



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

June 9, 2016

Mr. Bryan C. Hanson  
President and Chief Nuclear Officer  
Exelon Generation Company, LLC  
4300 Winfield Road  
Warrenville, IL 60555

SUBJECT: NUCLEAR REGULATORY COMMISSION REPORT FOR THE AUDIT OF R.E. GINNA NUCLEAR POWER PLANT, LLC'S FLOOD HAZARD REEVALUATION REPORT SUBMITTALS RELATING TO THE NEAR-TERM TASK FORCE RECOMMENDATION 2.1-FLOODING FOR R.E. GINNA NUCLEAR POWER PLANT (CAC NO. MF6098)

Dear Mr. Hanson:

By letter dated June 10, 2015 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML15148A163), the U.S. Nuclear Regulatory Commission (NRC) informed you of the staff's plan to conduct a regulatory audit of R. E. Ginna Nuclear Power Plant, LLC's (the licensee) Flood Hazard Reevaluation Report (FHRR) submittal related to the Near-Term Task Force Recommendation 2.1-Flooding for R. E. Ginna Nuclear Power Plant. The audit was intended to support the NRC staff review of the licensee's FHRR and the subsequent issuance of a staff assessment.

The audit was conducted on August 27, 2015, and was performed consistent with NRC Office of Nuclear Reactor Regulation, Office Instruction LIC-111, "Regulatory Audits," dated December 29, 2008, (ADAMS Accession No. ML082900195). Therefore, the purpose of this letter is to provide you with the final audit report which summarizes and documents the NRC's regulatory audit of the licensee's FHRR submittal.

B. Hanson

-2-

If you have any questions, please contact me at (301) 415-6197 or by e-mail at Tekia.Govan@nrc.gov.

Sincerely,

A handwritten signature in black ink, appearing to read 'Tekia Govan', with a long, sweeping horizontal line extending to the right.

Tekia V. Govan, Project Manager  
Office of Nuclear Reactor Regulation  
Japan Lessons-Learned Division  
Hazards Management Branch

Docket No. 50-244

Enclosure:  
Audit Report

cc w/encl: Distribution via Listserv



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
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NUCLEAR REGULATORY COMMISSION REPORT FOR THE AUDIT OF R.E. GINNA  
NUCLEAR POWER PLANT, LLC'S FLOOD HAZARD REEVALUATION REPORT  
SUBMITTALS RELATING TO THE NEAR-TERM TASK FORCE RECOMMENDATION 2.1-  
FLOODING FOR R.E. GINNA NUCLEAR POWER PLANT

BACKGROUND AND AUDIT BASIS

By letter dated March 12, 2012, the U.S. Nuclear Regulatory Commission (NRC) issued a request for information to all power reactor licensees and holders of construction permits in active or deferred status, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR), Section 50.54(f) "Conditions of licenses" (hereafter referred to as the "50.54(f) letter"). The request was issued in connection with implementing lessons-learned from the 2011 accident at the Fukushima Dai-ichi nuclear power plant, as documented in the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident. Recommendation 2.1 in that document recommended that the NRC staff issue orders to all licensees to reevaluate seismic and flooding for their sites against current NRC requirements and guidance. Subsequent Staff Requirements Memoranda associated with Commission Papers SECY 11-0124 and SECY-11-0137, instructed the NRC staff to issue requests for information to licensees pursuant to 10 CFR 50.54(f).

By letter dated March 11, 2015 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML15072A008), R. E. Ginna Nuclear Power Plant, LLC (the licensee) submitted its Flood Hazard Reevaluation Reports (FHRRs) for R.E. Ginna Nuclear Power Plant (Ginna). The NRC is reviewing the aforementioned submittal and has completed a regulatory audit of the licensee to better understand the development of the submittal, identify any similarities/differences with past work completed and ultimately aid in its review of licensee's FHRR. This audit summary was completed in accordance with the guidance set forth in NRC Office of Nuclear Reactor Regulation, Office Instruction LIC-111, "Regulatory Audits," dated December 29, 2008, (ADAMS Accession No. ML082900195).

AUDIT LOCATION AND DATES

The audit was completed by document review via a webinar session in conjunction with the use of the licensee's established electronic reading room (ERR) and teleconference on August 27, 2015, from 1:00 pm to 4:00 pm.

