

UNITED STATES NUCLEAR REGULATORY COMMISSION

VERMONT YANKEE NUCLEAR POWER CORPORATION

DOCKET NO. 50-271

VERMONT YANKEE NUCLEAR POWER STATION

ENVIRONMENTAL ASSESSMENT AND FINDING OF

NO SIGNIFICANT IMPACT

The U.S. Nuclear Regulatory Commission (NRC) is considering issuance of an amendment to Facility Operating License No. DPR-28, issued to Vermont Yankee Nuclear Power Corporation, (the licensee), for operation of the Vermont Yankee Nuclear Power Station (Vermont Yankee), located in Windham County, Vermont.

ENVIRONMENTAL ASSESSMENT

Identification of the Proposed Action:

The proposed action would modify the spent fuel pool (SFP) by installation of additional rack modules. The additional rack modules will increase the Vermont Yankee SFP capacity from 2870 to 3353 fuel assemblies.

The proposed action is in accordance with the licensee's application for amendment dated September 4, 1998, as supplemented on February 8, April 16, August 26, September 16, and November 17, 1999.

The Need for the Proposed Action:

Vermont Yankee currently has full-core discharge reserve storage capability in the SFP through the Spring 2001 refueling outage. Since there are no immediate options for the

shipment of spent fuel to a permanent repository, the proposed action is required to maintain full-core reserve discharge capability to the SFP through the Fall 2008 refueling outage.

Environmental Impacts of the Proposed Action:

The Commission has completed its evaluation of the proposed action and concludes there are no significant environmental impacts. The factors considered in this determination are discussed below.

Radioactive Waste Treatment

Vermont Yankee uses waste treatment systems designed to collect and process gaseous, liquid, and solid waste that might contain radioactive material. These radioactive waste treatment systems are evaluated in the Final Environmental Statement (FES) dated July 1972. The proposed SFP expansion will not involve any change in the waste treatment systems described in the FES.

Radioactive Material Released to the Atmosphere

The storage of additional spent fuel assemblies in the SFP is not expected to affect the releases of radioactive gases from the SFP. Gaseous fission products such as Krypton-85 and Iodine-131 are produced by the fuel in the core during reactor operation. A small percentage of these fission gases is released to the reactor coolant from the small number of fuel assemblies which are expected to develop leaks during reactor operation. During refueling operations, some of these fission products enter the SFP and are subsequently released into the air. Since the frequency of refuelings (and therefore the number of freshly offloaded spent fuel assemblies stored in the SFP at any one time) will not increase, there will be no increase in the amount of radioactive material released to the atmosphere as a result of the increased SFP fuel storage capacity.

The storage of additional fuel assemblies in the SFP will not increase the SFP bulk water temperature beyond the existing design temperature. Therefore, radioactive material airborne release rates due to evaporation from the SFP are not expected to increase.

Solid Radioactive Wastes

Spent resins are generated by the processing of SFP water through the SFP Purification System. The licensee does not expect the resin change-out frequency of the SFP purification system to be permanently increased as a result of the storage of additional spent fuel assemblies in the SFP. In order to maintain the SFP water as clean as possible, and thereby minimize the generation of spent resins, the licensee will vacuum the floor of the SFP to remove any radioactive crud and other debris before the new fuel rack modules are installed. The staff does not expect that the additional fuel storage made available by the increased storage capacity will result in a significant change in the generation of solid radioactive waste.

Liquid Radioactive Wastes

The release of radioactive liquids will not be affected directly as a result of the modifications. The SFP ion exchanger resins remove soluble radioactive materials from the SFP water. When the resins are changed out, the small amount of resin sluice water which is released is processed by the radwaste system. As stated above, the licensee does not expect the resin change-out frequency of the SFP purification system to be permanently increased as a result of the storage of additional spent fuel assemblies in the SFP. The amount of radioactive liquid released to the environment as a result of the proposed SFP expansion is expected to be negligible.

Radiological Impact Assessment

The staff has reviewed the licensee's plan for the modification of Vermont Yankee spent fuel racks with respect to occupational radiation exposure. For this modification the licensee plans to add three new fuel rack modules to the SFP. A number of facilities have performed

similar operations in the past. On the basis of the lessons learned from these operations, the licensee estimates that the proposed fuel rack installation can be performed for between 1.6 and 3 person-rem.

All of the operations involved in the fuel rack installation will utilize detailed procedures prepared with full consideration of ALARA (as low as reasonably achievable) principles. The Radiation Protection Department will prepare Radiation Work Permits (RWPs) for the various jobs associated with the SFP rack installation operation. These RWPs will instruct the project personnel in the areas of protective clothing; general dose rates, contamination levels (including potential exposure to hot particles), and dosimetry requirements. Each member of the project team will attend an ALARA Pre-Plan meeting and each team member will be required to attend daily pre-job briefings on the scope of the work to be performed. Personnel will wear protective clothing and will be required to wear personnel monitoring equipment including alarming dosimeters.

