INTERAGENCY AGREEMENT	1. IAA NO. 31310018F0038	PAGE 1 OF 3

2. ORDER NO.	3. REQUISITION NO.	4. SOLICITATION NO.
	RES-18-0321	

5. EFFECTIVE DATE	6. AWARD DATE	7. PERIOD OF PERFORMANCE
08/15/2018	08/15/2018	08/15/2018 TO 12/31/2020

8. SERVICING AGENCY
OAK RIDGE NATIONAL LAB
ALC:
DUNS: 012075755 +4:
US DEPARTMENT OF ENERGY
OAK RIDGE NATION LABORATORY SITE OFFICE
BUILDING 4500N MS 6269
PO BOX 2008
OAK RIDGE TN 37831-6269
POC Deborah Garland, CO
TELEPHONE NO. (865) 241-9566

9. DELIVER TO
MEREDITH CARR
US NUCLEAR REGULATORY COMMISSION
MAIL STOP TWFN 10A12
11555 ROCKVILLE PIKE
ROCKVILLE MD 20852

10. REQUESTING AGENCY
ACQUISITION MANAGEMENT DIVISION
ALC: 31000001
DUNS: 040535809 +4:
US NUCLEAR REGULATORY COMMISSION
ONE WHITE FLINT NORTH
11555 ROCKVILLE PIKE
ROCKVILLE MD 20852-2738
POC Jeffrey R. Mitchell
TELEPHONE NO. 301-415-5074

11. INVOICE OFFICE
US NUCLEAR REGULATORY COMMISSION
ONE WHITE FLINT NORTH
11555 ROCKVILLE PIKE
MAILSTOP O3-E17A
ROCKVILLE MD 20852-2738

12. ISSUING OFFICE
US NRC - HQ
ACQUISITION MANAGEMENT DIVISION
MAIL STOP TWFN-07B20M
WASHINGTON DC 20555-0001

13. LEGISLATIVE AUTHORITY
Energy Reorganization Act of 1974

14. PROJECT ID

15. PROJECT TITLE
METHODS FOR ESTIMATING JOINT PROBABILITIES OF COIN

16. ACCOUNTING DATA
2018-X0200-FEEBASED-60-60D002-11-6-182-1014-251D

17. ITEM NO.	18. SUPPLIES/SERVICES	19. QUANTITY	20. UNIT	21. UNIT PRICE	22. AMOUNT
	The NRC and the DOE Oak Ridge National Laboratory (ORNL) hereby enter into this Task Order 31310018F0038 under Agreement, NRC-HQ-25-14-D-0004 for the project entitled, "Methods for Estimating Joint Probabilities of Coincident and Correlated Flooding Mechanisms for Nuclear Power Plant Flood Hazard Assessments ". The performance period for this agreement shall commence on August 15, 2018 and will expire on December 31, 2020. Continued ...				

23. PAYMENT PROVISIONS	24. TOTAL AMOUNT
	$192,625.00

25a. SIGNATURE OF GOVERNMENT REPRESENTATIVE (SERVICING)		26a. SIGNATURE OF GOVERNMENT REPRESENTATIVE (REQUESTING)	
		Jeffrey R Mitchell	
25b. NAME AND TITLE	**25c. DATE**	**26b. CONTRACTING OFFICER**	**26c. DATE**
		JEFFREY R. MITCHELL	08/22/2018

Consideration and Obligations:
(a) Authorized Cost Ceiling $480,000.00.

(b) The amount presently obligated with respect to this DOE Agreement is $192,625.00. When and if the amount(s) paid and payable to the DOE Laboratory hereunder shall equal the obligated amount, the DOE Laboratory shall not be obligated to continue performance of the work unless and until the NRC Contracting Officer shall increase the amount obligated with respect to this DOE Agreement. Any work undertaken by the DOE Laboratory in excess of the obligated amount specified above is done so at the DOE Laboratory's sole risk.

The following documents are hereby made part of this Agreement:
Attachment No. 1: Statement of Work

NRC CONTRACTING OFFICERS REPRESENTATIVE (COR):
[redacted] (Primary) [redacted] (Alternate)
ORNL PROJECT MANAGER: [redacted]

Master IAA: NRCHQ2514D0004

00001	Authorized Cost Ceiling Total Obligated Amount: $480,000.00 Incrementally Funded Amount: $192,625.00	480,000.00

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 the best of our knowledge, the work requested will not place the DOE and its contractor in direct competition with the domestic private sector.

