



[7590-01-P]

**NUCLEAR REGULATORY COMMISSION**

**[Docket No. 50-271; NRC-2017-0085]**

**Vermont Yankee Nuclear Power Station Vernon, Vermont and US Ecology Idaho Resource Conservation and Recovery Act Subtitle C Hazardous and Low-Activity Radioactive Waste Treatment and Disposal Facility**

**AGENCY:** Nuclear Regulatory Commission.

**ACTION:** Environmental assessment and finding of no significant impact; issuance.

**SUMMARY:** The U.S. Nuclear Regulatory Commission (NRC) is considering issuing an approval to Entergy Nuclear Operations, Inc. (ENO, or the licensee) for alternate disposal of low-activity radioactive waste water containing byproduct material from the Vermont Yankee Nuclear Power Station (VY). Additionally, the NRC is considering the related action of approving an exemption to US Ecology Idaho (USEI) from the licensing requirements of section 30.3 of title 10 of the *Code of Federal Regulations* (10 CFR), to allow USEI to receive and possess the byproduct radioactive materials from VY without an NRC license. The NRC staff is issuing an environmental assessment (EA) and finding of no significant impact (FONSI) associated with the proposed approvals.

**DATES:** The EA is available on **[INSERT DATE OF PUBLICATION IN THE *FEDERAL REGISTER*]**.

**ADDRESSES:** Please refer to Docket ID **NRC-2017-0085** when contacting the NRC about the availability of information regarding this document. You may obtain publicly-available information

related to this document using any of the following methods:

- **Federal Rulemaking Web Site:** Go to <http://www.regulations.gov> and search for Docket ID **NRC-2017-0085**. Address questions about NRC dockets to Carol Gallagher; telephone: 301-415-3463; e-mail: [Carol.Gallagher@nrc.gov](mailto:Carol.Gallagher@nrc.gov). For technical questions, contact the individual listed in the FOR FURTHER INFORMATION CONTACT section of this document.

- **NRC's Agencywide Documents Access and Management System (ADAMS):** You may obtain publicly-available documents online in the ADAMS Public Documents collection at <http://www.nrc.gov/reading-rm/adams.html>. To begin the search, select "ADAMS Public Documents" and then select "Begin Web-based ADAMS Search." For problems with ADAMS, please contact the NRC's Public Document Room (PDR) reference staff at 1-800-397-4209, 301-415-4737, or by e-mail to [pdr.resource@nrc.gov](mailto:pdr.resource@nrc.gov). For the convenience of the reader, the ADAMS Accession numbers are provided in a table in the Availability of Documents section of this document.

- **NRC's PDR:** You may examine and purchase copies of public documents at the NRC's PDR, Room O1-F21, One White Flint North, 11555 Rockville Pike, Rockville, Maryland 20852.

**FOR FURTHER INFORMATION CONTACT:** Jack D. Parrott, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, DC 20555-00001; telephone: 301-415-6634, e-mail: [Jack.Parrott@nrc.gov](mailto:Jack.Parrott@nrc.gov).

**SUPPLEMENTARY INFORMATION:**

**I. Introduction**

The NRC is considering a request dated January 14, 2016, ADAMS Accession No. ML16029A071, as supplemented by letter dated June 28, 2016 (ADAMS Accession No. ML16182A035), and e-mail dated August 11, 2016 (ADAMS Accession No. ML16231A028) by ENO for alternate disposal of approximately 757,082 l (200,000 gal) of low-activity radioactive waste water containing byproduct material from VY to the USEI Resource Conservation and Recovery Act (RCRA) Subtitle C hazardous and low-activity radioactive waste treatment and disposal facility located near Grand View, Idaho. Additionally, USEI requested, by letter dated January 14, 2016 (ADAMS Accession No. ML16021A173), an exemption from the licensing requirements of 10 CFR 30.3 to allow USEI to receive and possess the byproduct radioactive materials from VY without an NRC license. These requests were made under the alternate disposal provision contained in 10 CFR 20.2002 and the exemption provisions in 10 CFR 30.11. This EA has been developed in accordance with the requirements of 10 CFR 51.30.

