

July 25, 1997

SECY-97-164

FOR: The Commissioners

FROM: L. Joseph Callan /s/  
Executive Director for Operations

SUBJECT: SHIPMENT OF DECOMMISSIONED REACTOR VESSEL, CONTAINING  
IRRADIATED INTERNALS, FROM THE TROJAN NUCLEAR PLANT TO  
HANFORD NUCLEAR RESERVATION, RICHLAND, WASHINGTON

PURPOSE:

To request Commission approval of staff's approach for reviewing a request from Portland General Electric Company (PGE) for a one-time shipment of its decommissioned reactor vessel (RV), including irradiated internals, from the Trojan Nuclear Plant near Portland, Oregon to a disposal site at the Hanford Nuclear Reservation near Richland, Washington.

BACKGROUND:

On March 31, 1997, PGE requested that the Commission issue a Type B Certificate of Compliance (COC) under 10 CFR 71, which would allow the one-time shipment of a decommissioned RV, together with its irradiated internals, under the general license provisions of 10 CFR 71.12. Under this proposal, the RV, together with its irradiated internals intact, would be transported from the Trojan Nuclear Plant near Portland, Oregon, by barge approximately 434 kilometers (km) (270 miles) up the Columbia River to the Port of Benton, Washington, and then by special transporter to a disposal site operated by

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U.S. Ecology on the Hanford Nuclear Reservation near Richland, Washington. The total trip is expected to take about 72 hours.

The RV, fitted with impact limiters for transport, would measure approximately 13 meters (m) (43 feet) in length and 8.5 m (28 feet) in diameter, and would weigh approximately 925 metric tons (1,020 tons). The RV, with its irradiated internals, would contain over 74 petabecquerels (PBq) (2 million curies), primarily in the form of activated metal contained within the reactor internals. Activity in the form of internal surface contamination is estimated to be approximately 5.7 terabecquerels (TBq) (155 curies). In addition, it is estimated that the irradiated internals would generate approximately 20 to 30 kilowatts in decay heat.

#### DISCUSSION:

PGE's request to ship the RV with its internals intact, represents a departure from the shipping arrangements envisioned by PGE. Previously, the licensee had planned to remove the irradiated internals from the RV prior to its shipment, with the internals being shipped separately in Commission certified shipping packages. Because the proposed shipping package (i.e., the RV with internals intact) does not meet the packaging performance standards for Type B packages, PGE has requested that the Commission issue a COC under the provisions of 10 CFR 71.41(c). If approval is not granted under 10 CFR 71.41(c) PGE requests an exemption under 10 CFR 71.8. Section 71.41(c) would allow the Commission to issue a COC based on the use of alternative environmental and test conditions for Type B packages. In this case, the applicant must demonstrate that the additional controls and the alternate test conditions proposed for a shipment provide "equivalent safety" of the shipment to that provided if 10CFR 71.41(c) were not used.

In this instance, PGE has proposed that certain Type B test conditions for normal conditions of transport (e.g., the one-foot drop test as defined in 10 CFR 71.71), and for hypothetical accident conditions (e.g., the thirty-foot drop and puncture tests as defined in 10 CFR 71.73) be replaced with less stringent test conditions, based on operational controls exercised during shipment. Alternatively, if the Commission is unwilling to accept the applicant's analysis under 10 CFR 71.41(c), PGE has requested an exemption from the same test conditions under 10 CFR 71.8. Assuming that the Commission certifies the RV, with internals, as a Type B package, PGE is proposing to ship the RV under the general license provisions in 10 CFR 71.12.

Staff will review PGE's request for a COC under 10 CFR 71.41(c). However, if the Commission is unable to certify the RV with internals under 10 CFR Part 71, PGE would still have the option of removing the irradiated internals from the RV, shipping the internals that are not classified as Greater-Than-Class-C (GTCC) waste separately in Nuclear Regulatory Commission-certified Type B packages to a qualified disposal site, and storing the GTCC waste on-site.

