailed calculational risk results obtained using state-of-the-art calculational tools and models, to be provided by NRC, and modified for this project by the contractor, as necessary. The risk calculations should incorporate knowledge gained from other on-going activities, such as, thermal hydraulic calculations also being performed for this program.

The contractor will work with the nuclear plants designs and their system models which are also being analyzed by other divisions in RES for this rulemaking activity. These other evaluations attempt to gather thermal hydraulic and other plant performance information. This information will help the staff and contractors understand how the plant performs under assumptions postulated to result from a proposed rule and what key factors are expected to impact plant risk.

Once that is understood, the contractor may modify the standard plant risk models to, for instance, take selected systems out of service or change the system success criteria, to determine how risk changes as a result in comparison to the original plant configuration.

III. WORKSCOPE

This section describes the work required of the contractor to provide technical support to the staff as they proceed with rulemaking to risk-inform 10 CFR 50.46. RES has developed this statement of work to address technical issues as directed by the Commission in the SRM on risk informed changes to 10 CFR 50.46, dated March 31, 2003. A draft Integrated RES Task Plan (IRESTP) has been developed which describes the Office's planned efforts to address the technical issues associated with the rulemaking, including those described here. The contractor will interact with other RES contractors performing related work sponsored by other divisions of RES, as described in the IRESTP, and will integrate the results of that work, as necessary, into their efforts.

Task 1. Risk Evaluation of Thermal-Hydraulic Sensitivity Study Results—Thermal hydraulic case studies are being conducted using the TRACE code to better understand how a selected plant will respond to postulated plant changes which might result from a revision to 10 CFR 50.46. Plant changes may include such things as power uprates, changes in core peaking factors, and changes in diesel start times. Studies may also attempt to determine plant performance in the severe accident realm using the MELCOR code. These studies are described in the draft IRESTP, Tasks 2 and 3, attached to this Statement of Work, and are being performed by the Division of Systems Analysis and Regulatory Effectiveness, RES. Following the preliminary thermal hydraulic scoping studies of a selected plant, the contractor shall evaluate the impact on risk metrics, e.g., core damage frequency (CDF) and large early release frequency (LERF) of proposed plant changes. The risk evaluations should take into account the changes in the plant profile, such as, changes in the safety margins and defense-in-depth features, postulated to occur as a result of the voluntary implementation of a proposed rule and as verified by the thermal hydraulic analyses. The risk evaluations should include the effect of changes in safety margins on the following PRA models and assumptions:

- initiating event frequencies

- success criteria
- human actions
- accident sequences and accident propagation assumptions

IRESTP Tasks 2 and 3 included the selection of a surrogate plant for calculation purposes. The same plant should be used by the contractor for this task. Standardized plant analysis risk (SPAR) models with are based upon the NRC code, SAPHIRE, or other appropriate tool as approved by the Project Officer prior to use, will be used for these evaluations.

Estimated Completion Date: November 30, 2004

Task 2. Evaluation of Broader Change to Single Failure Criterion—The contractor shall assist the staff in exploring the feasibility of replacing the single failure criterion with a reliability based criterion incorporating concepts such as common mode failure. The contractor will work with the staff and other NRC contractors to develop and review candidate criteria. In so doing, the contractor will assist the staff to evaluate the pros and cons of the postulated criteria. Calculation efforts will be involved to demonstrate the impact on plant risk of changes postulated to the single failure criterion.

The contractor shall modify a plant risk model, such as a SPAR model, which is based upon an operating plant designed to the current single failure criterion, using a set of assumptions designed to replicate how the plant design basis might change in response to the various replacement criteria. The contractor shall then evaluate the change in plant risk.

Estimated Completion Date: January 31, 2005

Task 3. Development of Regulatory Guide—The contractor shall provide assistance to the staff in the development of a regulatory guide. This guide will provide assistance to the nuclear industry concerning implementation of risk-informed changes to 50.46 requirements as recommended by the staff and approved by the Commission. The guidance to be provided will be based upon results generated from this or related work being performed by other RES divisions. As such, the contractor will provide assistance in integrating input obtained from these activities into the guidance document.

Estimated Completion Date: October 31, 2005

IV REPORTING REQUIREMENTS

Monthly Letter Status Report: Work efforts, progress, problems and plans for the next period in each of the above tasks should be documented in a monthly letter status report (MLSR). The report should include financial information, such as estimated contract amount, funds obligated to date, total costs incurred during reporting period, total costs incurred to date, details on costs incurred, balance of obligations, and balance of obligations to complete task order.

