

2. AMENDMENT/MODIFICATION NO. 0005
 3. EFFECTIVE DATE **JAN 04 2010**
 4. REQUISITION/PURCHASE REQ. NO. NRC4207483011M5
 0748311015
 5. PROJECT NO.(if applicable)

6. ISSUED BY CODE 3100
 U.S. Nuclear Regulatory Commission
 Div. of Contracts
 Attn: Kala Shankar 492-3638
 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)
 ENERGY RESEARCH INC
 6167 EXECUTIVE BLVD
 ROCKVILLE MD 208523901
 CODE 621211259 FACILITY CODE
 9A. AMENDMENT OF SOLICITATION NO. (X)
 9B. DATED (SEE ITEM 11)
 10A. MODIFICATION OF CONTRACT/ORDER NO. NRC-42-07-483 0011
 10B. DATED (SEE ITEM 13) X 09-08-2008

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) 1025-15-171-111; Q4015; 252A; 31X0200
 OBLIGATE: N/A

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:
 D. OTHER (Specify type of modification and authority) Pursuant to FAR 52.243-2, Changes Cost-Reimbursement ALT 1 Mutual Agreement of Both Parties X

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 modification is to increase the task order ceiling by \$110,864.12 from \$321,191.49 to \$432,055.61; and extend the period of performance.
 Task Order Ceiling: \$432,055.61 (changed)
 Total Obligated Amount: \$279,424.97 (unchanged)
 Period of Performance: 09/08/2008 - 12/31/2011 (changed)

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) Mohsen Khatib-Rabbar, President
 15B. CONTRACTOR OFFEROR (Signature of person authorized to sign) [Signature]
 15C. DATE SIGNED 1/4/10
 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 1/4/10

The purpose of this modification is to increase the level of effort of this task order and incorporate a subsequent increase to the task order ceiling; and extend the period of performance to 12/31/2011. Accordingly the task order is hereby modified as follows:

Page 2, paragraph 2 of the basic Task Order 11 is hereby deleted in its entirety and is replaced with the following:

Task Order No. 11 shall be in effect from September 8, 2008 through December 31, 2011, with a cost ceiling of \$432,055.61. The amount of \$411,481.53 represents the estimated reimbursable costs, and the amount of \$20,574.08 represents the fixed fee.

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

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

Total FY07 Obligation Amount:	\$ 49,424.97
Total FY08 Obligation Amount:	\$120,000.00
Total FY09 Obligation Amount:	<u>\$ 110,000.00</u>
Cumulative Total of NRC Obligations:	\$279,424.97

TASK ORDER STATEMENT OF WORK

JCN/Contract No. Q4015	Contractor Energy Research, Inc.	Task Order No. 11 NRC-42-07-483 – 11 Mod 5
Applicant NRG Energy	Design/Site ABWR DC	Docket No. 05200012
Title/Description ABWR DC - ABWR Containment Performance Design Safety Margins		
TAC No. RX0584	B&R Number 025-15-171-111	SRP Section(s) Containment and Ventilation Sections (see Section 2)
NRC Task Order Project Officer (PO) Tracy Clark (301) 415-1474 Tracy.Clark@nrc.gov		
NRC Technical Monitor (TM) Andrzej Drozd DSRA/SBCV (301) 415-1308 Andrzej.Drozd@nrc.gov		

1.0 BACKGROUND

Design Certificate (DC) Applications are submitted pursuant to Section 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."

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 staff in determining the adequacy of the South Texas Project (STP) Application relating to the ABWR RCOL.

The primary deliverable, or output, of this regulatory review shall be the Letter Report (LR). The LR will serve as input to the NRC staff's SER which will document the NRC's technical, safety, and legal basis for approving the DC. The LR must provide sufficient information for the NRC staff to perform the design safety review. The LR, and ultimately the SER, should be written in a manner whereby a person with a technical (non-nuclear) background and unfamiliar with the applicant's request could understand the basis for the staff's conclusions.

The contractor will review the GEH application for the Containment and Ventilation Branch 2 (SBCV) under its purview. The contractor will perform limited confirmatory containment performance analysis for the Main Steam Line Brake (MSLB) design basis accident (DBA). The main purpose of this task is to assist the SBCV staff in assessing the safety margins and uncertainties existing in the containment analyses submitted by the GEH as well as in the analyses performed so far by the SBCV staff. The contractor will also compare DBA analyses to the calculation of a postulated sever accident scenario. The contractor will use the MELCOR computer code.

