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10 CFR 50.54(f)

RS-15-069

March 11, 2015

U.S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
11555 Rockville Pike  
Rockville, MD 20852

R. E. Ginna Nuclear Power Plant  
Renewed Facility Operating License No. DPR-18  
Docket No. 50-244

**Subject:** Flood Hazard Reevaluation Report Pursuant to 10 CFR 50.54(f) Regarding the Fukushima Near-Term Task Force Recommendation 2.1: Flooding

- References:**
- (1) Letter from E. J. Leeds (NRC) and M. R. Johnson (NRC) to All Power Reactor Licensees and Holders of Construction Permits in Active or Deferred Status, "Request for Information Pursuant 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," dated March 12, 2012 (ML12053A340).
  - (2) Letter from E. J. Leeds (NRC) to All Power Reactor Licensees and Holders of Construction Permits in Active or Deferred Status, "Prioritization of Response Due Dates for Request for Information Pursuant to Title 10 of the Code of Federal Regulations 50.54(f) Regarding Flooding Hazard Reevaluations for Recommendation 2.1 of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident," dated May 11, 2012 (ML12097A509).
  - (3) U.S. Nuclear Regulatory Commission, NUREG/CR-7046, "Design-Basis Flood Estimation for Site Characterization at Nuclear Power Plants in the United States of America", dated November 2011.
  - (4) ECP-14-000571, "External Flood Barrier Qualification," Revision 0001.
  - (5) Letter from M. G. Korsnick (CENG) to Document Control Desk (NRC), "Response to 10 CFR 50.54(f) Request for Information, Recommendation 2.3, Flooding," dated November 27, 2012 (ML12335A029).
  - (6) Letter from D. L. Schroeder, (NRC) to J. E. Pacher, (Exelon), "R.E. Ginna Nuclear Power Plant - NRC Supplemental Inspection Report 05000244/2014010 and Assessment Follow-up Letter," dated September 30, 2014 (ML14273A035).

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- (7) IP-CON-9, "Plant Barrier Control Program Implementation," Revision 002.
- (8) UFSAR, "Updated Final Safety Analysis Report," Revision 25.
- (9) CR-2014-004023, "Potential Minor Leakage into the "B" Battery Room."
- (10) Letter from M. G. Korsnick (CENG) to Document Control Desk (NRC), "Update to Response to NRC 10 CFR 50.54(f) Request for Information Regarding Near-Term Task Force Recommendation 2.3, Flooding – Review of Available Physical Margin (APM) Assessments," dated January 31, 2014 (ML14038A122).
- (11) CA-2014-000194, "Review All APM and Document per NRC RAI."
- (12) Letter from David L. Skeen, U.S. Nuclear Regulatory Commission, to Joseph E. Pollock, Nuclear Energy Institute - "Trigger Conditions for Performing an Integrated Assessment and Due Date for Response", dated December 3, 2012 (ML12326A912).
- (13) U.S. Nuclear Regulatory Commission, JLD-ISG-2012-05, "Guidance for Performing the Integrated Assessment for External Flooding", dated November 30, 2012.
- (14) GMM-23-99-FLOODBARRIER, "Flood Barrier Installation and Removal in Turbine Building Basement," Revision 00001.
- (15) ER-SC.2, "High Water (Flood) Plan," Revision 01001.
- (16) ECP-14-000900, "Auxiliary Building Block Wall Reinforcement," Draft.
- (17) AP-SW.2, "Loss of Service Water," Revision 00801.
- (18) AP-ELEC.17/18, "Loss of Safeguards Bus 17/18," Revision 00802.

On March 12, 2012, the U.S. Nuclear Regulatory Commission (NRC) issued Reference (1) to request information associated with Near-Term Task Force Recommendation 2.1 for Flooding. One of the Required Responses in this letter directed licensees to submit a Flood Hazard Reevaluation Report (FHRR), including the interim action plan requested in Item 1.d of Reference (1), Enclosure 2, if appropriate. On May 11, 2012, the NRC issued the prioritization plan developed by the NRC and resultant Flood Hazard Reevaluation due dates for all sites. Reference (2), Enclosure 1 identified R. E. Ginna Nuclear Power Plant (Ginna), as a Category 3 Site requiring a FHRR submittal due date of March 12, 2015. The information in the enclosed provides the Ginna FHRR. The Ginna FHRR follows the Hierarchical Hazard Assessment approach, as described in Reference (3).

