



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

REGION I
2100 RENAISSANCE BOULEVARD, SUITE 100
KING OF PRUSSIA, PENNSYLVANIA 19406-2713

December 5, 2019

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

**SUBJECT: CALVERT CLIFFS NUCLEAR POWER PLANT, UNITS 1 AND 2 – BIENNIAL
PROBLEM IDENTIFICATION AND RESOLUTION INSPECTION REPORT
05000317/2019010 AND 05000318/2019010**

Dear Mr. Hanson:

On November 8, 2019, the U.S. Nuclear Regulatory Commission (NRC) completed a problem identification and resolution inspection at your Calvert Cliffs Nuclear Power Plant, Units 1 and 2 and discussed the results of this inspection with Jacob Smith, Director of Organizational Performance & Regulatory Assurance, and other members of your staff. The results of this inspection are documented in the enclosed report.

The NRC inspection team reviewed the station's corrective action program and the station's implementation of the program to evaluate its effectiveness in identifying, prioritizing, evaluating, and correcting problems, and to confirm that the station was complying with NRC regulations and licensee standards for corrective action programs. Based on the samples reviewed, the team determined that your staff's performance in each of these areas adequately supported nuclear safety.

The team also evaluated the station's processes for use of industry and NRC operating experience information and the effectiveness of the station's audits and self-assessments. Based on the samples reviewed, the team determined that your staff's performance in each of these areas adequately supported nuclear safety.

Finally, the team reviewed the station's programs to establish and maintain a safety-conscious work environment and interviewed station personnel to evaluate the effectiveness of these programs. Based on the team's observations and the results of these interviews the team found no evidence of challenges to your organization's safety-conscious work environment. Your employees appeared willing to raise nuclear safety concerns through at least one of the several means available.

No findings or violations of more than minor significance were identified during this inspection.

This letter, its enclosure, and your response (if any) will be made available for public inspection and copying at <http://www.nrc.gov/reading-rm/adams.html> and at the NRC Public Document Room in accordance with Title 10 of the *Code of Federal Regulations* 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

/RA/

Matthew R. Young, Chief
Reactor Projects Branch 5
Division of Reactor Projects

Docket Nos. 05000317 and 05000318
License Nos. DPR-53 and DPR-69

Enclosure:
As stated

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SUBJECT: CALVERT CLIFFS NUCLEAR POWER PLANT, UNITS 1 AND 2 – BIENNIAL
 PROBLEM IDENTIFICATION AND RESOLUTION INSPECTION REPORT
 05000317/2019010 AND 05000318/2019010 DATED DECEMBER 5, 2019

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**U.S. NUCLEAR REGULATORY COMMISSION
Inspection Report**

Docket Numbers: 05000317 and 05000318

License Numbers: DPR-53 and DPR-69

Report Numbers: 05000317/2019010 and 05000318/2019010

Enterprise Identifier: I-2019-010-0008

Licensee: Exelon Generation Company, LLC

Facility: Calvert Cliffs Nuclear Power Plant, Units 1 and 2

Location: Lusby, MD

Inspection Dates: October 21, 2019 to November 8, 2019

Inspectors: L. Cline, Senior Project Engineer
L. Dumont, Reactor Inspector
P. Finney, Senior Project Engineer
C. Roettgen, Resident Inspector

Approved By: Matthew R. Young, Chief
Reactor Projects Branch 5
Division of Reactor Projects

Enclosure

SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring the licensee's performance by conducting a biennial problem identification and resolution inspection at Calvert Cliffs Nuclear Power Plant, Units 1 and 2, in accordance with the Reactor Oversight Process. The Reactor Oversight Process is the NRC's program for overseeing the safe operation of commercial nuclear power reactors. Refer to <https://www.nrc.gov/reactors/operating/oversight.html> for more information.

List of Findings and Violations

No findings or violations of more than minor significance were identified.

Additional Tracking Items

None.

INSPECTION SCOPES

Inspections were conducted using the appropriate portions of the inspection procedures (IPs) in effect at the beginning of the inspection unless otherwise noted. Currently approved IPs with their attached revision histories are located on the public website at <http://www.nrc.gov/reading-rm/doc-collections/insp-manual/inspection-procedure/index.html>. Samples were declared complete when the IP requirements most appropriate to the inspection activity were met consistent with Inspection Manual Chapter (IMC) 2515, "Light-Water Reactor Inspection Program - Operations Phase." The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel to assess licensee performance and compliance with Commission rules and regulations, license conditions, site procedures, and standards.