[ ] Fee Recoverable Work
[X] Non-fee Recoverable Work

Notwithstanding the agreement effective dates and period of performance start dates stated elsewhere in the agreement, the effective date of the agreement and start date of the period of performance are the last date of signature by the

Continued ...

parties.

ALC: 31000001
DUNS: 040535809
TAS: 31X0200.320

The total amount of award: $480,000.00. The obligation for this award is shown in box 24.

STATEMENT OF WORK

NRC Agreement Number	NRC Agreement Modification Number	NRC Task Order Number	NRC Task Order Modification Number (If Applicable)
NRCHQ2514D0004		31310018F0038	

Project Title
Methods for Estimating Joint Probabilities of Coincident and Correlated Flooding Mechanisms for Nuclear Power Plant Flood Hazard Assessments

Common Cost Center Code	B&R Number	DOE Laboratory
11-6-213-1014		Oak Ridge National Laboratory

NRC Requisitioning Office
Office of Research

NRC Form 187, Contract Security and Classification Requirements	
☐ Applicable ☒ Not Applicable	☐ Involves Proprietary Information ☐ Involves Sensitive Unclassified
☒ Non Fee-Recoverable	☐ Fee-Recoverable (If checked, complete all applicable sections below)
Docket Number (If Fee-Recoverable/Applicable)	**Inspection Report Number (If Fee Recoverable/Applicable)**
Technical Assignment Control Number (If Fee-Recoverable/Applicable)	**Technical Assignment Control Number Description (If Fee-Recoverable/Applicable)**

1. BACKGROUND

Regulatory Context:

The U.S. Nuclear Regulatory Commission (NRC) has developed regulations regarding siting and design of nuclear power plants (NPPs) aimed at providing safety from various natural hazards, including flooding. 10 CFR Part 100 addresses siting criteria. 10 CFR Parts 50 and Part 52 address design criteria for nuclear power plants with respect to natural hazards.

10 CFR Part 50 Appendix A, General Design Criterion (GDC) 2 “Design bases for protection against natural phenomena” provides the regulatory criterion for protection of structures, systems, and components (SSCs) important to safety against natural phenomena. GDC-2 states that SSCs important to safety must be designed to withstand the effects of natural phenomena that have been historically reported for the site and surrounding area, with sufficient margin for the limited accuracy, quantity, and period of time in which the historical data have been accumulated. The regulation also states that the design bases shall reflect appropriate combinations of the effects of normal and accident conditions with the effects of the natural phenomena.

10 CFR Part 52, more specifically 10 CFR Part 52.17(a)(1)(vi), for early site permits (ESPs) and 10 CFR Part 52.79 (a)(1)(iii) for combined licenses provide the requirements for new reactor applications as they relate to the hydrologic characteristics of the proposed site. These regulations require consideration of the most severe of the natural phenomena that have been historically reported for the site and surrounding area and with sufficient margin for the limited accuracy, quantity, and period of time in which the historical data have been accumulated.

The requirements to consider physical site characteristics (including hydrologic features) in site evaluations are specified in 10 CFR Part 100.10(c) for applications before January 10, 1997, and 10 CFR Part 100.20(c) for applications on or after January 10, 1997.

Current Guidance:

It is well understood that flooding is often the result of multiple forcing mechanisms. Examples include elevated sea levels caused by concurrent waves and storm tides, coastal flooding caused by both storm tides and high river flows and riverine flooding resulting from extreme rainfall occurring during snowmelt events. However, at this time, comprehensive and consistent guidance that supports risk-informed decision-making with respect to estimating joint probabilities of coincident and correlated flooding mechanisms for nuclear power plant flood hazard assessments is lacking. Existing deterministic guidance relies upon highly stylized discrete combinations of contributing forcing mechanisms along with empirical or qualitative treatment of probability.

