

ORDER FOR SUPPLIES OR SERVICES

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

BPA NO.

1. DATE OF ORDER 5/16/05	2. CONTRACT NO. (if any) NRC-04-04-065	6. SHIP TO.	
3. ORDER NO. T002	MODIFICATION NO.	4. REQUISITION/REFERENCE NO. RES-04-065	
5. ISSUING OFFICE (Address correspondence to) U.S. Nuclear Regulatory Commission Division of Contracts Mail Stop: T-7-I-2 Contract Management Branch 2 Washington, DC 20555		a. NAME OF CONSIGNEE U.S. Nuclear Regulatory Commission ATTN: Michael B. Rubin	

b. STREET ADDRESS M/S: T-10K8		c. CITY Washington	d. STATE DC	e. ZIP CODE 20555
7. TO:		f. SHIP VIA		

a. NAME OF CONTRACTOR INFORMATION SYSTEMS LABORATORIES		8. TYPE OF ORDER		
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b. COMPANY NAME		<input type="checkbox"/> a. PURCHASE	<input checked="" type="checkbox"/> b. DELIVERY
c. STREET ADDRESS 11140 ROCKVILLE PIKE STE 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 MD 208522310		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.	

e. STATE		f. ZIP CODE	
9. ACCOUNTING AND APPROPRIATION DATA B&R: 56015111201 Job Code: N6082 BOC: 252A 31X0200.560 FFS No: RES-C05-346 OBLIGATE: \$243,096.00		10. REQUISITIONING OFFICE Office of Nuclear Regulatory Research	

11. BUSINESS CLASSIFICATION (Check appropriate box(es))			12. F.O.B. POINT N/A
<input type="checkbox"/> a. SMALL	<input checked="" type="checkbox"/> b. OTHER THAN SMALL	<input type="checkbox"/> c. DISADVANTAGED	<input type="checkbox"/> g. SERVICE-DISABLED VETERAN-OWNED
<input type="checkbox"/> d. WOMEN-OWNED	<input type="checkbox"/> e. HUBZone	<input type="checkbox"/> f. EMERGING SMALL BUSINESS	

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

17. SCHEDULE (See reverse for Rejections)

ITEM NO. (A)	SUPPLIES OR SERVICES (B)	QUANTITY ORDERED (C)	UNIT (D)	UNIT PRICE (E)	AMOUNT (F)	QUANTITY ACCEPTED (G)
	<p>SEE ATTACHED PAGE 2 OF 2 FOR DESCRIPTION OF TASK ORDER NO. 002 UNDER NRC-04-04-065</p> <p>Title: Further Development of Generalized Margins Framework Period of Performance: 4/14/05 through 4/13/06</p> <p>Reimbursable Costs: \$225,096.00 Fixed Fee: \$18,000.00 Total Costs and Fee: \$243,096.00</p> <p>This task order is fully funded.</p> <p>Contractor Signature Required on Page 2 of 2</p>					

18. SHIPPING POINT		19. GROSS SHIPPING WEIGHT		20. INVOICE NO.		\$243,096.00	17(H) TOTAL (Cont. pages)
SEE BILLING INSTRUCTIONS ON REVERSE		21. MAIL INVOICE TO:					
a. NAME U.S. Nuclear Regulatory Commission Div. of Contracts, Mail Stop: T-7-I-2		b. STREET ADDRESS (or P.O. Box) ATTN: NRC-04-04-065, Task Order No. 002				NTE \$243,096.00	17(I) GRAND TOTAL
c. CITY Washington	d. STATE DC	e. ZIP CODE 20555					

22. UNITED STATES OF AMERICA BY (Signature) 	23. NAME (Typed) Sharon D. Stewart Contracting Officer TITLE: CONTRACTING/ORDERING OFFICER
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AUTHORIZED FOR LOCAL REPRODUCTION
PREVIOUS EDITION NOT USABLE
TEMPLATE - ADM001

SISP REVIEW COMPLETE

OPTIONAL FORM 347 (REV. 3/2005)
PRESCRIBED BY GSA/FAR 48 CFR 53.213(e)
ADM002

This confirms the verbal authorization that was provided to Information Systems Laboratories, Inc. (ISL) on 4/14/05, to begin work under Task Order No. 002, effective 4/14/05, with a temporary ceiling of \$50,000.00.