Information Requested in Reference (1), Enclosure 2

**a. Site information related to the flood hazard. Relevant SSCs important to safety and the UHS are included in the scope of this reevaluation, and pertinent data concerning these SSCs should be included. Other relevant site data includes the following:**

**i. Detailed site information (both designed and as-built), including present-day site layout, elevation of pertinent SSCs important to safety, site topography, as well as pertinent spatial and temporal data sets;**

Response

- Site layout and topography – See Section 1.2 and Figure 1.2-1 of Enclosure 2.
- Equipment required to obtain safe shutdown following an external flooding event are located in the Diesel Generator Buildings (DGBs), Control Building (CB) including Battery Rooms (BRs) and the Air Handling Room (AHR), the Auxiliary Building (AB), Reactor Containment (RC), Cable Tunnel (CT), and the Standby Auxiliary Feedwater Building (SAFWB).

**ii. Current design basis flood elevations for all flood causing mechanisms;**

Response

- Current design basis flood (DBF) elevations were developed from the probable maximum flood on streams and rivers. – See Section 1.3 and Table 2.2-6 of Enclosure 2.
- Flood causing mechanisms – See Section 1.4.1 of Enclosure 2.

**iii. Flood-related changes to the licensing basis and any flood protection changes (including mitigation) since license issuance;**

Response

- No flood-related changes to the licensing basis have been made since Full Term Operating License (FTOL) issuance.
- Flood protection changes (including mitigation) have been made since FTOL issuance:
  - Two cable penetrations between Manhole 1 and Battery Room B were hydrostatically sealed.
  - Two unsealed 4-inch round conduits, containing telecommunications cables, penetrating through Manhole 1 into Battery Room B were sealed.

**iv. Changes to the watershed and local area since license issuance;**

Response

- Watershed and local area changes have been minimal since FTOL issuance as described in Section 1.6 of Enclosure 2.
- Site configuration changes since FTOL issuance include:
  - New Buildings:
    - Contaminated Storage
    - Canister Preparation
    - Administrative
    - Engineering and Projects
    - Quality Control Storage
    - Receiving
    - Storage and Fab Shop
    - Vehicle Storage
    - Offsite Warehouse West with separate Storage Building
    - Steam Generator Storage
    - Independent Spent Fuel Storage Installation
    - Training Center East
    - Simulator
    - Training Labs
  - Guard House Expansion
  - Passive Barrier System

**v. Current licensing basis flood protection and pertinent flood mitigation features at the site;**

Response

- See Section 1.4 of Enclosure 2 for a description of Current Licensing Basis (CLB) flood protection and pertinent flood mitigation features at the site.
- The SAFWB is not protected from the current DBF through use of barriers; however, the height of the equipment ensures the Standby Auxiliary Feedwater system will be available for use during a flood. The CT is a structure below grade that connects the CB, Intermediate Building, and AB. The elevation of the floor of the CT is at an elevation of 261 feet 10 inches, which is above the DBF depth at the TB of 256.6 feet; hence, no flooding concerns exists due to the flood depth to the north. The CT is located below the Transformer Yard (TY), which is at an approximate elevation of 270 feet. The CT is fully enclosed and contains no penetrations that communicate with the TY. The CT was originally built with an access hatch for access from the TY to the CT. The hatch has since been grouted, and there is an RTV seal to prevent water ingress. The BRs and AHR are accessible from the Turbine Building (TB) at elevation 253 feet 6 inches. The

doors from the TB to the DGBs, AHR and BRs are sufficient to protect against the DBF (Reference (4)).