NRC's current regulatory guidance for new reactors on estimation of design basis flooding hazards, is contained in Regulatory Guide 1.59 "Design Basis Floods for Nuclear Power Plants" (RG-1.59, U.S. NRC 1977). ANSI/ANS-2.8 "Determining Design Basis Flooding at Nuclear Power Plant Sites (ANS 1992) has also been used by licensees and NRC for design basis flood estimation at new NPPs. These documents adopt a deterministic, standards-based approach to flood hazard assessment, employing deterministic concepts such as probable maximum precipitation, (PMP), probable maximum flood (PMF) etc. They do not provide quantitative information useful for risk-informed decision-making, and many of the analytical techniques discussed are seriously outdated.

Technical Context:

Existing deterministic approaches for flood hazard assessment (e.g., ANS-2.8-1992, NUREG/CR-7046) recognize that no single flood-causing mechanism or event is adequate as a design basis for NPPs. The solution adopted in existing deterministic approaches has been to identify combinations of flood-causing mechanisms that, collectively, do provide an adequate design basis. Typically, a few alternative mechanism combination sets are identified for different settings and scenarios (e.g., a set of alternative combinations for open coastal settings subject to storm surge or tsunamis, a set of alternative combinations for a riverine setting subject to flooding due to rainfall or snowmelt).

Because extreme events, such as a probable maximum flood or probable maximum storm surge, are by definition rare events, combining two or more of these events is discouraged. Instead, it is advised that only one of the flood-causing events in the combination should be a probable maximum event, while the others should be more commonly occurring events. The combinations identified in ANS-2.8-1992 and continued in NUREG/CR-7046 were selected to have an estimated annual exceedance probability of less than 1 x 10-6 (ANS 1992). ANS-2.8-1992 provided some supporting information related to the probability-of exceedance of selected combined events; however, rigorous statistical analyses for these estimates was not performed.

This project will focus mainly on summarizing and providing a critical review of the state of practice in estimating joint probabilities for coincident and/or correlated flooding mechanisms that may affect NPPs in a variety of settings. Where feasible and appropriate, promising extensions of existing practice or novel approaches will be investigated.

This research project is part of the NRC's Probabilistic Flood Hazard Assessment (PFHA) Research program. The proposed work will aid development of guidance on the use of PFHA methods and support risk-informing NRC's licensing framework (flood hazard design standards at proposed new facilities as well as the significance determination process for evaluating potential deficiencies related to flood protection at operating facilities) in the context of flooding hazards due to dam failure. The guidance developed will support and enhance NRC's capacity to perform thorough and efficient reviews of license applications and license amendment requests. They will also support risk-informed significance determination of inspection findings, unusual events and other oversight activities.

2. OBJECTIVE

The objective of this Agreement is for the DOE Laboratory to assist NRC in developing the technical basis for guidance on developing flood hazard curves for combinations of mechanisms. Knowledge transfer and training for NRC staff to guide them in performing reviews of flooding hazard assessments are also important objectives of this project.

This project will seek to summarize and critically review approaches and methods for developing flooding hazard curves that include coincident and/or correlated flooding mechanisms in a variety of settings. Flooding mechanisms to be addressed will include, but not be limited to:

- Rainfall and/or snowmelt
- Antecedent soil moisture or snowpack conditions
- Wind waves
- Storm surge
- Tsunami
- Ice effects
- Dam failure

Settings and scenarios to be examined will include, but not be limited to:

- Riverine settings subject to warm season precipitation processes
- Riverine settings subject to cool season precipitation processes (e.g., snowpack, snowmelt, ice effects)
- Riverine settings subject to dam failure
- Open coastal settings subject to surge, seiche, tsunamis
- Closed or semi-enclosed coastal settings subject to surge and seiche

A number of approaches and methods have been applied in various disciplines to estimate flooding hazards due to coincident or correlated mechanisms. Approaches range from purely statistical (e.g. multivariate extreme value analysis) to simulation-based (e.g. continuous simulation, event-based simulation). Methods are relatively mature and standardized for some combinations (e.g. joint probability of waves and water levels in coastal engineering), but relatively under-developed for others (e.g., dependence between extreme rainfall and storm surge). This project will examine available approaches for flooding phenomena of interest to

NPP flood hazards assessment, critically review selected methods, identify best practices, and develop illustrative example cases of their application. Because assessment of flooding and modeling of flood causing mechanisms are subject to considerable uncertainties, the project will also focus on for characterizing and quantifying key uncertainties to support risk-informed decision-making.

