

## AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

BPA NO.

1. CONTRACT ID CODE

PAGE

1

OF PAGE

2

2. AMENDMENT/MODIFICATION NO.

0005

3. EFFECTIVE DATE

See Block 16c

4. REQUISITION/PURCHASE REQ. NO.

NRO-11-276

5. PROJECT NO. (if applicable)

Dated: 07/08/2011

6. ISSUED BY

CODE

3100

7. ADMINISTERED BY (If other than Item 6)

CODE

3100

U.S. Nuclear Regulatory Commission  
Div. of Contracts  
Attn: Morie Gunter-Henderson  
Mail Stop: TWB-01-B10M  
Washington, DC 20555

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)

ENERGY RESEARCH INC

6167 EXECUTIVE BLVD

ROCKVILLE MD 208523901

(X)

9A. AMENDMENT OF SOLICITATION NO.

9B. DATED (SEE ITEM 11)

10A. MODIFICATION OF CONTRACT/ORDER NO.  
NRC-42-07-483 001610B. DATED (SEE ITEM 13)  
09-27-2007

CDEE 621211259

FACILITY CODE

X

## 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) 2011-25-17-4-107 Q4015 252A 31x0200 Obligate: \$2,627.00  
NAICS Code: 541990  
FSS: 113359

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 between the parties

E. IMPORTANT: Contractor ☐ is not, ☒ is required to sign this document and return 1 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 (1) increase the level of effort as seen in the attached SOW; (2) increase the ceiling by \$11,441.95 and (3) add funding in the amount of \$2,627.00.

Task Order Ceiling Amount: \$91,842.99 (changed)

Total Obligated Amount: \$83,028.04 (changed)

Period of Performance: 03/09/2009-03/31/2012 (changed)

ALL OTHER TERMS AND CONDITIONS SHALL REMAIN IN FULL FORCE AND EFFECT.

Except as provided herein, all terms and conditions of the document referenced in Item 8A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print)

Mohsen Khajibi-Rahbar, President

15A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)

Morie Gunter-Henderson  
Contracting Officer

15B. CONTRACTOR/OFFEROR

(Signature of person authorized to sign)

15C. DATE SIGNED

8/15/11

15B. UNITED STATES OF AMERICA

BY (Signature of Contracting Officer)

15C. DATE SIGNED

8/16/11

NSN 7540-01-152-8070  
PREVIOUS EDITION NOT USABLESTANDARD FORM 30 (REV. 10-83)  
Prescribed by GSA - FAR (48 CFR) 53.243

TEMPLATE - ADM001

SUNSI REVIEW COMPLETE

AUG 18 2011

ADM002

The purpose of this modification is to (1) increase the level of effort as seen in the attached SOW; (2) increase the ceiling by \$11,441.95 and (3) add funding in the amount of \$2,627.00. This task order is hereby modified as follows:

Page 2, paragraph 2 of the base Task Order 16 is hereby deleted in its entirety and is replaced with the following:

"Task Order No. 16 shall be in effect from March 09, 2009 through March 31, 2012 with a cost ceiling of \$91,842.99. The amount of \$87,469.00 represents the estimated reimbursable costs, and the amount of \$4,374.00 represents the fixed fee."

Page 2, paragraph 3 of the base Task Order 16 is hereby deleted in its entirety and is replaced with the following:

"The amount obligated by the Government with respect to this task order is \$83,028.04 of which \$79,074.00 represents the estimated reimbursable costs, and the amount \$3,954.00 represents the fixed fee."

A summary of the obligations for this contract is as follows:

Total FY09 Amount Obligated:	\$70,000.00
Total FY10 Amount Obligated:	\$9,401.04
Total FY11 Amount Obligated:	<u>\$3,627.00</u>
 Total Amount Obligated:	 \$ 83,028.04

ALL OTHER TERMS AND CONDITIONS OF THIS TASK ORDER SHALL REMAIN IN FULL FORCE AND EFFECT.

