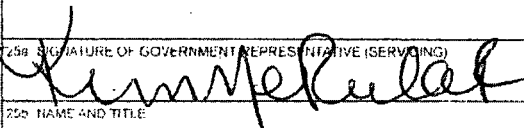
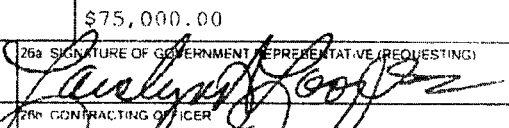


| | | | | | |
|---|---|--|---------|---|-----------|
| INTERAGENCY AGREEMENT | | 1 IAA NO. NRC-HQ-60-13-D-0004/M0008 | | PAGE 1 OF 2 | |
| 2 ORDER NO. | | 3 REQUISITION NO. RES-15-0239 | | 4 SOLICITATION NO. | |
| 5 EFFECTIVE DATE 06/19/2015 | | 6 AWARD DATE 06/19/2015 | | 7 PERIOD OF PERFORMANCE 03/20/2013 TO 09/30/2017 | |
| 8 SERVICING AGENCY BROOKHAVEN NATIONAL LABORATORY ALC: U.S. DEPARTMENT OF ENERGY DUNS: 027579460 +4: BROOKHAVEN SITE OFFICE PO BOX 5000 BLDG 464 UPION NY 11973-5000 POC Kim Nekulak TELEPHONE NO 631-344-7439 | | 9 DELIVER TO SELIM SANCAKTAR US NUCLEAR REGULATORY COMMISSION TWO WHITE FLINT NORTH BUILDING 11545 ROCKVILLE PIKE MAIL STOP T-10A12 ROCKVILLE MD 20852 | | | |
| 10 REQUESTING AGENCY ACQUISITION MANAGEMENT DIVISION ALC: 3100001 DUNS: 040535809 +4: US NUCLEAR REGULATORY COMMISSION TWO WHITE FLINT NORTH 11545 ROCKVILLE PIKE MAIL STOP T-5E3 ROCKVILLE MD 20852-2738 POC Carolyn A. Cooper TELEPHONE NO 301-415-6734 | | 11 INVOICE OFFICE | | | |
| 12 ISSUING OFFICE US NRC - HQ ACQUISITION MANAGEMENT DIVISION MAIL STOP TWFN-5E03 WASHINGTON DC 20555-0001 | | 13 LEGISLATIVE AUTHORITY Energy Reorganization Act of 1974 | | | |
| | | 14 PROJECT ID V6400 | | | |
| | | 15 PROJECT TITLE SEISMICALLY INDUCED FIRES AND FLOODING FEASIBILITY | | | |
| 16 ACCOUNTING DATA 2015-00200-FEEBASED-60-600002-11-6-212-1062-253D | | | | | |
| 17 ITEM NO. | 18 SUPPLIES/SERVICES | 19 QUANTITY | 20 UNIT | 21 UNIT PRICE | 22 AMOUNT |
| | NRC-HQ-60-13-D-0004 Master IAA: N/A The purpose of this modification is to accept Brookhaven National Laboratory's proposal dated May 11, 2015 to (1) increase the level of effort for Task 3; (2) add a new Task 4 to the agreement (to be performed after receipt of notification from the COR); (3) add incremental funding in the amount of \$75,000.00, and (4) extend the period of performance of the agreement to September 30, 2017, as reflected in the attached revised Statement of Work. Accordingly, the agreement is Continued ... | | | | |
| 23 PAYMENT PROVISIONS | | 24 TOTAL AMOUNT \$75,000.00 | | | |
| 25a SIGNATURE OF GOVERNMENT REPRESENTATIVE (SERVICING)  | | 25b SIGNATURE OF GOVERNMENT REPRESENTATIVE (REQUESTING)  | | | |
| 25c NAME AND TITLE Kim Nekulak, Contracting Officer | 25d DATE JUL 15 2015 | 25e CONTRACTING OFFICER CAROLYN A. COOPER | | 25f DATE 6/19/2015 | |

TEMPLATE - ANMMm

SUNSI REVIEW COMPLETE

JUL 21 2015

ANMM02

hereby modified: The ceiling amount of the agreement is increased by \$401,827.00, from \$496,000.00 to \$897,827.00, the amount obligated in the agreement is increased by \$75,000.00 from \$496,000.00 to \$571,000.00, and the period of performance is March 20, 2013 through September 30, 2017.

