

December 5, 2016

MEMORANDUM TO: Chairman Burns  
Commissioner Svinicki  
Commissioner Baran

FROM: Victor M. McCree */RA Michael R. Johnson Acting for/*  
Executive Director for Operations

SUBJECT: CYBER SECURITY REQUIREMENTS FOR  
DECOMMISSIONING NUCLEAR POWER PLANTS

The purpose of this memorandum is to inform the Commission of how the staff intends to apply Title 10 of the *Code of Federal Regulations* (10 CFR) 73.54, “Protection of digital computer and communication systems and networks,” to nuclear power reactor licensees who have transitioned from an operating status to a decommissioning status. This paper was prepared, in part, to address a license amendment request (LAR) from Dominion Energy Kewaunee, Inc. (DEK) to remove cyber security requirements from the Kewaunee Power Station Operating License.<sup>1</sup>

The current regulatory framework for cyber security in 10 CFR 73.54 sets forth programmatic requirements for licensees currently licensed to operate a nuclear power plant under 10 CFR Part 50. These licensees must ensure that digital computer and communication systems and networks are adequately protected against cyber attacks, up to and including the design basis threat, as described in 10 CFR 73.1, “Purpose and scope.” The cyber security rule further requires that these licensees, including current applicants for an operating license or combined license, submit their cyber security plans to the U.S. Nuclear Regulatory

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<sup>1</sup> October 15, 2015, “Request for Approval of the Kewaunee Power Station Security Plan” (Agencywide Document Access and Management System (ADAMS) Accession No: ML15294A072)

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Commission (NRC) for review and approval. All Part 50 power reactor licensees have submitted such plans to the NRC. In accordance with 10 CFR 50.54, “Conditions of licenses,” upon approval these plans become conditions in every nuclear power reactor operating license. For example, License Condition 2.D for Crystal River Unit 3 states, in part, that “[t]he licensee shall fully implement and maintain in effect all provisions of the Commission-approved cyber security plan (CSP), including changes made pursuant to the authority of 10 CFR 50.90 and 10 CFR 50.54(p).”<sup>2</sup>

The current regulatory language in 10 CFR 73.54 does not address the application of the cyber security rule to decommissioning nuclear power reactors that have filed certifications under 10 CFR 50.82, “Termination of license,” but still have fuel in the spent fuel pool (SFP). In 2013 licensees of the following four power reactor units submitted their 10 CFR 50.82(a)(1) certifications that they had permanently ceased operations and had removed all fuel from their reactor vessels: Duke Energy Florida, LLC (DEF) for Crystal River Unit 3 Nuclear Generation Plant; DEK for Kewaunee Power Station; and Southern California Edison for San Onofre Nuclear Generating Station, Units 2 and 3. Similarly, in December 2014, Entergy Nuclear Operations, Inc. shut down its Vermont Yankee Nuclear Power Station (VY). Subsequently, in January 2015, it certified pursuant to 10 CFR 50.82 that VY had permanently ceased operation and had removed all fuel from its reactor vessel. Furthermore, several other nuclear power reactor licensees have indicated their intent to permanently shut down their plants in the next few years.

The staff has received LARs related to cyber security requirements from two licensees currently undergoing decommissioning, both of which propose to keep their CSPs in place until their SFPs are empty. As noted above, on October 15, 2015, DEK submitted a LAR to remove cyber security requirements from its license, to be effective once “the remaining spent fuel in the spent fuel pool has been moved to the [independent spent fuel storage system] ISFSI.” The licensee justified this request in the supporting documentation, stating that the “requirements for [a] Cyber Security Plan does not apply per 73.54. Cyber Security applies to licensees currently licensed to operate a Nuclear Power Plant.”<sup>3</sup> On May 24, 2016, DEF submitted a similar LAR, seeking the deletion of the cyber security license condition from its Crystal River Unit 3 license. The transfer of spent fuel out of its SFP is now scheduled to be completed by late 2017 and DEF plans to submit written notification to the NRC when this transfer is complete.<sup>4</sup>