In accordance with Section G.4, Task Order Procedures, of contract number NRC-04-04-065, this definitizes Task Order No. 002. The effort shall be performed in accordance with the enclosed Statement of Work.

Task Order No. 002 shall be in effect from April 14, 2005, through April 13, 2006, with a cost ceiling of \$243,096.00. The amount of \$225,096.00 represents the estimated reimbursable costs, and the amount of \$18,000.00 represents the fixed fee. Funds in the amount of \$243,096.00 (including the \$50,000 temporary ceiling) are being obligated under this task order. This task order is fully funded.

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

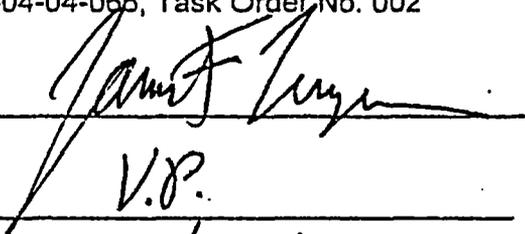
The issuance of this task order does not amend any terms or conditions of the subject contract.

Your contacts during the course of this task order are:

Technical Matters:	Michael Rubin Project Officer (301) 415-6769	Contractual Matters:	Mona Selden Contract Specialist (301) 415-7907
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Acceptance of Task Order No. 002 should be made by having an official, authorized to bind your organization, execute three copies of this document in the space provided and return two copies to the Contract Specialist. You should retain the third copy for your records.

ACCEPTED: NRC-04-04-065, Task Order No. 002



NAME

V.P.
TITLE

5/16/05
DATE

Enclosure: Statement of Work

STATEMENT OF WORK
NRC-04-04-065
TASK ORDER NO. 002

TITLE: Further Development of Generalized Margins Framework

PERIOD OF PERFORMANCE: April 14, 2005 through April 13, 2006.

I. BACKGROUND

The subject research effort began in 2003. The product of the work is a framework for the quantification of global margins that captures and integrates the elements of Regulatory Guide 1.174. The framework proposes a set of plant safety metrics that are performance-based and risk-informed. The methodology followed to systematically compute plant safety performance metrics is prescribed.

The margins framework has been disseminated by multiple means among internal stakeholders and, to a lesser extent, to the general technical community. The concepts of the framework were published in the transactions for and presented at the 2004 Best Estimate Meeting. The framework was also presented at the 2004 NSRC meeting. The draft NUREG report describing the framework was distributed to internal stakeholders in November 2004. Lead NRC staff have met with staff in DSAA/NRR and DRAA/RES to introduce the concepts of the framework to internal stakeholders. Further briefings are anticipated in early 2005. Internal stakeholder comments will be received in early 2005, and addressed, as appropriate in the final NUREG report.

The draft margins report has also been distributed among members of the Safety Margins Action Plan (SMAP) within the Committee for the Safety of Nuclear Installations (CSNI) of the Nuclear Energy Agency (NEA) at their November 2004 meeting. Feedback from the international community will be incorporated, as appropriate, into the margins framework.

The framework has reached a level of maturity sufficient for application to specific safety inquiries. ISL has generated a simplified example application to investigate the effect of a power uprate in a generic BWR4 on fuel cladding margin. The Office of Nuclear Regulatory Research (RES) staff has applied the framework to scoping calculations carried out in support of large break LOCA redefinition. It is anticipated that application of the framework will lead to further advances in the methodology and further refinement of details. Furthermore, the application of the framework to existing safety inquiries will further disseminate the methodology and enhance the feedback received from internal stakeholders.

II. OBJECTIVE OF PROPOSED WORK

The Contractor shall assist RES staff in advancing and applying the global margins framework described in the NUREG draft report of November 2004. This assistance shall include finalizing the NUREG report. Additionally, the Contractor shall support the NRC in documenting specific requirements of the margins framework to the level of detail necessary for practical implementation by NRC stakeholders. The Contractor shall also assist the NRC with the

application of the margins framework to current NRC safety inquiries. Such applications may include, among others, investigations related to large break LOCA redefinition and GSI 191.

