NRR-PMDAPEm Resource

From: Hall, Victor
Sent: Friday, April 03, 2015 12:03 PM
To: david.distel@exeloncorp.com
Cc: Wiebe, Joel
Subject: RESEND: Braidwood, Byron, Clinton, and LaSalle: 2.1 Flooding Requests for Information
Attachments: Byron RAIs Rev4.docx

Dave,
Sorry for the resend, but I meant to clean up the typo in the Byron RAI (attached), and will take the opportunity to change the date for that response to May 26, 2015, below. FYI, I will be adding this e-mail to the docket.
-Vic

From: Hall, Victor
Sent: Tuesday, March 31, 2015 5:00 PM
To: david.distel@exeloncorp.com
Cc: Wiebe, Joel; Purnell, Blake
Subject: Braidwood, Byron, Clinton, and LaSalle: 2.1 Flooding Requests for Information

Mr. Distel,

As we discussed in our clarification call today, please find the attached revision to the Byron Request for Addition Information. In addition, the NRC staff notes that Exelon will provide responses for the four sites discussed today per the following schedule:

- Braidwood: June 24, 2015
- Byron: May ~~25~~26, 2015
- Clinton: May 5, 2015
- LaSalle: May 5, 2015.

The NRC staff has determined that no security-related or proprietary information is contained herein.

Sincerely,

Victor Hall
Senior Project Manager
Japan Lessons Learned Division
Office of Nuclear Reactor Regulation
301-415-2915

Hearing Identifier: NRR_PMDA
Email Number: 1970

Mail Envelope Properties (Victor.Hall@nrc.gov20150403120200)

Subject: RESEND: Braidwood, Byron, Clinton, and LaSalle: 2.1 Flooding Requests for Information
Sent Date: 4/3/2015 12:02:43 PM
Received Date: 4/3/2015 12:02:00 PM
From: Hall, Victor

Created By: Victor.Hall@nrc.gov

Recipients:
"Wiebe, Joel" <Joel.Wiebe@nrc.gov>
Tracking Status: None
"david.distel@exeloncorp.com" <david.distel@exeloncorp.com>
Tracking Status: None

Post Office:

Files	**Size**	**Date & Time**
MESSAGE	1158	4/3/2015 12:02:00 PM
Byron RAIs Rev4.docx	34771	

Options
Priority: Standard
Return Notification: No
Reply Requested: No
Sensitivity: Normal
Expiration Date:
Recipients Received:

Request for Additional Information
Fukushima Lessons Learned Flood Hazard Reevaluation Report
ByronGenerating Station, Units 1 and 2 (TAC Nos. MF3893 and MF3894)

By letter dated March 12, 2014, Exelon Generation Company LLC (the licensee) submitted its flood hazard reevaluation report (FHRR) for Byron Generating Station, Units 1 and 2 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML14079A421). By e-mail dated June 18, 2014, the U.S. Nuclear Regulatory Commission (NRC) staff provided a request for additional information (RAI) regarding the above referenced FHRR (ADAMS Accession No. ML14169A545). The licensee responded to this RAI by letter dated July 14, 2014 (RS-14-194) (ADAMS Accession No. ML14293A599). The staff determined that additional information, as requested below, is necessary to complete its assessment of the licensee's FHRR.

RAI 1: Section 2.1 - Detailed Site Information

Background: As part of the review of the Flood Hazard Reevaluation Report (FHRR), maps of the site location, general site layout, important features of the site, and maps of critical numerical model features assist NRC staff in understanding the flood hazards.

Request: Provide electronic figures that include the following locations in relation to the site:

- Upstream (cross section 125.07) and downstream (cross section 86.56) boundaries of the HEC-RAS model
- Byron's river Screen House (cross section 115.0)
- Two dam structures
- USGS gage 05440700 (cross section 120.04)

RAI 2: Section 3.2 -Probable Maximum Flood on Rock River

Background:The HEC-RAS model for the probable maximum flood (PMF) applied Manning's n coefficient in the Federal Emergency Management Agency (FEMA) HEC-2 model (USACE 1985). The model calibrations were based on historical events with peak flows approximately 20% of the PMF flow. However, the staff noted no changes to the Manning's n coefficient based on these calibrations, which could affect the water surface elevation at the site.

Request:Justify the value used for Manning's n coefficient on the water surface elevation at Byron's river Screen House using the PMF flow.

RAI 3:Section 3.4- Dam Breaches and Failures

Background:The FHRR did not provide detail on the methodology and results of the dam failure analysis.

Request:Provide the following details related to the dam failure analysis:

- Parameters of all dams input into the hypothetical dam(e.g., height, volume, distance from site)
- A map of the location of the dams (i.e., Figure 3 Peak Outflow Attenuation Distance of Exelon FHRR reference BYR13-FUK-04, which can be found in Exelon's electronic reading room)

- Assumptions used to simplify assessment and failure evaluations
- Breach parameters of the hypothetical dam.

RAI 4: Section 3.4 - Dam Breaches and Failures

Background:The National Inventory of Dams database lists dams approximately 20 miles upstream from the site with heights ranging from 23 feet to 48 feet, and storage volumes ranging from 1,081 acre-feet (ac-ft) to 12,014 ac-ft. These parameter values appear to be higherthan most of the dams in the watershed. The NRC staff performed a simplified sensitivity analysis using known parameters of one of the dams specified above. The resultant peak breach outflow from this dam was greater than the peak breach outflow estimated for the hypothetical dam representing a conglomerate of 138 dams in the FHRR.The FHRR also describes a storage-weighted height for the non-critical dams to create the hypothetical dam for all of the non-critical dams.

Request:Provide justification for the exclusion as critical dams of any dams in the watershed with dam heights greater than 20 ft and storage greater than 1,000 acre-feet. Justify the use of a storage-weighted height as the height of the hypothetical dam.

RAI 5: Section 3.4 - Dam Breaches and Failures

Background:In Section 3.4, flow attenuation from the location of the hypothetical dam to Byron's river Screen House is estimated using the U.S. Bureau of Reclamation (USBR) empirical attenuation equation (USBR 1982). The computed attenuation of the peak breach flow at the hypothetical dam at the Byron river Screen House is greater than the attenuation computed with HEC-RAS in the stream flooding analysis, using the built-in functions in HEC-RAS.

Request:Provide justification for using the USBR attenuation equation for the dam failure analysis, rather than using the same methodology as the river flooding (i.e., the HEC-RAS attenuation function).

RAI 6: Section 3.4 - Dam Breaches and Failures

Background:The onsite dam failure analysis assumes that the probable maximum precipitation (PMP) only falls within the small Natural Draft Cooling Tower (NDCT) flume and basin, and that no rainfall occurs outside of the basin onto the rest of the site. As a result, the onsite FLO-2D model shows an inflow to 30 grids along the west edge of the NDCT flume, and no rainfall to the rest of grids. This proposed scenario does not represent the physical characteristics of a small, intense rainfall event and does not correctly reflect the spatial physics of precipitation events. National Weather Service, U.S. Army Corps of Engineers, and other meteorological guidance limit the minimum rainfall area to a one square-mile.

Request:Provide a justification for the assumption of the PMP being limited to the small sub basin. Justify that the analysis for evaluating hydrologic dam failures for the onsite basins is appropriately conservative.