**vi. Additional site details, as necessary, to assess the flood hazard (i.e., bathymetry, walkdown results, etc.)**

Response

- See Section 1.6 of Enclosure 2 for watershed and local area changes.
  - See Reference (5) for the walkdown results submitted to the NRC.
  - As a result of subsequent walkdowns of restricted access flood barriers, deficiencies were identified with flood barriers in Manhole 1, which impacted the BRs. Two non-hydrostatically sealed cable penetrations between Manhole 1 and BR B were identified and sealed, and two unsealed 4-inch round conduit penetrations through Manhole 1 and BR B were identified and sealed. (Reference (6)) As a result of these deficiencies:
    - A comprehensive barrier control program was created under Reference (7) that includes flood barriers.
    - An engineering evaluation (Reference (4)) was completed to provide a qualification for each external flood barrier with respect to the external flooding levels described within the Updated Final Safety Analysis Report (Reference (8)). This evaluation clearly demonstrates acceptability of each barrier.
    - All junction boxes and electrical panels below the DBF elevation in buildings with equipment required for safe shutdown were opened and inspected (Reference (9)).
  - In response to a NRC request for additional information (RAI) associated with Near-Term Task Force Recommendation 2.3, Flooding – Review of Available Physical Margin (APM) (Reference (10)), a review of all flood barriers and penetrations was conducted per Nuclear Energy Institute (NEI) 12-07. All penetrations were determined to be capable of withstanding the DBF as required by the RAI. (Reference (11))
- b. Evaluation of the flood hazard for each flood causing mechanism, based on present-day methodologies and regulatory guidance. Provide an analysis of each flood causing mechanism that may impact the site including local intense precipitation and site drainage, flooding in streams and rivers, dam breaches and failures, storm surge and seiche, tsunami, channel migration or diversion, and combined effects. Mechanisms that are not applicable at the site may be screened-out; however, a justification should be provided. Provide a basis for inputs and assumptions, methodologies and models used including input and output files, and other pertinent data.**

Response

A description of the flood hazard reevaluation for each flood-causing mechanism and the basis for inputs, assumptions, methodologies, and models are referenced below. Per NRC/NEI public meeting dated January 16, 2013 input-output files are not included with this submittal package but are available upon request.

- Local Intense Precipitation (LIP) and Drainage: See Section 2.1 of Enclosure 2.
- Flooding in Streams and Rivers: See Section 2.2 of Enclosure 2.
- Dam Breaches and Failures: See Section 2.3 of Enclosure 2.
- Storm Surge: See Section 2.4 of Enclosure 2.
- Seiche: See Section 2.5 of Enclosure 2.
- Tsunami: See Section 2.6 of Enclosure 2.
- Ice Induced Flooding: See Section 2.7 of Enclosure 2.
- Channel Migration or Diversion: See Section 2.8 of Enclosure 2.
- Combined Effects: See Section 2.9 of Enclosure 2.

**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 walkdowns) support this determination. If the current design basis flood bounds the reevaluated hazard for all flood causing mechanisms, include how this finding was determined.**

#### Response

The current DBF does not bound the reevaluated hazard for all applicable flood-causing mechanisms, combined-effect floods, associated effects, and/or flood event duration parameters. A comparison of current design basis and reevaluated flood hazards is provided in Section 3 of Enclosure 3. The summary below describes how this finding was determined for the applicable flood hazards. The dam breaches and failures, storm surge, seiche, tsunami, ice-induced flooding, and channel migration or diversion flood-causing mechanisms were either determined to be implausible or completely bounded by other mechanisms. Some individual flood-causing mechanisms (i.e. surge and seiche) are addressed in one or more of the combined-effect floods.

#### 1. Local Intense Precipitation

The current DBF for effects of LIP, as discussed in Section 2.4.2.2 of Reference (8) only evaluates flooding at the Screen House (SH). In an evaluation made by the NRC staff of the flood levels which would occur at safety-related buildings assuming an occurrence of the local maximum precipitation on the immediate site area, it was concluded that flood water will pond to an elevation of about 254.5 feet mean sea level at the north area of the site in the vicinity of the SH. The limiting elevation for

safety-related equipment in the SH is elevation 254.8 feet (SH floor elevation of 253.5 plus 1.3 feet to Safeguards Buses 17 and 18).

The maximum reevaluated flood elevation at the SH of 255.8 feet, as shown in Table 1 of Enclosure 1, is not bounded by the current LIP DBF limiting elevation at the Screen House of 254.8 feet.

## 2. Probable Maximum Flooding (PMF) in Streams and Rivers

Based on the PMF calculation for the total contributory drainage area for Deer Creek and Mill Creek, the PMF elevation on streams results from the All-Season 72-hour probable maximum precipitation depth of 30.5 inches. The current design basis peak flood flow in Deer Creek is 26,000 cubic feet per second (cfs), or about two-thirds of the previous, NRC-calculated, PMF peak flow of 38,700 cfs. The flood reevaluation PMF peak flow in Deer Creek is 28,500 cfs, including adjustments for non-linearity. The reevaluated PMF peak flow is lower than the previous, NRC calculated, PMF due principally to refinements in the methodologies used. In particular, the subdivision of the contributory watershed to reflect the separate branches of Deer Creek (i.e. Deer Creek and Mill Creek) results in differences in the timing of the peak flows from each basin, reducing the peak flow at Ginna.