TOTAL AMOUNT OF THIS MODIFICATION: \$401,827.00
TOTAL CEILING AMOUNT: \$897,827.00 (changed)
TOTAL AMOUNT OBLIGATED: \$571,000.00 (changed)

The following document is hereby made apart of this Agreement: Attachment No. 1, Statement of Work.

All other terms and conditions of the subject Agreement remain unchanged.

STATEMENT OF WORK

PROJECT TITLE: Scoping Study for a PRA Method for Seismically Induced Fires and Floods

JOB CODE: V6400

LABORATORY: Brookhaven National Laboratory (BNL)
SITE: Upton, New York

NRC CONTRACTING OFFICER
REPRESENTATIVE (COR): Selim Sancaktar
PHONE: (301) 251-7572
Email: Selim.Sancaktar@nrc.gov

BNL PRINCIPAL INVESTIGATOR: John Lehner

B&R NUMBER: 2013-60-11-6-212

PROJECT DURATION: March 20, 2013 through September 2017

This is a modification to the existing project with BNL with job code V6400. Task 1 is complete. Task 2 is to be completed in April 2015 by expected issuance of the draft report by BNL in the April 2015 time frame, exhausting the funds already committed. This modification:

- i) increases the level of effort for Task 3;
- ii) defines a new Task 4, to be initiated at the discretion of the COR;
- iii) changes the end date of the period of performance period to September 2017.

1. BACKGROUND

In response to the Japan nuclear accident at Fukushima Dai-ichi, the NRC established a task force of senior agency experts to determine lessons learned from the accident and to initiate a review of NRC regulations to determine if additional measures needed to be taken immediately to ensure the safety of U.S. plants. The task force issued its report on July 12, 2011, which concluded that there was no imminent risk from continued operation and licensing activities. The task force also concluded that enhancements to safety and emergency preparedness are warranted and made a dozen recommendations for Commission consideration. The staff subsequently prioritized and expanded upon the task force recommendations, which are grouped as Tier 1, Tier 2, and Tier 3 in SECY-11-0137, and continues to make additions and modifications, as appropriate.

Enclosure 3 to SECY-11-0137 contains the Program Plans for Tier 3 Near-Term Task Force (NTTF) Recommendations, and is publicly available in ADAMS (Accession Number ML12208A210). These plans cover the potential enhancements to the capability to prevent or mitigate seismically induced fires and floods, and define the following task.

- "(2) Completion of a feasibility scoping study to evaluate PRA approaches for assessing multiple concurrent events (December 2014)."

The concurrent events mentioned in this document refer to internal fires, and internal and external floods. Various aspects and constraints of this program related to this project are discussed in this document.

2. OBJECTIVE

The objective of this project is to generate sufficient information about the feasibility of a Probabilistic Risk Assessment (PRA) approach to assess risk from seismically induced fires and floods in domestic nuclear power plants such that the agency can make informed decisions about the appropriate next steps in this area. This report is intended to be used as one of the inputs to reevaluate Recommendation 3 – a reevaluation based on information obtained from Tier 1 activities and PRA method development activities, and recommend further activities.

3. TECHNICAL AND OTHER SPECIAL QUALIFICATIONS REQUIRED

It is expected that the BNL personnel who work on this project are experienced PRA personnel with a broad experience in the field, including at least seismic PRAs; it is also assumed that other experienced experts in fire and flooding PRAs will be available to contribute to the end product.

4. SCOPE OF WORK

The following tasks are envisioned:

TASK 1: Prepare a Program Plan and Define Scope.

BNL studies the staff plan on seismically induced fires and floods in ADAMS document ML12208A210 (and related documents), and also receives input from the NRC Contracting Officer Representative (COR) to define a project plan and scope, compatible with the program plan and considering the constraints. At least the following points should be considered:

1. The PRA approach should be feasible, considering plants with different levels of PRA models available, or not available (such as fire PRA, seismic PRA).
2. The evaluation should take into account the relative value (i.e., the improved ability to characterize and manage plant risk versus the resource investment required) of performing a PRA assessment for this issue, and also taking into account the ongoing quantitative walkdowns and assessments related to the NRC request to reevaluate plants after the Fukushima event.
3. The evaluation should account for lack of data (such as seismic fire fragilities of SSCs, i.e. the likelihoods that specified ground motions will result in the movement or failure of an SSC in a mode that creates an ignition source or combustible product) and previous similar work in this area, and the implications of cost and value of obtaining such information generically or plant-specifically.

The evaluation should also reflect on how the availability of this data, or lack thereof, affects the community's ability to define recommended approaches.