The NRC anticipates receiving similar LARs from other nuclear power reactor licensees that have entered into decommissioning. The Kewaunee LAR caused the staff to examine how the cyber security requirements in 10 CFR 73.54 apply to a nuclear power reactor undergoing decommissioning. In this regard, the staff looked at the terms of 10 CFR 73.54, the 2009

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<sup>2</sup> “Crystal River Unit 3 Nuclear Generating Plant License and Technical Specifications” p. 5d

<sup>3</sup> October 27, 2015, “Kewaunee - Security Plan Supporting Information: Security-Related Information Withhold Under 2.390, Revision 3.”, p. 1 (ADAMS Accession Nos: ML15302A415 and ML15302A403)

<sup>4</sup> May 24, 2016, LAR Enclosure 8 (ADAMS Accession No: ML16152A045).

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statement of considerations (SOC),<sup>5</sup> the treatment of nuclear power reactors already in a decommissioning status at the time 10 CFR 73.54 became effective in 2009 and subsequent staff positions pertaining to cyber security.

For the reasons set forth below, the staff has determined that once the NRC has docketed the certifications required by 10 CFR paragraphs 50.82(a)(1)(i) and (ii) and found in accordance with 10 CFR 50.82(a)(2) that the licensee is no longer authorized to operate the reactor or place or retain fuel in the reactor vessel, 10 CFR 73.54 no longer applies to that licensee. This determination is consistent with how reactors such as Zion and Yankee Rowe, both of which were in a decommissioning status at the time 10 CFR 73.54 became effective in 2009, were treated. For example, on December 2, 2010, Zion Solutions LLC requested “an exemption from the requirement of 73.55(a)(1) to create and maintain a Cyber Security Program and Plan.”<sup>6</sup> In its 2011 safety evaluation report responding to this request, the NRC staff stated that since the requirements in 10 CFR 73.55(a)(1) are limited to a licensee currently licensed to operate a reactor, the staff determined that the CSP requirement “is not applicable and the exemption as requested is not required.”<sup>7</sup>

The introductory wording of 10 CFR 73.54 states that the rule applies to “each licensee currently licensed to operate a nuclear power plant under Part 50 of this chapter....” In cases such as Zion Solutions and Yankee Rowe it was determined that (1) once a licensee has certified that fuel has been permanently removed from the reactor vessel, the licensee retains its Part 50 license but is no longer authorized to operate a nuclear power reactor; and (2) reactor licensees who had already filed the certifications required by 10 CFR paragraphs 50.82(a)(1)(i) and (ii) at the time 10 CFR 73.54 became effective were not currently licensed to operate a nuclear power reactor. Therefore, by its terms, 10 CFR 73.54 did not apply to these licensees, because they were no longer authorized to operate a nuclear power reactor. Accordingly, these licensees were not required to submit a CSP.

These prior determinations are consistent with positions developed to support the 1996 final rule establishing the 10 CFR 50.82(a) certification provisions. As stated in the July 1995 SOC for the proposed rule, the intent of these 10 CFR 50.82(a) provisions was to remove “the licensee’s authority to operate the reactor or to maintain or place fuel in the reactor,” and this non-operating status would thus provide a basis “to remove regulatory requirements that are no longer necessary to protect the public health and safety.”<sup>8</sup> Additionally, the conclusion that once a licensee files its 10 CFR 50.82 certifications, it possesses a Part 50 license but is no longer authorized to operate a nuclear power reactor supports the statutory restriction in Section 103.c of the Atomic Energy Act of 1954, as amended, that operating licenses issued by the Commission shall not exceed 40 years from the authorization to commence operation.