## **II. Environmental Assessment**

### *Description of Proposed Action*

The proposed action consists of NRC approval of ENO's alternate disposal request under 10 CFR 20.2002 and USEI's exemption request under 10 CFR 30.11. The proposed action arises from the licensee's shutdown of its VY power reactor facility on December 29, 2014. By January 12, 2015, ENO certified that VY had permanently ceased power operations and that all fuel had been permanently removed from the reactor vessel and placed in the spent fuel pool, thus beginning the decommissioning phase for VY (ADAMS Accession No. ML15013A426).

In its January 14, 2016 letter, ENO requested approval for the alternative waste disposal of certain low-activity radioactive waste water containing byproduct material (waste water) resulting from activities associated with preparing for long-term dormancy of VY as part of the

decommissioning process. The ENO's January 14, 2016 letter transmitted its application for alternative waste disposal, which was submitted in accordance with 10 CFR 20.2002. The ENO's application described the transport and the disposal of the waste water at the USEI facility.

In its January 14, 2016 letter, USEI also requested an exemption from the licensing requirements of 10 CFR 30.3, pursuant to 10 CFR 30.11, for the USEI facility in Grand View, Idaho, to allow for the disposal of the ENO waste water. Because the USEI facility is not licensed by the NRC, this proposed action would require the NRC to exempt USEI from the Atomic Energy Act of 1954, as amended (AEA) and NRC licensing requirements in 10 CFR Part 30 with respect to the low-activity material authorized for disposal.

The USEI facility is a RCRA Subtitle C hazardous waste disposal facility permitted by the State of Idaho. The USEI site has both natural and engineered features that limit the release of any stored radioactive material into the environment. The natural features include a low annual precipitation rate of 18.4 cm (7.4 in)/year, and a long average vertical distance to groundwater below the disposal zone of 61 m (203 ft). The engineered features include the cover, the liners, and the leachate monitoring systems. The waste water would be transported by truck from the VY facility in Vernon, Vermont to the USEI facility in 40 shipments of 18,927 liters (5,000 gal) each.

The subject waste consists of approximately 757,082 liters (200,000 gal) of water associated with the decommissioning of VY and preparing the VY facility for long-term dormancy. Since the cessation of plant operations, plant process water has been drained from systems creating a surplus of water. The waste water to be disposed of is currently stored in the former VY suppression chamber (Torus). The Torus has a capacity of 41,639,953 liters (1,100,000 gal) and, as of January 14, 2016, was filled to approximately 96% of capacity. The water in the Torus is continuously circulated and filtered/demineralized to minimize suspended solids. For

disposal, the waste water will be pumped from the Torus, from an upper elevation in the Torus that minimizes entrainment of bottom sediment, through the former high pressure coolant injection suction strainers located inside the Torus. The waste water being considered under this request will include fission and activation products resulting from VY operations. The radionuclide concentrations, which are described in ENO's January 14, 2016 submittal and its June 28, 2016 supplemental information, are expected to be low and to remain low through the shipment campaign.

#### *Need for Proposed Action*

The need for the proposed action is to authorize an appropriate method of disposal for surplus waste water containing radioactive material currently stored at the shutdown VY power reactor in Vernon, VT. The waste water was generated as a result of the subsequent draining of plant process water from the various plant systems following cessation of plant operations. The VY waste water storage system, the Torus, is at approximately 96% of its capacity. The USEI facility in Grand View, Idaho has the capability to receive and process the waste water. Upon receipt at USEI, the waste water will be solidified with clay and disposed as a soil-like waste.