3.0 WORK REQUIREMENTS, SCHEDULE AND DELIVERABLES

Tasks/Standards	Scheduled Completion	Deliverables
<p>1. REQUIREMENT: Become familiar with existing ABWR MELCOR model and staff's performed DBA calculation in support of ABWR DCD.</p> <p>STANDARD: Written confirmation that familiarization is complete. 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.</p>	<p>* 10 days after authorization of work</p>	<p>Documentation that assigned personnel have reviewed references.</p>
<p>2. REQUIREMENT: Participate in an orientation/kick-off meeting with the NRC staff to discuss the scope of the work, expectations and task order management.</p> <p>STANDARD: Attendance by individuals designated by NRC.</p>	<p>* 14 days after authorization of work</p>	<p>N/A</p>
<p>3. REQUIREMENT: Develop MELCOR ABWR plant model based on available STP application documents. The two subtasks are:</p> <ul style="list-style-type: none"> a. Develop and/or modify available plant input model and prepare RAIs b. Finalize the input deck based on RAI responses <p>STANDARD: Revise/modify existing ABWR MELCOR model to reflect available STP design information.</p>	<p>* 120 days after authorization of work</p>	<p>N/A</p>
<p>4. REQUIREMENT: Prepare a matrix of containment DBA calculations, including reproduction of the ABWR licensing (conservative) DBA curve and a list of selected parameters for realistic containment response analyses. Perform preliminary calculation to be discussed with the SBCV staff.</p> <p>STANDARD: Calculation matrix to be developed in a close cooperation with, and accepted by the SBCV staff.</p>	<p>* 60 days after authorization of work</p>	<p>Matrix of DBA calculation</p>

Tasks/Standards	Scheduled Completion	Deliverables
<p>5. REQUIREMENT: Perform MELCOR DBA calculation, both conservative and realistic, as agreed with, and approved by the SBCV staff. Prepare a Letter Report (LR).</p> <p>STANDARD: Completed LR that follows the NRC provided template without deviation. No deviation from the guidance defined in Section III, RAI Guidance of Attachment 1 to the basic contract SOW. One round of comment incorporation acceptable.</p>	<p>* 200 days after authorization of work</p>	<p>LR</p>
<p>6. REQUIREMENT: Become familiar with STP containment analysis methodology used in support of the COL application. In particular, review and evaluate Toshiba's use of GOTHIC computer code, including its physical models and available user's input options, as applied to performing ABWR DBA analyses.</p> <p>STANDARD: Written confirmation that familiarization is complete.</p> <p>The level of effort for Task 6 is based on the volume of materials to be reviewed; this task is for familiarity and for evaluation.</p>	<p>* 300 days after authorization of work</p>	<p>LR</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 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:

- Mechanical engineers or fluid systems engineer(s) or analysts with extensive experience in reviewing containment heat removal systems, mass and energy release for postulated loss of coolant accidents (LOCAs).

- Analysts should be familiar with and be able to run MELCOR which is an NRC computer program.

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 task order is subject to the NRC technical monitor's (TM's) approval and the resume for each shall be provided. 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 weekly progress reports as needed 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 at email addresses delineated on page 2 of this RFP.

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 TAPM 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.: Q4015; Technical Assignment Control No. (TAC): RX0584; Task Order No.: 11; the licensee: NRG Energy; and, the site: South Texas Project.

At the completion of Task 5, submit a LR 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.

7. MEETINGS AND TRAVEL

The following travel assumptions should be considered in planning the work effort. It is likely that a smaller group than the entire review team will be necessary to accomplish some activities; the actual travel contingent will be determined by the NRC TM after discussion with the contractor PM. Travel in excess of the total number of person-trips must be approved by the NRC Contracting Officer; travel within the work scope limits will be approved by the NRC TM.

- (If required) two, 2-person, 4 hrs, working meeting at NRC headquarters to review deliverables (Tasks 2 and 4)
- (If required) One 1-person, 4 hrs meeting, for hearing or ACRS meeting

At the discretion of the NRC TM, quarterly progress meetings may be conducted at the contractor's office or via telephone or video conference.

8.0 NRC FURNISHED MATERIAL

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

- a) Staff's ABWR MELCOR input deck.
- b) Relevant plots of the DBA analysis performed do far.

9. LEVEL OF EFFORT

The estimated level of effort in professional staff hours apportioned among the subtasks and by labor category for the RCOLA is as follows:

Task(s)	Labor Category	Level of Effort FY 2008 (hrs)	Level of Effort FY 2009 (hrs)	Level of Effort FY 2010 (hrs)
1-6	Fluid systems engineers / analysts	90	1800	400 1300
1-6	Project Manager	30	320	150 350
Total	[STP RCOL: 2,790 3,890 hours]	120	2120	550 1650

10. PERIOD OF PERFORMANCE

The projected period of performance is ~~6 months from authorization of work~~ through December 31, ~~2009~~ 2011.

11. OTHER APPLICABLE INFORMATION

License Fee Recovery

- All work under this task order is fee-recoverable under 10 CFR Part 170 and shall be charged to the appropriate TAC number(s).

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 Tasks 2, 3 and 4 is based on the assumption that the contractor is familiar with the review procedures of the SRP Sections.
- 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.

During the course of the review, the TM, and possibly other NRC personnel, may travel to the contractor site to discuss the status of the review and participate in the resolution of open items. It is assumed that the level of effort covers such a meeting.

12. REFERENCES

1. NRO Office Instruction, NRO-REG-100, "Acceptance Review Process for Design Certification and Combined License Applications" [ML071980027].