OTHER ACTIVITIES – BASELINE

71152B - Problem Identification and Resolution

Biennial Team Inspection (IP Section 02.04) (1 Sample)

- (1) The inspectors performed a biennial assessment of the licensee's problem identification and resolution performance in the following areas:
 - Corrective Action Program Effectiveness including problem identification, prioritization and evaluation, and corrective actions, which included a review of corrective actions completed to address Unit 1 safety injection tank leakage and site-wide roof leakage in safety-related areas over the past five years.
 - Use of Operating Experience.
 - Completed Self-Assessments and Audits.
 - Health of the Safety Conscious Work Environment.

INSPECTION RESULTS

Assessment	71152B
Corrective Action Program Effectiveness –	
<u>Problem Identification:</u> The inspectors determined that, in general, the licensee identified issues and entered them into the corrective action program at a low threshold.	
<u>Problem Prioritization and Evaluation:</u> Based on the samples reviewed, the inspectors determined that, in general, the licensee appropriately prioritized and evaluated issues commensurate with the safety significance of the identified problem. The licensee appropriately screened issue reports (IRs) for operability and reportability, categorized IRs by significance, and assigned actions to the appropriate department for evaluation and resolution.	
However, the inspectors identified one minor performance deficiency and one observation regarding the licensee's evaluation of issues. The details of the minor performance deficiency and the observation are documented in the applicable sections below.	

Corrective Actions: The inspectors determined that the overall corrective action program performance related to resolving problems was effective. In most cases, the licensee implemented corrective actions to resolve problems in a timely manner.

Assessment

71152B

Use of Operating Experience -

The team determined that the licensee appropriately evaluated industry operating experience for its relevance to the facility. The licensee appropriately incorporated both internal and external operating experience into plant procedures and processes, as well as lessons learned for training and pre-job briefs.

Self-Assessments and Audits -

The team reviewed a sample of self-assessments and audits to assess whether the licensee was identifying and addressing performance trends. The team concluded that the licensee had an effective self-assessment and audit process.

Assessment

71152B

Safety Conscious Work Environment -

The team interviewed a total of 32 individuals. The purpose of these interviews was to evaluate the willingness of the licensee staff to raise nuclear safety issues; to evaluate the perceived effectiveness of the corrective action program at resolving identified problems; and to evaluate the licensee's safety-conscious work environment. The personnel interviewed were randomly selected by the inspectors from the Operations, Engineering, Maintenance, Security, and Radiation Protection work groups. To supplement these discussions, the team interviewed the Employee Concerns Program (ECP) representative to assess his perception of the site employees' willingness to raise nuclear safety concerns. The team also reviewed the ECP case log and select case files.

All individuals interviewed indicated that they would raise safety concerns. All individuals felt that their management was receptive to receiving safety concerns and generally addressed them promptly, commensurate with the significance of the concern. Most interviewees indicated they were adequately trained and proficient on initiating condition reports. All interviewees were aware of the licensee's ECP, stated they would use the program if necessary, and expressed confidence that their confidentiality would be maintained if they brought issues to the ECP. When asked whether there have been any instances where individuals experienced retaliation or other negative reaction for raising safety concerns, all individuals interviewed stated that they had neither experienced nor heard of an instance of retaliation at the site. The team determined that the processes in place to mitigate potential safety conscious work environment issues were adequately implemented.

Minor Performance Deficiency

71152B

Minor Performance Deficiency: The inspectors determined that two root cause analyses (RCAs) completed during the period were not conducted in accordance with the licensee's corrective action program guidance for use of evaluation techniques. Specifically, procedure PI-AA-125-1001, Root Cause Analysis Manual, states, in part, that, although an event and causal factor chart is typically required, the use can be waived provided adequate justification is documented. Contrary to this guidance, the inspectors identified that two of the

three completed RCAs (the August 2017 Dry storage cask Uptake Event (AR 4040215) and the February 2018 11A Reactor Coolant Pump Bay Uncontrolled Locked High Radiation Area Event (AR 4107884)), did not provide evidence that an event and causal factor chart was used nor documented the basis for not using an event and casual factor chart.

For these RCAs, the inspectors interviewed licensee staff who conducted the investigations as well as those responsible for implementing the directed corrective actions. They also reviewed the completed RCAs and associated supporting documentation. Based on these interviews and document reviews, the inspectors concluded that the causal factors identified by each RCA were reasonable and that corrective actions and corrective actions to prevent recurrence, as applicable, were adequate based on the evaluation results.

Screening: The inspectors determined the performance deficiency was minor. Using NRC Inspection Manual Chapter 0612, Appendices B and E, the inspectors determined the performance deficiency was minor because it did not impact the adequacy of the corrective actions completed to prevent recurrence of the associated conditions adverse to quality. The licensee documented this minor performance deficiency in IR 04294549.

