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: MAR 26 2009	2. CONTRACT NO. (If any): NRC-42-07-483
3. ORDER NO.: 0014 MODIFICATION NO.:	4. REQUISITION/REFERENCE NO.: 42-07-483T014R NRO09748314015

5. ISSUING OFFICE (Address correspondence to):
U.S. Nuclear Regulatory Commission
Div. of Contracts
Attn: Kala Shankar 301-492-3638
Mail Stop TWB 01-B10M
Washington, DC 20555

6. SHIP TO:
a. NAME OF CONSIGNEE: U.S. Nuclear Regulatory Commission
b. STREET ADDRESS: Karen Chapman 301-415-3653
c. CITY: Washington | d. STATE: DC | e. ZIP CODE: 20555

7. TO:
a. NAME OF CONTRACTOR: ENERGY RESEARCH INC
b. COMPANY NAME:
c. STREET ADDRESS: 6167 EXECUTIVE BLVD
d. CITY: ROCKVILLE | e. STATE: MD | f. ZIP CODE: 208523901

f. SHIP VIA:

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
925-15-171-111; JC:Q-4015; BOC: 252A; 31X0200
Obligate: $75,000
Contractor DUNS: 621211259

10. REQUISITIONING OFFICE: NRO

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

12. F.O.B. POINT: Destination

13. PLACE OF		14. GOVERNMENT B/L NO.	15. DELIVER TO F.O.B. POINT ON OR BEFORE (Date)	16. DISCOUNT TERMS
a. INSPECTION	b. ACCEPTANCE			NET 30

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 No. ~~13~~ 14 under Contract No. NRC-42-07-483 Title: "South Texas project ABWR COL Application and Associated Topical Reports - Chapters 5.2.2 and 15" Period of Performance: 03/26/09 - 03/25/11 Estimated Reimbursable Cost: $302,652.85 Fixed Fee: $15,132.64 Total Cost Plus Fixed Fee: $317,785.49 Funding in the amount of $75.000 is being provided. See attached pages for a description of Task Order 14and Statement of Work.					

18. SHIPPING POINT	19. GROSS SHIPPING WEIGHT	20. INVOICE NO.	
			17(h) TOTAL (Cont. pages)

SEE BILLING INSTRUCTIONS ON REVERSE

21. MAIL INVOICE TO:
a. NAME: U.S. Nuclear Regulatory Commission Payment Team, Mail Stop TWB 01-B10M
b. STREET ADDRESS (or P.O. Box): Attn: NRC-42-07-483, Task Order 14
c. CITY: Washington | d. STATE: DC | e. ZIP CODE: 20555

17(i). GRAND TOTAL: $75,000.00

22. UNITED STATES OF AMERICA BY (Signature): Kala Shankar

23. NAME (Typed): Kala Shankar
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)

DUPLICATE - ADM001

SUNSI REVIEW COMPLETE APR 13 2009

ADM002

Task Order No. 14 shall be in effect twenty four months from date of award, with a cost ceiling of $317,785.49. The amount of $302,652.85 represents the estimated reimbursable costs, and the amount of $15,132.64 represents the fixed fee.

The amount obligated by the Government with respect to this task order is $75,000, of which $71,429 represents the estimated reimbursable costs, and the amount of $3,571 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: Karen Chapman
Project Officer
301-415-3653

Contractual Matters: Kala Shankar
Contract Specialist
301-492-3638

Acceptance of Task Order No. 14 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:

[signature]

NAME

President

TITLE

3/26/09

DATE

TASK ORDER STATEMENT OF WORK

JCN	Contractor	Task Order No. 14
Q-4015	Energy Research, Inc.	NRC-42-07-483 14
Applicant	Design/Site	Docket No.
NRG Energy	ABWR/STP3/4	05200012, 05200013
Title/Description		
South Texas Project ABWR COL Application and Associated Topical Reports-Chapter 5.2.2 and 15- Overpressure, Transients and Accident Analyses, Evaluation of Transient and Accident Analysis Model, FSAR Sections 5.2.2, 15.0, 15.1 to 15.6 and 15.8 (LOCA and Fuel Handling Accidents Analyses are Excluded)		
TAC No.	B&R Number	SRP or ESRP Section(s)
RX0065	925-15-171-111	5.2.2, 15
NRC Task Order Project Officer (PO)		
Karen Chapman	301-415-3653	Karen.Chapman@nrc.gov
NRC Technical Monitor (TM)		
George Thomas	301-415-1814	George.Thomas@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.

