AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

BPA NO. | 1. CONTRACT ID CODE | PAGE 1 | OF PAGES 2

2. AMENDMENT/MODIFICATION NO.: 0001

3. EFFECTIVE DATE: NOV 20 2008

4. REQUISITION/PURCHASE REQ. NO.: 03-07-036 NRO-09-036

5. PROJECT NO.(If applicable):

6. ISSUED BY — CODE 3100

U.S. Nuclear Regulatory Commission
Div. of Contracts
Attn: Kala Shankar 301-415-6310
Mail Stop TWB 01-B10M
Washington, DC 20555

7. ADMINISTERED BY (If other than Item 6) — CODE 3100

U.S. Nuclear Regulatory Commission
Div. of Contracts
Mail Stop TWB 01-B10M

Washington, DC 20555

8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code)

INFORMATION SYSTEMS LABORATORIES, INC
ISL
ATTN: DR. JAMES F. MEYER

11140 ROCKVILLE PIKE, SUITE 500

ROCKVILLE MD 20852

CODE 107928806 | FACILITY CODE

(X) 9A. AMENDMENT OF SOLICITATION NO.

9B. DATED (SEE ITEM 11)

10A. MODIFICATION OF CONTRACT/ORDER NO. NRC-42-07-036 0039

X 10B. DATED (SEE ITEM 13) 05-21-2008

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 on 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) 925-15-171-103; Q4160; 252A; 31X0200.925 $24,547.54

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).

C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:

X D. OTHER (Specify type of modification and authority) Mutual Agreement of Both Parties
Incremental Funding

E. IMPORTANT: Contractor ☐ is not, ☒ is required to sign this document and return 2 _____ 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 task order is to 1) incorporate the revised statement of work, and 2) increase the task order ceiling; and 3) add incremental funds in the amount of $24,547.54.
Task Order Ceiling Amount: $105,748 (changed)
Total Obligated Amount: $100,874.54 (changed)
Period of Performance: 05/21/2008 - 02/20/2009 (unchanged)

See continuation pages

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): Bruce B. Mrowca V.P.

15B. CONTRACTOR/OFFEROR: B. B. M (Signature of person authorized to sign)

15C. DATE SIGNED: 11/20/08

16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print): Kala Shankar, Contracting Officer

16B. UNITED STATES OF AMERICA BY Kala Shankar (Signature of Contracting Officer)

16C. DATE SIGNED: 11/20/08

NSN 7540-01-152-8070 PREVIOUS EDITION NOT USABLE

STANDARD FORM 30 (REV. 10-83) Prescribed by GSA - FAR (48 CFR) 53.243

TEMPLATE - ADM001

SUNSI REVIEW COMPLETE

DEC 11 2008

ADM002

The purpose of this modification is to 1) incorporate the revised Statement of Work which reflects an increase to the level of effort, 2) increase the task order ceiling, 3) add incremental funds in the amount of $24,547.54 and 4) reflect a change to task order technical point of contact. The revised SOW (attached) replaces all prior version(s) of the task order Statement of Work. Accordingly, the task order is hereby modified as follows:

Page 2, paragraphs 2 and 3 of the task order award document are revised to read as follows:

Task Order No. 39 shall be in effect from May 21, 2008 through February 20, 2009 months, with a cost ceiling of $105,748. The amount of $99,322 represents the estimated reimbursable costs, and the amount of $6,426 represents the fixed fee.

The amount obligated by the Government with respect to this task order is $100,874.54, of which $93,836.78 represents the estimated reimbursable costs, and the amount of $7,037.76 represents the fixed fee.

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

Your contacts during the course of this task order are:

Technical Matter: Richard Daniel
Project Officer
301-415-6319

A summary of obligations for this contract, from award date through the date of this action, is given below:

Total FY08 Obligation Amount:	$ 76,327.00
Total FY09 Obligation Amount:	$ 24,547.54
Cumulative Total of NRC Obligations:	$100,874.54

