UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

OCT 09 2009

Mr. James A. Reafsnyder, Director
Office of Partnerships and Program Development
ATTN: Ms. Teresa Hope
DOE Oak Ridge Operations Office
P. O. Box 2001, Mail Stop: M6.1
Federal Building
Oak Ridge, Tennessee 37831

Dear Mr. Reafsnyder:

SUBJECT: ORNL TECHNICAL ASSISTANCE TO THE OFFICE OF NUCLEAR REACTOR REGULATION, NRC – "PARTICIPATION IN THE CRYSTAL RIVER UNIT 3 CONTAINMENT CONCRETE SPECIAL INSPECTION," JCN J-4289

This letter is an authorization to start work immediately on the enclosed Statement of Work and to request for a proposal of the Oak Ridge National Laboratory (ORNL) to provide technical assistance to the Office of Nuclear Reactor Regulation (NRR) of the Nuclear Regulatory Commission. The enclosed Statement of Work details the required work and should be used as the basis for preparing a proposal. NRC Form 189 contains the minimum information needed and will be used for a proposal. Standard terms and conditions for NRC work, as approved by Headquarters, DOE, apply to this effort. A copy of these terms and conditions has been furnished to your office separately. The proposal should be submitted electronically within three weeks to:

Bernard L. Grenier, Project Manager
PMDA, NRR; E-mail: Bernard.Grenier@NRC.GOV

Performance of work in accordance with the enclosed Statement of Work is urgently required to support the Crystal River Unit 3 Special Inspection beginning on October 13, 2009, and is made in accordance with NRC Management Directive 11.7, Part 2. Expedited handling by DOE and ORNL is hereby requested.

If you have any questions about this request, please contact Mr. B. L. Grenier at 301/415-2726.

Sincerely,

Patrick L. Hiland, Director
Division of Division of Engineering
Office of Nuclear Reactor Regulation

Enclosure:
Statement of Work

cc: J. Simpson, ORNL

A-107

NRC FORM 173
NRC MD 11.7

U.S. NUCLEAR REGULATORY COMMISSION

STANDARD ORDER FOR DOE WORK (SOEW)

ORDER NUMBER: Z012-001

DATE OF ISSUANCE: OCT 09 2009

This agreement is entered into pursuant to the authority of the Energy Reorganization Act of 1974, as amended (42 U.S.C. 5801 et seq.). This work will be performed in accordance with the NRC/DOE Memorandum of Understanding dated November 24, 1998. To be best of our knowledge, the work requested will not place the DOE and its contractor in direct competition with the domestic private sector.

ISSUED TO: *(DOE OFFICE)*	ISSUED BY: *(NRC OFFICE)*	ACCOUNTING CITATION
Oak Ridge Operations Office	Office of Nuclear Reactor Regulation Division of Safety Systems (DSS)	APPROPRIATION SYMBOL: 31X0200.020 B&R NUMBER: 020-15-122-150
PERFORMING ORGANIZATION Oak Ridge National Laboratory Oak Ridge, Tennessee	DISTRIBUTION OF OUTGOING *(NRC SIGNED)* Official Contract File	JOB CODE: J-4289 BOC CODE: 253D
JOB CODE TITLE Participation in the Crystal River Unit 3 Containment Concrete Special Inspection	DISTRIBUTION OF INCOMING *(DOE SIGNED)* Official Contract File See distribution in Remarks section below.	PROJECT PERFORM. PERIOD: BEGIN 10/13/2009 – END 12/04/2009 THIS FY FUNDING PERIOD: FROM 10/13/2009 – TO 12/04/2009

OBLIGATION AVAILABILITY PROVIDED BY:

A. THIS ORDER	$40,000
B. TOTAL OF ORDERS PLACED PRIOR TO THIS ORDER WITH THE PERFORMING ORGANIZATION UNDER THIS JOB CODE FOR THIS FISCAL YEAR	0
C. TOTAL ORDERS TO DATE FOR THIS JOB CODE FOR THIS FISCAL YEAR. (Total A. and B.)	$40,000

STANDARD TERMS AND CONDITIONS ARE PART OF THIS ORDER UNLESS OTHERWISE NOTED *(See NRC Management Directive 11.7).*

ATTACHMENTS	SECURITY
THE FOLLOWING ATTACHMENTS ARE HEREBY MADE A PART OF THIS ORDER	
☐ STATEMENT OF WORK	☐ WORK ON THIS ORDER INVOLVES CLASSIFIED INFORMATION. NRC FORM 187 IS ATTACHED.
☐ ADDITIONAL TERMS AND CONDITIONS	
☐ OTHER *(Specify)*	☐ WORK ON THIS ORDER INVOLVES SENSITIVE UNCLASSIFIED, UNCLASSIFIED SAFEGUARDS INFORMATION, OR UNESCORTED ACCESS TO PROTECTED AND VITAL AREAS OF NUCLEAR POWER PLANTS. NRC FORM 187 IS ATTACHED.
FEE BILLABLE UNDER 10 CFR PART 170: ☒ YES ☐ NO	☒ WORK ON THIS ORDER IS UNCLASSIFIED AND NOT SENSITIVE.

