



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

September 21, 2015

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

SUBJECT: CALVERT CLIFFS NUCLEAR POWER PLANT, UNIT NOS. 1 AND 2 –  
SUMMARY OF SITE AUDIT TO SUPPORT THE REVIEW OF THE LICENSE  
AMENDMENT REQUEST TO TRANSITION TO THE NATIONAL FIRE  
PROTECTION ASSOCIATION STANDARD 805 FIRE PROTECTION  
LICENSING BASIS (TAC. NO. MF2993, MF2994)

Dear Mr. Hanson:

The purpose of this summary is to document the results of an audit performed at Calvert Cliffs Nuclear Power Plant Unit Nos. 1 and 2 (CCNPP) associated with the National Fire Protection Association Standard 805 (NFPA 805) license amendment request (LAR) dated September 24, 2013 (Agencywide Documents Access and Management System (ADAMS) Accession Nos. ML13301A673 and ML13301A674), as supplemented by letters dated February 9, 2015 (ADAMS Accession No. ML15043A249), March 11, 2015 (ADAMS Accession No. ML15075A110), and April 13, 2015 (ADAMS Accession No. ML15107A029).

A review team, consisting of U.S. Nuclear Regulatory Commission (NRC) staff and contractors from the Pacific Northwest National Laboratory (PNNL), and the Center for Nuclear Waste Regulatory Analyses (CNWRA) conducted a regulatory audit of the Constellation Energy Nuclear Group (CENG) CCNPP. The regulatory audit took place at the plant site located in Lusby, Maryland from December 8 - 11, 2014. The regulatory audit supports the review of the LAR filed by CENG<sup>1</sup> to transition the plant's fire protection licensing basis to Title 10 of the *Code of Federal Regulations* (10 CFR) 50.48(c), which endorses with exceptions the NFPA 805, "Performance-Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants," 2001 Edition.

The purpose of the audit was to gain an understanding of the information needed to support the staff's licensing decision regarding the LAR and to develop high quality requests for additional information (RAI), as needed. The information submitted in support of the Calvert Cliffs LAR is under final review, and any additional information needed to support the LAR review has been formally requested by the staff using the RAI process in accordance with Office of Nuclear Reactor Regulation Office Instruction LIC-101, "License Amendment Review Procedures."

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<sup>1</sup>By Order dated March 24, 2014 (ADAMS Accession No. ML14105A472), the NRC staff ordered the direct transfer of operating authority from Calvert Cliffs, LLC (a subsidiary of CENG), to Exelon Generation, LLC.

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The audit team consisted of 12 NRC staff members, 2 NRC contractors from PNNL, and 1 NRC contractor from CNWRA. Enclosure 1 provides the schedules of activities during the audit. Enclosure 2 lists personnel from the NRC, PNNL, CNWRA, and Exelon Generation, LLC (the licensee), and their contractors who participated in the audit.

The audit team held an entrance meeting on Monday, December 8, 2014, with the licensee's staff and contractors. During the remainder of the audit, team members participated in technical discussions based on their discipline according to the audit plan available in the ADAMS under Accession No. ML14336A256. Technical discussions were focused on five major areas: Fire Protection Engineering, Safe Shutdown/Circuit Analyses, Fire Probabilistic Risk Assessment, Fire Modeling, and programmatic review. The audit team participated in plant walk-downs, tours, and technical presentations focusing on these topical areas.

Enclosure 3 contains a list of documents reviewed by the team. In addition, attendance lists for entrance and exit meetings are provided in Enclosure 4 and Enclosure 5. At the conclusion of the audit, the audit team participated in a summary exit meeting with the licensee on December 11, 2014. The NRC staff provided a brief conclusion of the team goals, objectives, walk-downs, and technical discussions.

If you have any questions regarding this matter, please contact me at (301) 415-2549.