The reevaluated peak PMF elevations at the safety-related structures, systems and components (SSCs) at Ginna generally range from 258.1 feet to 273.5 feet, corresponding to a PMF peak flow of approximately 28,500 cfs. Based on the reevaluated peak PMF elevations, the RC, TB, CB including the BRs and AHR, SH and DGBs are not bounded by the current DBF levels. The AB, All-Volatile-Treatment-Building (AVTB), and the SAFWB have increased margin compared to the current DBF levels. (See Table 2 of Enclosure 1)

## 3. Combined-Effect Flood in Section H.1, Reference (3), from the PMF in Deer Creek with Critical Wind Speed

Wave runup resulting from Deer Creek flooding with the critical wind speed is expected to influence the flood elevations only at the southern end of the site, with the waves likely to break against the SAFWB Annex, the Canister Preparation Building and the Contaminated Storage Building, which results in elevated flood levels at the AB and SAFWB. The maximum wave runup at the southern end of the power block at Ginna causes a flood elevation along the south wall of the AB ranging from 273.5 feet to 275.3 feet (Enclosure 3). This results from the greatest straight line fetch of 870 feet (Figure 2.9-3 in Enclosure 2), an average water depth of 15.7 feet and a 2-year return period wind speed of 73.9 feet/sec. The maximum reevaluated wind-wave runup elevations at the SAFWB and SAFWB Annex are peak flood elevations 0.9 feet higher than the Deer Creek PMF flood levels. Peak elevations for the remaining structures are the same as the Deer Creek PMF flood levels. Thus, based on the re-evaluated peak elevations, the RC, AB, TB, CB including the BRs and AHR, SAFWB, SH and DGBs are not bounded by the current DBF levels. The AVTB has increased margin compared to the current DBF levels. (See Table 3 of Enclosure 1)

4. Combined-Effect Flood in Section H.4.2, Reference (3), Floods along the Shores of Enclosed Bodies of Water for Lake Ontario (Streamside Locations)

Section H.4.2, Reference (3), presents three alternatives (streamside locations) for flooding along shores of enclosed bodies of water that considers the combined-effects of precipitation-induced flooding, surge/seiche, and wind-wave runoff. The maximum reevaluated wind-wave runoff elevations (Alternative 2) are peak flood elevations 0.1 feet higher than the Deer Creek PMF flood levels at the TB, SH, and DGBs due to contributing flood waters from the 25-year storm surge and associated wave runoff. Peak elevations for the remaining structures are the same as the Deer Creek PMF flood levels. Thus, based on the re-evaluated peak elevations, the RC, TB, CB including the BRs and AHR, SH and DGBs are not bounded by the current DBF levels. The AB, AVTB, and the SAFWB have increased margin compared to the current DBF levels. (See Table 4 of Enclosure 1)

Findings from Enclosure 4 of Reference (1) support this determination as discussed in *a.vi* above.

***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.***

Response

*Integrated Assessment (IA) Trigger and Plan*

Per Enclosure 2 of Reference (1), an IA is required for plants where the current DBFs do not bound the reevaluated hazard for all flood causing mechanisms. Reference (12) presents four approaches for performing an IA based on the results of the flood hazard reevaluation.

- Scenario 1 - Reevaluated Hazard Bounded by Design Basis
- Scenario 2 - Only Local Intense Precipitation
- Scenario 3 - All Permanent and Passive Flood Protection
- Scenario 4 - Integrated Assessment Required

An IA is not necessary in Scenario 1. Limited evaluations can be conducted and submitted with the FHRR under Scenarios 2 and 3 that only address specific sections of the Integrated Assessment Interim Staff Guidance (Reference (13)). Licensees in Scenario 4 and those not including limited evaluations in the FHRR under Scenarios 2 and 3 are required to perform a full IA.

Per "Part c" above, the DBF does not bound the reevaluated hazard for all applicable flood-causing mechanisms and combined-effect floods. Specifically, local intense precipitation, PMF in Streams and Rivers, and combined-effect flood combinations H.1 and H.4.2 were not bounded by the DBF hazard. Therefore, Ginna plans to prepare a full IA (Scenario 4).

