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Calvert Cliffs Nuclear Power Plant; Unit Nos. 1 & 2
Renewed Facility Operating License Nos. DPR-53 and DPR-69
Docket Nos. 50-317 & 50-318

Subject: Response to NRC Integrated Inspection Report 05000317/2018001 and 05000318/2018001

Reference: 1. Letter from M. Catts (NRC) to B. C. Hanson (Exelon), Calvert Cliffs Nuclear Power Plant – Integrated Inspection Report 05000317/2018001 and 05000318/2018001, dated May 9, 2018

Exelon Generation Company (EGC) is respectfully contesting one Non-Cited Violation (NCV) contained in Reference 1. The NCV (NCV 05000317/2018001-01) cited a violation of Title 10 of the Code of Federal Regulations (10 CFR) 20.1501, "Surveys and Monitoring: General," due to a failure to perform adequate radiological surveys of the adjacent 11A reactor coolant pump (RCP) bay area following aggregation of in-core instrumentation wires (ICI wires) in one area of the flooded refueling cavity. The NCV concludes that EGC's failure to conduct radiological surveys in 11A RCP bay was a performance deficiency because EGC failed to meet a regulatory requirement that was reasonably within its ability to foresee and correct. Exelon maintains that it was not reasonable to expect high radiation levels in 11A RCP bay given the 4½ foot thickness of the concrete wall between the refuel pool (refueling cavity) and the 11A RCP bay. As such Exelon views that the NCV is unwarranted and should be rescinded.

NCV 05000317/2018001-01

Reference 1 documents a finding of very low safety significance (green) and associated violation of 10 CFR 20.1501 for failure to perform radiological surveys in 11A RCP bay. The NCV stated:

"...on February 23-24, 2018, Exelon did not make or cause to be made surveys that were necessary for the licensee to comply with the regulations in Part 20 and were reasonable under the circumstances to evaluate the magnitude and extent of radiation levels and, as a result, did not identify the presence of dose rates exceeding 1000 mrem/hr within an area being controlled as a High Radiation Area. Specifically, the licensee had been applying High Radiation Area access controls for the 11 pump bay, based on initial radiological surveys performed at the start of the outage and historical dose rates in the room from the adjacent refueling cavity, including the impact from the temporary placement of in-core directors in the adjacent cavity. However,

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the licensee did not perform subsequent surveys to evaluate the resulting radiation levels in the 11 pump bay after changing the storage location of the in-core detectors to an area approximately ten feet higher within the cavity than had been historically used. These surveys were reasonable due to the change in location of the detectors and were necessary to demonstrate compliance with 10 CFR 20.1601(c). As a result, the licensee did not identify the presence of an area requiring control as a Locked High Radiation Area in accordance with Exelon procedure RP-AA-460 section 3.4 until a worker's electronic dosimeter alarmed."

With this letter, EGC is contesting this NCV.

Basis for Contesting NCV 05000317/2018001-01

The Nuclear Regulatory Commission (NRC) issued an NCV to EGC for not performing surveys as required by 10 CFR 20.1501. 10 CFR 20.1501 states in part:

- (a) Each licensee shall make or cause to be made, surveys of areas, including the subsurface, that (1) May be necessary for the licensee to comply with the regulations in this part; and
- (2) Are reasonable under the circumstances to evaluate—
 - (i) The magnitude and extent of radiation levels; and
 - (ii) Concentrations or quantities of residual radioactivity; and
 - (iii) The potential radiological hazards of the radiation levels and residual radioactivity detected

As indicated in 10 CFR 20.1501(a)(2) surveys must be made when it is reasonable under the circumstances. It is EGC's contention that the design of the refuel pool and the procedural requirements governing its operation are such that it would not have been reasonable to survey the adjacent 11A RCP bay when the ICI wires were stored alongside the refuel pool concrete wall.

