# ORDER FOR SUPPLIES OR SERVICES

PAGE 1 OF 2 PAGES

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

1. DATE OF ORDER 9/30/2009
2. CONTRACT NO. (If any) NRC-42-08-064
3. ORDER NO. NRC-T019 MODIFICATION NO.
4. REQUISITION/REFERENCE NO. 42-08-064T019 09806419182

5. ISSUING OFFICE (Address correspondence to)
U.S. Nuclear Regulatory Commission
Div. of Contracts
Attn: Jeffrey R. Mitchell, 301-492-3639
Mail Stop TWB-01-B10M
Washington, DC 20555

6. SHIP TO:
a. NAME OF CONSIGNEE U.S. Nuclear Regulatory Commission
b. STREET ADDRESS Attn: Min Lee, 301 415 0502
c. CITY Washington d. STATE DC e. ZIP CODE 20555
f. SHIP VIA

7. TO:
a. NAME OF CONTRACTOR
INFORMATION SYSTEMS LABORATORIES, INC
ISL
b. COMPANY NAME ATTN: DR. JAMES F. MEYER
c. STREET ADDRESS 11140 ROCKVILLE PIKE, SUITE 500
d. CITY ROCKVILLE e. STATE MD f. ZIP CODE 20852

8. TYPE OF ORDER
[ ] a. PURCHASE
REFERENCE YOUR _____
Please furnish the following on the terms and conditions specified on both sides of this order and on the attached sheet, if any, including delivery as indicated.
[X] b. DELIVERY
Except for billing instructions on the reverse, this delivery order is subject to instructions contained on this side only of this form and is issued subject to the terms and conditions of the above-numbered contract.

9. ACCOUNTING AND APPROPRIATION DATA See CONTINUATION Page
925-15-171-103 Q4182 252A 31x0200.925
Obligate $37,008.00
DUNS: 107928606

10. REQUISITIONING OFFICE NRO

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

12. F.O.B. POINT Destination

13. PLACE OF
a. INSPECTION b. ACCEPTANCE

14. GOVERNMENT B/L NO.

15. DELIVER TO F.O.B. POINT ON OR BEFORE (Date)

16. DISCOUNT TERMS

17. SCHEDULE (See reverse for Rejections)

| ITEM NO. (a) | SUPPLIES OR SERVICES (b) | QUANTITY ORDERED (c) | UNIT (d) | UNIT PRICE (e) | AMOUNT (f) | QUANTITY ACCEPTED (g) |
|---|---|---|---|---|---|---|
| | Issuance of Task Order 19 under Contract No. NRC-42-08-064<br><br>Title: Review USAPWR Pressure Temperature Limits Report (Section 5.3.2)"<br><br>Period of Performance: Day of Award to July 31, 2010<br>Estimated Reimbursable Cost: $35,297.00<br>Fixed Fee: $1,711.00<br>Total Cost Plus Fixed Fee: $37,008.00<br><br>Funding in the amount of $37,008.00 is provided<br><br>SEE CONTINUING PAGES | | See CONTINUATION Page | | | |

18. SHIPPING POINT
19. GROSS SHIPPING WEIGHT
20. INVOICE NO.

17(h) TOTAL (Cont. pages)

21. MAIL INVOICE TO:
a. NAME Department of Interior / NBC
NRCPayments@nbc.gov
b. STREET ADDRESS (or P.O. Box) Attn: Fiscal Services Branch - D2770
7301 W. Mansfield Avenue
c. CITY Denver d. STATE CO e. ZIP CODE 80235-2230

SEE BILLING INSTRUCTIONS ON REVERSE

17(i). GRAND TOTAL

22. UNITED STATES OF AMERICA BY (Signature) Jeffrey R. Mitchell

23. NAME (Typed) Jeffrey R. Mitchell
Contracting Officer
TITLE: CONTRACTING/ORDERING OFFICER

AUTHORIZED FOR LOCAL REPRODUCTION
PREVIOUS EDITION NOT USABLE

OPTIONAL FORM 347 (REV. 4/2006)
PRESCRIBED BY GSA/FAR 48 CFR 53.213(f)

SUNSI REVIEW COMPLETE

OCT 02 2009

TEMPLATE - ADM001

ADM002

**NRC-42-08-064 NRC-T019**

In accordance with Section G.4, Task Order Procedures, of Contract No. NRC-42-08-064, this definitizes Task Order No. 19. The effort shall be performed in accordance with the attached Statement of Work.

There is still a pending organizational conflict of interest issue regarding the proposed key personnel [redacted]. Therefore, [redacted] has not been identified as key personnel in the enclosed Task Order No. 19 and is not authorized to begin work under this Task Order No. 19 until this issue is resolved. If the resolution of this issue determines there is no organizational conflict of interest with [redacted] performing on this requirement, the NRC Contracting Officer will provide acceptance notice in writing.

Task Order No. 18 shall be in effect from Day of Award through September 30, 2010, with a cost ceiling of $37,008.00. The amount of $35,297.00 represents the estimated reimbursable costs, and the amount of $1,177.00 represents the fixed fee.

