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U. S. Nuclear Regulatory Commission
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Zion Nuclear Power Station, Units 1 and 2
Facility Operating License Nos. DPR-39 and DPR-48
NRC Docket Nos. 50-295 and 50-304

Subject: Additional Information Regarding a License Amendment Request to Eliminate the Requirement for Continuous Control Room Watch When Nuclear Fuel is Stored in the Spent Fuel Pool

Reference: Letter from R. M. Krich (Exelon Generation Company, LLC) to NRC, "Request for a License Amendment to Eliminate the Requirement for Continuous Control Room Watch When Nuclear Fuel is Stored in the Spent Fuel Pool," dated February 28, 2001

In the referenced letter, in accordance with 10 CFR 50.90, "Application for amendment of license or construction permit," we proposed a change to Appendix A, Technical Specifications (TS), of Facility Operating License Nos. DPR-39 and DPR-48 for Zion Nuclear Power Station, Units 1 and 2. The proposed change to TS Section 5.2.2, "Facility Staff," involves the elimination of the requirement for at least one person qualified to stand watch being present in the control room when nuclear fuel is stored in the spent fuel pool. The proposed change would optimize the efficiency of the shift crew for routine operations and enhance shift crew response to off normal conditions.

During a telephone conference call between representatives of the NRC and Exelon Generation Company, LLC on May 3, 2002, additional information was requested by the NRC regarding the proposed change to TS 5.2.2. Attachment A of this letter contains the requested information.

If you have any questions about this letter, please contact K. A. Ainger at (630) 657-2800.

Respectfully,

K. A. Ainger for

Keith R. Jury
Director – Licensing
Mid-west Regional Operating Group

Attachment

cc: Regional Administrator – NRC Region III
Office of Nuclear Facility Safety – Illinois Department of Nuclear Safety

Pool

ATTACHMENT A

Additional Information Regarding a License Amendment Request to Eliminate the Requirement for Continuous Control Room Watch When Nuclear Fuel is Stored in the Spent Fuel Pool

During a telephone conference call between representatives of the NRC and Exelon Generation Company, LLC (Exelon) on May 3, 2002, additional information was requested by the NRC regarding the proposed change to Technical Specification (TS) 5.2.2, "Facility Staff." Specifically, Exelon was requested to address certain "industry decommissioning commitments" (IDCs) and staff decommissioning assumptions (SDAs) from Tables 4.1-1 and 4.2-2, respectively, of NUREG-1738, "Technical Study of Spent Fuel Accident Risk at Decommissioning Nuclear Power Plants," for Zion Nuclear Power Station (ZNPS).

IDC No. 2: Procedures and training of personnel will be in place to ensure that onsite and offsite resources can be brought to bear during an event.

The ZNPS Defueled Station Emergency Plan (DSEP) requires that the site maintain an augmented Defueled Emergency Response Organization (DERO) that consists of an emergency director, radiation protection director, technical director, and communicator. All members of the DERO received initial training and receive requalification training annually per plan requirements. DSEP Section 8.2 discusses the training requirements for the DERO as well as onsite and offsite support personnel. DSEP Section 4.6 discusses the arrangements in place with local government agencies, including police, fire, and hospital, to provide support during emergency conditions. Organizational control of emergencies is discussed in DSEP Section 4.0. Emergency Plan Implementing Procedures (EPIPs) are in place to assure the provisions of the DSEP are met. The EPIPs are controlled documents that are submitted to the NRC in accordance with 10 CFR 50, Appendix E, Section V, when revised.

IDC No. 3: Procedures will be in place to establish communication between onsite and offsite organizations during severe weather and seismic events.

DSEP Emergency Action Level (EAL) HA3, "Natural OR Destructive Phenomena affecting the Spent Fuel Pool," is in place to address severe weather and seismic conditions. EPIP 1, "Emergency Director," and EPIP 6, "Communicator," provide direction for establishing communication with both onsite and offsite organizations.

IDC No. 5: [Spent fuel pool] SFP instrumentation will include readouts and alarms in the control room (or where personnel are stationed) for SFP temperature, water level, and area radiation levels.

SFP instrumentation in the control room includes SFP level low and high alarms, SFP temperature high alarm, and SFP area high radiation alarms. This instrumentation is discussed in Defueled Safety Analysis Report (DSAR) Sections 3.9.2.1.3, Spent Fuel Storage Radiation Shielding, and 3.9.2.1.5, Monitoring Fuel Storage.

