



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

June 27, 2018

Mr. Corey Daniels
Director, Nuclear Decommissioning
Entergy Nuclear Operations, Inc.
Vermont Yankee Nuclear Power Station
320 Governor Hunt Rd
Vernon, VT 05354

SUBJECT: VERMONT YANKEE NUCLEAR POWER STATION - ISSUANCE OF LICENSE
AMENDMENT FOR REMOVAL OF CYBER SECURITY PLAN REQUIREMENTS

Dear Mr. Daniels:

The U.S. Nuclear Regulatory Commission (NRC) has issued the enclosed Amendment No. 268 to Renewed Facility Operating License No. DPR-28 for the Vermont Yankee Nuclear Power Station (VY). The amendment removes the Cyber Security Plan (CSP) requirements contained in license condition 3.G "Security Plan," from the VY Renewed Facility Operating License in response to your application dated July 13, 2017 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML17198A020). The Notice of Application for Amendment was published in the *Federal Register* on September 26, 2017 (82 FR 44852).

As discussed in the enclosed safety evaluation, the NRC staff has reviewed the proposed changes and concluded that the licensee's request to remove the requirement for a cyber security plan from the facility operating licenses is acceptable. The basis for our conclusion is contained in the attached safety evaluation.

Pursuant to Paragraph (c)(12) of Title 10 of the *Code of Federal Regulations* (10 CFR) 51.22, "Criterion for categorical exclusion; identification of licensing and regulatory actions eligible for categorical exclusion or otherwise not requiring environmental review," the Commission has determined that the issuance of this amendment is categorically excluded, and pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared. Approval of this amendment is based on modifications to systems used for security and/or materials accountability that relates solely to safeguards matters and does not involve any significant construction impacts.

The NRC staff has determined that the attached safety evaluation does not contain Sensitive Security-Related Information (SUNSI) pursuant to 10 CFR 2.390, "Public inspections, exemptions, requests for withholding." In accordance with 10 CFR 2.390 of the NRC's "Agency Rules of Practice and Procedure," a copy of this letter will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records component of ADAMS. ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>.

C. Daniels

- 2 -

A copy of the related safety evaluation is provided in Enclosure 2. The Notice of Issuance will be included in the Commission's next biweekly *Federal Register* notice. If you have any questions, please contact me at 301-415-6634, or via e-mail at Jack.Parrott@nrc.gov.

Sincerely,

/RA/

Jack D. Parrott, Senior Project Manager
Reactor Decommissioning Branch
Division of Decommissioning, Uranium Recovery
and Waste Programs
Office of Nuclear Material Safety
and Safeguards

Docket No. 50-271

Enclosures

1. Amendment No. 268 to DPR-28
2. Safety Evaluation

cc w/encls: Distribution via Listserv

C. Daniels

SUBJECT: VERMONT YANKEE NUCLEAR POWER STATION - ISSUANCE OF LICENSE AMENDMENT FOR REMOVAL OF CYBER SECURITY PLAN REQUIREMENTS (EPID NO. L-2017-SPR-0005), **DATE** June 27, 2018

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

ENERGY NUCLEAR OPERATIONS, INC.

DOCKET NO. 50-271

VERMONT YANKEE NUCLEAR POWER STATION

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 268
License No. DPR-28

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for license amendment filed by Entergy Nuclear Operations, Inc. (ENO or the licensee), dated July 13, 2017, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's regulations set forth in Title 10 of the *Code of Federal Regulations* (10 CFR) Chapter I, and all required notifications to other agencies or bodies have been duly made;
 - B. The facility will operate in conformity with the application, as supplemented, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations set forth in 10 CFR Chapter I;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51, "Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions," of the Commission's regulations, and all applicable requirements have been satisfied.

2. Accordingly, Renewed Facility Operating License No. DPR-28 is amended by removing requirements for a cyber security plan by changing Section 3.G to remove the second paragraph that reads:

Entergy Nuclear Operations, Inc. 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). Entergy Nuclear Operations, Inc. CSP was approved by License Amendment No. 247, as supplemented by changes approved by License Amendment Nos. 251, 259, 265 and 266.