****ALL OTHER TERMS AND CONDITIONS OF THE SUBJECT TASK ORDER REMAIN UNCHANGED***

TASK ORDER STATEMENT OF WORK

JCN	Contractor	Task Order No.
Q4160	ISL, Inc.	39 (Revision 1)
Applicant	Design/Site	Docket No.
Westinghouse	AP1000 Design Certification	05200006
Title/Description		
Evaluation of AP1000 Design Certification Amendment Sump Screen Downstream Effects on Long-Term Core Cooling (SRP 6.3 and 15.6.5)		
TAC No.	B&R Number	SRP or ESRP Section(s)
RX0313	**925**-15-171-103	Sections 6.3 and 15.6.5
NRC Task Order Project Officer (PO)		
Richard Daniel	**301-415-6319**	**Richard.Daniel@nrc.gov**
NRC Technical Monitor (TM)		
Tanya Ford	301-415-1194	Tanya.Ford@nrc.gov

1.0 BACKGROUND

In 2007 Westinghouse submitted to U.S. Nuclear Regulatory Commission (NRC) an application for AP1000 Design Certification amendment (DCA) 16. DCA 16 includes changes to AP1000 Design Certification Document (DCD), Section 6.3.2.2.7, "IRWST and Containment Recirculation Screens." Although the primary review responsibility of the IRWST and containment recirculation screens lies in the Containment and Ventilation Branch (SPCV), downstream effects of the debris loading on the sump screens on long-term cooling are under the purview of the Reactor Systems, Nuclear Performance & Code Review Branch (SRSB). The SRSB is required to provide technical support and conduct detailed review to determine the acceptability of the proposed changes to these sections.

Westinghouse has also submitted Technical Report (TR) APP-GW-GLR-079, "AP1000 COL Standard Technical Report Submittal of APP-GW-GLR-079 (TR26), Revision 3." This TR provides the bases for closing Combined Operating License (COL) Information Item 6.3-2, "Verification of Containment Resident Particulate Debris Characteristics." This revision updates TR26 to include information from the following three sources: 1) Head loss testing that was done specifically for AP1000; 2) A downstream effects evaluation of the Passive Core Cooling System (PXS) piping system; and 3) A downstream effects evaluation of the amount of chemical that might plate out on the fuel. The NRC staff's review of the ECCS changes will follow the guidance of Standard Review Plan (SRP) (NUREG-0800) Section 6.3, "Emergency Core Cooling System," SRP 15.6.5, "Loss-of-Coolant Accidents Resulting From Spectrum of Postulated Piping Breaks Within the Reactor Coolant Pressure Boundary," regarding long-term cooling, and Regulatory Guide (RG) 1.82, Revision 3, "Water Sources for Long-Term Recirculation Cooling Following a Loss-of-Coolant-Accident," to assure the quality and uniformity of staff safety reviews. As part of the full scope of AP1000 ECCS review, The SRSB staff will conduct review of changes related to the section of AP1000 ECCS that are under the SRSB purview. Specifically, the SRSB's review responsibility includes Item 3 above, downstream effects of the amount of chemical that might plate out on the fuel.

The staff publishes the results of these reviews in a supplemental Safety Evaluation Report (SER).

2.0 OBJECTIVE

The objective of this task order is to obtain technical expertise from ISL, Inc. to assist the NRC SRSB staff in the review of the proposed changes to the AP1000 design certification amendment associated with resolution of GSI-191.

3.0 WORK REQUIREMENTS, SCHEDULE AND DELIVERABLES

Tasks Requirements and Standards	Scheduled Completion	Deliverables
1. REQUIREMENT: Become familiar with (1) SRP Sections 6.2 and 6.3, "Emergency Core Cooling System," (2) the AP1000 Design and AP1000 DCD, including Chapter 6.3 "Passive Core Cooling System" and Chapter 15.6.5, on long term cooling, and (3) the following documents: • WCAP-16793 • GSI-191 • GL-2004-02 • RG 1.82 STANDARD: Written confirmation that familiarization is complete	1 week after authorization of work.	Documentation that assigned personnel have reviewed references
2. REQUIREMENT: Participate in an orientation/kick-off meeting with the NRC staff to discuss the scope of work, expectations, and task order management. Also to be discussed are the technical areas of review that are under the SRSB's purview. STANDARD: Attendance by the contractor project manager and assigned technical reviewers	1.5 weeks after authorization of work.	N/A

