



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

July 1, 2015

**LICENSEE:** Exelon Generation Company, LLC

**FACILITY:** Calvert Cliffs Nuclear Power Plant, Unit Nos. 1 and 2

**SUBJECT:** SUMMARY OF JUNE 4, 2015, MEETING WITH EXELON GENERATION COMPANY, LLC, ON CALVERT CLIFFS NUCLEAR POWER PLANT, UNIT NOS. 1 AND 2, LICENSE AMENDMENT REQUEST REGARDING TRANSITION TO NATIONAL FIRE PROTECTION ASSOCIATION 805, "PERFORMANCE-BASED STANDARD FOR FIRE PROTECTION FOR LIGHT WATER REACTOR ELECTRIC GENERATING PLANTS" (TAC NOS. MF2993 AND MF2994)

On June 4, 2015, a Category 1 public meeting was held between the U.S. Nuclear Regulatory Commission (NRC) and representatives of Exelon Generation, LLC, (or the licensee) at NRC Headquarters, One White Flint North, 11555 Rockville Pike, Rockville, Maryland. The purpose of the meeting was to discuss the license amendment request (LAR) to transition to National Fire Protection Association (NFPA) 805, "Performance-Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants," for the Calvert Cliffs Nuclear Power Plant, Unit Nos. 1 and 2 (Calvert Cliffs). The meeting notice and agenda, dated May 20, 2015, is available in the Agencywide Documents Access and Management System (ADAMS) Accession No. ML15153A323. A list of attendees is provided as Enclosure 1.

The licensee presented information regarding the current licensing status of the NFPA 805 LAR, fire modeling status, several Attachment L approval requests, the use of Marinite board in containment, and the probabilistic risk assessment (PRA) modeling of tray and junction boxes. The licensee's slides can be viewed at ADAMS Accession No. ML15152A082.

The licensee presented information regarding their proposed schedule for ongoing and future licensing activities related to the NFPA 805 LAR. The licensee stated they are committed to working towards a completed safety evaluation in 2015. The licensee's current licensing status report shows milestone target dates for resolution of all Requests for Additional Information (RAIs), the transmittal of final PRA results, and the final safety evaluation. The licensing status update also included the statement that all modifications, from the LAR, would be completed by April 30, 2018. The licensee plans to finish the required modifications for Unit 1 during the 2016 refueling outage (RFO), and during the 2017 RFO for Unit 2. The last part of the licensing status update noted that Attachment S-3 states the implementation of the NFPA 805 Fire Protection Program will occur within 12 months of the issuance of an approved amendment by the NRC.

The NRC staff did not have any questions on the licensee's proposed schedule. The licensee communicated their views and the NRC staff acknowledged that they were communicated.

The licensee then presented the approach to answer PRA RAI 07.01, and PRA RAI 08.01, which were transmitted to the licensee by letter dated June 3, 2015 (ADAMS Accession No. ML15142A729). The licensee indicated their intent to revise the PRA analysis to use the guidance provided in Fire PRA Frequently Asked Questions 13-0005, and 13-0006. The results of the revised PRA analysis will be included in the response to PRA RAI 03.

The licensee continued on to discuss the status, and a summary of the fire modeling (FM) RAI responses. The licensee reviewed and updated the fire model to include secondary combustibles, model high energy arcing fault events, incorporate wall/corner effects, and adjust main control room fire modeling, among other updates. The licensee noted that all of the revisions to the fire model have a complete initial analysis although the PRA results are still being reviewed because they changed as a result of the fire modeling updates.

The NRC staff informed the licensee that if any changes are made in the fire modeling methods the licensee would need to inform the NRC of the changes. In addition, the licensee stated that their PRA RAI 03 response will contain a description of any changes to the fire modeling methods.

The licensee gave an update on the status of the fire PRA, specifically PRA RAI 03, and PRA RAI 19, parts a and d. For these RAIs, the initial fire modeling is complete and the total risk quantification is in progress. In addition, final risk quantification will begin after the RAI responses are reviewed by the NRC. The final results will be submitted with the response to PRA RAIs 03, 19a and 19d. Attachment C, G, S, and W updates will also be submitted with the response to PRA RAI 03.

The NRC staff asked if the Attachment J pages in the 120 day RAI responses were affected by changes made to fire modeling. The licensee indicated that the Attachment J pages were not affected by the changes they described on the slides earlier in the presentation. In addition, the NRC staff asked for clarification on when the final risk quantification will begin. The licensee stated that it will be after they understand what their final analysis methods will be, which is dependent upon NRC review of other RAI responses.

The next topic the licensee discussed was FM RAI 01.I.i.01, which concerns main control board (MCB) FM. The licensee stated that the main control room (MCR) FM analysis was revised to model all MCB vertical sections with the most conservative heat release rate (HRR) value in NUREG/CR-6850 Table G-1. This revision resulted in an increase in risk, although it appeared that the total plant risk is still acceptable and would meet risk objectives for transition to NFPA-805. The licensee also stated that since the worst case was used this approach is satisfactory, and that the licensee does not plan to use an alternate approach.

The NRC staff's main concern with the fire modeling was in regards to the 120 day RAI responses that appeared to describe many fire modeling actions as future actions. In order to draw conclusions, and write a safety evaluation, the NRC staff needs to know what has actually been done with regards to fire modeling. The NRC staff communicated these concerns to the licensee. The licensee responded by describing how any fire modeling methods, and changes to the fire model, would be included in the response to PRA RAI 03. The NRC staff will continue to review the licensee's RAI responses from the March 11, 2015 (ADAMS Accession No. ML15075A110) letter, and if further questions arise they will be documented in RAIs. The licensee would then describe any necessary changes in their response to PRA RAI 03.