3. This license amendment is effective as of the date the licensee notifies the NRC in writing that all spent nuclear fuel assemblies have been transferred out of the spent fuel pool and have been placed in dry storage within the independent spent fuel storage installation, and shall be implemented within 60 days of the effective date.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

Bruce A. Watson, CHP, Chief
Reactor Decommissioning Branch
Division of Decommissioning, Uranium Recovery
and Waste Programs
Office of Nuclear Material Safety
and Safeguards

Attachment:
Change to Renewed Facility
Operating License No. DPR-28

Date of Issuance: June 27, 2018

ATTACHMENT TO LICENSE AMENDMENT NO. 268

CHANGE TO RENEWED FACILITY OPERATING LICENSE NO. DPR-28

DOCKET NO. 50-271

Replace the following pages of Renewed Facility Operating License No. DPR-28 with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the area of change.

Renewed Facility Operating License No DPR-28

REMOVE

- 3 -
- 6 -

INSERT

- 3 -
- 6 -

- D. Entergy Nuclear Operations, Inc., pursuant to the Act and 10 CFR Parts 30, 40 and 70, to receive, possess, and use in amounts as required any byproduct, source, or special nuclear material without restriction to chemical or physical form, for sample analysis or instrument calibration or associated with radioactive apparatus or components.
 - E. Entergy Nuclear Operations, Inc., pursuant to the Act and 10 CFR Parts 30 and 70, to possess, but not to separate, such byproduct and special nuclear material as may be produced by operation of the facility.
3. This renewed license shall be deemed to contain and is subject to the conditions specified in the following Commission regulations: 10 CFR Part 20, Section 30.34 of 10 CFR Part 30, Section 40.41 of 10 CFR Part 40, Section 50.54 and 50.59 of 10 CFR Part 50, and Section 70.32 of 10 CFR Part 70; and is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified below:
- A. This paragraph deleted by Amendment No. 263.
 - B. Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 268, are hereby incorporated in the license. Entergy Nuclear Operations, Inc. shall operate the facility in accordance with the Technical Specifications.
 - C. Reports

Entergy Nuclear Operations, Inc. shall make reports in accordance with the requirements of the Technical Specifications.
 - D. This paragraph deleted by Amendment No. 226.
 - E. Environmental Conditions

Pursuant to the Initial Decision of the presiding Atomic Safety and Licensing Board issued February 27, 1973, the following conditions for the protection of the environment are incorporated herein:
 - 1. This paragraph deleted by Amendment No. 206, October 22, 2001.
 - 2. This paragraph deleted by Amendment 131, 10/07/91.

G. Security Plan

Entergy Nuclear Operations, Inc. shall fully implement and maintain in effect all provisions of the Commission-approved physical security, training and qualification, and safeguards contingency plans including amendments made pursuant to provisions of the Miscellaneous Amendments and Search Requirements revisions to 10 CFR 73.55 (51 FR 27817 and 27822), and the authority of 10 CFR 50.90 and 10 CFR 50.54(p). The combined set of plans¹, which contain Safeguards Information protected under 10 CFR 73.21, is entitled: "Vermont Yankee Nuclear Power Station Security Plan, Training and Qualification Plan, and Safeguards Contingency Plan, Revision 0," submitted by letter dated October 18, 2004, as supplemented by letter dated May 16, 2006.

H. This paragraph deleted by Amendment No. 107, 8/25/88.

I. This paragraph deleted by Amendment No. 131, 10/7/91.

J. License Transfer Conditions

On the closing date of the transfer of Vermont Yankee Nuclear Power Station (Vermont Yankee), Entergy Nuclear Vermont Yankee, LLC shall obtain from Vermont Yankee Nuclear Power Corporation all of the accumulated decommissioning trust funds for the facility, and ensure the deposit of such funds into a decommissioning trust for Vermont Yankee established by Entergy Nuclear Vermont Yankee, LLC. If the amount of such funds does not meet or exceed the minimum amount required for the facility pursuant to 10 CFR 50.75, Entergy Nuclear Vermont Yankee, LLC shall at such time deposit additional funds into the trust and/or obtain a parent company guarantee (to be updated annually) and/or obtain a surety pursuant to 10 CFR 50.75(e)(1)(iii) in a form acceptable to the NRC and in an amount or amounts which, when combined with the decommissioning trust funds for the facility that have been obtained and deposited as required above, equals or

¹ The Training and Qualification Plan and Safeguards Contingency Plan are Appendices to the Security Plan.