REMARKS: *(At a minimum, reference the approved proposal (NRC Form 189) by number and date. See further instructions on the reverse side.)*

This order is to authorize initiation of work on the attached Statement of Work and to request a proposal, NRC Form 189, on an expedited basis in accordance with NRC Management Directive 11.7, Part 2.

Funds Obligated to Date: $40,000
Authorized Cost Ceiling: To be determined
Period of Performance: October 13, 2009 to December 4, 2009

Project Officer: Bernard L. Grenier

After acceptance, please E-mail to the NRC OCFO, ATTN: OCFO_Obligations.Resource@nrc.gov & NBCPayments_NBCDenver@nbc.gov, and to the Office of Nuclear Reactor Regulation, ATTN: B. L. Grenier, (Bernard.Grenier@nrc.gov) and Sylvia.Valentia@nrc.gov.

CERTIFICATION OF FUNDS

This certifies that funds in the amount cited in Block A are available in the current Fiscal Year allotment for work authorized by this SOEW.

FUNDS CERTIFICATION OFFICIAL *(Typed Name)*	SIGNATURE	DATE
Kimberly M. Ferrell, Chief, FMB, PMDA, NRR	Kimberly M. Ferrell	10/9/09
NRC ISSUING AUTHORITY *(Typed Name and Title)*	SIGNATURE	DATE
Patrick L. Hiland, Director, DSS, NRR	Mike for Pat Hiland	10/9/09
DOE ACCEPTING ORGANIZATION *(Typed Name and Title)*	SIGNATURE	DATE

Statement of Work

Title: Participation in the Crystal River Unit 3 Containment Concrete Special Inspection

Job Code Number: J-4289
B&R Number: 020-15-122-150
BOC: 253D

Inspection Report Number: 05000302 2009-007

Project Officer: Bernard L. Grenier: 301/415-6181; E-mail: Bernard.Grenier@nrc.gov

BACKGROUND

On October 2, 2009, during removal of the containment concrete in preparation for steam generator replacements, Progress Energy discovered a separation in the approximately 42-inch-thick concrete wall surrounding the reactor containment liner. The reactor was shut down at the time of discovery. The separation is about one-half inch wide and appears to be located in the concrete about nine inches from the outer surface. No problems have been noted with the steel liner. Progress Energy is investigating the extent of the separation or gap and has initiated assessment of the implications. The licensee is utilizing its resources as well as consultants to analyze and assess the separation.

The reactor building is designed to serve as one of three barriers protecting the public and environment from radiation exposure. The building has a carbon steel liner with a thickness of about three-eighths inch for the cylinder wall and dome, and about one-quarter inch for the base. The steel liner is the primary barrier to a release. The 3.5-foot-thick pre-stressed concrete wall includes a post-tensioning system with steel tendons in a horizontal and vertical lattice structure ensuring that the integrity of the liner is maintained. The separation was found near the horizontal tendons. There are 144 vertical tendons and 282 horizontal tendons. Each horizontal tendon extends 120 degrees around the cylinder.

Following construction, the containment building was subjected to a one-time structural integrity test of 115% of the original design pressure. A containment pressure test that simulates accident pressure conditions was last performed in 2005 and was successful. In 1976, Crystal River repaired a concrete de-lamination, or separation, issue affecting the dome. A containment structural integrity test was successfully performed after the repair.

The NRC will be conducting a Special Inspection with inspectors and experts from the Region II office in Atlanta and NRC headquarters in Rockville, Md. The NRC Special Inspection Team will include an independent expert to assist in the inspection. The NRC special inspection will continue for several weeks during the plant's outage and the plant will not restart until the agency is satisfied that the analyses and all work completed provide the required safety margin.