*Interim Evaluation and Actions Taken or Planned*



Actions taken and planned to address flooding hazards not bounded by the current DBF for PMF in Streams and Rivers and both combined effect flood combinations H.1 and H.4.2 include:

- Provided for Aquafence installation in the TB around the BRs and Diesel Generator Rooms to increase flood protection height. Aquafence is a portable barrier system that is installed prior to an impending flood at Level 1 flood condition per GMM-23-99-FLOODBARRIER, "Flood Barrier Installation and Removal in Turbine Building Basement" (Reference (14)).
- Revised ER-SC.2, "High Water (Flood) Plan," (Reference (15)) to shutdown prior to an impending flood (Level 2 flood condition), and install flood barriers in the AB ground level doorways.
- Purchased dewatering pumps to remove water from structures. Dewatering pumps are staged in the AB and inside the Aquafence barriers at Level 1 flood condition per ER-SC.2.
- A modification to the AB (ECP-14-000900, "Auxiliary Building Block Wall Reinforcement") (Reference (16)) will be installed to protect safe-shutdown equipment in the AB from the new flood height.

Ginna is not bounded for the reevaluated LIP flood hazard. The maximum reevaluated flood elevation in the SH will cause a loss of 480 Safeguards Buses 17 and 18, which will result in a loss of the Service Water Pumps. While the reevaluated SH flood elevation is not bounded for LIP, the flood elevation is below the current DBF elevation for PMF in Streams and Rivers. ER-SC.2 and current procedures for loss of service water (Reference (17)) and loss of Safeguards Buses 17 and 18 (Reference (18)) provide guidance to address the reevaluated LIP flood elevation.

In addition to the above actions taken or planned for the not bounded reevaluated flood hazards, when the mitigation strategies for beyond-design-basis external events have been implemented, Ginna can utilize the FLEX strategies to mitigate the reevaluated flood hazards.

***e. Additional actions beyond Requested Information item 1.d taken or planned to address flooding hazards, if any.***

Response

- None required

A list of regulatory commitments contained in this letter is provided in Enclosure 4.

If there are any questions regarding this letter, please contact Thomas Harding Jr. at 585-771-5219.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 11<sup>th</sup> day of March 2015.

Respectfully,

A handwritten signature in black ink that reads "Mary G. Korsnick". The signature is written in a cursive style with a large, prominent "M" and "K".

Mary G. Korsnick

Enclosures:

1. Flood Hazard Reevaluation Tables for Flood-Causing Mechanisms and Combined-Effects Floods Not Bounded by the Reevaluated Hazard
2. Constellation Energy Nuclear Group Flood Hazard Reevaluation Report for R. E. Ginna Nuclear Power Plant
3. Combined Events Flood Analysis for R. E. Ginna Nuclear Power Plant
4. Summary of Regulatory Commitments

cc: Regional Administrator, Region I, USNRC  
NRC Project Manager, NRR – R. E. Ginna Nuclear Power Plant  
NRC Senior Resident Inspector – R. E. Ginna Nuclear Power Plant  
Director, Office of Nuclear Reactor Regulation  
Mr. G. Edward Miller, NRR/DORL/LPL2-1, NRC

**Enclosure 1**

**Flood Hazard Reevaluation Tables for  
Flood-Causing Mechanisms and Combined-Effects Floods  
Not Bound by the Reevaluated Hazard**

**Table 1: Local Intense Precipitation Reevaluation Results**

Structure	LIP DBF Levels (ft)*	Reevaluated Peak (ft)**	Maximum Flow Depth (ft)	Maximum Flow Velocity (fps)	Bounded (B) or Not Bounded (NB)
Reactor Containment	N/A	270.9	0.7	0.4	N/A
Auxiliary Building	N/A	270.7	0.2	0.5	N/A
Turbine Building (includes Battery Rooms and Air Handling Room flood elevations)	N/A	255.8	1.8	1.5	N/A
Control Building	N/A	270.9	0.5	0.6	N/A
All-Volatile-Treatment Building	N/A	270.8	0.1	0.8	N/A
Standby Auxiliary Feedwater Pump Building	N/A	270.2	0.2	0.6	N/A
Proposed Standby Auxiliary Feedwater Pump Building Annex	N/A	270.5	0.6	0.8	N/A
Screen House	254.5	255.8	2.1	0.7	NB
Diesel Generator Building	N/A	255.8	2.1	3.0	N/A

**Notes:**

\* Only the flood elevation at the Screen House was determined for the current LIP DBF.