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

SAFETY EVALUATION FOR AMENDMENT NO. 268
TO RENEWED FACILITY LICENSE NO. DPR-28
FOR REMOVAL OF CYBER SECURITY PLAN LICENSE CONDITION
ENTERGY NUCLEAR OPERATIONS, INC.
VERMONT YANKEE NUCLEAR POWER STATION
DOCKET NO. 50-271

1.0 INTRODUCTION

By letter dated September 23, 2013 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML13273A204) Entergy Nuclear Operations, Inc. (ENO, the licensee) informed the U.S. Nuclear Regulatory Commission (NRC), of its intention to permanently cease power operations at Vermont Yankee Nuclear Power Station (VY), pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) 50.82(a)(1)(i). By letter dated January 12, 2015 (ADAMS Accession No. ML15013A426), the licensee certified to the NRC that as of December 29, 2014, operations had ceased at VY. The licensee also certified, pursuant to 10 CFR 50.82(a)(1)(ii), that all fuel had been removed from the reactor vessel.

By letter dated July 13, 2017 (ADAMS Accession No. ML17198A020), ENO requested a change to renewed Facility Operating License No. DPR-28 for VY, pursuant to 10 CFR 50.90. The proposed change would remove reference to the cyber security plan (CSP) and update the associated license condition 3.G (hereafter, the "cyber security license condition") in the renewed facility license. This will allow ENO to terminate the VY CSP and associated activities at the site. According to the licensee, the proposed change is based on the lowered risk profile of VY, a nuclear power reactor that has permanently ceased operations and has removed all fuel from the reactor vessel. This request from ENO considers that for a decommissioning facility with a permanently defueled reactor the spectrum of possible accidents is significantly reduced and the risk of an offsite radiological release is significantly lower.

The NRC staff previously reviewed and approved the licensee's CSP implementation schedule by License Amendment No. 247 dated July 20, 2011 (ADAMS Accession No. ML111801094), to renewed Facility Operating License No. DPR-28 concurrent with the incorporation of the CSP into the facility's current licensing basis. The NRC staff then reviewed and approved the licensee's request to initially extend the CSP Milestone 8 implementation date to June 30, 2016 by letter dated November 12, 2014, with License Amendment No. 259 (ADAMS Accession No. ML14206A710). The NRC staff later reviewed and approved License Amendment No. 265 dated March 14, 2016 (ADAMS Accession No. ML16014A169), to fully implement the CSP

implementation schedule by December 15, 2017. Additionally, the NRC issued License Amendment No. 266, dated December 15, 2017 (ADAMS Accession No. ML17333A770), to extend the full implementation date of the VY CSP Implementation Schedule Milestone 8 from December 15, 2017, to July 31, 2019.

2.0 REGULATORY EVALUATION

The NRC staff considered the following regulatory requirements and guidance during its review of the July 13, 2017, application to eliminate the existing cyber security license condition:

- 10 CFR 73.54, "Protection of digital computer and communication systems and networks," which requires that, as of November 23, 2009, each licensee, currently licensed to operate a nuclear power plant under 10 CFR Part 50, submit a CSP for Commission review and approval.
- SECY-12-0088, "The Nuclear Regulatory Commission Cyber Security Roadmap," dated June 25, 2012 (ADAMS Accession No. ML12135A050), which states, in part, that

By regulation, dry cask storage in ISFSIs [independent spent fuel storage installations] allows spent fuel that has already been cooled in the spent fuel pool for 1 year to be surrounded by inert gas inside a storage cask. Licensees that are subject to 10 CFR 72.212, 'Conditions of General License Issued Under § 72.210,' (i.e., licenses limited to storage of spent fuel in casks) must also comply with specific portions of 10 CFR 73.55, ['Requirements for Physical Protection of Licensed Activities in Nuclear Power Reactors against Radiological Sabotage'] requirements for physical security and the ASM [additional security measure] Orders, but are not subject to the provisions of 10 CFR 73.54, which specifically applies to operating reactors and COL (combined operating license) applicants.

