

2. AMENDMENT/MODIFICATION NO. M002	3. EFFECTIVE DATE 8-1-2004	4. REQUISITION/PURCHASE REQ. NO. RES-02-054	5. PROJECT NO. (if applicable)
6. ISSUED BY U.S. Nuclear Regulatory Commission Div of Contracts Two White Flint North - MS T-7-I-2 Washington, DC 20555	CODE 3100	7. ADMINISTERED BY (if other than Item 6) U.S. Nuclear Regulatory Commission Div of Contracts Two White Flint North - MS T-7-I-2 Washington, DC 20555	CODE 3100

8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code) <i>Information Systems 1140 Rockville Pike Suite 500 Rockville MD 20852</i>	(X)	9A. AMENDMENT OF SOLICITATION NO.
		9B. DATED (SEE ITEM 11)
		10A. MODIFICATION OF CONTRACT/ORDER NO. NRC-04-02-054 T011
	X	10B. DATED (SEE ITEM 13)
CODE 150135445	FACILITY CODE	

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers is extended, is not extended. Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods: (a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment of each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required) RES-C04-475 31X0200 46015110201 Y6522 252A \$46,980

13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS, IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

(X)	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).
X	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF: Mutual Agreement
	D. OTHER (Specify type of modification and authority)

E. IMPORTANT: Contractor is not, is required to sign this document and return two copies to the Issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)
The purpose of this modification is to add more tasks to the SOW of this task order. Accordingly, the attached SOW is hereby incorporated into Task Order 11. As a result, the estimated cost is increased by \$43,507 from \$278,075 to \$321,582. The fixed fee is increased by \$3,473 from \$20,775 to \$24,248. The total CPPF is increased by \$46,980 from \$298,850 to \$345,830. Funds in the amount of \$46,980 are hereby allotted to this task order to fully fund the TO. The period of performance is extended to run from 9/4/03 to 11/30/04.

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print) James F. Meyer, V.P.	16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print) Stephen Pool
15B. CONTRACTOR OFFER BY <i>[Signature]</i> (Signature of person authorized to sign)	15C. DATE SIGNED 8/26/04
16B. UNITED STATES OF AMERICA BY <i>[Signature]</i> (Signature of Contracting Officer)	16C. DATE SIGNED 8/24/04

**STATEMENT OF WORK
NRC-04-02-054 TASK ORDER 11 MOD 2**

TITLE: Safety Margins and Impact of Plant Changes on Margins/CSNI

I. BACKGROUND

This modification – Phase 2 of a multi-phase program – will continue to support the NRC's program to investigate safety margins and the effect of plant changes on those safety margins. Under this Task Order Modification, the contractor will modify the existing "Interim Report" to produce a final report on the methodology developed in Phase 1 that uses a systematic risk and deterministic process to evaluate the change in safety margin due to plant changes, such as power uprates, higher fuel burn-up, longer operating cycles, and plant aging.

Phase 1 of this Task Order provided a draft "Interim Report" delivered to the NRC staff for comment on April 30, 2004. This report presented the theory and background for the new framework and demonstrated its capability by using as a test case the success paths for the LBLOCA for a typical BWR-4. Comments from the NRC staff requested a different approach to the executive summary, making it more readable to the anticipated stakeholder, and also requested a further look at the set of indices originally chosen to provide insights into changes in plant safety. Phase two is to complete the interim report, based on this staff guidance.

II. OBJECTIVE OF PROPOSED WORK

The objective of this project is to continue to support the NRC's program to investigate safety margins and the effect of plant changes on those safety margins.

Phase 1 developed the methodology using a systematic risk and deterministic process to evaluate the change in safety margin due to plant changes, such as power up-rates, higher fuel burn-up, longer operating cycles, and plant aging.

For phase 2 of this project, the contractor will modify the existing "Interim Report" produced in phase 1, to produce a final report, based on staff guidance.

III. SCOPE OF WORK

Task 13. Finalize Interim Safety Margin Report as NUREG/CR with reader-friendly Executive Summary

The April 30, 2004 version of the interim report will be revised for final NRC staff review and comment. In addition, the executive summary of the report will be rewritten and the overall report structure modified to make it more readable and convincing to NRC management. The review draft will be provided to the NRC staff in NUREG/CR format for planned publication in October. A summary paper, based on the interim report, will be prepared and presented at the Nuclear Safety Research Conference (NSRC) in October 2004.