Under this option, the RV could either be shipped intact as either a Type B package (which requires Commission approval based on similar alternative test conditions as described above), or other type package (e.g., an IP-2 package if it qualifies under Department of Transportation regulations in 49 CFR), or could be dismantled into individual pieces, which could then be shipped in Type B or other type packages.

Apart from transportation, the PGE application has raised another important and potentially precedent setting issue. PGE, in proposing this shipment, has assumed that the RV, intact with internals, can qualify for near-surface disposal. The basis for this assumption is the Branch Technical Position on Concentration Averaging and Encapsulation, issued by the Office of Nuclear Material Safety and Safeguards on January 17, 1995. In contrast, if the internals were removed for shipment separately, it is probable some of the internals would be classified as GTCC wastes, and would not qualify for disposal at a near-surface disposal site. PGE estimates that about 340 cubic feet of reactor internals would exceed Class C limits. Staff estimates that GTCC components contain about 80 percent of the total activity proposed for disposal. These GTCC components would require storage at the Trojan site until a suitable repository or disposal site is approved. Shipping and disposal of the RV with internals intact, would, if approved, eliminate the need to provide on-site storage for GTCC RV components. It should be noted that the State of Washington has made a preliminary waste classification determination that the Trojan RV with its internals is consistent with NRC's Branch Technical Position on Concentration Averaging and Encapsulation and could be disposed of, with the reactor internals intact, at the U.S. Ecology, Inc., burial facility in the State of Washington. The State of Washington is awaiting specific activation analysis which the licensee is to provide and any NRC staff review of the licensee analysis prior to making a final determination.

Because of its potential for impacting the environment and public health and safety, and its potential for setting a precedent, staff is requesting approval from the Commission on its approach for reviewing PGE's request, before committing significant staff resources. A preliminary estimate of the minimum resources that would be required to complete a review under 10 CFR Part 71 are 0.5 full time equivalent (FTE) staff years, and 100,000 dollars in contract support. These resources are included in NRC's FY 1998 budget request.

Therefore, staff requests that the Commission approve the following general approach for reviewing PGE's application:

- (1) Staff intends to consult with the State of Washington, an Agreement State, as to whether the RV with its internals, is suitable for disposal at the U.S. Ecology site. If the State of Washington determines that the RV with its internals is not suitable for disposal at the U.S. Ecology site, staff intends to terminate its review and return PGE's application. Shipment and disposal of the RV and non-GTCC internals could proceed as previously proposed by PGE.
- (2) If the waste classification of the RV with internals is appropriate for the U.S. Ecology burial site, staff will notice receipt of PGE's application in the Federal Register.
- (3) Staff will review PGE's request for shipment using the provisions in 10 CFR 71.41(c) to demonstrate equivalent safety. Staff will inform the Commission of its intent to issue any COC under 10 CFR 71.41(c).

- (4) Alternatively, if staff cannot approve the application under 10 CFR 71.41(c), it will so inform the Commission, and proceed to assess PGE's request for an exemption under 10 CFR 71.8. The staff will inform the Commission of the process for that review.

COORDINATION:

This paper has been coordinated with the Office of Nuclear Reactor Regulation and the Office of General Counsel (OGC). OGC has no legal objection to this paper.

The Chief Financial Officer has concurred in this paper.

RECOMMENDATION:

That the Commission:

Approve the general approach outlined in this paper to review the shipment of a decommissioned RV from the Trojan Nuclear Power Plant near Portland, Oregon to a disposal site at the Hanford Nuclear Reservation near Richland, Washington.

Note that the staff will continue to inform the Commission of precedent setting issues, involving the transportation and disposal of large reactor components, such as reactor vessels.

Note that the State of Oregon has written to Chairman Jackson urging expeditious consideration of PGE's proposal (letter attached).

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Attachment:  
State of Oregon letter to  
Chairman Jackson