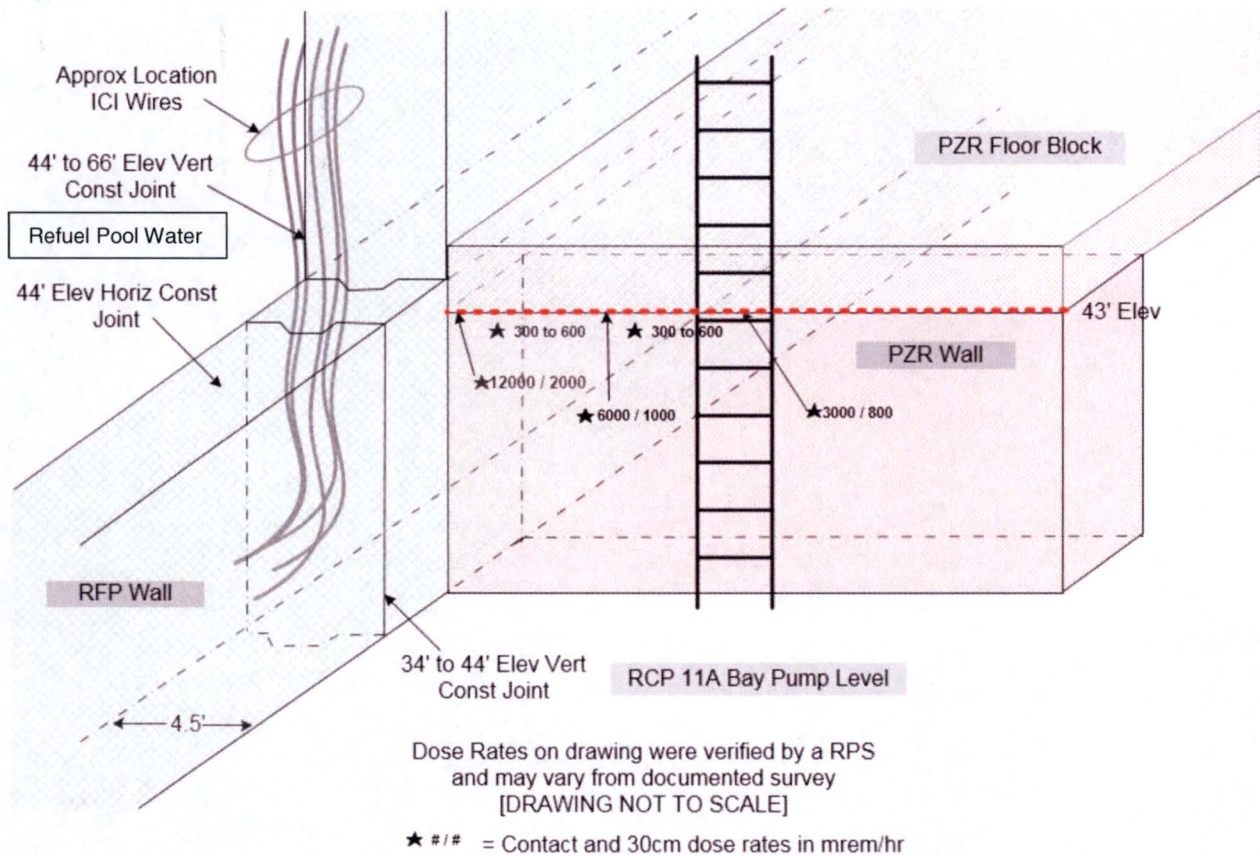
The refuel pool concrete wall separating the refuel pool and the adjoining 11A RCP bay is 4½ feet thick for the entire height of the refuel pool wall. The design of the refuel pool concrete wall is such that it can attenuate radiation levels during movement of irradiated fuel and other highly irradiated reactor components within the refuel pool to maintain acceptable general area dose rates in the areas adjacent to the refuel pool wall. This design feature of the refuel pool concrete wall was subsequently substantiated during the root cause investigation by three separate calculations, each using different methodologies, which all demonstrated the change in positioning of the ICI wires would not result in radiological dose rates in the 11A RCP bay that could exceed 0.8 mrem/hr. Given the robust design feature of the refuel pool concrete wall, EGC could not have foreseen the unexpected localized radiation streaming into 11A RCP bay and thus not requiring performance of a radiological survey during this evolution in this area was reasonable.

However, it was in fact reasonable that this evolution might directly impact radiation levels experienced above the waterline when the ICI wires were temporarily stored six feet higher than was done in previous refuel outages. It is EGC's contention that reasonable radiological protections were taken in accordance with the governing procedure, RV-68, In-Core Instrumentation Removal, for this evolution. All established radiological work package conditions to commence the evolution were met, a pre-job brief with emphasis on possible changing radiological conditions in the work area above the refuel pool was conducted, a portable radiation monitor and an AMS-4 air monitor were placed in the work area, and constant Radiation Protection (RP) technician coverage was assigned. All these steps were reasonable and

preventative actions taken to provide adequate protection for the health and safety of the workers. These actions, and the precautions in RV-68 were based on the acknowledgement that this evolution could potentially cause changing radiological conditions that would need constant radiological monitoring. The precautions were established based on past experiences in performing this task in previous outages. Surveys performed showed the highest general area dose rates were only 10 mrem/hr at knee level, indicating the ICI wire storage location had no significant impact on dose rates above the water's surface. This reinforces EGC's contention that EGC would not have reasonably foreseen a change in dose rates within 11A RCP bay. Therefore, the actions taken by EGC met the requirement in 10 CFR 20.1501 that the licensee make surveys that may be necessary for the licensee to comply with the regulations in Part 20 and that are reasonable under the circumstances.