\*\* LIP Peak Elevations are approximate and vary depending on the exact location. Elevations were conservatively rounded up, and peak elevations in the time-series plots are slightly lower than the peak elevations above.

**Table 2: PMF in Streams and Rivers Reevaluation Results**

Structure	PMF DBF Levels (ft)*	Reevaluated Peak (ft)**	Maximum Flow Depth (ft)	Maximum Flow Velocity (fps)	Bounded (B) or Not Bounded (NB)
Reactor Containment	272.0	272.4	2.2	1.0	NB
Auxiliary Building	272.0 to 273.8	272.6	2.1	2.8	B
Turbine Building (includes Battery Rooms and Air Handling Room flood elevations)	256.6	258.1	4.2	3.1	NB
Control Building	272.0	272.4	2.1	2.2	NB
All-Volatile-Treatment Building	272.0	271.3	0.7	5.3	B
Standby Auxiliary Feedwater Pump Building	273.0	272.8	2.7	4.0	B
Proposed Standby Auxiliary Feedwater Pump Building Annex	N/A	273.5	3.6	2.8	N/A
Screen House	256.6	258.1	4.4	3.3	NB
Diesel Generator Building	256.6	258.3	4.6	4.3	NB
<p>Notes:</p> <p>* Current design basis flood elevations are approximated from Reference (8).</p> <p>** PMF Peak Elevations are approximate and vary depending on the exact location.</p>					

**Table 3: Combined-Effects Flood in Section H.1 of Reference (3)**

Structure	PMF DBF Levels (ft)*	Reevaluated Peak (ft)**	Maximum Flow Depth (ft)***	Maximum Flow Velocity (fps)****	Bounded (B) or Not Bounded (NB)
Reactor Containment	272.0	272.4	2.2	1.0	NB
Auxiliary Building	272.0 to 273.8	273.5 to 275.3	3.0	2.8	NB
Turbine Building (includes Battery Rooms and Air Handling Room flood elevations)	256.6	258.1	4.2	3.1	NB
Control Building	272.0	272.4	2.1	2.2	NB
All-Volatile-Treatment Building	272.0	271.3	0.7	5.3	B
Standby Auxiliary Feedwater Pump Building	273.0	273.7***	3.6	4.0	NB
Proposed Standby Auxiliary Feedwater Pump Building Annex	N/A	274.4***	4.5	2.8	N/A
Screen House	256.6	258.1	4.4	3.3	NB
Diesel Generator Building	256.6	258.3	4.6	4.3	NB

**Notes:**

\* Current design basis flood elevations are approximated from Reference (8).

\*\* Peak Elevations are approximate and vary depending on the exact location.

\*\*\* The maximum reevaluated wind-wave runup elevations at the AB, SAFWB and SAFWB Annex are peak flood elevations 0.9 feet higher than the Deer Creek PMF flood levels from Table 2. Other values are taken directly from Table 2.

\*\*\*\* Values are taken directly from Table 2.

**Table 4: Combined-Effect Flood in Section H.4.2 of Reference (3)**

Structure	PMF DBF Levels (ft)*	Reevaluated Peak (ft)**	Maximum Flow Depth (ft)	Maximum Flow Velocity (fps)	Bounded (B) or Not Bounded (NB)
Reactor Containment	272.0	272.4	2.2	1.0	NB
Auxiliary Building	272.0 to 273.8	272.6	2.0	2.8	B
Turbine Building (includes Battery Rooms and Air Handling Room flood elevations)	256.6	258.2	4.2	3.1	NB
Control Building	272.0	272.4	2.0	2.1	NB
All-Volatile-Treatment Building	272.0	271.3	0.7	5.3	B
Standby Auxiliary Feedwater Pump Building	273.0	272.8	2.7	4.0	B
Proposed Standby Auxiliary Feedwater Pump Building Annex	N/A	273.5	3.6	2.8	N/A
Screen House	256.6	258.2	4.5	3.3	NB
Diesel Generator Building	256.6	258.4	4.7	4.4	NB
<p>Notes:            * Current design basis flood elevations are approximated from Reference (8).            ** Peak Elevations are approximate and vary depending on the exact location.</p>					