Enclosure

#### AUDIT TEAM

<b>Title</b>	<b>Team Member</b>	<b>Organization</b>
Team Leader, NRR/JLD	Tekia Govan	NRC
Technical Branch Chief	Aida Rivera-Varona	NRC
Technical Manager	Laura Quinn-Willingham	NRC
Technical Staff	Lyle Hibler	NRC
Technical Deputy Division Director	Andy Campbell	NRC
Technical Contractor	Eugene Yan	Argonne National Laboratory (ANL)
Technical Contractor	Vinod Mahat	ANL
Technical Contractor	John Quinn	ANL

A list of the Licensee's participants can be found in Attachment 2.

#### DOCUMENTS AUDITED

Attachment 1 of this report contains a list which details the documents that were reviewed by the NRC staff, in part or in whole, as part of this audit. The documents were located in the licensee's ERR during the NRC staff's review. The documents, or portions thereof, that were used by the staff as part of the technical analysis and/or will be used as reference in the completion of the staff assessment, were submitted by the licensee and docketed, as necessary, to complete the development of the staff assessment. These documents are identified in Table 1.

#### AUDIT ACTIVITIES

In general, the audit activities consisted mainly of the following actions:

- Review background information on site topography and geographical characteristics of the watershed.
- Review site physical features and plant layout.
- Understand the selection of important assumptions and parameters that would be the basis for evaluating the individual flood-causing mechanisms described in the 50.54(f) letter.
- Review model input/output files to computer analyses such as FLO-2D to have an understanding of how modeling assumptions were programmed and executed.

Table 1 summarizes specific technical topics (and resolution) of important items that were discussed and clarified during the audit. The items discussed in Table 1 may be referenced/mentioned in the staff assessment in more detail.

**Table 1: Technical Topics of Discussion**

Info Need No.	Information Need Description	Post-Audit Status
1	<p><b><u>All Flood-Causing Mechanisms – Comparison of Reevaluated Flood Hazard with Current Design-Basis</u></b></p> <p>Recommendation 2.1 of the 50.54(f) letter provides instructions for developing the Flood Hazard Reevaluation Report (FHRR). Under Section 1, Hazard Reevaluation Report, Items c and d, licensees are requested to perform:</p> <p>c. Comparison of current and reevaluated flood-causing mechanisms at the site. Provide an assessment of the current design-basis flood elevation to the reevaluated flood elevation for each flood-causing mechanism. Include how the findings from Enclosure 4 of the 50.54(f) letter (i.e., Recommendation 2.3 flooding walk downs) support this determination. If the current design-basis flood bounds the reevaluated hazard for all flood-causing mechanisms, include how this finding was determined.</p> <p>d. Interim evaluation and actions taken or planned to address any higher flooding hazards relative to the design-basis, prior to completion of the integrated assessment described below, if necessary.</p> <p>The Ginna FHRR provides a comparison of the reevaluated flood hazards with the current licensing basis (CLB) instead of the current design-basis (CDB). Section 3.0 of the report summarizes of this comparison.</p>	<p>In response to this information need the licensee referenced the FHRR, the Flood Walk down Report, and Updated Final Safety Analysis Report (UFSAR) Revision 23. The licensee described that for the purposes of the FHRR, the “current licensing basis” and “current design-basis” were considered interchangeable.</p> <p>The NRC staff concluded that the information provided by the licensee was sufficient to address the information need request.</p> <p>The NRC staff requested this response be placed on the docket to support the development of the Ginna staff assessment.</p>