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

2.0 OBJECTIVE

The U.S. Advanced Boiling Water Reactor (ABWR) is a certified standard design which is described in Title 10 of the Code of Federal Regulations, Part 52, Appendix A (10CFR52, App. A). The applicant for certification of the U.S. ABWR design was GE Nuclear Energy. The ABWR has been certified to the requirements of Subpart B of 10CFR52. All design analyses were based on approved GE Nuclear Energy (now GE Hitachi Nuclear Energy) methods. It is expected that the STP Nuclear Operating Company will request an Amendment to the COL before the fuel loading. South Texas initial core will be based on Toshiba transient and accident analysis methods. In addition, the fuel design for the initial core will be different from the certified GE fuel design.

ABWR design was approved based on the analyses performed by GE transient analyses model ODYNA. It is expected that the FSAR Chapters 5 and 15 analyses will be based on Toshiba transient and accident analyses methods such as: BISON, Advanced Phoenix & POLCA. Therefore a new staff evaluation of overpressure protection analyses, transient and accident analyses are required.

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 STP3/4 COL application (FSAR Section 15) meets appropriate regulatory requirements. Specifically, technical assistance is required to assist the staff in determining the adequacy of the COL application (FSAR Section 15) relating to the regulatory acceptance of the overpressure protection analyses and the following categories of transients and accidents analyses (ATWS, LOCA analysis and Fuel Handling Accidents are excluded) specified in the SRP sections, and all associated topical reports. The topical reports are expected to include analysis methods for transients and accidents.

SRP Section reviews include:

5.2.2
Overpressure Protection

15
Introduction Transient and Accident Analyses

15.0.2
Review of Transient and Accident Analysis Method

Acceptability of the evaluation model used for the transient and accident analysis

15.1 .1-15.1.4
Decrease in Feedwater Temperature, Increase in Feedwater Flow, Increase in Steam Flow, and Inadvertent opening of a SRV

15.2 .1-15.2.5
Loss of External Load; Turbine Trip; Loss of Condenser Vacuum; Closure of Main Steam Isolation Valve and Steam Pressure Regulator Failure (closed)

15.2.6
Loss of Non-emergency power to the Station Auxiliaries

15.2.7
Loss of Normal Feedwater Flow

15.3.1-15.3.2
Loss of Forced Reactor Coolant Flow including Trip of Pump Motor and Flow Controller Malfunctions

15.3.3-15.3.4
Reactor Coolant Pump Rotor Seizure and Reactor Coolant Pump Shaft Break

15.4.1
Uncontrolled Control Rod Assembly Withdrawal from a Subcritical or Low Power Startup Condition

15.4.2
Uncontrolled Control Rod Assembly Withdrawal at Power

15.4.3
Control Rod Misoperation (System Malfunction or Operator Error)

15.4.4-15.4.5
Startup of an Inactive Loop or Recirculation Loop at an Incorrect Temperature, and Flow Controller Malfunction Causing an Increase in BWR Core Flow Rate

15.4.7
Inadvertent Loading and Operation of a Fuel Assembly in an Improper Position

15.4.9
Spectrum of Rod Drop Accidents (BWR)

15.5.1-15.5-2
Inadvertent Operation of ECCS and Chemical and Volume Control System Malfunction that Increases Reactor Coolant Inventory