V DELIVERABLES AND DELIVERY SCHEDULE

For all tasks 1 through 3, a draft report is due 1 month prior to the completion date listed in each task. The final report is due on the completion date listed in each task.

The MLSR should be submitted to NRC by the 15th of each month starting the second month of the task order, covering the prior month.

Reports should be in form such that the contractor could easily convert it to a NRC NUREG/CR report, once the work is reviewed by NRC staff and it is finalized.

All reports and the MLSR should be provided to the project manager (PM), the technical monitor (if different from the PM) and the RES management analyst. A copy of the MLSR should also be provided to the contract specialist.

VI MEETINGS AND TRAVEL

The contractor project manager shall plan to meet with NRC staff at headquarters in Rockville, Maryland, approximately 10 times during the contract period for one day each time to discuss the results of the on-going work and intermediate results. In addition, frequent conference calls are expected.

VII PERIOD OF PERFORMANCE

The task order will cover the period which extends 18 months from the date of award.

VIII QUALITY ASSURANCE

Prior to submitting deliverables to the NRC, the contractor shall incorporate sufficient review and quality checks to ensure that the deliverable is technically sound, the assumptions made in the analysis are appropriate and have been adequately justified.

IX GOVERNMENT FURNISHED INFORMATION

NRC will provide SAPHIRE-based SPAR models of nuclear power plants, as well as copies of the SAPHIRE analysis code. A copy of the Draft IRESTP, Tasks 2 and 3, and SRM will also be provided.

X REFERENCES

1. SECY-98-300, "Options for Risk-Informed Revisions to 10 CFR Part 50 - "Domestic Licensing of Production and Utilization Facilities," December 1998. This is the first SECY paper which described three "high level" options for risk-informing 10 CFR Part 50. Option 1 simply consisted of leaving Part 50 as is. Option 2 involved making changes in the scope of structures, systems and components related to special treatment rules (the current rulemaking activity for 10 CFR 50.69). Option 3, described herein, involved making changes to specific regulatory requirements, such as 10 CFR 50.44 and 50.46.
2. SECY-99-264, "Proposed Staff Plan for Risk-Informing Technical Requirements in 10 CFR Part 50," November 1999, described the overall staff plan for Option 3.
3. SECY-00-0198, "Status Report on Study of Risk-Informed Changes to the Technical Requirements of 10 CFR Part 50 (Option 3) and Recommendations on Risk-Informed Changes

to 10 CFR 50.44 (Combustible Gas Control)," provided a description of proposed changes to 50.44 and a proposed framework for considering other changes to Part 50.

4. SECY-01-0133, "Status Report on the Study of Risk-Informed Changes to the Technical Requirements of 10 CFR Part 50 (Option 3) and Recommendations on Risk-Informed Changes to 10 CFR 50.46 (ECCS Acceptance Criteria)," provided preliminary feasibility studies recommending risk-informed changes to Part 50.46.

5. SECY-02-0057, "Update to SECY-01-0133, "Fourth Status Report on Study of Risk-Informed Changes to the Technical Requirements of 10 CFR Part 50 (Option 3) and Recommendations on Risk-Informed Changes to 10 CFR 50.46 (ECCS Acceptance Criteria)," provided specific recommendations for changes to 50.46 in the areas of ECCS break size definition, ECCS acceptance criteria, ECCS reliability and ECCS evaluation model. On March 31, 2003, the Commission provided the latest staff requirements memorandum (SRM) providing their guidance to the staff.

6. Staff Requirements Memorandum, March 31, 2003, pertaining to SECY-02-0057

Note: All SECY reports are available at www.nrc.gov.

XI ATTACHMENTS

1. Draft Integrated Office of Research Task Plan (IRESTP), Tasks 2 and 3, covering Risk-Informed 10 CFR 50.46 Technical Support, February 2004.