Observation: Weaknesses in Causal Evaluation Performance and Review	71152B
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The inspectors reviewed three RCAs and eleven corrective action program evaluations (CAPEs) completed for issues identified during the inspection period. Although the inspectors determined the corrective actions for these issues were adequate and timely and the evaluations complied with applicable standards and regulations; they also identified an adverse trend in the execution and documentation of the evaluations, and in the quality of the management review of the evaluations.

Several of the causal evaluation reports did not include objective evidence and documentation that demonstrated how the licensee identified causal factors and determined the root, contributing, and/or apparent causes. Examples included: the RCA reports did not use or include the completed event and causal factor charts; the RCA reports did not discuss all potential casual factors for the event/issue and its consequences; some CAPE reports used TapRooT investigation techniques but did not discuss or include the event and causal factor chart normally used with this technique; one CAPE report used a support/refute matrix but did not include the matrix result; and one CAPE report used two analysis techniques that produced conflicting results but did not discuss the conflict.

The inspectors also reviewed licensee guidance for management review of completed RCAs and CAPEs. In accordance with site procedures, RCAs require a lead investigator review and RCAs and CAPEs both require responsible manager and management review committee review. The licensee's procedures did not provide specific direction on what was required to conduct or document these reviews, but the inspectors identified that corrective action program procedure, PI-AA-125-1001, did suggest that the lead investigator and responsible manager use Attachment 3, Investigation Report Quality Checklist, for a completed RCA review. The inspectors determined that many of the critical and important attributes identified in this checklist could have identified the inspector-identified causal evaluation weaknesses listed above.

EXIT MEETINGS AND DEBRIEFS

The inspectors verified no proprietary information was retained or documented in this report.

- On November 8, 2019, the inspectors presented the biennial problem identification and resolution inspection results to Jacob Smith, Director of Organizational Performance & Regulatory Assurance, and other members of the licensee staff.

DOCUMENTS REVIEWED

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71152B	Corrective Action Documents		2632602, 2636152, 2642479, 2644405, 2693413, 2707583, 2721584, 4000385, 4039165, 4042199, 4042695, 4044315, 4045023, 4047414, 4047695, 4048211, 4048236, 4049825, 4053168, 4053645, 4054403, 4054643, 4058419, 4059671, 4063778, 4064875, 4066096, 4068478, 4068672, 4069005, 4070712, 4070732, 4072614, 4074039, 4084199, 4087101, 4088149, 4101431, 4102575, 4105873, 4107962, 4108011, 4108041, 4108119, 4108876, 4109513, 4109966, 4111829, 4113555, 4113595, 4113596, 4113599, 4114316, 4115012, 4115386, 4118580, 4123918, 4126041, 4127164, 4127246, 4127435, 4127862, 4128096, 4128408, 4128978, 4137793, 4139331, 4150464, 4156632, 4158882, 4167233, 4170945, 4172814, 4177148, 4180603, 4183896, 4192991, 4193436, 4200530, 4200920, 4203193, 4208769, 4216814, 4220152, 4220609, 4220790, 4220795, 4221352, 4222236, 4222897, 4225770, 4227978, 4228454, 4229529, 4230917, 4230952, 4231083, 4236280, 4238136, 4247781, 4252613, 4254790, 4254792, 4255207, 4256218, 4265063, 4270719, 4274612	
		CAPE 4075301	EDG 2B Failed to maintain Combustion	
		CAPE 4111790	Oil Sheen was Observed on the Bay	
		CAPE 4120959	Unit 1 Main Turbine Linear Variable Differential Transformer (LVDT) mounting bracket broke off	
		CAPE 4130918	21A RCP Seal Leakage from Pressure Transmitter Line Flex Hose	
		CAPE 4153797	Ventilation was OOS	
		CAPE 4177689	Corporate Maintenance Elevation AD-AA-1110	
		CAPE 4182707	EDG Low Header Press	
		CAPE 4203915	OF1 U1 Steam Generators Entered AL1 For Sulfates	
		CAPE 4225806	2CV4260, Tested Above Admin Limit During 2019 RFO As-Found and As-Left Local Leak Rate Testing (LLRT)	
		CAPE 4227781	Misapplication of Technical Specification Following Failed Surveillance Resulted in Operation Prohibited by Technical	