Tasks Requirements and Standards	Scheduled Completion	Deliverables
3. REQUIREMENT: Review APP-GW-GLR-079 (TR26), APP-GW-GLE-002, technical report regarding long-term cooling sensitivity study (to be submitted by Westinghouse in April 2008), and the proposed changes to the AP1000 DCD associated with resolution of GSI-191, **and new technical report APP-FA01-T2R-001, Revision 0, "Evaluation of Debris Loading Head Loss Tests for AP1000 Simulated Fuel Assembly During Post-Accident Recirculation," dated August 7, 2008.** The contractor should discuss with the NRC SRSB technical monitor (TM) to identify the review scope. The review should use SRP 6.3 and RG 1.82 as guidance, and verify that the proposed changes to the DCD associated with the containment recirculation screen and IRWST screen properly maintain long-term core cooling following a LOCA. STANDARD: Complete preliminary Technical Evaluation Report (TER) that follows the NRC provided template. No deviation from the guidance defined in Section III, RAI guidance of Attachment 1.	10 weeks after authorization of work	Technical Evaluation Report and RAIs, if applicable
a. Prepare a preliminary TER related to the ECCS changes, identify technical issues and those aspects of the application that need additional or clarifying information and generate draft requests for additional information (RAIs).	8 weeks after the authorization of work.	PSER and Draft RAIs
b. Discuss with NRC technical monitor any draft RAIs. Participate in conference calls with the applicant to discuss the draft RAIs and additional supporting materials needed to support the official RAI and TER development. Based on these discussions, generate formal RAIs to be sent to the applicant for their response.	2 weeks after completion of Task 4a.	Final RAIs

Tasks Requirements and Standards	Scheduled Completion	Deliverables
4. REQUIREMENT: Evaluate the RAI responses to determine if they adequately resolve the outstanding issues. Discuss with the NRC TM and identify open items that were not resolved from the RAI responses. Prepare a Draft TER with open items. STANDARD: Complete draft TER that follows the NRC provided template without deviation.	3 weeks after receipt of RAI responses.	Draft TER with open items, if any
5. REQUIREMENT: Participate with the NRC staff and the applicant in the discussion of open items. Evaluate applicant's responses to open items. Identify any unresolved issues with open items if any, as a TER based on staff's comments. STANDARD: Complete TER that follows the NRC provided template without deviation.	2 weeks after completion of task 4.	Final draft TER
6. REQUIREMENT: If required, develop ACRS presentation slides and material for staff to review. Support staff's ACRS presentations. STANDARD: Ensure presentation materials are reviewed and approved by NRC staff.	TBD pending the ACRS meeting schedule.	ACRS presentation material. Attend ACRS meeting if required

* These Work Schedules are subject to change by the NRC Contracting Officer (CO) to support the needs of the NRC Licensing Program Plan.

The Technical Monitor may issue technical instruction from time to time throughout the duration of this task order. Technical instructions must be within the general statement of work delineated in the task order and shall not constitute new assignments of work or changes of such a nature as to justify an adjustment in cost or period of performance. The contractor shall refer to Section G.1 of the base contract for further information and guidance on any technical directions issued under this task order.

Any modifications to the scope of work, cost or period of performance of this task order must be issued by the CO and will be coordinated with the NRO Project Officer.

4.0 TECHNICAL AND OTHER SPECIAL QUALIFICATIONS REQUIRED

As specified in the basic task ordering agreement, the contractor shall provide individuals who have the required educational background and work experience to meet the objectives of the work specified in this task order. Specific qualifications for this effort include expertise in:

- Light-Water Reactor Design

- Nuclear Fuel Design
- Thermal-hydraulic Design
- Emergency/Passive Core Cooling Systems
- LOCA analysis including long-term cooling

The contractor shall provide a project manager (PM) to oversee the effort and ensure the timely submittal of quality deliverables so that all information is accurate and complete as defined in the base contract.

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 proposals, including resumes, is accurate and truthful. The resume for each professional proposed to work under this task order (principal investigators, technical staff, employees, consultants, specialists or subcontractors) shall describe the individual's experience in applying his or her area of engineering specialization to work in the proposed area. The use of particular personnel on this contract is subject to the NRC technical monitor's (TM's) approval. This includes any proposed changes to key personnel during the life of the task order.

5.0 REPORTING REQUIREMENTS

Task Order Progress Report

The contractor shall provide a bi-weekly progress report summarizing accomplishments, expenditures, contractor staff hours expended, percent completed for each task under this task order, and any problems encountered by the contractor. The report shall be sent via e-mail to the NRC TM, TAPM and CO.

Please refer to Section F of the basic contract award document for contract reporting requirements.