#### *Environmental Impacts of the Proposed Action*

The NRC staff has reviewed the evaluation performed by the licensee to demonstrate compliance with the 10 CFR 20.2002 alternate disposal criteria. Under these criteria, a licensee may seek NRC authorization to dispose of licensed material using procedures not otherwise authorized by NRC regulations. The licensee's application must include a description of the waste containing licensed material, including the physical and chemical properties important to risk evaluation, and the proposed manner and conditions of waste disposal. The application must also include an analysis and evaluation of pertinent environmental information and the nature and location of any other potentially affected licensed and unlicensed facilities. Finally,

the licensee's supporting analysis must show that the radiological doses arising from the proposed 10 CFR 20.2002 disposal will be as low as reasonably achievable and within the 10 CFR Part 20 dose limits.

The licensee performed a radiological assessment. Based on this assessment, ENO concludes that the dose equivalent for the Maximally Exposed Individual, which includes workers involved in the transportation and placement of this waste, will not exceed "a few mrem per year." The standard of a "few [millirem per year] mrem/yr" to a member of the public is set forth in NRC Regulatory Issues Summary 2004-08, "Results of the License Termination Rule Analysis" (ADAMS Accession No. ML041460385). The transportation workers and USEI workers are treated as members of the public because the USEI site, while permitted by the State of Idaho under RCRA to accept certain radioactive materials, is not licensed by the NRC.

The NRC staff evaluated activities and potential doses associated with transportation, waste handling and disposal as part of the review of this 10 CFR 20.2002 application. This evaluation is documented in a Safety Evaluation Report (ADAMS Accession No. ML16320A442). The projected doses to individual transportation and USEI workers have been appropriately estimated and are demonstrated to meet the NRC's alternate disposal requirement of not more than "a few mrem/yr" to any member of the public.

The licensee also performed a radiological assessment of the potential dose to the general public from the USEI RCRA facility after its closure. They evaluated a post-closure dose to a member of the public, the intruder construction scenario, the intruder well drilling scenario, and the intruder driller occupancy scenario. All of the results were not more than "a few mrem/yr" for approval of an alternate disposal authorization at an operating site.

The NRC staff's independent review of the post-closure and intruder scenarios confirmed that the maximum projected dose over a period of 1,000 years is also within "a few mrem/yr."

Additionally, the proposed action would not significantly increase occupational or public radiation exposures.

With regard to potential non-radiological impacts, the NRC staff concludes that the proposed action would not have significant impacts upon any environmental resources. Activities associated with the proposed action occurring at the VY facility are bounded by prior environmental analyses, including the NRC's "Generic Environmental Impact Statement on Decommissioning of Nuclear Facilities," NUREG-0586, Supplement 1 (2002). The transportation of the waste water is also similarly bounded by the transportation analyses in NUREG-0586, Supplement 1<sup>1</sup>. This environmental assessment incorporates by reference and tiers off of NUREG-0586, Supplement 1. Additionally, the NRC staff determined that the proposed action (i.e., undertaking) is not the type of activity that would have the potential to cause effects on historic properties, and that the proposed action would have no effect on endangered or threatened species or their critical habitat.

#### *Environmental Impacts of the Alternatives to the Proposed Action*

As an alternative to the proposed action, the NRC staff considered the no-action alternative, under which the staff would deny the disposal request. The denial of the request would result in the waste water being transported to another out-of-state waste disposal facility that is authorized to take this waste water (the current practice). All other factors would remain the same or similar. Therefore, the environmental impacts of the proposed action and the no-action alternative are similar and the no-action alternative is accordingly was not further considered.

#### *Agencies and Persons Consulted*

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<sup>1</sup> NUREG-0586, Supplement 1, is available on the NRC's public web site at: <http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr0586/s1/v1>.