3. SCOPE OF WORK

The following list provides the general scope of work (SOW) under this project. To accomplish the objectives of this project the DOE Laboratory will:

1. Provide a summary (literature review) of the current state of practice in developing flooding hazard curves for coincident and/or correlated flooding mechanisms.
2. Conduct a critical assessment of selected methods and approaches summarized in (1) to identify best practices, and where feasible suggest extensions or improvements that could substantially improve upon current practices.
3. Develop a set of example cases to illustrate use of selected best practices.
4. Prepare a draft NUREG/CR report summarizing activities 1-3.
5. Assist the NRC in conducting a training workshop/seminar at the NRC Headquarters in Rockville, MD covering the topics in items 1-3.
6. Prepare final NUREG/CR report.

The DOE Laboratory must provide all resources necessary to accomplish the tasks and deliverables described in this SOW.

4. SPECIFIC TASKS

This section describes the specific tasks under this Agreement.

Task 1: Current State of Practice in Developing Hazard Curves for Coincident and/or Correlated Flooding Mechanisms

The DOE Laboratory will conduct research to develop a comprehensive summary of the current state of practice in assessing flooding hazards due to coincident and/or correlated flooding mechanisms. The intent is address the broad range of phenomena, settings, and available analysis approaches and methods (e.g., a wide-ranging survey of approaches and methods that have been applied to various flooding phenomena and settings).

This survey will be challenging since, due to the multidisciplinary nature of the flood hazard assessment in general and the several distinct settings in which floods of interest to NRC can occur, the scientific literature to be covered is fragmented. Various aspects of flood hazard assessment are examined in journals devoted to meteorology, hydrologic and hydraulic engineering, civil engineering, coastal engineering, physical oceanography, natural hazards, risk analysis, applied mathematics, probability and statistics. Therefore the DOE Laboratory will conduct an initial reconnaissance level review, using the mechanisms and settings listed in Section 2 as a starting point, to prepare a work plan outlining the scope of a full survey for NRC approval. In preparing this plan, the DOE Laboratory will survey and establish a structure to address the distinction between coincident and correlated hazard mechanisms and the characterization of those hazards.

A draft of the full survey will be provided for NRC review and comment. After addressing NRC comments the literature survey will be submitted as a DOE Laboratory Technical Memorandum Report and made publically available.

Deliverables: Work plan, Draft and Final DOE Laboratory Technical Memorandum Report

Task 2: Critical Assessment of Selected Methods and Approaches

Based on the summary developed in Task 1, the DOE Laboratory will conduct research to provide a critical review of selected approaches. Task 1 is designed to be a wide-ranging survey of approaches and methods that have been applied to various flooding phenomena and settings. Task 2 will comprise a critical review of the methods identified in Task 1 to focus further efforts on a smaller collection of methods that are sufficiently general or flexible for application to the range of flooding phenomena expected at NPPs in the U.S. (it is anticipated that one single method may not be optimal for all phenomena and settings). Where feasible and appropriate, promising extensions of existing practice or novel approaches may also be investigated.

The DOE Laboratory will prepare a work plan for NRC approval outlining the scope of the critical review. A draft of the critical review will be provided for NRC review and comment. After addressing NRC comments the literature survey will be submitted as a DOE Laboratory Technical Memorandum Report and made publically available..

Deliverables: Work Plan, Draft and Final DOE Laboratory Technical Memorandum Report of Critical Assessments

Task 3: Develop Example Cases to Illustrate Best Practices

Based on the critical review developed in Task 2, the DOE Laboratory will develop a set of illustrative examples for selected approaches and settings. The DOE Laboratory will prepare a work plan identifying the methods and example cases to be considered for NRC approval. A draft of the best practices report will be provided for NRC review and comment. After addressing NRC comments the best practices report will be submitted as a DOE Laboratory Technical Memorandum Report and made publically available.

Deliverables: Work Plan, Draft and Final DOE Laboratory Technical Memorandum *of Example Cases*

Task 4: Knowledge Transfer

Task 4a: Draft NUREG/CR Report

Based on the work in Tasks 1-3, the DOE Laboratory will prepare a draft NUREG/CR report. The DOE Laboratory will organize a peer review of the report using one or two experts from outside of the organization performing the work of this project. The draft NUREG/CR report will be submitted to NRC for review and comment in advance of the training seminar in Task 4b.