OBJECTIVE

The objective of this contract is to obtain technical expertise from the ORNL to assist the NRC staff in determining the overall structural integrity of the concrete containment of the Crystal River Unit 3 nuclear power plant which will be used as an input to the final inspection report regarding the adequacy of the containment as it relates to the plant's ability to resume normal operation. Additionally, the objective of this task order will also be to assess adequacy of the licensee's proposed corrective action regarding this issue.

TECHNICAL AND OTHER SPECIAL QUALIFICATIONS REQUIRED

One expert-level Structural Engineer on a full-time, short-term basis who specializes in the analysis and inspection of pre-stressed concrete structures relating to: (1) the evaluation of pre-stressed concrete structures used in nuclear power applications under normal and faulted conditions; (2) the structural integrity of these pre-stressed concrete structures; (3) the degradation mechanisms which can be found within these pre-stressed concrete structures; and; (4) the root-cause identification and evaluation of degradation of these pre-stressed concrete structures.

WORK REQUIREMENTS AND SCHEDULE

	Tasks	Completion Schedule
1.	Assist internal NRC Special Inspection Team with inspection efforts in support of Crystal River Unit 3 containment structure concrete evaluation utilizing procedures found in IP 93812.	November 20, 2009
2.	Prepare input to the Special Inspection Report based on findings at the Crystal River Unit 3 site during the inspection period utilizing format provides in IMC 0612.	December 4, 2009

LEVEL OF EFFORT

The estimated level of effort is 40 professional staff days.

PERIOD OF PERFORMANCE

The period of performance for this task order is October 13, 2009 through December 4, 2009.

DELIVERABLES

Technical Reporting Requirements

NOTE: All reports are to be prepared using Microsoft Word 2003, or compatible version, and sent electronically to the Technical Monitor with a copy to the Project Officer. The transmittal letter and cover page shall contain the job code number (JCN) and title, and NRC Inspection Report number.

At the completion of Task 2, submit a technical evaluation report, draft and final as appropriate, that incorporates evaluations of the findings based on the efforts of the expert's inspection activities with the Special Inspection Team at the Crystal River Unit 3 nuclear power plant. The content and format of the report should be prepared using the template contained in 0612-14 of IMC-0612, the NRC's Inspection Manual Chapter which details the guidelines for constructing an inspection report documenting the inspection activities at a nuclear power reactor. IMC-0612 is available on the NRC's public website at the following location:

http://adamswebsearch2.nrc.gov/idmws/doccontent.dll?library=PU_ADAMS^PBNTAD01&ID=083400148

Monthly Business Letter Report

See Attachment 1.

MEETINGS AND TRAVEL

A one-person (expert structural engineer), six-week (nominal) trip to the Crystal River nuclear power facility will be required for the contracted individual in order to conduct inspections of the containment structure on site.

NRC FURNISHED MATERIALS

The NRC furnished materials that are necessary to carry out the contractual duties as stated are available on the NRC's public website and indicated below:

Inspection Procedures:
http://www.nrc.gov/reading-rm/doc-collections/insp-manual/inspection-procedure/index.html

Inspection Manual Chapters:
http://www.nrc.gov/reading-rm/doc-collections/insp-manual/manual-chapter/index.html

OTHER APPLICABLE INFORMATION

License Fee Recovery

The work under this task order is license fee recoverable.

Assumptions and Understanding

The level of effort for Task 1 is based on one half day of travel to the Crystal River nuclear facility site and one half day return travel for the contracted expert structural engineer. The remaining level of effort for Task 1 is assumed to focus on direct inspection activities at the site.

The level of effort for Task 2 is based on the estimate of time required for the contracted expert structural engineer to compile inspection results and construct an input to the Special Inspection Team report in accordance with the guidance in IMC-0612.

Organizational Conflict of Interest Disclosure

DOE recognizes that Section 170A of the Atomic Energy Act of 1954, as amended, requires that NRC be provided with disclosures on potential conflicts when NRC obtains technical, consulting, research and other support services. DOE further recognizes that the assignment of NRC work to DOE Laboratories must satisfy NRC's conflicts standards. Accordingly, when NRC enters into an agreement with the ORNL to perform work for NRC, and during the life of the agreement, the ORNL shall review and promptly disclose its current work, planned work and where appropriate, past work for DOE and others (meaning, organizations, in the same/similar technical area as the NRC project scope of work, e.g. (included but not limited to), NRC licensees, vendors, industry groups or research institutes that represent or are substantially comprised of nuclear utilities) for work in the same or similar technical area as the proposed NRC project. Disclosures for current or planned work for DOE or others in the same or similar technical area as the proposed NRC work, are to include (1) the name of organization; (2) dollar value; (3) period of performance of the work identified; and (4) statements of work for the projects. NRC shall then determine whether a conflict would result and, if one does, determine, after consultation with the ORNL, the appropriate action NRC or the ORNL should take to avoid the conflict, or when appropriate under the NRC procedures, waive the conflict.