Given the as built permanent design features of the concrete refuel pool wall, there was no EGC procedural requirement governing this evolution that would lead us to perform radiological surveys in the areas adjoining the refuel pool wall. The EGC procedure RP-AA-300-1005, Removing Items from the Spent Fuel Pool, Reactor Cavity, and Equipment Pit, that governs movement of highly irradiated equipment, contains a note identifying that movement of irradiated components past gates, nozzles, and penetrations can cause streaming and elevated dose rates. However, given that the area of the 11A RCP bay where the localized high radiation occurred contains none of these features, there was no reason for EGC to have foreseen the need to perform a radiological survey in this area.

The subsequent root cause investigation into this event determined the most probable cause for the unexpected increase in dose rates in 11A RCP bay was due to discovery of a previously unknown anomaly within the refuel pool concrete wall. This unforeseen anomaly resulted in localized radiation streaming within 11A RCP bay that was not eliminated until the ICI wires were relocated 14 feet below the waterline (i.e., approximately four feet below typical storage height). Discussions with engineers and workers associated with the work ongoing in the 11A RCP bay indicated there were no visible signs of concrete cracking or spalling but did identify there were vertical and horizontal construction joints that merge together in the general area of highest dose rates in 11A RCP bay. Thus, the most likely cause of the localized radiation streaming experienced in 11A RCP bay was a previously unknown anomaly that exists within the tongue and groove construction joint at that location. Below is an illustration of the area where the high, unforeseen, radiation levels occurred. This area does not contain any nozzles, penetrations, or gates that are potential sources where radiation streaming might reasonably be expected to occur.



Based on this circumstantial information that has not been taken into consideration, it is EGC's contention that it was not within EGC's ability to foresee the refuel pool wall's degraded condition and subsequent localized radiation streaming into the 11A RCP bay, and as such not reasonable to expect radiation surveys to be conducted in that area given the known thickness of the as-built design features of the refuel pool concrete wall. Exelon did, however, conduct appropriate radiological surveys in the areas that were reasonable under the circumstances to evaluate the magnitude and extent of radiation levels following the placement of the ICI wires.

Additionally, had EGC performed a general area survey in the 11A RCP bay after the ICI wires were stored along the refuel pool wall it would have been very unlikely to detect the localized radiation streaming. With the ICI wires being stored in this position, two separate work crews, one to remove the 11A RCP motor and one to install the 11A RCP motor, worked in 11A RCP bay without receiving dose rates more than their approved Radiation Work Permit (RWP) dose rate alarms. It was only when a third work crew went to reinstall a safety cage (previously removed as interference before ICI wires were stored along the refuel pool wall) on a permanent ladder within 11A RCP bay that a worker exceeded the allowed RWP dose rate alarm. The workers left the area and the RP technician commenced a very detailed survey. It took the RP technician approximately 45 minutes to locate the localized area of radiation streaming. This was a more extensive survey than what would be involved in an appropriate general area survey to find the area of increased radiation dose rate.

Although there are numerous external operating experiences where citations have been issued to licensees for failure to perform adequate surveys, none of these violations were such that any of these could have reasonably led EGC to identify the need to perform a survey in the areas

adjacent to the refuel pool concrete wall. Requiring performance of radiation surveys to verify that as built design features are maintained, given no credible evidence to suspect they have degraded, would set a costly new precedence resulting in licensees performing additional, unnecessary radiation surveys and as such applying this absolute criterion would increase radiation exposure; not in accordance with current ALARA practices.

Conclusion

The NRC issuance of an NCV of 10 CFR 20.1501 is not warranted in that EGC took adequate radiological protection actions that were reasonable under the known circumstances for the ICI wires storage evolution in accordance with 10 CFR 20.1501. Exelon could not have been reasonably expected to foresee that dose rates in 11A RCP bay would be impacted given the as-built design features of the 4½ foot thick refuel pool concrete wall. Only the existence of a previously unknown, undetectable anomaly in the concrete wall resulted in localized radiation streaming requiring the adjacent, affected area to become a locked high radiation area.

Furthermore, an affirmation of the violation based on such an absolute standard without proper consideration of the word "reasonable" is unwarranted. This violation results in a new precedence that will directly lead to the performance of unnecessary surveys causing exposure to unnecessary radiation dose for the RP technicians and is not compatible with ALARA principles.

Based on all these reasons EGC respectfully requests this NCV be rescinded.

There are no regulatory commitments contained in this letter.

Should you have any questions concerning this letter, please contact Mr. Larry D. Smith at 410 495-5219

Respectfully,



Mark D. Flaherty
Site Vice President

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June 7, 2018

Page 6

cc: NRC Project Manager, Calvert Cliffs
NRC Regional Administrator, Region I
NRC Resident Inspector, Calvert Cliffs
S. Gray, MD-DNR
Director, Office of Enforcement