Deliverables: Draft NUREG/CR

Task 4b: Knowledge Transfer Seminar for NRC Staff

The DOE Laboratory will assist RES staff to develop and conduct a knowledge transfer seminar based on the draft NUREG/CR, with a focus on items in tasks 2 and 3. The seminar will be held at the at the NRC headquarters in Rockville, MD. The seminar will include basics theory as needed, and examples to illustrate application of methods.

The DOE Laboratory will work with the NRC COR to develop an agenda for a seminar 1-2 days in length. The agenda shall not go outside the scope of Tasks 1-3. The DOE Laboratory will provide the materials for the seminar in paper and electronic format.

Deliverables: Seminar Agenda, seminar materials.

Task 4c: Finalize NUREG/CR Report

Following the peer reviews and NRC reviews, as well as feedback from the seminar in Task 4b, the DOE Laboratory will address comments and prepare a Final NUREG/CR report for delivery to the NRC.

Deliverable: Final NUREG/CR Report

5. DELIVERABLES AND SCHEDULE

The main project deliverables will be (1) monthly letter status reports (MLSRs); (2) work plans; (3) DOE laboratory technical memorandum reports, a training workshop, and a NUREG/CR report summarizing the results of Tasks 1-3. As they are completed, NRC will review and provide comments on the letter reports and draft reports to DOE Laboratory, in order to ensure the timely completion of the NUREG/CR reports.

Task Number	Deliverable/Milestone Description	Due Date
	Monthly Letter Status Report	20th calendar day of the following month
1	DOE Laboratory will provide work plan for Task 1	NLT 1 month from the commencement of this agreement
1	DOE Laboratory will provide draft TM report for Task 1	NLT 4 months from the commencement of this agreement
1	DOE Laboratory will provide publically available final TM report for Task 1	NLT 3 months after receipt of NRC comments on the Draft Letter Report
2	DOE Laboratory will provide work plan for Task 2	NLT 7 months from the commencement of this agreement
2	DOE Laboratory will provide draft TM report for Task 2	NLT 12 months from the commencement of this agreement

2	DOE Laboratory will provide publically available final TM report for Task 2	NLT 3 month after receipt of NRC comments on the Draft Letter Report
3	DOE Laboratory will provide work plan for Task 3	NLT 15 months from the commencement of this agreement
3	DOE Laboratory will provide draft TM report for Task 3	NLT 18 months from the commencement of this agreement.
3	DOE Laboratory will provide publically available final letter TM for Task 3	NLT 3 months after receipt of NRC comments on the Draft Letter Report
4	DOE Laboratory will provide a draft NUREG/CR Report	NLT 22 months from the commencement of this agreement.
5	DOE Laboratory will provide a seminar agenda and deliver seminar and seminar materials	NLT 24 months from the commencement of this agreement
6	DOE Laboratory will provide final NUREG/CR Report	NLT 1 month after receipt of NRC comments on the Draft NUREG/CR Report

6. TECHNICAL AND OTHER SPECIAL QUALIFICATIONS REQUIRED

This project requires broad technical expertise in the field of water resources engineering and specific technical expertise in the following areas: 1) hydrometeorology; 2) hydrology; 3) coastal hydrodynamics; 4) flood hazard modeling; and 5) probabilistic modeling. This project also requires broad knowledge of natural hazards assessment and risk analysis.

7. MEETINGS AND TRAVEL

The Principal Investigator (PI) will participate in Annual PFHA Research Workshops at NRC Headquarters in Rockville, MD. NRC plans two such workshops during the period of performance for this project.

The PI will also make a two-day trip to NRC Headquarters in Rockville, MD for the technology-transfer/training seminar (Task 4b).

8. REPORTING REQUIREMENTS

Monthly Letter Status Report

A Monthly Letter Status Report (MLSR) will be submitted to the NRC Contracting Officer Representative by the 20th of the month following the month to be reported with copies to the

Contracting Officer (CO) and the Office of Administration Acquisition Management Division to ContractsPOT.Resource@nrc.gov. If a project is a task ordering agreement, a separate status report must be submitted for each task order with a summary project status report, even if no work has been performed during a reporting period. Once NRC has determined that all work on a task order is completed and that final costs are acceptable, a task order may be omitted from the MLSR.