**MODIFICATION**  
**TASK ORDER STATEMENT OF WORK**

JCN Q-4015	Contractor Energy Research, Inc.	Task Order No. 16 NRC-42-07-483-TO-16 (Mod 5)
Applicant NRG Energy	Design/Site ABWR/South Texas Project	Docket No. 5200012
Title/Description South Texas Project R-COL Chapter 19 Technical Review Support		
TAC No. RX0598	B&R Number 2011-25-17-4-107	SRP or ESRP Section(s) 19
NRC Task Order Project Officer (PO) Meghan Blair (301) 415-5242 Meghan.Blair@nrc.gov		
NRC Technical Monitor (TM) Todd Hilsmeier (301) 415-6788 Todd.Hilsmeier@nrc.gov		

**1.0 BACKGROUND**

Combined Operating License (COL) Applications are submitted pursuant to Part 52 of Title 10 of the *Code of Federal Regulations* (10 CFR 52), "Early Site Permits; Standard Design Certifications; and Combined Licenses for Nuclear Power Plants." The U.S. Nuclear Regulatory Commission (NRC) reviews COL Applications based on information furnished by electric utility companies pursuant to 10 CFR 52.79, "Contents of Applications Technical Information."

A Standard Review Plan (NUREG-0800) is prepared for the guidance of staff reviewers in the Office of New Reactors in performing safety reviews of applications to construct or operate nuclear power plants and the review of applications to approve standard designs and sites for nuclear power plants. The principal purpose of the SRP is to assure the quality and uniformity of staff safety reviews.

An Environmental Safety Review Plan (NUREG-1555) is prepared for the guidance of staff reviewers in performing environmental reviews of applications related to nuclear power plants. The ESRPs are companions to regulatory guides that address siting and environmental issues. As with NUREG-0800 the purpose of the ESRP is to assure the quality and uniformity of environmental reviews.

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

**2.0 OBJECTIVE**

The objective of this task order is to obtain technical expertise from the contractor to assist the NRC staff in determining whether or not the subject COL application meets appropriate regulatory requirements. Specifically, technical assistance is required to support the technical review of Chapter 19 of the STP FSAR.

**3.0 WORK REQUIREMENTS, SCHEDULE AND DELIVERABLES**

Tasks/Standards	Scheduled Completion	Deliverables
<p>1. REQUIREMENT: Support the NRC Staff's review of the description of the STP Level 2 PRA and its results.</p> <p>STANDARD:</p> <ul style="list-style-type: none"><li>• Support the audit of the STP Level 2 PRA to see how it differs from the existing ABWR PRA.</li><li>• Prepare drafts of RAIs and submit them to the NRC;</li><li>• Prepare a final technical evaluation report and submit to the NRC.</li></ul>	<p>*Draft RAIs will be prepared 2.5 months after start.</p> <p>A draft technical evaluation report will be submitted 2.5 months after start.</p> <p>A final technical evaluation report will be submitted 8 months after start.</p>	<p>Draft RAIs and Technical Evaluation Report.</p>
<p>2. REQUIREMENT: Support the NRC Staff's review of the description of the STP Severe Accident Evaluation and the analysis of severe accident mitigation in the STP ABWR.</p> <p>STANDARD:</p> <ul style="list-style-type: none"><li>• Support the audit of the STP Severe Accident Evaluation to see how its evaluation of severe accident mitigation differs from the existing ABWR Severe Accident Evaluation.</li><li>• Prepare drafts of RAIs and submit them to the NRC;</li><li>• Prepare a final technical evaluation report and submit to the NRC.</li></ul>	<p>*Draft RAIs will be prepared 2.5 months after start.</p> <p>A draft technical evaluation report will be submitted 2.5 months after start.</p> <p>A final technical evaluation report will be submitted 8 months after start.</p>	<p>Draft RAIs and Technical Evaluation Report.</p>

Tasks/Standards	Scheduled Completion	Deliverables
<p>3. REQUIREMENT: Support the NRC Staff's review of the SAMA evaluation in the STP Environmental Report.</p> <p>STANDARD:</p> <ul style="list-style-type: none"><li>• Prepare drafts of RAIs and submit them to the NRC;</li><li>• Prepare a final technical evaluation report and submit to the NRC.</li></ul>	<p>*Draft RAIs will be prepared 2.5 months after start. A draft technical evaluation report will be submitted 2.5 months after start. A final technical evaluation report will be submitted 8 months after start.</p>	<p>Draft RAIs and Technical Evaluation Report.</p>
<p>4. REQUIREMENT: Participate in a technical meeting between NRC and South Texas Project's staff concerning Level 2 PRA and deterministic severe accident evaluations associate with hurricane events.</p> <p>STANDARD: Participation in technical meeting</p>	<p>February 2011</p>	<p>Attend meeting</p>