As discussed in the referenced letter, monitoring SFP conditions will continue to be effective and timely without the control room being continuously manned. Shiftly surveillance of the SFP area is conducted to monitor pool parameters. Also, a plant pager system is in place that alerts onsite operations personnel when abnormal SFP conditions are present. The pager system

interfaces with the SFP Data Acquisition System (DAS) and provides the operator with remote monitoring capability of equipment and system status. A designated pager, worn by shift personnel, will alarm for 1) SFP high and low water level, 2) SFP high water temperature, 3) fuel building high radiation conditions, 4) SFP cooling tower pump trips, and 5) abnormal fuel building ventilation system operation. When an alarm is received, the operator can assess the condition by viewing a DAS display monitor located both in the control room and the fuel building. The pager system currently in use has been in place since the shut down of the plant in January 1998. No failures of the pager system have occurred during this timeframe. The automatic dialing interface that initiates a page to operations personnel when an alarm is received has been in operation for approximately 16 months. No failures of this system have occurred to date. Operations personnel were surveyed regarding knowledge of plant areas where the pagers would not function. They indicated that the pagers have proven to be reliable in all areas routinely traveled by operations personnel.

IDC No. 7: Procedures or administrative controls to reduce the likelihood of rapid draindown events will include (1) prohibitions on the use of pumps that lack adequate siphon protection or (2) controls for pump suction and discharge points. The functionality of anti-siphon devices will be periodically verified.

Permanently installed piping prohibits draining the SFP via siphoning below the 598' elevation. This elevation is eight feet above the top of the stored fuel as discussed in TS Section 4.2.2. There is an anti-siphon hole in the SFP pump return piping that is verified to be free of obstructions every 18 months in accordance with a periodic surveillance. No credit is taken for the anti-siphon hole regarding potential drain down to the 598' elevation. Proceduralized SFP evolutions involving the use of portable pumps and hoses are administratively controlled and are subject to an anti-siphon review in accordance with Zion Administrative Procedure (ZAP) 110-02, "Procedure Process Control." These procedures contain adequate siphon precautions.

IDC No. 9: Procedures will be in place to control SFP operations that have the potential to rapidly decrease SFP inventory. These administrative controls may require additional operations or management review, management physical presence for designated operations or administrative limitations such as restrictions on heavy load movements.

Procedures are in place to control SFP operations that have the potential to rapidly decrease SFP inventory. These administrative controls require operations or management review, management physical presence for designated operations, and administrative limitations on heavy load movements. For example, Fuel Handling Instruction (FHI) 22, "Fuel Building Overhead Crane Procedure/ Checklist," contains a prerequisite for a supervisor to be present when carrying loads over the SFP.

ATTACHMENT A

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SDA No. 2: Walk-downs of SFP systems will be performed at least once per shift by the operators. Procedures will be developed for and employed by the operators to provide guidance on the capability and availability of onsite and offsite inventory makeup sources and time available to initiate these sources for various loss of cooling or inventory events.

Walk-downs of the fuel building and recording critical parameters such as SFP level and temperature are performed every shift in accordance existing operating procedures. Abnormal Operating Procedure (AOP) 6.2, "SFP Uncontrolled Loss of Level," contains provisions for SFP makeup using both onsite and offsite sources. DSAR Chapter 5 discusses the limiting loss of inventory events and the time available for inventory makeup. Time to boil estimates are periodically updated based on SFP heat up data and are provided to operations personnel in a maintained SFP status document.

SDA No. 3: Control room instrumentation that monitors SFP temperature and water level will directly measure the parameters involved. Level instrumentation will provide alarms at levels associated with calling in offsite resources and with declaring a general emergency.

The control room SFP low level alarm is initiated from an in-pool displacement type level transmitter. The temperature alarm signal is received from an in-pool temperature probe. The SFP low level alarm annunciates at 614' 4" elevation which is two inches below the low end of the normal SFP range (i.e., 614' 6" – 615' 2"). The top of the fuel assemblies is approximately 590' elevation. Access to the SFP would not be restricted by radiological conditions until the SFP level decreased to approximately 594' elevation (see DSAR Chapter 5 discussion). Therefore, as described in the referenced letter, low level annunciation is received days prior to any required actions to restore SFP level based on recent pool heat up data. The highest level of emergency classification for a SFP level or temperature event is an Unusual Event. This EAL (MU1) is entered when the SFP temperature exceeds 150° F or the level drops below 613' elevation with no make-up capability.