Info Need No.	Information Need Description	Post-Audit Status
	The licensee is requested to clarify, and where necessary correct, the comparison of the reevaluated flood hazard to the current design bases.	
2	<p><b><u>All Flood-Causing Mechanisms – Location of Site Features</u></b></p> <p>The FHRR for the Ginna site includes several figures that show some of the site locations that are mentioned, but lacks annotations or figures that show all of the site locations that are referred to in the FHRR clearly. In FHRR Figures 2.1-2, 2.1-3, 2.2-11, 2.2-12, 2.2-13, for example, the cell identification number are not sufficiently clear to reference the location of these site locations for the purpose consistent with this information need.</p> <p>Figure 1.2-1 could be modified or the licensee could provide additional similar figures to illustrate the location of the structures listed in Table 1 to Table 4 of Enclosure 1 "Flood Hazard Reevaluation Tables for Flood-Causing Mechanism and Combined-Effects Floods Not Bound by the Reevaluated Hazard", reactor containment, turbine building, control building, screen house, and diesel generator buildings, auxiliary building, All-volatile , standby auxiliary feedwater building, standby auxiliary feedwater building annex, canister preparation building, contaminated storage building, and the ("shoreline" or "stone" revetment), Ginna Access Road (and culverts) and Driveway Bridge. The licensee is requested to describe the buildings and site feature locations discussed in the FHRR.</p>	<p>In response to this information need the licensee provided, in the ERR, a revised figure with the requested locations added.</p> <p>The NRC staff concluded that the information provided by the licensee was sufficient to address the information need request.</p> <p>The NRC staff requested this response be placed on the docket to support the development of the Ginna staff assessment.</p>

Info Need No.	Information Need Description	Post-Audit Status
3	<p><b><u>Local Intense Precipitation</u></b></p> <p>In the FHRR, the Local Intense Precipitation (LIP) analysis was reported to use a 6-hour probable maximum precipitation (PMP) in the FLO-2D model. The licensee indicated that the 6-hour PMP was derived from the Hydrometeorological Report (HMR) 51 PMP for 10 square miles and a 6-hour duration (HMR 51 Figure 18). Based on HMR 51 Figure 18, referenced by the licensee, as shown on page A-3 of calculation package 32-9190272-000, the HMR 51 value is 23.5 inches. However, the PMP input in the FLO-2D is 22.4 inches and the FHRR also indicates that 22.4 inches was used for PMP in LIP analysis.</p> <p>Clarify the difference between 6-hour PMP values of 22.4 inches used in the FLO-2D model and 23.5 inches from HMR 51.</p>	<p>In response to this information need, the licensee re-ran the model with the correct 6-hour PMP and found only a small increase in flows from the model run based on an incorrect 6-hour PMP. The licensee reported that LIP peak elevations, maximum flow depth, and maximum flow velocity were unchanged from the reporting level of accuracy (0.1 feet (ft) and 0.1 feet/second (ft/s) for these parameters for the structure locations reported in FHRR Table 3-1. Therefore, even though the incorrect PMP values were inadvertently used in FLO-2D, the difference was insignificant.</p> <p>The NRC staff concluded that the information provided by the licensee was sufficient to address the information need request.</p> <p>The NRC staff requested this response be placed on the docket to support the development of the Ginna staff assessment.</p>