4. The evaluation should address the fact that this subject cuts across at least four technical areas, namely PRA, seismic risk, flooding risk, and internal fire risk, and address the challenges this situation creates in terms of developing a consensus state-of-practice.
5. Given the above complexities, and to ensure that this evaluation does not miss key considerations that affect the agency's path forward in this area, the program plan should include a small effort to get perspective and opinion of recognized experts in this area (such as those involved with the widely varying efforts to consider this issue as part of the IPEEEs), related to feasibility, usefulness, and merit (versus other risk measurement gaps) of a PRA assessment.

The draft project plan should be submitted to the NRC Contracting Officer Representative (COR) by email within a month after the project kickoff meeting. NRC will then provide feedback to BNL within two weeks, and BNL will then deliver the final project plan to the NRC by email within two weeks from receipt of the NRC feedback. The final project plan will define a report as the final deliverable of this project. The report outline should be defined in the project plan, but may be revised as the project proceeds. The staff-hours (staff months) estimate in this statement of work is for budgetary purposes; the project plan should define the expected resources commensurate with the project plan.

After approval of the project plan by the NRC, the following Tasks 2 and 3 should be performed by BNL.

TASK 2: Implement the Approved Project Plan to Generate the Draft Report

After the NRC approves the project plan, BNL shall implement it. As shown in the table of Section 5 below (Deliverables/Schedules and/or Milestones), BNL Actions No. 1 and No. 2 comprise the first phase of the project which is expected to take up to 12 months to complete. During this first phase BNL should prepare progressively improved draft reports of the final product; which will be submitted to the NRC for review at approximately four month intervals. At least two meetings at the NRC Headquarters in Rockville, Maryland should be budgeted.

TASK 3: Generate the Final Report

After NRC review of the last progressively-improved draft report prepared under Task 2, the NRC will authorize BNL to prepare and submit a final draft report to the NRC for review. NRC feedback from its review will be then transmitted back to BNL for finalizing the report. At least one meeting at the NRC Headquarters should be budgeted. In addition, the following activities are to be performed :

- i. respond to the NRC comments on the draft report of April 2015;
- ii) disseminate the resulting report to the already formed expert panels and other technical organizations (such as EPRI); and

iii) receive and incorporate feedback obtained in item ii) into the draft report to produce a final report by December 2015. Expert consultant help from outside of the BNL organization may be used to obtain wider feedback.

TASK 4: (new task) Support a Pilot Application of a Method on a Nuclear Power Plant

This new task will be initiated at the discretion of the NRC COR, if feasible. The feasibility of performing this task will be assessed by the NRC COR based, in part, on the availability of a voluntary nuclear power plant for a pilot application of Seismically-Induced Fires and Floods guidance developed under Task 3. It is expected that the pilot application will involve a qualitative assessment approach. BNL is expected to support this evaluation, which may be performed by other parties. BNL will write a summary report on the conclusion of this evaluation and relate it to the project report already produced in Task 3. Travel to the plant site may be needed.

5. DELIVERABLES/SCHEDULES AND/OR MILESTONES

The following table lists the expected deliverables and schedule (as measured from the project kickoff meeting). Since the duration of the project will be defined by the project plan (to be constructed in Task 1. The project end date is expected to be September 2017.

| Task # | Deliverables | | Comments |
|--------|--------------|------------|-------------------------------------|
| | Draft | Final | |
| 1 | | | Project Plan Done |
| 2 | April 2015 | | Draft Project Deliverable Reports |
| 3 | | Dec. 2015 | Final Project Deliverable Report |
| 4 | | Sept. 2017 | Summary Report on Task 4 |
| | Every month | | Monthly Letter Status Report (MLSR) |

6. REPORTING REQUIREMENTS

Reporting requirements are summarized in the table in Section 5 above.

All draft deliverable reports should be sent to the NRC Contracting Officer Representative (COR) as Microsoft Word files attached to emails. The final project plan (Task 1) and the final report (Task 3) should also be sent the same way, but should also be followed by a formal cover letter sent by email.

Each project deliverable report (draft and final) should be spell-checked and also visually inspected for format before being sent to the NRC.

7. MONTHLY LETTER STATUS REPORTS

In accordance with Section 4 of the attached Standard Terms and Conditions for DOE Work, a copy of the Monthly Letter Status Report (MLSR) is to be submitted to the following mailboxes:

RESDRAMLSR.Resource@nrc.gov
ContractsPOT.Resource@nrc.gov

Selim Sancaktar DRA/PRAB COR Mail Stop: C4A07M
Email: Selim.Sancaktar@nrc.gov

Walter Leschek DRA/PRAB Mail Stop: C4C07M
Email: Walter.Leschek@nrc.gov

8. MEETINGS AND TRAVEL

BNL should budget at least 2 meetings for task 2, and 1 meeting for Task 3 at the NRC Headquarters in Rockville, Maryland. Additional two trips should be budgeted for Task 4.