The licensee then discussed the 'Attachment L' request number 7, Wood in the North Service Building. The licensee noted that three fenced-in storage areas in the north service building of the power block contain non-compliant wood. The quantities of wood are established administratively by the fire protection engineer. The licensee also described steps taken to mitigate the fire risk.

The NRC staff questioned the licensee on the location of the fenced-in storage areas, and if the building they are located in, are a part of a normal fire marshal plant walkdowns. The licensee responded that the building is part of a normal walkdown, and the locations of the non-compliant wood are similar to warehouse areas. The NRC staff also noted that additional information will be needed for this 'Attachment L' request. A few of the items noted by the NRC staff were additional detail on the combustibles, justification for the sprinkler system design, and detail on fixed ignition sources. The licensee asked for the NRC staff to clarify why this additional detail is needed since the licensee assumed a total burn. The NRC staff noted that while the assumption of a total burn may address safe shutdown of the plant, echelons 1 and 2 for fire protection may still need to be addressed.

For the 'Attachment L' request number 9, Insulation Materials, the licensee presented their method for resolving instances where they may not comply with the rule, or have prior NRC approval. In these instances, the licensee stated they will develop a performance-based approval request or evaluate the materials for acceptability as part of the Attachment L request.

The NRC staff informed the licensee that when developing approval requests or evaluating the materials for acceptability, they should justify how any materials that do not comply with Chapter 3 of NFPA-805 meet the intent of Chapter 3. The justification should include a test set-up comparison in order to link the intent. This discussion should be included in their RAI response.

Next, 'Attachment L' request number 8, Non-Metallic Raceways/Conduit, was discussed. The licensee noted the original construction requirement for underground and concrete-embedded applications. The licensee stated these are not relied upon for grounding, they are not credited as fire resistance in the NFPA-805 analysis, and they do not contribute to fire loading. The licensee also stated their intent to revise this 'Attachment L' request to remove the request for permission to evaluate and self-approve use of the non-metallic conduit.

The NRC staff noted that details on the current design criteria for this approval request will most likely be needed. More detail on items such as a technical justification for thin metal tubing, the extent of installation, and methods to mitigate fire damage, may be needed. In addition, the NRC staff questioned the licensee on why they removed the statements that the safe shutdown cables above suspended ceilings are routed in conduits. The licensee stated that the statements were removed because the conduits are not credited in their analysis.

The last part of the licensee's presentation was on the use of Marinite boards in containment. The licensee discussed how the Marinite boards are credited in the PRA as a 'fire break', and not credited as a separation barrier in the deterministic analysis.

The NRC staff informed the licensee that it appears the Marinite boards are used as a 20 foot fire break zone. The licensee stated that they are modeled as such in the PRA since they do

not propagate fire, however, they are not used to protect cables as a fire protection feature. The NRC staff noted that they may need the attributes and performance assumptions of the Marinite board.

No members of the public were in attendance. Public Meeting Feedback forms were not received.

Please direct any inquiries to me at 301-415-2549, or Alexander.Chereskin@nrc.gov.

A handwritten signature in black ink, appearing to read 'Alex Chereskin', written in a cursive style.

Alexander N. Chereskin, Project Manager  
Plant Licensing Branch I-1  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket Nos. 50-317 and 50-318

Enclosures:

1. List of Attendees

cc w/encls: Distribution via Listserv

LIST OF ATTENDEES

JUNE 04, 2015, MEETING WITH EXELON GENERATION, LLC TO  
DISCUSS CALVERT CLIFFS NUCLEAR POWER PLANT, UNIT NOS. 1, AND 2  
NFPA-805 LICENSE AMENDMENT REQUEST

**U.S. Nuclear Regulatory Commission and Contractors**

A. Chereskin  
C. Moulton  
H. Barrett  
T. Dinh  
B. Miller  
A. Klein  
L. Fields  
T. Hilsmeier  
S. Rosenberg  
B. Metzger  
N. Iqbal  
S. Dinsmore  
M. Nicholson  
P. Lee  
W. Ivans\*  
F. DePeralta\*  
M. Janssens\*  
J. Huczek\*

**Exelon Generation Company, LLC and Contractors**

M. Schairer  
R. Cavedo  
P. Darby  
P. Pringle  
J. Stone  
J. McQuighan  
P. Furio\*  
C. Dobry\*  
U. Farradj\*  
B. Meade\*  
J. Quinn\*  
M. Graham\*  
T. Daniels\*  
R. Mellucci\*  
S. Southord\*

\*via teleconference

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**/RA/**

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Plant Licensing Branch I-1  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

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RidsNrrDraApla	L. Fields, NRR
RidsNrrDraAfpb	H. Barrett, NRR
C. Moulton, NRR	M. Waters, OEDO

**ADAMS Accession Nos.:**

Meeting Notice ML15153A323      **Meeting Summary ML15167A008**      Handouts ML15152A082

OFFICE	NRR/DORL/LPLI-1/PM	NRR/DORL/LPLI-1/LA	NRR/DRA/APLA/BC
NAME	ACHereskin	KGoldstein	SRosenberg
DATE	06/18/2015	06/17/2015	06/23/2015
OFFICE	NRR/DRA/AFPB/BC	NRR/DORL/LPLI-1/BC	NRR/DORL/LPLI-1/PM
NAME	AKlein	(DPickett for) MDudek	ACHereskin
DATE	06/22/2015	06/25/2015	07/01/2015

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