<p>4</p>	<p><b><u>Stream and River Flooding</u></b> FLO-2D simulated water depth due to stream flooding. The staff evaluated Manning's n values assigned in the FLO-2D model and noticed that several cells' n values for shrubs or grass are considered very low, i.e., 0.08. These areas (see figure) are along the pathway that slowdown the stream overflow from southwest to northeast based on the velocity vector plot.</p> <p>Describe the justification of n values assigned for vegetation areas surrounding the plant, especially areas near the plant and structures.</p>	<p>In response to this information need, the licensee provided an initial response which described the use of the 2006 National Land Cover Data, the FLO-2D reference manual, and their engineering judgement to assign roughness coefficient across the site. The licensee stated that the values were conservatively selected. The NRC staff requested a more detailed discussion and the licensee subsequently provided a supplemental response via letter dated September 30, 2015, "Response to NRC Audit Review Request for Additional Information Regarding the Fukushima Lessons Learned -Flood Hazard Reevaluation Report" (ADAMS Accession No. ML15273A138).</p> <p>The licensee's supplemental response, stated that "the Manning's n-values assigned in the FLO-2D model are judged to be appropriate for the existing land cover and modeled probable maximum flood (PMF) flow depths with a reasonable degree of conservatism."</p> <p>The NRC staff noted that the roughness parameters selected by the licensee were not the minimum values, but rather were best-estimated based on the ground cover of the area modeled. The licensee described their rationale for selecting the roughness values during the audit held on August 27, 2015. Therefore, the staff independently evaluated the roughness using independently-estimated best-estimate values as part of a sensitivity test. The staff's results produced values that were higher than the licensee's results. However, the staff's sensitivity results indicated that the water-level elevations at all buildings locations that were determined as bounded by the CDB in the licensee's analysis remained below the CBD except for one building (the</p>
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		<p>Standby Auxiliary Feedwater Pump Building). At this one building (the Standby Auxiliary Feedwater Pump Building), the staff's results were approximately 3-inches higher than the CDB, which is within the model error and within the range of accuracy of the LIP analysis. Therefore, NRC staff concluded that the information provided by the licensee was sufficient to address the information need request.</p>
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Info Need No.	Information Need Description	Post-Audit Status
5	<p><b><u>Stream and River Flooding</u></b>  NUREG/CR-7046 Section 5.4 "Accounting for Uncertainty in Input and Model Parameters for Estimation of Design-Basis Flood Hazards", page 5-6 states:</p> <p style="padding-left: 40px;">"Design-basis flood analysis should carefully describe and quantify the sources of uncertainty by appropriately selected sensitivity analyses. The design-basis flood hazards should then be selected carefully from the predicted range of values of these hazard metrics (e.g., depth of flow, density of flow, velocity of flow, and duration of inundation) to ensure that the most adverse conditions are accounted for."</p> <p>The FHRR presents stream PMF for a 72-hour PMP with center temporal distribution. Other temporal distributions of PMP event (e.g. front or end temporal distributions) could result in different peak flows, which might not be bounded by the licensee's PMF value.</p> <p>Provide justification that the PMF analysis presented in the FHRR is bounding in terms of peak flow. This justification can include sensitivity analysis of various PMP temporal distributions (e.g., other temporal distributions in addition to a center temporal distribution). The evaluations could identify potentially bounding scenarios with respect to peak flow.</p>	<p>In response to this information need, the licensee explained that the reevaluated hazard was based on a "mid-loaded" PMP event and tested the sensitivity of the resultant flood flows using an "end loaded" PMP event. The licensee stated that NOAA guidance (HMR-52) does not recommend a "front loaded" 72-hour PMP distribution. The licensee compared the results for both the mid-loaded and end-loaded PMP distributions and showed that the HEC-HMS modeled peak PMF flow difference was insignificant.</p> <p>The NRC staff concluded that the information provided by the licensee was sufficient to address the information need request.</p>

Info Need No.	Information Need Description	Post-Audit Status
6	<p><b><u>Storm Surge Datum Conversions</u></b></p> <p>FHRR Table 1.1-1 states that 0.7 ft should be added to elevations given with respect to International Great Lakes Datum of 1985 (IGLD85) to get elevations with respect to National Geodetic Vertical Datum of 1929 (NGVD29). The FHRR states the antecedent water level in Lake Ontario is 247.3 ft IGLD85 (Section 2.4.2.3) and then states the PMSS height is 3.2 ft (Section 2.4.3) and the predicted Probable Maximum Surge (PMS) elevation is 251.1 ft NGVD29 and 250.5 ft IGLD85; a 0.6 ft difference which is inconsistent with FHRR Table 1.1-1.</p> <p>Explain the discrepancy introduced when converting between datums which may be attributed to rounding, and if necessary, provide the correct value.</p>	<p>In response to this information need, the licensee stated that FHRR Table 1.1-1 contained typographical errors and that the correct datum conversion from IGLD85 to NGVD29 is 0.62 ft. The licensee provided an update to FHRR Table 1.1-1 as Table 6-1 in the response located in the licensee's ERR.</p> <p>The licensee's response referenced the FHRR and AREVA Document No. 32-9190277-000.</p> <p>The NRC staff concluded that the information provided by the licensee was sufficient to address the information need request.</p> <p>The NRC staff requested this response be placed on the docket to support the development of the Ginna staff assessment.</p>