Sincerely,

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:

As stated

cc w/encl: Distribution via Listserv

REGULATORY AUDIT SUMMARY  
REGARDING TRANSITION TO NFPA 805  
LICENSE AMENDMENT REQUEST  
CALVERT CLIFFS NUCLEAR POWER PLANT, LLC.  
EXELON GENERATION COMPANY, LLC  
CALVERT CLIFFS NUCLEAR POWER PLANT, UNIT NOS. 1 AND 2  
DOCKET NOS. 50-317 AND 50-318

**Schedule of Activities**

**Monday, December 8, 2014**

8:00 am	Arrive on site Audit team members established computer connections and setup wireless connections in the assigned conference room.
8:30 am	NRC team briefing
9:00 am	All team members participate in a virtual tour – final walk-down areas were identified for the upcoming plant tour.
9:30 am	Entrance meeting in classroom 13
10:00 am	Breakout sessions initiated
1:00 pm	Technical Discussions
12:30 pm	Breakout Sessions continued: review and clarification of RAIs, fire modeling (FM), radioactive release, safe shutdown analysis (SSA), fire probabilistic risk assessment (PRA), main control room abandonment (MCR), multiple spurious operations (MSO), recovery actions, non-power operations (NPO), Nuclear Safety Capability Assessment (NSCA), fire protection engineering (FPE).
4:00 pm	NRC team debrief
4:30 pm	Licensee wrap up

**Tuesday, December 9, 2014**

8:00 am Plant tour – Tour preparation, safety briefing, break into tour groups,  
10:00 am Radiation Protection breakout  
1:30 pm Fire Modeling / PRA /SSA breakout  
2:00 pm RAI Timelines  
4:00 pm NRC team debrief  
4:30 pm Licensee wrap up

**Wednesday, December 10, 2014**

8:30 am Presentation – Modifications and Implementation Items  
10:00 am Fire Modeling breakout, SSA breakout  
12:30 MCR / self-induced station blackout, SSA and FM / PRA breakouts  
2:30 Final RAI meetings  
4:00 pm Final RAI closeouts for three groups

**Thursday, December 11, 2014**

9:00 am RAI closeouts completed  
10:00 am PRA final RAI meeting  
12:30 pm Audit Exit meeting

## **List of Participants**

### **U.S. Nuclear Regulatory Commission (NRC) Team**

- Alex Klein                      NRC                      Branch Chief
- Hossein Hamzehee       NRC                      Branch Chief
- Leslie Fields                NRC                      Audit Team Leader
- Harold Barrett            NRC                      DRA/Quality Assurance (QA)
- Pete Lee                      NRC                      FPE
- Bernard Litkett            NRC                      SSA
- James Downs               NRC                      Observer
- Charles Moulton           NRC                      FM/FPE
- Todd Hilsmeier            NRC                      Fire PRA
- Stephen Dinsmore        NRC                      Fire PRA/QA
- Steven Garry               NRC                      Radiological Release
- Richard Clement          NRC                      Radiological Release

### **Pacific Northwest National Laboratory (PNNL) Team**

- Fleur de Peralta           PNNL                      FPE/SSD
- William Evans            PNNL                      PRA

### **Center for Nuclear Waste Regulatory Analyses (CNWRA) Team**

- Jason Huczek              CNWRA                      Fire Modeling

### **Calvert Cliffs Response Team**

- Pat Furio                      CCNPP Licensing
- Jim McQuighan            NFPA 805 Project Manager
- Paul Darby                   NFPA 805 Engineer
- Jeff Stone Sr.               Engineering Manager-Risk Management
- Chris Dobry                  Fire Protection
- Frank Bazyk                  Manager-Operations Support
- Pat Pringle                   PRA Engineering Analyst
- Jim Landale                  Senior Staff Engineer-Risk Management
- Rob Cavedo                  Senior Staff Engineer-Risk Management
- Carl Turner                   Senior Engineer
- Gerard Gryczkowski      Principle Engineer-Power Fuel Services