If the ORNL determines there is no applicable work in the same or similar technical area, it should be stated in its proposal.

Monthly Business Letter Report

A monthly business letter report (MBLR) will be submitted by the 20th of each month to B. L. Grenier, Project Officer, NRR, E-mail: Bernard.Grenier@NRC.GOV; with copies provided to the Technical Monitor, the License Fee Coordinator: Makeeka.Compton@NRC.GOV and to the Office of the Chief Financial Officer, ATTN: Richard.Skinker@NRC.GOV.

Note: If no work was performed during the period, a negative report (E-mail) is to be submitted instead of the full report.

State the period, including the dates the report covers, i.e., the time period for which the costs were incurred. Each report will contain the following sections as described below:

I. WORK PROGRESS STATUS

1.a. Task Order Identification Information

- The Job Code Number (JCN) and title
- The principal investigator(s) and telephone number(s)
- The NRC Project Officer and telephone number
- The NRC Technical Monitor(s) and telephone number

1.b. The period of performance.

1.c. Financial Summary

- The authorized ceiling amount
- The total amount of funds obligated to date
- The total cost for the period
- The total cost for the fiscal year to date
- The total cost cumulative to date
- Percent of funds expended against obligated funds

2. Schedule/Milestone Information in the following format:

Tasks	Planned Completion Date	Revised Completion Date	Actual Date
Provide a brief summary of the work; include any report or travel.	The day, month and year scheduled for completion, or timeframe if a date is not known or projected.	The revised day, month and year based on a change. The reason for the change must be given in the "Problem/ Resolution" section below.	The day, month and year all of the work has been actually completed.

3. Work Performed During the Period

A description of the work performed and accomplished commensurate with the amount of funds expended; i.e., the description should provide the reader with sufficient explanation of the work to justify the amount of the expenditures.

Any travel taken during the reporting period should also be summarized in this section of the report. Each travel summary should identify the persons traveling, the duration of the travel, the purpose of the travel, and any work/accomplishments not reflected elsewhere.

4. Problem/Resolution

- All problems encountered during the period should be clearly and succinctly identified and stated. Then, the resolution or the proposed solution should be briefly described. It should be clearly evident, from a reading of the description, who is responsible for solving the problem, should it still exist at the time the report is written.

- Notwithstanding the status of the problem at the time the MBLR is written, all problems should be recorded in the "Problem/ Resolution" section of the MBLR for documentation/historical purposes. If the problem still exists in a subsequent month, in whole or in part, it should be described as it currently exists; otherwise, it should be deleted from the report.

- Problem or circumstances that require a change in the level of effort/costs, scope, or travel requirements are to be described in the MBLRs for documentation purposes but are to be dealt with separately in a letter addressed and sent to the NRR project manager.

5. Plans for Next Period

Provide a brief description of the work to be performed/accomplished during the next reporting period. If a milestone is expected to be completed during the next report period, so state.

II. FINANCIAL STATUS

1. Provide the total direct staff use (including subcontractor hours) and the amount of funds expended (costed) during the period and total cumulative year to date in the following categories for each task order:

Monthly Business Letter Report (Continued)

	Current Month	Fiscal Year to Date	Total To Date
a. Direct Labor (hours)			
(1) Management	XX	XX	XX
(2) Technical	XX	XX	XX
(3) Support	XX	XX	XX
Subtotal	XX	XX	XX
Contractor hours	XX	XX	XX
Total Hours	XX	XX	XX
b. Costs			
Labor Costs			
(1) Direct Labor Costs	XX	XX	XX
(2) Indirect Labor Costs	XX	XX	XX
Subtotal	XX	XX	XX
Other Direct Costs			
(1) Subcontractor/Consultant Cost	XX	XX	XX
(2) Material and Services Costs	XX	XX	XX
(3) Computer Usage Costs	XX	XX	XX
(4) Travel			
(a) Domestic	XX	XX	XX
(b) Foreign	XX	XX	XX
Total Travel	XX	XX	XX
Subtotal Other Direct Costs	XX	XX	XX
G&A Costs	XX	XX	XX
DOE Adder	XX	XX	XX
Total Reimbursable Costs	XX	XX	XX