The amount obligated by the Government with respect to this task order is $37,008.00, of which $35,297.00 represents the estimated reimbursable costs, and the amount of $1,711.00 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: | Min Lee<br>Task Order Project Officer<br>301-415-0502 |
| Contractual Matters: | Jeffrey R. Mitchell<br>Contract Specialist<br>301-492-3639 |

Acceptance of Task Order No. 19 should be made by having an official, authorized to bind your organization, execute three copies of this document in the space provided and return two copies to the Contract Specialist at the address identified in Block No. 5 of the OF 347. You should retain the third copy for your records.

ACCEPTANCE:

K K Hanna

NAME

V.P.

TITLE

9/30/09

DATE

# TASK ORDER STATEMENT OF WORK

| JCN | Contractor | Task Order No. |
|---|---|---|
| Q-4182 | Information Systems Laboratories, Inc. | NRC-42-08-064 Task 19 |
| Applicant | Design/Site | Docket No. |
| Mitsubishi Heavy Industries (MHI) | US-APWR | 52-021 |
| Title/Description | | |
| Review USAPWR Pressure Temperature Limits Report (Section 5.3.2) | | |
| TAC No. | B&R Number | SRP Section(s) or ESRP |
| RX0xxx | 925-15-171-103 | 5.3.2 |
| NRC Task Order Project Officer (PO) | | |
| Richard Daniel | 301-415-6319 | Richard.Daniel@nrc.gov |
| NRC Technical Monitor (TM) | | |
| Neil Ray | (301) 415-2643 | Neil.Ray@nrc.gov |

## 1.0 BACKGROUND

Pressure-Temperature (P-T) limits are required as a means of protecting the reactor vessel during startup and shut down to minimize the possibility of fast fracture. The methods outlined in Appendix G of Section XI of the ASME Code are employed in the analysis of protection against nonductile failure. Beltline material properties degrade with radiation exposure, and this degradation is measured in terms of the adjusted reference temperature (ART), which includes a reference nil ductility temperature shifts, initial $RT_{NDT}$, and margin.

Bounding P-T limits for heat-up, cool down, criticality, and hydrostatic and leak tests must be submitted for NRC review and approval prior to the issuance of a combined operating license (COL). To address this requirement, an applicant has the option of submitting either the P-T limits or a pressure and temperature limits report (PTLR) using bounding material properties and projected fluence. In comparison, the PTLR, as described in GL 96-03, contains the P-T limits in addition to a complete methodology for their calculation.

## 2.0 OBJECTIVE

The objective of this task order is to obtain technical expertise from the contractor to assist the staff in the review and approval the generic PTLR relating to the MHI US-APWR reactor. This review will serve as input to the NRC's Safety Evaluation Report Section 5.3.2 which will document the NRC's technical, safety, and legal basis for approving the US-APWR Design Certification application.

The primary deliverable, or output of this regulatory review, shall be the Technical Evaluation Report (TER). The TER will serve as input to the NRC's Safety Evaluation Report (SER) which will document the NRC's technical, safety, and legal basis for approving the US-APWR Design Certification application. The TER documents the contractor's technical evaluation of a proposed design against relevant regulatory criteria. The technical evaluation should include a description of the proposed design and an analysis of the proposal in terms of regulatory requirements, established NRC positions (e.g., SRP or regulatory guides), industry standards, or other relevant criteria. The Contractor should explain the method used in its review of the

design (e.g., a comparison of applicants proposal against regulatory criteria, a review of input assumptions combined with use of approved methodology, or an independent calculation to confirm results presented by an applicant). The technical evaluation should be specific as to what information is relied on to form the basis for approving or denying the proposed design. The technical evaluation should also contain the contractor's specific conclusion that the proposed design is technically acceptable and meets regulatory guidance or other industry standards or reasons why the proposed design is unacceptable. The TER, and ultimately the SER, should be written in a manner whereby a person with a technical (non-nuclear) background and unfamiliar with the applicants request could understand the basis for the staff's conclusions.

## 3.0 WORK REQUIREMENTS, SCHEDULE AND DELIVERABLES

| Tasks/Standards | Scheduled Completion | Deliverables |
|---|---|---|
| 1. REQUIREMENT: Become familiar with the following<br>– Pressure-temperature limit curves for heat-up, cool down, criticality, and hydrostatic and leak tests.<br>– The required content of pressure temperature limits reports as described in generic letter 96-03.<br>– 10 CFR Part 50 Appendix G<br>– Appendix G, ASME Code Section XI<br><br>STANDARD: Written confirmation that familiarization is complete | Two weeks 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 the work, expectations and contract management<br><br>STANDARD: Attendance by individuals designated by NRC. | Two weeks after authorization of work | N/A |