The DOE Laboratory is responsible for structuring the deliverable to follow agency standards. The current agency standard is Microsoft Office Suite 2010. The current agency Portable Document Format (PDF) standard is Adobe Acrobat 9 Professional. Deliverables must be submitted free of spelling and grammatical errors and conform to requirements stated in this section.

9. CONTRACTING OFFICER'S REPRESENTATIVE

The COR monitors all technical aspects of the agreement/task order and assists in its administration. The COR is authorized to perform the following functions: assure that the DOE Laboratory performs the technical requirements of the agreement/task order; perform inspections necessary in connection with agreement/task order performance; maintain written and oral communications with the DOE Laboratory concerning technical aspects of the agreement/task order; issue written interpretations of technical requirements, including Government drawings, designs, specifications; monitor the DOE Laboratory's performance and notify the DOE Laboratory of any deficiencies; coordinate availability of NRC-furnished material and/or GFP; and provide site entry of DOE Laboratory personnel.

Contracting Officer's Representative

Name: [redacted]
Agency: U.S. Nuclear Regulatory Commission
Office: [redacted]
Mail Stop: [redacted]
Washington, DC 20555-0001
E-Mail: M[redacted]
Phone: [redacted]

Alternate Contracting Officer's Representative

Name: [redacted]
Agency: U.S. Nuclear Regulatory Commission
Office: [redacted]
Washington, DC 20555-0001
E-Mail: [redacted]
Phone: 3[redacted]

10. MATERIALS REQUIRED

Not Applicable.

11. NRC-FURNISHED PROPERTY/MATERIALS

Not Applicable.

12. RESEARCH QUALITY

Each year the Advisory Committee on Reactor Safeguards assesses the quality of NRC research programs. 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 DOE Laboratory to ensure that these quality criteria are adequately addressed throughout the course of the research that is performed. The NRC COR will review all research products with these criteria in mind.

13. 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 Project Manager 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: the NUREG-series designator is no longer required 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 COR 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®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.

14. OTHER CONSIDERATIONS

Not Applicable.

15. REFERENCES

ANS (1992). Determining Design Basis Flooding at Nuclear Power Plant Sites. La Grange Park, IL, American National Standards Institute/American Nuclear Society.

DEFRA (2005a). Joint Probability: Dependence Mapping and Best Practice, R&D Technical Report FD2308/TR1, United Kingdom Department for Environment, Food and Rural Affairs

DEFRA (2005b). Use of Joint Probability Methods in Flood Management: A Guide to Best Practice, R&D Technical Report FD2308/TR2, United Kingdom Department for Environment, Food and Rural Affairs

U.S. NRC (1977). Design Basis Floods for Nuclear Power Plants, Rev. 2. Washington, DC, U.S. Nuclear Regulatory Commission.

U.S. NRC (1987). Evaluation of External Hazards to Nuclear Power Plants in the United States (NUREG/CR-5042). Washington, DC, U.S. Nuclear Regulatory Commission.

U.S. NRC (1988). Supplement 4 to NRC Generic Letter 88-20, “Individual Plant Examination for Severe Accident Vulnerabilities". Washington, DC, U. S. Nuclear Regulatory Commisison.

U.S. NRC (2011). Design-Basis Flood Estimation for Site Characterization at Nuclear Power Plants in the United States of America. Washington, DC, prepared by Pacific Northwest National Laboratories for the U.S. Nuclear Regulatory Commission.

U.S. NRC (2012). Request for Information Pusuant to Title 10 of the Code of Federal Regulations 50.54(f) Regarding Recommendations 2.1,2.3, and 9.3, of the Near-Term Task Force Review of Insights from the Fukushima Dai-Ichi Accident. Washington, DC, U.S. Nuclear Regulatory Commission, Office of Nuclear Reactor Regulation.

U.S. NRC (2013). Interim Staff Guidance for Estimating Flooding Hazards due to Dam Failure, JLD-ISG-13-01. Washington, DC, U.S. Nuclear Regulatory Commission, Office of Nuclear Reactor Regulation, Japan Lessons-Learned Directorate.