A meeting for Task 1 may or may not be included at the discretion of BNL.

9. NRC-FURNISHED MATERIAL

None is specified.

10. RESEARCH QUALITY

The quality of NRC research programs are assessed each year by the Advisory Committee on Reactor Safeguards. Within the context of their reviews of RES programs, the definition of quality research is based upon several major characteristics:

Results meet the objectives (75% of overall score)

Justification of major assumptions (12%)

Soundness of technical approach and results (52%)

Uncertainties and sensitivities addressed (11%)

Documentation of research results and methods is adequate (25% of overall score)

Clarity of presentation (16%)

Identification of major assumptions (9%)

It is the responsibility of the contractor to ensure that these quality criteria are adequately addressed throughout the course of the research that is performed. The NRC Contracting Officer Representative (COR) and technical monitor will review all research products with these criteria in mind.

11. NEW STANDARDS FOR CONTRACTORS WHO PREPARE NUREG-SERIES
MANUSCRIPTS

The U.S. Nuclear Regulatory Commission (NRC) began to capture most of its official records electronically on January 1, 2000. The NRC will capture each final NUREG-series publication in its native application. Therefore, please submit your final manuscript that has been approved by your NRC Contracting Officer Representative (COR) in both electronic and camera-ready copy.

The final manuscript shall be of archival quality and comply with the requirements of NRC Management Directive 3.7 "NUREG-Series Publications." The document shall be technically edited consistent with NUREG-1379, Rev. 2 (May 2009) "NRC Editorial Style Guide." The goals of the "NRC Editorial Style Guide" are readability and consistency for all agency documents.

All format guidance, as specified in NUREG-0650, "Preparing NUREG-Series Publications," Rev. 2 (January 1999), will remain the same with one exception. You will no longer be required to include the NUREG-series designator on the bottom of each page of the manuscript. The NRC will assign this designator when we send the camera-ready copy to the printer and will

place the designator on the cover, title page, and spine. The designator for each report will no longer be assigned when the decision to prepare a publication is made. The NRC's Publishing Services Branch will inform the NRC Contracting Officer Representative (COR) for the publication of the assigned designator when the final manuscript is sent to the printer.

For the electronic manuscript, the Contractor shall prepare the text in Microsoft Word, and use any of the following file types for charts, spreadsheets, and the like.

| File Types to be Used for NUREG-Series Publications | |
|---|----------------|
| File Type | File Extension |
| Microsoft® Word® | .doc |
| Microsoft® PowerPoint® | .ppt |
| Microsoft® Excel | .xls |
| Microsoft® Access | .mdb |
| Portable Document Format | .pdf |

This list is subject to change if new software packages come into common use at NRC or by our licensees or other stakeholders that participate in the electronic submission process. If a portion of your manuscript is from another source and you cannot obtain an acceptable electronic file type for this portion (e.g., an appendix from an old publication), the NRC can, if necessary, create a tagged image file format (file extension.tif) for that portion of your report. Note that you should continue to submit original photographs, which will be scanned, since digitized photographs do not print well.

If you choose to publish a compact disk (CD) of your publication, place on the CD copies of the manuscript in both (1) a portable document format (PDF); (2) a Microsoft Word file format, and (3) an Adobe Acrobat Reader, or, alternatively, print instructions for obtaining a free copy of Adobe Acrobat Reader on the back cover insert of the jewel box.

12. SUBCONTRACTING/CONSULTANT INFORMATION

None is specified. BNL make use of services of expert technical subject-matter subcontractors, after approval by the COR.

13. INFORMATION TECHNOLOGY (IT) RESOURCES

None is specified.

14. CONTRACTING OFFICER REPRESENTATIVE (COR)

Technical direction as defined in Section 1 of the Standard Terms and Conditions will be provided by the Contracting Officer Representative (COR), Selim Sancaktar, who can be reached at:

U. S. Nuclear Regulatory Commission
Mail Stop: CSB-4A07M
Washington, D. C. 20555-0001
Phone: (301) 251-7572
Fax: (301) 251-7424
Email: Selim.Sancaktar@nrc.gov

Express mail should be sent to:
U. S. Nuclear Regulatory Commission
Mail Stop: CSB-4A07M
11545 Rockville Pike
Rockville, MD 20852-2738