- Roland Courtney Supervisor Radiation Protection
- Bob Bleacher Operations Tech Writer
- Dwayne Robertson Simulator Coordinator
- Ryan Haley Fire Marshall
- Mark Graham PRA Consulting Engineer
- Jeff Quinn Consulting Engineer/SSA
- Ervin Lyson Senior Reactor Operator
- Tim Huber Senior Reactor Operator
- Kiang Zee Consulting PRA Engineer
- Usama Farradj Consulting PRA Engineer
- Mark Wishart Consulting PRA Engineer
- Beth Meade Consulting Engineer/FM-FP
- Mark Schairer Consulting Engineer/FM-FP
- Steve Southard Consulting Engineer/FM-FP

**Industry Representatives**

- Greg Kvamme Xcel Energy

### **List of Documents Reviewed during the audit**

1. C0-FSS-004, Rev. 1, Detailed Fire Modeling Notebook
2. C0-FSS-005, Rev. 2, Structural Failure Analysis
3. C0-FSS-007, Rev. 1, MCR Abandonment
4. C0-FSS-008, Rev. 2, MCA [Multi-Compartment Analysis]
5. Product data sheet and installation instructions/details for plume impingement barrier (3M Interam™ Endothermic Mat) used in Cable Spreading Rooms
6. 3M Interam™ Endothermic Data Sheet

**Calvert Cliffs LIST OF MEETING ATTENDEES (Entrance)**

<b>Name</b>	<b>Organization</b>
Leslie Fields	NRC
Jeff Stone	Exelon
Hossein Hamzehee	NRC
Rob Cavedo	Exelon
Doug Lauver	Exelon
Todd Hilsmeier	NRC
Ben Scott	Exelon
Todd Tierney	Exelon
Fleur de Peralta	PNNL
Mark Moore	Exelon
Tim Riti	Exelon
Bernard Litkett	NRC
Mark Flaherty	Exelon
Charles Moulton	NRC
Harry Barrett	NRC
Mitch Beckman	Calvert
Stephen Dinsmore	NRC
Kiang Zou	Exelon
Ken Robinson	Exelon
Usama Farrod	Exelon
Mark Wishart	Exelon
Jeff Quinn	EPM
Pat Pringle	Exelon
Jeff York	Exelon
James McQuighan	Exelon
Mark Schairer	EPM
Chris Doby	Exelon
Beth Meade	EPM
Steven Southard	EPM
Ryan Haley	Exelon
Pete Lee	NRC
Jason Huczek	SWRI
James Downs	NRC



**Calvert Cliffs LIST OF MEETING ATTENDEES (Exit)**

<b>Name</b>	<b>Organization</b>
Mark Wishart	Exelon
Pat Pringle	NRC
Jeff Quinn	EPM
Frank Bazyk	OPS
Roland Courtney	Exelon
Stephen Dinsmore	NRC
Rob Cavedo	Exelon
Jim Landale	PRP
Gerard Gryzkowski	Fuels
Bernard Litkett	NRC
Harry Barrett	NRC
Todd Tierney	Exelon
Mark Flaherty	Exelon
Mack Moore	Exelon
Doug Lauvier	Exelon
Ken Robinson	ENG
Ben Scott	ENG
Tim Riti	Work Mgmt
Hossein Hamzehee	NRC
Alex Klein	NRC
Jeff Stone	Exelon
Fleur deParalta	PNNL
William Ivans	PNNL
Charles Moulton	NRC
Jason Huczek	SWRI
Beth Meade	EPM
Steve Southard	EPM
Mark Schairer	EPM
Ryan Haley	OPS
Paul Darby	Exelon
Susan Reichard	Regional Assistance

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/RA/

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:

As stated

cc w/encl: Distribution via Listserv

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L. Fields, NRR	B. Miller, NRR	C. Moulton, NRR
T. Hilsmeier, NRR	H. Barrett, NRR	

**ADAMS Accession No: ML15231A596**

\*See dated memo

OFFICE	DORL/LPLI-1/PM	DORL/LPLI-1/LA	DRA/AFP/BC	DRA/APLA/BC	DORL/LPLI-1/BC
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