III. SCOPE OF WORK

Task 1. Finalizing the Definitions of Terminology and Related Concepts

This task includes defining the concepts of safety margins and generalized margins, as well as all terminology employed in the quantification of margins. The basis for this document is the terminology and definitions used in the margins framework draft report. The revised and expanded definitions will ensure that the safety margins framework terminology is consistent with current usage, acceptable to NRC stakeholders and, if possible, international stakeholders.

As needed, the Contractor shall assist the NRC in finalizing the terminology and conceptual definitions necessary for the margins framework.

Deliverable	Completion date
Letter report collating definitions and terminology	May 31, 2005

Task 2: Draft a Guiding Document for the Assessment Process for Generalized Margins

This task includes developing guidance for building a complete set of representative initiators and associated event trees using existing PRA trees and design basis events as a starting point. The changes in representative initiators and associated event trees induced by changes in the plant (e.g., aging, uprates, and operations modifications) have to be identified. The information necessary for quantifying generalized margins will be summarized. Specific guidance will be included for the safety inquiries of Task 6.

Working with NRC staff, the Contractor shall summarize requirements and restrictions imposed by the margins framework on developing a complete set of representative initiators and event trees. The Contractor shall draft detailed outlines of letter reports addressing each of the elements necessary to document the assessment process. The Contractor shall modify and change the detailed outlines according to technical direction received from NRC staff. Upon receiving approval of the detailed outline from the NRC Technical Monitor, the Contractor shall draft the reports. Format guidance shall be provided by the NRC Technical Monitor.

Deliverable	Completion date
Letter report summarizing requirements for the complete PRA set	May 16, 2005
Detailed outline for documenting changes in initiators and event trees	May 16, 2005
Draft report on changes in initiators and event trees	May 31, 2005
Detailed outline for documenting information necessary for quantifying global margins	May 16, 2005
Draft report on information necessary for quantifying global margins	May 31, 2005

Task 3: Draft Margins Evaluation Methods Document

A summary of existing methods used to estimate the dynamic behavior of the plant under accident conditions, e.g., "very conservative" (Appendix K), best estimates and uncertainties, "bounded best estimates", qualitative, realistic conservative, etc., will be prepared. Guidance needs to be provided on applying computational analysis capability. A significant aspect of this guidance includes dealing with uncertainties, aleatory and epistemic. Examples of methods appropriate for fuel design, thermal-hydraulics, containment behavior, structural behavior, materials, human factors, neutron kinetics, etc., will be included. Specific methods necessary for the safety inquiries of Task 6 will be addressed.

Working with NRC staff, the Contractor shall summarize and describe existing computational methods, and rank them according to the degree of conservatism. ISL shall draft detailed outlines of letter reports addressing existing computational methods and their applicability to the margins framework. The Contractor shall modify and change the detailed outlines according to technical direction received from NRC staff. Upon receiving approval of the detailed outline from the NRC Technical Monitor, ISL shall draft the reports. Format guidance shall be provided by the NRC Technical Monitor.

As needed, the Contractor shall assist the NRC by performing the following:

- draft a detailed outline for a letter report summarizing existing methods used to estimate plant behavior under accident conditions. The Contractor shall modify and change the detailed outline according to technical direction received from NRC staff. Upon receiving approval of the detailed outline from the NRC Technical Monitor, the Contractor shall draft a letter report on existing methods used to estimate plant behavior under accident conditions. Format guidance shall be provided by the NRC Technical Monitor.

- draft a detailed outline for a letter report providing guidance on the application of computational analysis capabilities. Provisions for dealing with uncertainty shall be included. The Contractor shall modify and change the detailed outline according to technical direction received from NRC staff. Upon receiving approval of the detailed outline from the NRC Technical Monitor, the Contractor shall draft a letter report providing guidance on the application of computational analysis capabilities. Format guidance shall be provided by the NRC Technical Monitor.