The NRC provided a draft of this EA and draft of the NRC Safety Evaluation Report (SER) for this proposed action to the State of Idaho Department of Environmental Quality and the State of Vermont Department of Public Service for review on December 12, 2016 (ADAMS Accession Nos. ML17013A250, ML17013A257, and ML17013A303) for a 30-day review. No comments were received from the State of Idaho. Comments were received from the State of Vermont by letter dated January 11, 2017 (ADAMS Accession No. ML17012A240). The State of Vermont commented on the potential for changes to the radionuclide concentrations in the water to be disposed and how that would affect dose, how particulate contamination in the water to be disposed would be avoided, how the concentration of radionuclides in the water to be disposed would be verified and how those concentrations would be controlled relative to dose, and on the calculated dose rate to the drivers of the tanker trucks. These comments were all comments on the NRC's SER, and were addressed by revising or supplementing the final SER (ADAMS Accession No. ML17055C780). An additional comment came from the State of Vermont on the potential for non-radioactive hazardous contamination in the water to be shipped. Non-radiological impacts from this disposal have been addressed in this EA as having been bounded by previous environmental analysis. Further State of Vermont concerns about non-radiological constituents in the water to be shipped should be addressed to ENO under the State's authority for regulation of hazardous wastes.

### **III. Finding of No Significant Impact**

The proposed action consists of the NRC approval of ENO's alternate disposal request under 10 CFR 20.2002 and USEI's exemption request under 10 CFR 30.11. The NRC staff has prepared this EA in support of the proposed action. On the basis of this EA and NUREG-0586, Supplement 1, which are incorporated by reference, the NRC finds that the proposed action will

not have a significant effect on the quality of the human environment, and therefore, the preparation of an environmental impact statement is not warranted. Accordingly, the NRC has determined that a Finding of No Significant Impact is appropriate.

#### **IV. Availability of Documents**

Documents related to the proposed action, including the application and supporting documentation, are available electronically at the NRC's Electronic Reading Room at <http://www.nrc.gov/reading-rm/adams.html>. From this site, you can access the NRC's ADAMS, which provides text and image files of NRC's public documents. The documents related to this action are listed below, along with their ADAMS accession numbers.

| Document  | Date       | ADAMS<br>Accession No. |
|---|------------|------------------------|
| ENO letter to NRC, Vermont Yankee - Submittal of 10 CFR 20.2002 Request for Alternate Waste Disposal at US Ecology.   | 01/14/2016 | ML16029A071            |
| USEI letter to NRC, US Ecology Idaho, Inc. - Request for Exemptions under 10 CFR 30.11 for Alternate Disposal of Wastes from Vermont Yankee Nuclear Plant Under 10 CFR 20.2002. | 01/14/2016 | ML16021A173            |
| NRC letter to ENO, Request for Additional Information Related to 10 CFR 20.2002 Alternate Waste Disposal Request for Vermont Yankee Nuclear Power Station.                      | 03/22/2016 | ML16077A345            |
| ENO letter to NRC, Vermont Yankee Nuclear Power Station - Response to Request for Additional Information Related to 10 CFR 20.2002, Alternate Waste Disposal Request.           | 06/28/2016 | ML16182A035            |
| NRC e-mail to ENO, Follow-up Questions Related to Entergy Request for 20.2002 Disposal of Contaminated Water.   | 07/28/2016 | ML16231A219            |
| ENO e-mail to NRC, Response to NRC Questions Related to Request for 20.2002 Disposal of Contaminated Water.   | 08/11/2016 | ML16231A028            |

If you do not have access to ADAMS, or if there are problems in accessing the documents located in ADAMS, contact the NRC Public Document Room (PDR) Reference staff at 1-800-397-4209, 301-415-4737, or by e-mail at [pdr@nrc.gov](mailto:pdr@nrc.gov). These documents may also be viewed on the public computers located at the NRC's PDR, O 1 F21, One White Flint North, 11555 Rockville Pike, Rockville, Maryland 20852. The PDR reproduction contractor will copy documents for a fee.

Dated at Rockville, Maryland, this 20th day of March, 2017.

FOR THE U.S. NUCLEAR REGULATORY COMMISSION

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[FR Doc. 2017-06495 Filed: 3/31/2017 8:45 am; Publication Date: 4/3/2017]