STATEMENT OF WORK – ATTACHMENT 1

Draft Integrated Office of Research Task Plan

Risk-Informing 10 CFR 50.46

Task 2. Thermal-Hydraulic Analysis of LOCA

(RES/DSARE)

Task 2A. Background development -Select a candidate plant for analysis. The candidate plant must have an accurate input deck that can be converted to a format suitable for the TRACE code. Perform a literature survey of realistic large and small break calculations performed with best estimate assumptions on safety injection (assuming off-site power available and no failures). *(Completed)*

For the plants selected, simulate a three break spectrum of double-ended guillotine cold leg breaks assuming loss of off-site power and the loss of one diesel generator. Best estimate decay heat is to be assumed. Simulate a double-ended guillotine cold leg break assuming off-site power is available, and no safety-related equipment failures. Best estimate decay heat is to be assumed. *(2nd Quarter FY04)*

Perform base case "as-operated" LOCA analyses for candidate PWR plants including 4, 10 and 12 inch breaks, pressurizer surge line, SI, SG manway, CRDM failure and instrument tube failure. These will establish a reference point for current safety margin. *(2nd Quarter FY04)*

Task 2B. Perform risk-informed LOCA analyses. Review the list of plant operational changes being considered by the Westinghouse Owners Group and NEI for the candidate plants in the sensitivity study. From this, postulate what changes could be accommodated if some or all of the changes became the new design basis. For example, possible changes include a total power increase of 5%, increased peaking factors and diesel start time of 60 seconds. A steady-state result for breaks up to the new redefined large break LOCA will be generated for each plant and the departure from nucleate boiling (DNB) margin evaluated. This becomes the "risk-informed" plant. Run the same cases as in Task 2A. *(3rdQ FY04)*

Task 2C. Comparison of base case and risk-informed LOCA analyses. Assess: (a) what magnitude of power uprate, diesel delay time, and peaking factor increases a risk-informed treatment of maximum break size and locations would enable, (b) if LOCA is still limiting, or would DNB or some other scenario become more limiting, (c) If DNB or another scenario becomes more limiting, would this meet the desired intent of the SRM which is to focus attention on more risk-significant accidents, (d) if the staff defines the maximum credible break size as $X \text{ ft}^2$, does increasing it to $X + 10\%$ send results "over a cliff", or is there margin for error in selection of the new maximum break size? *(3rdQ FY04)*

Task 2D. Accident analysis needs. Evaluate whether existing thermal-hydraulic codes remain adequately validated at modified plant operating conditions. That is, does

experimental data support the peak linear heat rates that may be enabled by the new maximum break size? Similarly, are transients in integral facilities such as ROSA, Semiscale, BETHSY and others still representative of new transients? Are new integral effects tests necessary to support the proposed changes to the regulations?

(4thQ FY04)

Task 3. Thermal-Hydraulic Sensitivity Studies for Beyond Design Basis LOCA

(RES/DSARE)

Task 3A. Three break spectrum. For a three break spectrum of large cold leg breaks assess the risk impacts after incorporating potential plant changes, e.g., power uprates, peaking factor increases and diesel start time delays. Determine if current Appendix K acceptance criteria is exceeded and, if so, by how much.

(4thQ FY04)

Task 3B. New success criteria for beyond DB LOCA. Recommend whether it is feasible to develop a revised ECCS success criteria for breaks beyond the revised DB LOCA which will maintain a coolable fuel geometry. Assess the consequence of a double-ended large break LOCA if the plant is uprated and equipment availability is not as restrictive as currently required?

(4thQ FY04)

Task 4. Risk-Significance Evaluation of Redefined LOCA Break Sizes and Frequencies

(RES/DRAA)

For selected plants, calculate the contributions of various LOCA sizes to total plant CDF. These calculations should be based upon redefined LOCA sizes and their new frequencies. The plant-specific SPAR models will be used for these evaluations. Limited evaluations will be performed to calculate LERF as well, when those SPAR models are available. The plants selected should include two to four from each reactor vendor. The results should provide plant-specific risk insights on the impact of redefined LOCA sizes.

This task will also study the various candidate risk acceptance criteria. For example, RG 1.174 provides a basis for accepting plant changes based upon risk considerations. This task will evaluate the pros and cons of various acceptance criteria in an attempt to uncover potential implications and surprises.

(4thQ FY04)

**ATTACHMENT 2- DELIVERY ORDER NO. DR-04-04-069
BILLING INSTRUCTIONS FOR
FIXED PRICE CONTRACTS (October 2003)**

General: The contractor is responsible during performance and through final payment of this contract for the accuracy and completeness of the data within the Central Contractor Registration (CCR) database, and for any liability resulting from the Government's reliance on inaccurate or incomplete CCR data. The contractor shall prepare vouchers or invoices as prescribed herein. **FAILURE TO SUBMIT VOUCHERS/INVOICES IN ACCORDANCE WITH THESE INSTRUCTIONS WILL RESULT IN REJECTION OF THE VOUCHER/INVOICES AS IMPROPER.**

Form: Claims shall be submitted on the payee's letterhead, voucher/invoices, or on the Government's Standard Form 1034, "Public Voucher for Purchases and Services Other than Personal," and Standard Form 1035, "Public Voucher for Purchases Other than Personal-- Continuation Sheet." These forms are available from the U.S. Government Printing Office, 710 North Capitol Street, Washington, DC 20401.