Technical reporting requirements

Unless otherwise specified above, the contractor shall provide all deliverables as draft products. The NRC TM will review all draft deliverables (and coordinate any internal NRC staff review, if needed) and provide comments back to the contractor. The contractor shall revise the draft deliverable based on the comments provided by the TM, and then deliver the final version of the deliverable. When mutually agreed upon between the contractor and the TM, the contractor may submit preliminary or partial drafts to help gauge the contractor's understanding of the particular work requirement.

The contractor shall provide the following deliverables in hard copy and electronic formats. The electronic format shall be provided in MS Word or other word processing software approved by the TM. For each deliverable, the contractor shall provide one hard copy and electronic copy to both the PM and the TM. The schedule for deliverables shall be contained in the approved project plan for the task order effort.

In all correspondence, include identifying information: JCN No.: Q4160; Task Order 39, the applicant: Westinghouse; and, the site: AP1000.

1. At the completion of Task 3a, submit a Technical Evaluation Report (TER) that contains, for each Sub-section of the SER (see Attachment 1 for the list of the SER sections and the outline, format and content of the report): a description of the information proposed by the applicant including the assumptions for the analysis, design, and references to consensus standards: review findings (including the basis for the findings), as a result of comparison with the review guidelines: and a list of "Requests for Additional Information (RAIs). See Attachment 1 in Section J of the base contract SOW for the guidelines for developing RAIs.

2. At the completion of Task 4, submit a TER (see Attachment 1) that contains a summary of the review results and the updated report completed under Task 3 incorporating the findings from the resolution of the RAIs. Include a separate list of the remaining open items and the basis for such determination.

3. At the completion of Task 5, submit a TER (see Attachment 1) that contains a safety evaluation report with open items resulting from the work performed in Task 4, and update of the Technical Evaluation Report developed under Task 4.

6.0 MEETINGS AND TRAVEL

One 1-person, 1-day working meeting to kickoff project and contractor orientation.*

One 1-person, 1-day working meetings at NRC headquarters to review deliverables*

One 1-person, 1-day meeting (if needed) for hearing or ACRS meeting

*At the discretion of the NRC TM, meeting may be conducted via telephone or video conference.

7.0 NRC FURNISHED MATERIAL

The following NRC furnished materials will be provided to the contractor together with SOW:

a. CD-ROM containing AP1000 DCD, AP1000 DCA Revision 16, Sections 6.3 and 15.6.5

b. Technical Reports:
   1) APP-GW-GLR-079, Revision 3, "AP1000 COL Standard Technical Report Submittal of APP-GW-GLR-079 (TR26), Revision 3,
   2) APP-GW-GLR-134, "AP1000 DCD Impacts to Support COLA Standardization"
   3) APP-GW-GLE-002, "Impacts to AP1000 DCD to Address Generic Safety Issue (GSI) 191"
   4) New Technical Report regarding long-term cooling sensitivity study (to be submitted by Westinghouse in April 2008)
   5) **APP-FA01-T2R-001, "Evaluation of Debris Loading Head Loss Tests for AP1000 Simulated Fuel Assembly During Post-Accident Recirculation" Revision 0**

c. Topical Reports:
   1) WCAP-16793-NP, "Submittal of WCAP-16793-NP, Revision 0, "Evaluation of Long-Term Cooling Considering Particulate, Fibrous and Chemical Debris in the Recirculating Fluid"
   2) WCAP-16406-P-A Revision 1, "Evaluation of Downstream Sump Debris Effects in Support of GSI-191"

d. CD-ROM containing the NUREG-1793, "Final Safety Evaluation Report Related to Certification of the AP1000 Standard Design."

8.0 LEVEL OF EFFORT

The estimated level of effort in professional staff days apportioned among the tasks and by labor category is as follows:

Task(s)	Labor Category	Level of Effort FY-08 (hours)	Level of Effort FY-09 (hours)
1	Technical Reviewers	40	
2	Technical Reviewers	10	
3.a	Technical Reviewers	300	**60**
3.b	Technical Reviewers	20	**10**
4	Technical Reviewers	80	**30**
5	Technical Reviewers		40
6	Technical Reviewers		40
Tasks 1-6	Project Manager	30	**30**
Total		480	**210**

9.0 PERIOD OF PERFORMANCE

The projected period of performance is 9 months from date of task order award.

10.0 OTHER APPLICABLE INFORMATION

a. License Fee Recovery

All work under this task order is fee recoverable and must be charged to the appropriate TAC number(s).

b. Assumptions and Understandings:

The level of effort for Task 1 is based on the volume of materials to be reviewed; this task is for familiarity and not for evaluation.