Deliverable	Completion date
Detailed outline for methods summary draft report	May 16, 2005
Draft report on methods summary	May 31, 2005
Detailed outline for application of computational tools draft report	May 16, 2004
Draft report on application of computational tools	June 30, 2005

Task 4: Draft Margins Quantification Document

A document containing guidance for the practical implementation of the margins framework will be prepared. The guidance will include the identification of safety variables and parameters that affect the generalized plant margin (e.g., fuel design, thermal-hydraulics, containment behavior, structural behavior, materials, human factors, neutron kinetics, etc.). The methodology presented in the margins draft report will then be used to provide guidance for developing a baseline of analyses that allows for assessing the deterioration or enhancement of barrier safety performance and overall plant safety. Requirements for the safety inquiries of Task 6 shall be emphasized.

Working with NRC staff, the Contractor shall prepare a practical implementation guidance document for the application of the margins framework. The guidance document shall include the identification and list of parameters and variables that impact plant safety, and must thus be considered in the application of the margin framework. The Contractor shall draft detailed outlines of letter reports on the practical implementation guidance document and safety parameter list. The Contractor shall modify and change the detailed outlines according to technical direction received from NRC staff. Upon receiving approval of the detailed outline from the NRC Technical Monitor, the Contractor shall draft the reports. Format guidance shall be provided by the NRC Technical Monitor.

As needed, the Contractor shall assist the NRC by performing the following:

- draft a detailed outline of the document providing guidance for the practical implementation of the margins framework. The Contractor shall modify and change the detailed outline according to technical direction received from NRC staff. Upon receiving approval of the detailed outline from the NRC Technical Monitor, the Contractor shall draft the letter report providing guidance for the practical implementation of the margins framework. Format guidance shall be provided by the NRC Technical Monitor.

- draft a detailed outline for the letter report identifying and listing parameters and variables that impact plant safety. The Contractor shall modify and change the detailed outline according to technical direction received from NRC staff. Upon receiving approval of the detailed outline from the NRC Technical Monitor, the Contractor shall draft the letter report providing guidance on the application of computational analysis capabilities. Format guidance shall be provided by the NRC Technical Monitor.

Deliverable	Completion date
Detailed outline for application guidance draft report	April 16, 2005
Draft report on application guidance	April 29, 2005
Detailed outline for safety variables and parameters draft report	April 16, 2005
Draft report on safety variables and parameters	April 29, 2005

Task 5. Follow-up Actions to Finalize the NUREG Report on a Generalized Framework for Quantifying Margins in Nuclear Power Plants

A draft report on the margins framework has been distributed for review and comment to NRC stakeholders. The comments will be collated and addressed. The final NUREG report will be revised, as appropriate, in response to internal stakeholder comments.

As needed, the Contractor shall provide assistance to NRC staff in finalizing the NUREG report on margins. The assistance shall consist of technical support in the review and revision process of the document, and editorial support in generating the final, formatted NUREG report.

Deliverable	Completion Date
Formatted NUREG report with final comment resolutions	April 29, 2005

Task 6. Applications of the Margins Framework to Current Safety Inquiries

The Contractor has provided an example application for the draft NUREG report on margins. In this simplified application, the effect of a power uprate to 120% in a generic BWR4 was determined in the case of a large break LOCA. NRC staff has also preliminarily applied the margins framework to investigate the consequences of a 110% power uprate in a PWR, in which the containment spray system actuates or fails during a small, medium and large break transient. While presenting the framework in meetings with NRC stakeholders, potential applications were identified and suggested. The following are examples of potential applications of the margins framework, e.g.:

- safety consequences of foreseeable plant modifications following the large break LOCA redefinition, for example:

- relaxation of Diesel generator start time requirements
- reduction of vessel fluence by allowing higher peaking factors
- staggered accumulator injection setpoints

- the impact of potential debris blockage on global plant safety

- the usefulness of the margins framework in the regulatory decision making process, for example, the Davis Besse decision

- the potential granting of exemptions, e.g.:

- consideration of loss of offsite power coincident with a large break LOCA
- credit for containment overpressure to provide ECCS pump net positive suction head

- the inclusion of operator intervention time as a safety metric in the computation of global margin for the plant

The application of the margins framework requires the following steps to be carried out separately for the plant before the modification and then the modified plant:

1. identification of safety parameters impacted by the modification (e.g., peak clad temperature, cladding oxidation, peak containment pressure),
2. identification of safety parameter physical and regulatory thresholds and limits necessary for indexing the safety metrics (e.g., regulatory acceptance limit, clad temperature disruption threshold, containment design pressure, containment failure limit),
3. identification of all event-scenarios that are affected by a modification to the plant (e.g., large break LOCA event tree, medium break LOCA event tree, small break LOCA event tree, loss of off-site power event tree),
4. computation of frequencies associated with each safety-relevant event scenario,
5. computations of limiting safety parameter values during all safety relevant, marginal event scenarios, in which the consequences of the transient are not a priori determined as either completely benign or complete loss of function,
6. computation of safety metrics associated with each safety parameter in each safety relevant event scenario
7. aggregation of safety metrics over the entire event scenario space and, if possible,
8. computation of global plant safety metrics.

The decision making is then based not just on the global safety metrics, but also on all subsidiary metrics used to obtain the global metric.

As needed, the Contractor shall provide assistance to NRC staff in the application of the margins framework to current NRC safety inquiries. The NRC Technical Monitor shall assign five safety inquiries to the Contractor as they are prioritized within RES. The Contractor shall work with the NRC Technical Monitor to identify relevant safety parameters and limits for each safety inquiry. Contractor support shall include PRA and deterministic analyses at a sufficient level of detail to generate event-scenario, aggregate and global margins. The Contractor shall provide detailed drafts of each deliverable for the review and approval of the NRC Technical Monitor prior to submitting the final deliverable to the NRC.

Deliverables for Each of the Five Tasked Safety Inquiries

Identification of safety parameters and limits necessary and sufficient for the specific safety inquiry

Event scenario identification, including safety relevant event scenario frequencies for plant

Completion Date

within one week from safety inquiry assignment

within two weeks from safety

before and after modification	inquiry assignment
Deterministic analyses for all safety parameters, during all safety-relevant, marginal event scenarios	within four weeks from safety inquiry assignment
Computation of event-scenario, aggregate and global safety metrics	within four weeks from safety inquiry assignment
Letter report summarizing the PRA and deterministic approach, as well as the computed safety metrics for the base and modified case	within eight weeks from safety inquiry assignment

IV. REPORTING REQUIREMENTS

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

Office of Nuclear Regulatory Research Project Officer and Technical Monitor

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

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

The Monthly Letter Status Report will identify the title of the project, the job code, the Principal Investigator, the period of performance, the reporting period, summarize each month's technical progress, list monthly spending, total spending to date, and the remaining funds. Any administrative or technical difficulties which may affect the schedule or costs of the project shall be immediately brought to the attention of the NRC project manager.

V. DELIVERABLES AND DELIVERY SCHEDULE

These are defined at the end of each task.

Note:

- (1) NRC has implemented a new document management system, Agencywide Documents Access and Management System (ADAMS). For the present, contractors' mail will not be placed in ADAMS. All documents mailed to NRC (e.g., letters, technical reports, monthly letter reports, and other mail) should have "Addressee Only" on the envelope to keep it from being entered into ADAMS. Send mail for the addressee and cc's as separate mailings.

VI. MEETINGS AND TRAVEL REQUIREMENTS

Meetings are to take place with the NRC staff at NRC headquarters facilities or the ISL Rockville office. Other travel such as technical professional society meetings to present papers may be considered if needed, but must be approved by the NRC Project Manager. Foreign travel must be approved by processing NRC Form 445, in addition to being provided as part of the approved proposal.

VII. TECHNICAL DIRECTION

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

Mail Stop: (T-10 K08)
U. S. Nuclear Regulatory Commission
Washington DC 20555-0001
Phone: (301) 415-5332
Fax: (301) 415-5160
Email: mxq5@nrc.gov

VIII. 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.

IX. 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.

X. NRC-FURNISHED MATERIALS

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

XI. TECHNICAL AND OTHER SPECIAL QUALIFICATIONS REQUIRED

The Contractor shall provide personnel who are experienced with the margins framework.

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 the technical objectives of the work specified in this SOW. The NRC will rely on representations made by the contractor concerning the qualifications of the personnel assigned to this task order including assurance that all information contained in the technical and cost proposal, including resumes, is accurate and truthful. In addition, the contractor and personnel assigned to this work must be approved for handling and working with proprietary information.

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

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

XII. 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.

XIII. 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.