Info Need No.	Information Need Description	Post-Audit Status
7	<p><b><u>Stream and River Flooding</u></b></p> <p>The FHRR presents that the peak flow from flood re-evaluation for PMF is 28,460 (rounded to 28,500) cubic feet per second (cfs), which is about three-fourths of the peak flow (38,700 cfs) estimated in the previous study in 1982. In the FHRR, Section 2.2.3 explains that the discrepancy is mainly caused by dividing the watershed into two contributory watersheds (Deer Creek and Mill Creek) in the re-evaluation flow model, which results in a decreased composite peak flow due to the difference in peak time between two peak flows. The staff found that the peak flow for re-evaluation PMF is 20,530 cfs for Mill Creek and 8,140 cfs for Deer Creek. The sum of two peak flows without considering difference in peak timing is 28,670 cfs, which is much less than the previous flow study.</p> <p>Justify why the reevaluated PMF is conservative and bounding in terms of peak flow. If necessary, provide a comparison between the reevaluation PMF model and the previous PMF model.</p>	<p>In response to this information need, the licensee placed two documents in its ERR (NUS, 1981; NRC, 1982) and the staff has reviewed these documents for the purposes of understanding the methods and model parameters used to develop past PMF flood hazards.</p> <p>The NRC staff determined that the previous PMF peak flow value was not used as the CDB flow and therefore, comparison to the previous PMF peak flow is not needed for the FHRR review. The model parameter values that were used to determine the reevaluated PMF peak flow and associated flood hazards were discussed in the licensee's response and the NRC staff concluded that the information provided by the licensee was sufficient to address the information need request.</p> <p>The NRC staff requested this response be placed on the docket to support the development of the Ginna staff assessment.</p>
8	<p><b><u>Combined Effects</u></b></p> <p>Wind wave effects are reported in the FHRR for Deer Creek under the PMF condition based on the use of CEDAS-ACES v4.03 software as documented in Appendix I of Document 32-9190280-000. The topographical parameters used to estimate the wind wave effects are not completely described in the FHRR or other docketed material. For example, the COTAN of the nearshore slope is set to 40 without reference to site information. This information is needed for staff's review and documentation within the staff assessment. The combined effect named H.4.1 scenario</p>	<p>In response to this information need, the licensee referenced the FHRR, AREVA Document No. 32-9190280-000 and McMahan (2012) (topographic information drawing). The response described the estimation of the parameters necessary for a conservative evaluation of the maximum wave effects resulting from the combined event including Deer Creek PMF and wind-wave effects.</p> <p>The NRC staff concluded that the information provided by the licensee was</p>

Info Need No.	Information Need Description	Post-Audit Status
	<p>considers the Deer Creek PMF plus wave action due to a 2-year return period winds. Document No. 312-9190280 (Enclosure 3 of the FHRR submittal) provides CEDAS-ACES output for one location in Appendix I.</p> <p>Provide the basis for the determination that the maximum runup is represented in Appendix I. Identify other locations that were examined or how this particular set of CEDAS-ACES input values were determined to define the maximum. For each location examined, include a descriptive site feature (e.g., Turbine Building, Auxiliary Building), FLO-2D cell identification number, associated grid cell elevation, maximum water surface elevation, maximum flow depths, and ground slope used as CEDAS-ACES input and the maximum elevation including wave runup. The FHRR states that at the southern edge of the powerblock the maximum runup is 0.9 ft; this appears to be associated with FLO-2D cell 7885, which has a PMF max elevation of 275.0 ft MSL (or NGVD29). Explain where the combined event maximum water surface elevation, presumably 275.9 ft NGVD29, is included as the maximum combined effect wave runup elevation and incorporated into the FHRR conclusions.</p>	<p>sufficient to address the information need request.</p>
9	<p><b><u>Flood Event Duration Parameters</u></b> The March 12, 2012, 50.54(f) letter, Enclosure 2, requests the licensee to perform an Integrated Assessment of the plant's response to the reevaluated hazard if the reevaluated flood hazard is not bounded by the current design-basis. Flood scenario parameters from the flood hazard reevaluation serve as the input to the Integrated Assessment. To support efficient and effective evaluations under the</p>	<p>In response to this information need request, the licensee indicated that for parameters for which no numerical values were provided in the FHRR or supplemental letters, the licensee will develop flood event duration parameters and applicable flood associated effects as part of the MSA as discussed in the latest revision to NEI-12-06, Appendix G (see COMSECY-15-0019). The staff will evaluate the flood event duration</p>