The main body of this report will be a condensed version of the current draft report. Much of the detail will be moved to appendices. A stand-alone ABSTRACT will be added to the front of the report to give a very brief summary of the whole document. A new "Executive Summary," with a maximum of four pages, will be added to the report and will reference the more detailed aspects of the study.

Guidelines for the main body of the report are as follows:

Clearer description of the need for this expansion of the conventional safety margin assessment practice, i.e., why are we doing this? What are the intended applications? How will the information be employed? This should be written from the users point of view with limited use of equations.

Plain English will be used. If any term is introduced which may be unfamiliar to a general NRC engineering level audience, a plain-English explanation is required. An example is "success path." We will try to eliminate any new or non-standard terminology if at all possible. The appendices will be arranged in such a way that the reader can get the details on the framework structure, the PRA aspects, the deterministic analysis, and the example (LBLOCA).

The new outline of the report will be as follows (Note it is described relative to the Table of Contents of the 4/30/04 report.):

EXECUTIVE SUMMARY

ABSTRACT

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

NOMENCLATURE

1.0 INTRODUCTION

The current Intro will be integrated into the new main body with any duplication eliminated.

2.0 PROPOSED SAFETY INDEX FRAMEWORK

This, and the "Section 2" details below will become the "Framework" Appendix

2.1 THE PROPOSED APPROACH

2.2 BARRIER PERFORMANCE PARAMETERS

2.3 DEFINITION OF BARRIER DAMAGE STATES

2.4 DEFINITION OF SAFETY INDICES FOR A GIVEN TRANSIENT

2.5 DEFINITION OF A UNIQUE PLANT SAFETY METRIC

3.0 DETERMINISTIC MODEL DEVELOPMENT AND ANALYSIS

This, and the "Section 3.1 and 3.2" details from the draft report will become the "Deterministic model development" Appendix.

3.1 MODEL REQUIREMENTS AND OBJECTIVES

3.2 RELAP5 MODEL FOR GENERIC BWR 4 WITH MARK I CONTAINMENT

"Section 3.3" details from the draft report and certain portions of "Section 4.1" will become the "PRA model development" Appendix

3.3 ANALYSIS OF SELECTED SUCCESS AND FAILURE PATHS ASSUMING LBLOCA

"Section 3.4" details below and certain other portions of "Section 4.1" below will become the "LBLOCA example" Appendix

3.4 SAFETY MARGINS FOR SELECTED LBLOCA CASES

4.0 SPECIFICATION OF EVENT SEQUENCES FOR T/H ANALYSIS

4.1 SENSITIVITY OF PROPOSED SAFETY STATE METHODOLOGY TO DESIGN, OPERATIONAL, AND REGULATORY CHANGES

5.0 SUMMARY OBSERVATIONS AND FUTURE WORK

5.1 SUMMARY OBSERVATIONS

5.2 FUTURE WORK

6.0 REFERENCES

7.0 GLOSSARY

Completion Date: 11/30/04

IV. REPORTING REQUIREMENTS

See Task 13.

PUBLICATIONS NOTE

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.

V. Deliverables and Delivery Schedule

1. A Monthly Letter Status Report is to be submitted to the NRC Project Manager 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)

Division of Contracts, Office of Administration (Mail Stop T-712) - an electronic copy only to Mary Lynn Scott, email address mls2@nrc.gov and to Debra Robinson, email address [djrl@nrc.gov](mailto:djr1@nrc.gov). If the contractor cannot comply with the request for electronic transfer to the Division of Contracts, please provide a hard copy addressed to Ms. Scott, Mail Stop T-7 12.

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

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.

2. Task 13 will result in a Safety Margins Status Report in NUREG/CR format due 11/30/04.

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.
- (2) **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.

VI. MEETINGS AND TRAVEL REQUIREMENTS

No travel is required for completion of this phase.

VII. DURATION OF TASK ORDER

Summary of Tasks, Period of Performance: Phase 2

Task #	Task Title	Period of Performance
13	Finalize Interim Safety Margin Report	08/24/04 - 11/30/04

VIII. PERIOD OF PERFORMANCE

The period of performance of this task order is TO effective date through November 1, 2004.

X. 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.

XI. NRC-FURNISHED MATERIAL

None.