15.6.1
Inadvertent Opening of a PWR Pressurizer Pressure Relief Valve or a BWR Pressure Relief Valve

3.0 WORK REQUIREMENTS, SCHEDULE AND DELIVERABLES

Tasks/Standards	Scheduled Completion	Deliverables
1. REQUIREMENT: Become familiar with SRP) Sections 5.2.2 AND 15 STANDARD: Written confirmation that familiarization is complete	40 Hrs, 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 the work, expectations and contract management STANDARD: Attendance by individuals designated by NRC.	2 *weeks* after authorization of work	N/A

Tasks/Standards	Scheduled Completion	Deliverables
3. REQUIREMENT: Review the COL application Sections, DCD Sections 5.2.2, 15 and LTRs to determine the adequacy of the analyses. Determine if the methods and approach proposed by the applicant meet the review guidance. Identify issues and the need for any additional or clarifying information (requests for additional information, RAIs). Identify those aspects of the application that need additional or clarifying information (RAIs). Prepare a Draft Technical Evaluation Report. 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 Attachment1. One round of comment incorporation is acceptable.	52 *weeks* after authorization of work	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. 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 Attachment1. One round of comment incorporation is acceptable.	2 *weeks* after receipt of the 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: a. Audit the analysis and design reports as described in the R-COL for STP 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. c. Prepare a trip report (as an input to NRC Audit Report) to summarize the information reviewed, results of the audit, and meeting discussions. STANDARD: Complete evaluation as defined in Task. Submit Trip Report within weeks of site review.	2 weeks before the audit report (schedule TBD)	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. STANDARD: Complete Technical Evaluation Report that follows the NRC provided template without deviation.	4 weeks after receipt of RAI 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. STANDARD: Ensure presentation materials are reviewed and approved by NRC staff.	TBD	Prepare Presentation Materials: Attend Meetings, 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 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:

Engineering and Scientific Disciplines Required:

(A minimum of a Bachelor's Degree in Engineering/Science or equivalent experience and at least seven years direct nuclear power related experience in each of the disciplines is required.)

Reactor Core Analysis
Reactor Physics
Reactor Fuel
New Reactor Designs
Plant (Systems) Engineering
Thermal Hydraulics and Fluid Dynamics
Reactor Systems

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, 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), RX0065, Task Order No.:14; the licensee: NRG Energy; and, the site: South Texas 3 & 4 .

1. At the completion of Task 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** under Section J 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, 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.

6.0 MEETINGS AND TRAVEL

One 2 -person, 1 -day working meeting to kickoff project and contractor orientation.*

*(If required)*One , 2 person, 1 -day trips to the applicant's facility (Tasks 5).

One __2-person, _1_-day working meetings at NRC headquarters to review deliverables*

One, _2_-person, _1_-day meetings, if needed, for hearing or ACRS meeting.

(any additional trips that may be required)

*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.

c. Topical reports will be provided when available.

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-09 (hours)	Level of Effort FY-10 (hours)	Level of Effort FY-11 (hours)
1	Nuclear Engineer	40	0	0
2	Nuclear Engineer	16	0	0
3	Nuclear Engineer	500	1440	80
4	Nuclear Engineer	80	0	0
5	Nuclear Engineer	80	0	0
6	Nuclear Engineer	160	0	0
7	Nuclear Engineer			20
Task 1 - 7	Project Manager	80	120	20

Task(s)	Labor Category	Level of Effort FY-09 (hours)	Level of Effort FY-10 (hours)	Level of Effort FY-11 (hours)
Task 1 - 7	Admin Support	20	30	10
Total		976	1590	130

9.0 PERIOD OF PERFORMANCE

The projected period of performance is 24 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 3 is based on the assumption that the contractor is familiar with the review procedures of SRP Sections 5.2.2 and 15 .

The level of effort for Task 4 is based on the assumption that there will be less than 30 RAIs and it will take, on the average, 2.5 hours to review and address each response.

The level of effort for Task 5 is based on two, two-person, five-day trips (including travel time) plus four days to prepare for the trips and to write the trip reports.

The level of effort for Task 6 is based on the need to resolve 20 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 7 is based on requiring one trip to the site and 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.

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