Tasks/Standards	Scheduled Completion	Deliverables
<p>5. <b>REQUIREMENT:</b> The contractor shall provide technical support to NRC staff in the resolution of any emergent issues and technical concerns on STP Level 2 PRA, deterministic severe accident evaluations, and SAMA evaluation. This support in the subject area may include: (a) interactions with the COL applicant, as appropriate, to ensure that the issues are well understood and to arrive at an acceptable path to resolution; (b) confirmatory assessments; (c) identification of additional information needed to resolve any emergent issues and technical concerns (which should be provided to the NRC in the form of RAIs for follow-up discussion with the COL applicant); (d) evaluation of the applicant's responses to additional RAIs; (e) participation in technical meetings and conference calls between NRC staff and the COL applicant, as needed; (f) as necessary, provide presentations to the Advisory Committee for Reactor Safeguards (ACRS), Commission, and industry groups, and/or support to the NRC staff in preparing such presentations.</p> <p>The contractor shall update, as needed, the associated TERs for PRAs, severe accidents, and SAMDAs to reflect the resolution of any emergent issues and technical concerns.</p> <p><b>STANDARD:</b></p> <ul style="list-style-type: none"><li>• Additional or clarifying information needed to resolve emergent issues shall be provided to the NRC in the form of RAIs for transmittal to the COL applicant.</li><li>• The TERs will be in a format that can be incorporated into NRC staff SERs with minimal changes.</li></ul>	<p>To be determined</p>	<p>RAIs and updated Final Technical Evaluation Reports, if needed</p> <p>Prepare presentation materials and attend meetings, if required</p>

\* 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:

1. Development and peer review of Level 2 and 3 PRAs and deterministic severe accident evaluations, including treatment of internal and external events during at-power and shutdown conditions;
2. BWR plant systems, including the design and functional performance of passive systems, containment systems, and severe accident features;
3. Thermal-hydraulic, severe accident progression, and offsite consequence analyses, including familiarity with the MAAP, MELCOR, CONTAIN, and MACCS2 computer codes;
4. Specialized techniques for treatment and quantification of severe accident phenomena (e.g., ROAAM);
5. PRA quality standards and the use of PRA methodologies and results in commercial nuclear reactor applications; and
6. NRC regulations, technical specifications, and inspections related to commercial nuclear power plant operations.

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 (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, Task Order Project Officer (PO) 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.: Q-4015; Technical Assignment Control No. (TAC), RX0598, Task Order No.: 16; the licensee: NRG Energy; and, the site: STP.

1. Two and one-half months after the start of Tasks 1-3, submit a draft TER (see Attachment 1) that contains a summary of the review results.
2. Eight months after the project start, submit a TER 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 Tasks 1-3, submit a Technical Evaluation Report (TER) that contains, for each Sub-section of the SER (see Attachment 1 for 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 the base contract SOW for the guidelines for developing RAIs.
4. **In Task 5, submit a description of any additional information needed to resolve emergent issues and technical concerns in the form of RAIs for transmittal to the COL applicant. Submit updated TERs for Level 2 PRA, deterministic severe accident evaluations, and SAMDAs, as needed, to reflect the resolution of any emergent issues and technical concerns.**



## **6.0 MEETINGS AND TRAVEL**

One two-person, 3-day trip to the applicant's offices to support the audit of the STP PRA.

One two-person, 1-day working meeting at NRC headquarters to review deliverables.\*

One, two-person, 1-day trip to NRC Headquarters in Rockville, Maryland to meet with the NRC and South Texas Project's staff concerning Level 2 PRA and deterministic severe accident evaluations associate with hurricane events.

**Any additional trips that may be required to support the resolution of emergent issues.**

\*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 R-COL Sections and the relevant Appendices from the R-COL application.
- b. CD-ROM containing the Final Safety Evaluation Report of the DCD.

## **8.0 LEVEL OF EFFORT**

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

Task(s)	Labor Category	Level of Effort FY-09 (hours)	Level of Effort FY-10 (hours)	Level of Effort FY-11 (hours)	Level of Effort FY-12 (hours)
1	Senior Technical Reviewer and Technical Reviewer	120	60		
2	Subject Matter Expert and Technical Reviewer	120	60		
3	Senior Technical Reviewer and Technical Reviewer	80	60		
4	Subject Matter Experts			6	
5	<b>Subject Matter Expert and Technical Reviewer</b>			<b>24</b>	<b>46</b>
1-3	Administrative Support	40	20		
1-35	Project Manager	24	16	3	4

Task(s)	Labor Category	Level of Effort FY-09 (hours)	Level of Effort FY-10 (hours)	Level of Effort FY-11 (hours)	Level of Effort FY-12 (hours)
Total		384	216	6+27=33	50

**9.0      PERIOD OF PERFORMANCE**

The projected period of performance is  $12 + 9 = 21$  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:**

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.

Attachment:

- 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

---