Number of Copies: An original and three copies shall be submitted. Failure to submit all the required copies will result in rejection of the voucher/invoice as improper.

Designated Agency Billing Office: Vouchers/Invoices shall be submitted to the following address:

U.S. Nuclear Regulatory Commission
Division of Contracts - T-7-I-2
Washington, DC 20555-0001

A copy of any invoice which includes a purchase of property valued at the time of purchase at \$5000 or more, shall additionally be sent to:

NRC Property Management Officer
Administrative Services Center
Mall Stop - T-7-D-27
Washington, DC 20555-0001

HAND-DELIVERY OF VOUCHERS/INVOICES IS DISCOURAGED AND WILL NOT EXPEDITE PROCESSING BY THE NRC. However, should you choose to deliver vouchers/invoices by hand, including delivery by any express mail service or special delivery service which uses a courier or other person to deliver the vouchers/invoices in person to the NRC, such vouchers/invoices must be addressed to the above Designated Agency Billing Office and will only be accepted at the following location:

U.S. Nuclear Regulatory Commission
One White Flint North - Mail Room
11555 Rockville Pike
Rockville, MD 20852

HAND-CARRIED SUBMISSIONS WILL NOT BE ACCEPTED AT OTHER THAN THE ABOVE ADDRESS

Note that the official receipt date for hand-delivered vouchers/invoices will be the date it is received by the official agency billing office in the Division of Contracts.

Agency Payment Office: Payment will continue to be made by the office designated in the contract in Block 12 of the Standard Form 26 or Block 25 of the Standard Form 33, whichever is applicable.

Frequency: The contractor shall submit a voucher or invoice only after the NRC's final acceptance of services rendered or products delivered in performance of the contract unless otherwise specified in the contract.

Preparation and Itemization of the Voucher/Invoice: The voucher/invoice shall be prepared in ink or by typewriter (without strike-overs). Corrections or erasures must be initialed. To be considered a proper voucher/invoice, all of the following elements must be included:

1. Contractor's Data Universal Number (DUNS) or DUNS+4 number that identifies the contractor's name and address. The DUNS+4 number is the DUNS number plus a 4-character suffix that may be assigned at the discretion of the contractor to identify alternative Electronic Funds Transfer (EFT) accounts for the same parent concern.
2. Contract number.
3. Sequential voucher/invoice number.
4. Date of voucher/invoice.
5. Payee's name and address. Show the name of the Payee as it appears in the contract and its correct address. If the Payee assigns the proceeds of this contract as provided for in the assignment of claims terms of this contract, the Payee shall require as a condition of any such assignment, that the assignee shall register separately in the Central Contractor Registration (CCR) database at <http://www.ccr.gov> and shall be paid by EFT in accordance with the terms of this contract. See Federal Acquisition Regulation 52.232-33(g) Payment by Electronic Funds Transfer - Central Contractor Registration (October 2003).
6. Description of articles or services, quantity, unit price, and total amount.
7. For contractor acquired property list each item purchased costing \$50,000 or more and having a life expectancy of more than 1 year and provide: (1) an item description, (2) manufacturer, (3) model number, (4) serial number, (5) acquisition cost, (6) date of purchase, and (7) a copy of the purchasing document.
8. Weight and zone of shipment, if shipped by parcel post.
9. Charges for freight or express shipments. Attach prepaid bill if shipped by freight or express.
10. Instructions to consignee to notify the Contracting Officer of receipt of shipment.
11. For Indefinite Delivery contracts or contracts under which progress payments are authorized, the final voucher/invoice shall be marked "FINAL VOUCHER" OR "FINAL INVOICE."

Currency: Billings may be expressed in the currency normally used by the contractor in maintaining his accounting records and payments will be made in that currency. However, the U.S. dollar equivalent for all vouchers/invoices paid under the contract may not exceed the total U.S. dollars authorized in the contract.

Supersession: These instructions supersede any previous billing instructions.

P:\Billing instruct FP 2003.wpd