Info Need No.	Information Need Description	Post-Audit Status
	<p>Integrated Assessment, staff will review flood scenario parameters as part of the flood hazard reevaluation and document results of the review as part of the staff assessment of the flood hazard reevaluation. The information is also necessary for conducting the MSA in accordance with NEI 12-06 App G.</p> <p>Provide the applicable flood event duration parameters (see definition and Figure 6 of the Guidance for Performing an Integrated Assessment, Japan Lessons-Learned Division (JLD) Interim Staff Guidance (ISG) JLD-ISG-2012-05) associated with mechanisms that trigger an Integrated Assessment using the results of the flood hazard reevaluation. This includes (as applicable) the warning time the site will have to prepare for the event (e.g., the time between notification of an impending flood event and arrival of floodwaters on site) and the period of time the site is inundated for the mechanisms that are not bounded by the current design basis. Provide the basis or source of information for the flood event duration, which may include a description of relevant forecasting methods (e.g., products from local, regional, or national weather forecasting centers) and/or timing information derived from the hazard analysis. The FHRR does state a PMF flood duration (6.5 hours) but other parameters are lacking.</p> <p>In Section 3.3 of the FHRR, LIP, flooding on rivers and streams, and two combined-effects flood scenarios were stated to exceed the CLB.</p>	<p>parameters (including warning time and period of inundation) during its review of the MSA. The staff will include the parameters that are provided and appropriately note ones that were not provided in the staff assessment.</p> <p>The licensee provided a docketed response (ADAMS Accession No. ML15273A138) including flood water surface elevation at key locations over time (LIP: Figures 9-1 to 9-9; Combined Effect Flood: Figures 9-10 to 9-19). The NRC staff examinations of these figures would allow for its review of some flood event duration parameters (duration of inundation and recession times).</p> <p>The licensee stated in the letter response (and refers to the FHRR) that the river flood protection measures are triggered based on the flood levels at the Driveway Bridge. The licensee stated that there is a greater than 35-hour delay for the combined effect flood at the Driveway Bridge and flooding near plant structures.</p> <p>The also licensee stated in the letter response that "detailed evaluation of timing required for potential flood mitigation strategies will be addressed as part of the Integrated Assessment phase of work."</p> <p>The NRC staff concluded that the information provided by the licensee was sufficient to address the information need request.</p>
10	<p><b><u>Flood Height and Associated Effects -</u></b> Flood scenario parameters from the flood hazard reevaluation serve as the input to the Integrated Assessment. To support</p>	<p>In response to this information need, the licensee indicated that for parameters for which no numerical value is provided in the FHRR, the licensee will develop flood</p>



Info Need No.	Information Need Description	Post-Audit Status
	<p>efficient and effective evaluations under the Integrated Assessment, the staff will review flood scenario parameters as part of the 50.54(f) letter, FHRR and document results of the review as part of the staff's assessment. The March 12, 2012, 50.54(f) letter, Enclosure 2, requests that the licensee perform an Integrated Assessment of the plant's response to the reevaluated hazard if the reevaluated flood hazard is not bounded by the current design basis. This information is also necessary for conducting the MSA in accordance with NEI 12-06 App G.</p> <p>Provide the flood height and associated effects (as defined in Section 9 of JLD-ISG-2012-05) that are not described in the FHRR for mechanisms that trigger an Integrated Assessment. This includes the following quantified information for each mechanism (as applicable):</p> <ul style="list-style-type: none"> <li>• Wind waves and run up,</li> <li>• Hydrodynamic loading, including debris,</li> <li>• Effects caused by sediment deposition and erosion (e.g., flow velocities, scour),</li> <li>• Concurrent site conditions, including adverse weather,</li> <li>• Groundwater ingress</li> </ul> <p>The FHRR indicated that the Integrated Assessment will include LIP, flooding on rivers and streams, and two combined-effects flood scenarios. For these mechanisms or their combination not all the associated effects listed above were stated in the FHRR. Provide the analysis used to support the conclusions for each associated effect. Provide analysis of the associated effects for these flood-causing mechanisms that will be included in the Integrated</p>	<p>event duration parameters and applicable flood associated effects as part of the MSA, as discussed in the latest revision to NEI-12-06, Appendix G (see COMSECY-15-0019). The NRC staff will evaluate the flood-related associated effects during its review of the MSA. The staff will include the parameters that are provided and appropriately note ones that were not provided in the staff assessment.</p> <p>The response references the FHRR, UFSAR Revision 23, FLO-2D 2012 documentation, AREVA Document No. 32-91902080-000, and USACE 1984 erosion control guidance.</p> <p>The NRC staff concluded that the information provided by the licensee was sufficient to address the information need request.</p> <p>The NRC staff requested this response from the ERR to be placed on the docket to support the development of the Ginna staff assessment.</p>

Info Need No.	Information Need Description	Post-Audit Status
	Assessment or a clear justification of why these effects are excluded.	