| Tasks/Standards | Scheduled Completion | Deliverables |
|---|---|---|
| 3. REQUIREMENT: Review the pressure-temperature limits and/or pressure temperature limits report submitted by the COL applicant. Develop and submit requests for additional Information (RAIs) as necessary. Prepare a Technical Evaluation Report.<br><br>STANDARD: Completed Technical Evaluation Report that follows the NRC provided template without deviation. No deviation from the guidance defined in Section III, RAI Guidance of Attachment 1. One round of comment incorporation is acceptable. | Two weeks after end of Task 2 | Technical Evaluation Report and RAIs, if applicable |
| 4. REQUIREMENT: Review response to the RAIs to determine if they adequately resolve the outstanding issues. Identify any other open items. Incorporate the review results in the evaluation report completed under Task 3.<br><br>STANDARD: Completed Technical Evaluation Report that follows the NRC provided template without deviation. No deviation from the guidance defined in Section III, RAI Guidance of Attachment 1. One round of comment incorporation is acceptable. | Two weeks after receipt of responses | Revised Technical Evaluation Report |

| Tasks/Standards | Scheduled Completion | Deliverables |
|---|---|---|
| 5. REQUIREMENT: *(If applicable)* Prepare for and travel to the applicant's office and participate in an NRC review team to:<br><br>a. If required (TBD) Audit the information/calculations as described in the DCD application.<br><br>b. Evaluate and discuss the applicant's responses to the unresolved issues identified in Task 4 to determine if the outstanding issues are adequately resolved.<br><br>c. Prepare a trip report (as an input to NRC Audit Report) to summarize the information reviewed, results of the audit, and meeting discussions.<br><br>STANDARD: Complete evaluation as defined in Task. Submit Trip Report within three weeks of site review. | Four weeks after receipt of responses<br><br>Two weeks after trip | Trip Report |
| 6. REQUIREMENT: Review the applicant's response to the open items identified as a result of the design audit (Tasks 4 & 5). Identify any unresolved issues and prepare a safety evaluation report w/open items if any, as a Technical Evaluation Report.<br><br>STANDARD: Complete Technical Evaluation Report that follows the NRC provided template without deviation. | Three weeks after receipt of responses | Safety Evaluation Report Input w/open items |
| 7. REQUIREMENT: As needed and requested by the staff, provide technical support to the staff during related ACRS meetings and hearing proceedings.<br><br>STANDARD: Ensure presentation materials are reviewed and approved by NRC staff. | TBD | Prepare Presentation Materials. Attend Meetings, if required |

| Tasks/Standards | Scheduled Completion | Deliverables |
|---|---|---|
| 8. As needed resolve remaining open items and prepare a technical evaluation report (TER) addressing the open items. (Phase 4) | TBD | Final Technical Evaluation Report |

* 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 base contract, 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:

A senior level engineer with experience relating to pressure-temperature limit curves, low temperature overpressure protection system limits, and adjusted reference temperature. More specifically, the engineer should be able to verify the adequacy of the pressure-temperature limits for heatup, cooldown, criticality, and hydrostatic and leak tests and/or the content of the pressure temperature limits report based on reactor vessel material properties and fluence projections.

The contractor shall provide a contractor 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 (contractor, subcontractor, or consultant) 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.: Q4182; Technical Assignment Control No. (TAC); RX0xxx;Task Order No.: 19; the licensee: MHI.

1. At the completion of Task 3, submit a Technical Evaluation Report (TER) that contains 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 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 trip report, as an input to NRC audit report, that contains a summary of documents audited, the audit results of the structural design reports and design calculations, a summary of meeting discussion conducted with, the applicant list of outstanding issues, significance of these issues, and the basis for the conclusion. Incorporate the findings in the report developed under Task 3.

4. At the completion of Task 6, submit a TER (**see Attachment 1**) that contains a safety

evaluation report with open items resulting from the work performed in Task 4 & 5, and update of the Technical Evaluation Report developed under Task 5.

5. At the completion of Task 8, submit a final TER incorporating the findings from the resolution of RAIs and remaining open items. Include a separate list of the remaining open items, if any, and the basis for such determination

## 6.0 MEETINGS AND TRAVEL

Two, one-person, 1/2 day working meetings for project kickoff, technical issues training*, and issue resolution.

One, one-person, one-day working meeting at NRC headquarters to review deliverables*

One, one-person, one-day meeting, if needed, for hearing or ACRS meeting.

*At the discretion of the NRC TM, quarterly progress meetings may be conducted at headquarters or 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 the US-APWR DCD.

b. A copy of the generic PTLR submitted by MHI

c. A copy of Generic Letter 96-03, if applicable

## 8.0 PERIOD OF PERFORMANCE

The period of performance is Day of Award through July 31, 2010.

## 9.0. 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:

i. The level of effort for Task 3 is based on the assumption that the contractor is familiar with the procedure for reviewing pressure-temperature limits and pressure temperature limits reports.

ii. The level of effort for Task 4 is based on the assumption that there will be 8 RAIs and it will take, on the average, 2.5 hours to review and address each response.

iii. The level of effort for Task 5 is based on no need for the contractor to travel to the applicant's site.

iv. The level of effort for Task 6 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.

v. The level of effort in Task 7 is based on requiring one trip to the site and one trip to NRC headquarters.

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

vii. 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.

Attachments:

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

**Attachment 1**

*Outline and Format for the Technical Evaluation Report*

## 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 laboratory 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.

### 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