- MEMORANDUM, dated December 5, 2016, the subject of which is "Cyber Security Requirements for Decommissioning Nuclear Power Plants," (ADAMS Accession No. ML16172A284). The Memorandum was prepared to inform the Commission how the staff intends to apply the 10 CFR 73.54 requirements to nuclear power reactor licensees who have transitioned from an operating status to a decommissioning status.

3.0 TECHNICAL EVALUATION

3.1 Licensee's Requested Change

In its request, dated July 13, 2017, the licensee requested the removal of the existing cyber security license condition from the VY renewed facility license. In that request, the licensee stated that, following permanent shutdown of VY and removal of spent fuel from the reactor, the spectrum of possible accidents are significantly reduced and the risk of an offsite radiological release is significantly lower for a permanently defueled reactor. The licensee asserted that the only design-basis accident that could potentially result in an offsite radiological release at VY is a fuel handling accident (FHA) which is predicated on spent fuel being stored in the spent fuel pool (SFP). Spent fuel at VY is stored in the SFP and in the ISFSI. The licensee asserts in this

configuration, the spectrum of possible accident transients and accidents is significantly reduced compared to an operating nuclear power reactor.

Analysis performed by ENO showed that 17 days after shutdown, which was on December 29, 2014, the radiological consequence of an FHA would not exceed the limits established by the U.S. Environmental Protection Agency (EPA) early-phase protective action guides (PAGs) of 1 man-rem at the exclusion area boundary. The licensee noted that the spent fuel in the SFP has decayed to a point where a fire in the zirconium fuel cladding following a postulated beyond-design-basis event involving the loss of SFP water inventory is unlikely. This is based on analysis showing that after sufficient cooling time following cessation of reactor operations, there is little chance that the spent fuel in the SFP could heat-up to clad ignition temperature within 10 hours, which is sufficient time for mitigation strategies to prevent spent fuel heat-up damage.

The licensee further noted that this rationale is similar to the rationale used to justify a reduction of emergency preparedness requirements during decommissioning, as detailed in NUREG-1738, "Technical Study of Spent Fuel Pool Accident Risk at Decommissioning Nuclear Power Plants," February 2001 (ADAMS Accession No. ML010430066), and documented in safety evaluations associated with decommissioning plant emergency preparedness exemption requests. The licensee previously submitted an analysis to the NRC of the adiabatic heatup of spent fuel scenario in support of requested exemptions from specific requirements of 10 CFR 50.47 and Appendix C to 10 CFR Part 50 for certain emergency planning requirements as appropriate for a decommissioning facility. The analysis was reviewed and approved by the NRC staff with an effective date of April 15, 2016 (ADAMS Accession No. ML15180A054). The conclusion that resulted from the analysis was that due to the length of time it would take for the adiabatic heat-up to occur, there is ample time to respond to any partial drain down event that might cause such an occurrence by restoring cooling or makeup, or providing spray. As a result, the likelihood that such a scenario would progress to a zirconium fire is not deemed credible.

The licensee also asserted that there is a reduced cyber security risk due, in part, to the fact there are fewer critical digital assets at a decommissioning facility in comparison to the number of critical digital assets at an operating reactor. The licensee stated that following permanent cessation of reactor operations and removal of fuel from the reactor vessel, the digital computers and communication systems and networks that require cyber protection are primarily those associated with security and emergency preparedness functions, and those safety systems that support operation of the SFP. Once the spent fuel has sufficiently decayed, the potential consequences of a cyber-attack are significantly reduced.

3.2 NRC Staff Evaluation of Requested Change

The NRC staff evaluated the licensee's application using the regulatory requirements and guidance cited in section 2.0 of this safety evaluation. The Cyber Security Rule, as contained in 10 CFR 73.54, applies to licensees currently licensed to operate a nuclear power plant. However, the NRC staff has determined that 10 CFR 73.54 does not apply to reactor licensees that have submitted certifications of permanent cessation of operations and permanent removal of fuel under 10 CFR 50.82(a)(1) or 10 CFR 52.110(a)(1), and whose certifications have been docketed by the NRC. Once the NRC has docketed these certifications, the licensee is no longer authorized to operate a nuclear power plant, and the requirements of 10 CFR 73.54 no longer apply. ENO certified to the NRC, pursuant to 10 CFR 50.82(a)(1)(i), that as of December 29, 2014, operations had ceased at VY. The licensee also certified, pursuant to

10 CFR 50.82(a)(1)(ii), that all fuel had been removed from the reactor vessel. Therefore, pursuant to 10 CFR 50.82(a)(2), VY's 10 CFR Part 50 license does not authorize operation of the VY reactor or emplacement or retention of fuel into the reactor vessel, and the NRC staff has determined that the Cyber Security Rule at 10 CFR 73.54 no longer applies to VY.