During the audit the licensee committed to provide all requested audit responses on the docket. All responses were received by the NRC by letter dated September 30, 2015, "Response to NRC Audit Review Request for Additional Information Regarding the Fukushima Lessons Learned Flood Hazard Reevaluation Report" (ADAMS Accession No. ML15273A138).

#### EXIT MEETING/BRIEFING

On October 30, 2015, the NRC staff closed out the discussion of the technical topics described above. There are no outstanding information needs remaining as a result of this audit.



**ATTACHMENT 1**  
**ERR Reference List**

1. AREVA. 2014. Flood Hazard Re-evaluation – Local Intense Precipitation (LIP) – Generated Flow and Elevations at R. E. Ginna Nuclear Power Plant. Document Number 32-9190271-000.
2. AREVA. 2013. Flood Hazard Re-evaluation – Probable Maximum Precipitation (PMP) for Streams near R. E. Ginna Nuclear Power Plant. Document Number 32-9190272-000.
3. AREVA. 2013. Flood Hazard Re-evaluation – Probable Maximum Flood Flow in Streams near R. E. Ginna Nuclear Power Plant. Document Number 32-9190273-000.
4. AREVA. 2013. Flood Hazard Re-evaluation – Probable Maximum Flood Elevations in Streams near R. E. Ginna Nuclear Power Plant. Document Number 32-9190274-000.
5. AREVA. 2013. Flood Hazard Re-evaluation – Wind Generated Waves near R. E. Ginna Nuclear Power Plant. Document Number 32-9190279-000.
6. AREVA. 2013. Flood Hazard Re-evaluation – Combined Events Flood Analysis for R. E. Ginna Nuclear Power Plant. Document Number 32-9190280-000.
7. NUS Corporation. 1981. Ginna Station Design Basis Flooding Study for Rochester Gas and Electric Corporation. August 1981. Rockville Md. (Attachment letter dated August 18, 1981 from J.E. Maier to NRC (attn.: D. M. Crutchfield) Subject: SEP Topics II-3.A, II-3.B, II-3.B.1, III-3.A R. E. Ginna Nuclear Power Plant Docket No. 50-244.
8. NRC. 1982. Letter dated May 27, 1982 from D. R. Crutchfield (NRC) to D. M. Maier. Subject: Ginna Nuclear Power Plant – Final Evaluation of SPE Topics II-3.A, II-3.b, II-3.C, and II-4.D. May 27, 1982.
9. Ginna. 2014. R.E. Ginna Nuclear Power Plant. Updated Final Safety Analysis Report. Revision 25. November 19, 2014.

**ATTACHMENT 2**  
**List of R.E Ginna Nuclear Power Plant, LLC Participants**

<u>Name</u>	<u>Organization</u>
1. Chuck Behrend	Exelon
2. Vinod Aggarwal	Exelon
3. Joseph Bellini	Exelon
4. David Distel	Exelon
5. George Wrobel	Exelon
6. John Traynor	Exelon
7. Cynthia Fasano	AREVA
8. Dan Brown	AREVA
9. David Leone	GZA GeoEnvironmental, Inc. (GZA)
10. Ken Hunu	GZA

B. Hanson

-2-

If you have any questions, please contact me at (301) 415-6197 or by e-mail at Tekia.Govan@nrc.gov.

Sincerely,

/RA/

Tekia V. Govan, Project Manager  
Office of Nuclear Reactor Regulation  
Japan Lessons-Learned Division  
Hazards Management Branch

Docket No. 50-244

Enclosure:  
Audit Report

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CCook, NRO	LHibler, NRO	ACampbell, NRO	LQuinn-Willingham, NRO	

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