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
			Specifications	
		CAPE 4253533	Loss of 2Y04 Inverter 24	
		RCA 4040215	Dry Storage Cask Uptake Event	
		RCA 4064538	Clearance and Tagging Event per OP-AA-106-101-1001	
		RCA 4107884	11A Reactor Coolant Pump Bay Uncontrolled Locked High Radiation Area (LHRA)	
	Corrective Action Documents Resulting from Inspection		4290430, 4290627, 4290909, 4291003, 4291081, 4291978, 4294549, 4294674, 4295344, 4295433, 4290824, 4295106, 4295425, 4295472	
	Engineering Changes	ECP_18-000194	Evaluate Mounting 1YXA2 Configuration Using a Different Plug 1C04BB	Rev. 0
	Miscellaneous		Maintenance Department PI MRM Summary 1Q19	
			UFSAR Chapters 9.5, 9.10	
			(a)(1) Determination Issue Report Number: 4261127	9/19/2019
	Procedures	CC-AA-309-101	Engineering Technical Evaluations	Rev.15
		EE-AA-200-1001	Equipment Classification	Rev. 4
		ER-AA-1200	Critical Component Failure Clock	Rev. 14
		ER-AA-700	Aging Management Implementation	Rev. 7
		FASTENER-01	Torqueing and Fastener Applications	400
		MA-AA-716-017	Station Rework Reduction Program	Rev.8
		PI-AA-120	Issue Identification Screening Process	Rev. 8
		PI-AA-125	Corrective Action Program	Rev. 6
		PI-AA-125-1003	Corrective Action Program Evaluation Manual	Rev. 5
		WC-AA-106	Work Screening and Processing	Rev. 18
	Self-Assessments	NOSA-CAL-17-07	Nuclear Fuels Audit Report	05/23/2017
		NOSA-CAL-17-08	Operations Functional Area Audit Report	10/11/2017
		NOSA-CAL-18-03	Emergency Preparedness Audit Report	05/02/2018
		NOSA-CAL-18-04	Chemistry, Radwaste, Effluent and Environmental Monitoring Audit Report	07/11/2018
		NOSA-CAL-18-05	Engineering Programs and Station Blackout Audit Report	04/26/2018
		NOSA-CAL-18-06	Fire Protection Audit Report	10/24/2018
		NOSA-CAL-18-07	Training and Staffing Audit Report	07/10/2018

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		NOSA-CAL-18-09	Inservice Inspection, Inservice Testing, and Appendix J Audit Report	09/19/2018
		NOSA-CAL-19-02	Security Programs Audit Report	02/13/2019
		NOSA-CAL-19-06	Radiation Protection Audit Report	08/21/2019
		NOSC-CAL-18-01	Maintenance Functional Area Audit Report, (4090531)	Jan-Feb 18
	Work Orders	C92759014	STP M-031-0 -1RV409, High Pressure Safety Injection Relief Valve Set Pressure Test	02/22/2016
		C93444081	STP O-073G-1, High Pressure Safety Injection Pump Large Flow Test	03/17/2018
		C93444358	STP-O-067C-1, Miscellaneous Check Valve Test (Safety injection)	03/17/2018
		C93610383	STP-O-067C-2, Miscellaneous Check Valve Test (Safety injection)	03/15/2019
		C93610579	STP O-073G-2, High Pressure Safety Injection Pump Large Flow Test	02/23/2019
		C93621898	Perform Alignment of 23 AFW Pump	11/7/2017
		C93622591	Sample Oil on 23 AFW Pump & Motor due to Misalignment	8/7/2017
		C93661271	BACC 23 HPSI pump has boric acid leakage	03/26/2018
		C93661290	NRC: 11 HPSI Pp inboard bearing has evidence of an oil leak	06/12/2018
		C93661293	OF1 - 21 HPSI motor oil levels are elevated	04/18/2018
		C93667437	BACC - Detectable Leak On 13 HPSI Pp Discharge Flange	06/12/2018
		C93668288	STP O-73A1-2, A Train Saltwater Pump and Check Valve Quarterly Operability Test	Rev.2, 7/5/19
		C93669912	STP O-73A2-2, B Train Saltwater Pump and Check Valve Quarterly Operability Test	Rev. 3, 7/18/19
		C93673157	Material defect discovered at EPL during failure analysis	07/06/2018
		C93677129	STP O-62-2 Monthly Valve Position Verification Unit 2	9/15/2019
		C93678804	STP O-73A1-2, A Train Saltwater Pump and Check Valve Quarterly Operability Test	Rev. 2, 10/3/19
C93680595	STP O-73A2-2, B Train Saltwater Pump and Check Valve Quarterly Operability Test	Rev. 3, 10/17/19		
C93699030	Space heaters are not passing current	03/14/2019		