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<sup>5</sup> March 27, 2009, “74 FR 13925 – Power Reactor Security Requirements”

<sup>6</sup> December 2, 2010, “Response to Revised Power Reactor Security Rule and Request for Exemptions: Enclosure 1,” p. 3 (ADAMS Accession No.: ML103400569)

<sup>7</sup> November 10, 2011, “Safety Evaluation Report related to Zion Nuclear Power Station Units 1 and 2,” p. 3 (ADAMS Accession No.: ML112010337)

<sup>8</sup> July 20, 1995, “60 FR 37374 - Decommissioning of Nuclear Power Reactors,” p. 37378

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Kewaunee and Crystal River are now in a licensing position comparable to Zion and Yankee Rowe in 2009. Kewaunee and Crystal River have filed the required 10 CFR 50.82(a) certifications and are, therefore, no longer authorized to operate a nuclear power reactor. The staff has determined that it is appropriate to treat Kewaunee and Crystal River consistent with the manner in which Zion and Yankee Rowe were treated, with one modification. Zion and Yankee Rowe were not subject to 10 CFR 73.54 (because they were not in an operating status in 2009) and, therefore, did not have to submit a CSP for NRC approval. Therefore, their respective licenses did not contain a license condition requiring compliance with a CSP. Kewaunee and Crystal River were operating reactors when 10 CFR 73.54 became effective, and were, therefore, required to submit a CSP that upon NRC approval would be referenced in a license condition. Now that Kewaunee and Crystal River have filed their 10 CFR paragraphs 50.82(a)(1)(i) and (ii) certifications, and these certifications have been docketed by the NRC, both licensees have submitted LARs requesting the removal of their CSP license conditions.

For the reasons set forth above, the staff plans to approve the Kewaunee and Crystal River LARs to remove their respective CSP license conditions. The staff's position is that 10 CFR 73.54 does not apply after the licensee is no longer licensed to operate a nuclear power plant. Further, the spent fuel at both Kewaunee and Crystal River has been in the SFP for longer than 3 years, which is a sufficient cooling period to mitigate the risk of heat-up to clad ignition temperature within 10 hours. The LARs requesting the removal of cyber security requirements for Kewaunee and Crystal River are both contingent on the removal of spent fuel from the SFP.

Accordingly, the staff has determined that (1) there are no applicable design-basis events at these facilities that could result in an offsite radiological release exceeding the limits established by the U.S. Environmental Protection Agency's early phase protective action guidelines of 1 rem at the exclusion area boundary; and (2) sufficient time would exist to take prompt mitigative actions in response to a postulated zirconium fire accident scenario in the SPF. Furthermore, given the age of the spent fuel at Kewaunee and Crystal River, it cannot reasonably heat up to clad ignition temperature within 10 hours. The staff believes 10 hours is sufficient time for plant staff to reliably implement required mitigation strategies to prevent spent fuel heat-up damage. The staff's rationale is similar to the rationale used to justify a reduction of emergency preparedness requirements during decommissioning, as detailed in NUREG 1738<sup>9</sup> and documented in staff safety evaluations associated with decommissioning plant emergency preparedness exemption requests.

Staff recognizes that, unlike Kewaunee and Crystal River, other reactor licensees who have submitted their 10 CFR 50.82(a)(1) certifications may have fresh fuel in the SFP that has not undergone a sufficient cooling period to mitigate the risk of heat-up to clad ignition temperature within 10 hours. Notwithstanding the determination above that 10 CFR 73.54 does not apply to licensees who have submitted their 10 CFR 50.82(a)(1) certifications, any such licensee is still subject to its CSP license condition until it is removed from the license pursuant to a

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<sup>9</sup> February 2001, "NUREG-1738 - Technical Study of Spent Fuel Pool Accident Risk at Decommissioning Nuclear Power Plants" (ADAMS Accession No.: ML010430066)

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10 CFR 50.90 amendment request. Accordingly, licensees that are decommissioning, but still have fresh fuel in their SFPs, will remain subject to their CSP license conditions, and the staff plans to evaluate any LARs requesting the removal of these license conditions on a case-by-case basis.

The staff is considering whether to develop cyber security requirements for decommissioning power reactors in the upcoming rulemaking: “Regulatory Improvements for Reactors Transitioning to Decommissioning” (NRC Docket ID: NRC-2015-0070). The staff solicited input on whether there should be reduced cyber security requirements for decommissioning power reactors in the associated advance notice of proposed rulemaking, published on November 19, 2015, and is planning to address this subject in the draft regulatory basis.

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**ADAMS Accession No. ML16172A284**

**\*via email**

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