The licensee further determined that the fuel has cooled in the SFP for a sufficient amount of time such that no design-basis accident could have radiological consequences that exceed the EPA PAGs. The licensee completed site-specific analyses supporting the conclusion that a zirconium fire would be highly unlikely in the event of a beyond-design-basis drain down scenario. The NRC staff verified the licensee's analyses and its calculations, and concluded that, because all spent fuel was removed from the reactor prior to December 29, 2014, the spent fuel has decayed well beyond the minimum cooling time of 15.4 months that would allow sufficient time (10 hours) to mitigate a SFP drain down in the adiabatic case. Therefore, even if a cyber-attack were to result in the draining of the SFP, the consequences of such an attack are much lower now than while the plant was operating or when the fuel in the SFP was not as cool. The NRC staff's previous reviews and approvals of the licensee's associated analyses and the results are included in a letter to the licensee dated March 14, 2014 (ADAMS Accession No. ML14080A141), and December 10, 2015 (ADAMS Accession No. ML15180A054).

Based on its review of the licensee's submissions, the NRC staff concludes that ENO's request to remove the existing cyber security license condition from the VY renewed facility license No. DPR-28 is acceptable and consistent with maintaining adequate protection of the public health and safety and the common defense and security.

3.3 Revisions to License Conditions Paragraph 3.G

By letter dated July 13, 2017, ENO proposed to modify paragraph 3.G of renewed facility license No. DPR-28 to remove the license condition requiring ENO to fully implement and maintain in effect all provisions of the NRC-approved CSP.

The license condition in paragraph 3.G of renewed facility license No. DPR-28, for VY is modified to delete the following statement:

Entergy Nuclear Operations, Inc. shall fully implement and maintain in effect all provisions of the Commission-approved CSP, including changes made pursuant to the authority of 10 CFR 50.90 and 10 CFR 50.54(p). Energy Nuclear Operations, Inc CSP was approved by License Amendment No. 247, as supplemented by changes approved by License Amendment Nos. 251, 259, 265 and 266.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, on April 25, 2018, the Vermont State Liaison Officer to the NRC, June Tierney, Commissioner, Vermont Department of Public Service (VT PSD) was notified by letter (ADAMS Accession No. ML18127A558) of the proposed issuance of the amendment to remove the cyber security license condition requiring VY to have a cyber security plan. The State Liaison Officer responded by letter dated May 3, 2018 (ADAMS Accession No. ML18131A194). The VT PSD official found no technical reason to require VY to continue to have a cyber security plan, but commented that this conclusion was based on assumptions that the spent nuclear fuel at VY would continue to have certain physical inspections and physical security protections.

The NRC agrees with the conclusion, but disagrees with the basis for the conclusion because, while the spent nuclear fuel at VY will continue to be subject to NRC's safety and security requirements including physical inspections and security protections, the rationale for allowing the removal of the cyber security protections at VY is that the reactor is shut down and the spent nuclear fuel has sufficiently radiologically decayed and cooled so as to significantly reduce the potential consequences of a cyber-attack.

5.0 ENVIRONMENTAL CONSIDERATION

This amendment relates solely to safeguards matters and does not involve any significant construction impacts, and relates to modifications to systems used for security and/or materials accountability. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration, and there has been no public comment on such finding, which was published in the *Federal Register* on August 15, 2017 (82 FR 38718). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(12). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

6.0 CONCLUSION

The NRC staff has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner; (2) there is reasonable assurance that such activities will be conducted in compliance with the Commission's regulations; and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: S. Coker, NSIR/DPCP/CSB

Date: June 27, 2018