The level of effort for Task 3 is based on the assumption that the contractor is familiar with the review procedures of SRP Section 6.2.1, "Containment Functional Design," SRP Section 6.3, "Emergency Core Cooling System," SRP Section 15.6.5, "Loss-of-Coolant Accidents Resulting From Spectrum of Postulated Piping Breaks Within the Reactor Coolant Pressure Boundary," regarding long-term cooling, RG 1.82, Revision 3, "Water Sources for Long-Term Recirculation Cooling Following a Loss-of-Coolant-Accident," and GSI-191, "Assessment of Debris Accumulation on Pressurized-Water Reactor (PWR) Sump Performance."

The level of effort for Task 4 is based on the assumption that there will be 20 RAIs and it will take, on the average, 4 hours to review and address each response.

The level of effort for Task 5 is based on the need to resolve 10 open items and it will take, on the average, 4 hours to review and resolve each open item, and prepare an SER.

The level of effort in Task 6 is based on requiring one trip to NRC headquarters.

It is assumed that the contractor has access to the NRC furnished material available on the Internet.

It is understood that the scope of the review consists of conference calls with the NRC staff, and with the NRC staff and the applicant, to discuss open items in an attempt to obtain additional information or reach resolution.

c. SOW Revision Details

The review of APP-FA01-T2R-001, "Evaluation of Debris Loading Head Loss Tests for AP1000 Simulated Fuel Assembly During Post-Accident Recirculation" Revision 0 (issued by Westinghouse on August 7, 2008) added scope to Phase I Review Subtask 3a.

An additional 29 draft RAIs with multiple parts (in some cases) were generated from documents related to the Phase I Review of Effect of Sump Screen Debris on Long-Term Cooling.

Attachments:

1. Outline, Format, and Content for the TER Input

Attachment 1

Outline, format, and sample for the TER (draft SER input)

X.Y.Z Title of Section

X.Y.Z.1 Regulatory Criteria

Develop an outline that follows the format and topics presented in the AREAS OF REVIEW section of the appropriate SRP section. This information will correspond to the SRP sections that are the subject of this Task Order. For each unique SRP review area contained in the TER, the contractor should specify the acceptance criteria that were used for its review. Summarize the applicable regulations and other regulatory references, including regulatory guides, generic letters, or NRC staff positions, that are relevant to this topic.

Technical reviewers are encouraged to use the descriptions of acceptance criteria from previously issued Safety Evaluation Reports for completed design certifications (e.g., NUREG-1793 for the AP1000 Final Safety Evaluation Report) when applicable.

X.Y.Z.2 Summary of Technical Information

Describe the key technical points that were made in the application. It is not necessary to restate the application verbatim or to address all the details in the application.

X.Y.Z.3 Technical Evaluation

Document the contractor's evaluation of the application against the relevant regulatory criteria. The evaluation should support the contractor's conclusions as to whether the regulations are met. State what the contractor did to evaluate the applicant's submittal. The contractor's evaluation may include verification that the applicant followed applicable regulatory guidance, performance of independent calculations, and validation that the appropriate assumptions were made. The contractor may state that certain information provided by the applicant was not considered essential to the contractor's review and was not reviewed by the contractor. While the contractor may summarize the information offered by the applicant in support of its application, the contractor should clearly articulate the bases for its conclusions.

Contractor should provide a clear and concise description of any request for additional information (RAIs). The description should include a justification of the requested information that the requested information is not provided in the application and is absolutely needed to determine or confirm whether the relevant regulatory requirements (articulate specific requirements) have been met. The contractor should discuss its technical evaluation of the licensee's response to the RAIs and determine whether it is acceptable. The contractor should clearly articulate the bases for its acceptance or rejection. If the RAI response is not acceptable, it will be classified as an 'open item'. All open items will be resolved in Phase 3.

X.Y.Z.4 Conclusions

Summarize the contractor's conclusions regarding the application, including words such as the following. As set forth above in Sections X.Y.Z.2 and X.Y.Z.3 of this report, [provide specific bases for conclusions that follow]. Accordingly, the staff concludes that the application meets
[or, if applicable, does not meet] the relevant requirements of 10 CFR Part XX and is [or, if applicable, is not] acceptable.

X.Y.Z.5 References