Since this license amendment does not involve the removal of any spent fuel racks, the licensee does not plan on using divers for this project. However, if it becomes necessary to utilize divers to remove any interferences which may impede the installation of the new spent fuel racks, the licensee will equip each diver with radiation detectors with remote, above surface, readouts which will be continuously monitored by Radiation Protection personnel. The licensee will conduct radiation surveys of the diving area prior to each diving operation and following the movement of any irradiated hardware. In order to minimize diver dose, the licensee will use visual barriers (such as streamers fastened to rope, nets, or enclosure) as much as practical. The licensee will monitor and control personnel traffic and equipment movement in the SFP area to minimize contamination and to ensure that exposure is maintained ALARA.

On the basis of our review of the Vermont Yankee proposal, the staff concludes that the Vermont Yankee SFP rack modification can be performed in a manner that will ensure that doses to workers will be maintained ALARA. The projected dose for the project of 1.6 to 3 person-rem is in the range of doses for similar SFP modifications at other plants and is a small fraction of the annual collective dose accrued at Vermont Yankee.

Accident Considerations

On April 25, 1986, Vermont Yankee submitted an amendment request to increase the SFP capacity from 2000 to 2870. The staff approved that amendment request on May 20, 1988. The staff's safety evaluation supporting the issuance of that amendment concluded that the licensee's fuel handling accident dose analysis was acceptable. For this amendment request (3353 storage locations), the licensee concluded that analysis was still valid because no parameters of the analysis were affected by the increase in storage capacity. After reviewing the licensee's current submittal and the 1988 safety evaluation, the staff agrees with the licensee's conclusion. Because the proposed SFP modification at Vermont Yankee will not affect any of the assumptions or inputs used in evaluating the dose consequences of a fuel handling accident, it will not result in an increase in the doses from a postulated fuel handling accident.

Conclusion

The proposed action will not significantly increase the probability or consequences of accidents, no changes are being made in the types of any effluents that may be released offsite, and there is no significant increase in occupational or public radiation exposure. Therefore, there are no significant radiological environmental impacts associated with the proposed action.

With regard to potential nonradiological impacts, the proposed action does not involve any historic sites. It does not affect nonradiological plant effluents and has no other

environmental impact. Therefore, there are no significant nonradiological environmental impacts associated with the proposed action.

Accordingly, the NRC concludes that there are no significant environmental impacts associated with the proposed action.

Alternatives to the Proposed Action:

As an alternative to increasing the spent fuel storage capacity at Vermont Yankee, the licensee considered shipment to another reactor site or away-from-reactor storage facility, e.g. shipment of spent fuel to a Federal fuel storage or disposal facility. This alternative was determined not to be feasible due to the unavailability of an offsite storage facility.

As an alternative to the proposed action, the staff considered denial of the proposed action (i.e., the "no-action" alternative). Denial of the application would result in no change in current environmental impacts. The environmental impacts of the proposed action and the alternative action are similar.

Alternative Use of Resources:

This action does not involve the use of any resources not previously considered in the Final Environmental Statement for the Vermont Yankee Nuclear Power Station.

Agencies and Persons Consulted:

In accordance with its stated policy, on December 13, 1999, the staff consulted with the Vermont State Official, William Sherman, regarding the environmental impact of the proposed action. The State official had no comments.

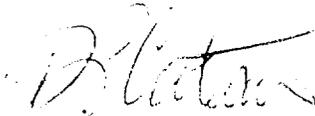
FINDING OF NO SIGNIFICANT IMPACT

On the basis of the environmental assessment, the NRC concludes that the proposed action will not have a significant effect on the quality of the human environment. Accordingly, the NRC has determined not to prepare an environmental impact statement for the proposed action.

For further details with respect to the proposed action, see the licensee's letter dated September 4, 1998, as supplemented on February 8, April 16, August 26, September 16, and November 17, 1999.

Dated at Rockville, Maryland, this 14th day of December 1999.

FOR THE NUCLEAR REGULATORY COMMISSION



Richard P. Croteau, Project Manager, Section 2
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

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December 14, 1999

MEMORANDUM TO: Rules and Directives Branch
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 Office of Administration

FROM: Office of Nuclear Reactor Regulation

SUBJECT: **VERMONT YANKEE NUCLEAR POWER CORP - VERMONT YANKEE
 NUCLEAR POWER STATION**

One signed original of the *Federal Register* Notice identified below is attached for your transmittal to the Office of the Federal Register for publication. Additional conformed copies (**Five**) of the Notice are enclosed for your use.

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- Notice of Receipt of Partial Application for Construction Permit(s) and Facility License(s): Time for submission of Views on Antitrust matters.
- Notice of Consideration of Issuance of Amendment to Facility Operating License. (Call with 30-day insert date).
- Notice of Receipt of Application for Facility License(s); Notice of Availability of Applicant's Environmental Report; and Notice of Consideration of Issuance of Facility License(s) and Notice of Opportunity for Hearing.
- Notice of Availability of NRC Draft/Final Environmental Statement.
- Notice of Limited Work Authorization.
- Notice of Availability of Safety Evaluation Report.
- Notice of Issuance of Construction Permit(s).
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- Notice of Granting Exemption.
- Environmental Assessment.
- Notice of Preparation of Environmental Assessment.
- Receipt of Petition for Director's Decision Under 10 CFR 2.206.
- Issuance of Final Director's Decision Under 10 CFR 2.206.
- Other: _____

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Attachment(s): As stated

Contact: **R. Croteau**
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