

UNITED STATES NUCLEAR REGULATORY COMMISSIONNORTHEAST NUCLEAR ENERGY COMPANY, ET AL.DOCKET NO. 50-336NOTICE OF CONSIDERATION OF ISSUANCE OF AMENDMENT TO
FACILITY OPERATING LICENSE AND PROPOSED NO SIGNIFICANT HAZARDS
CONSIDERATION DETERMINATION AND OPPORTUNITY FOR HEARING

The U. S. Nuclear Regulatory Commission (the Commission) is considering issuance of an amendment to Facility Operating License No. DPR-65, issued to Northeast Nuclear Energy Company (the licensee), for operation of the Millstone Nuclear Power Station, Unit 2, located in New London County, Connecticut.

The amendment would authorize the licensee to increase the spent fuel pool storage capacity from 667 to 1112 storage locations. The proposed expansion is to be achieved by reracking the spent fuel pool with a combination of poison racks and non-poison racks in a two-region arrangement.

Region I consists of two 8 x 9 modules and three 8 x 10 modules and would store high-enrichment, core off-load assemblies. The region consists of poisoned spent fuel racks with a nominal center-to center cell spacing of 9.8 inches. Fuel assemblies would be stored in every location. The five modules of Region I total 384 storage locations and are designed to accommodate 1.7 reactor cores of high enrichment nuclear spent fuel.

The spent fuel rack design for Region I is based upon the commonly accepted physics principle of a "neutron flux trap" with the use of neutron absorber materials. The racks are designed to store Millstone 14 x 14 fuel with an initial enrichment of 4.5 weight percent U-235. The poison material to be used is Boraflex.

Region II consists of 14 modules of non-poisoned spent fuel racks with nominal center-to-center cell spacing of 9.0 inches. The modules consist of 962 cells with useable capacity of 728 storage locations.

Region II is reserved for fuel that has sustained at least 85% of its design burn-up. The spent fuel rack design is based on criticality acceptance criteria specified in Revision 2 of Regulatory Guide 1.13 which allows credit for reactivity depletion in spent fuel. (Previously, the physics criteria for fuel stored in the spent fuel pool were defined by the maximum unirradiated initial enrichment of the fuel). Fuel assemblies are stored in a three-out-of-four logic pattern. The fourth location of the storage configuration remains empty to provide the flux trap to maintain the required reactivity control. Blocking devices will be used to prevent inadvertent placing of a fuel assembly in the fourth location.

The spent fuel racks in both regions are fabricated from 304 stainless steel which is 0.135 inches thick. Each cell is formed by welding along the intersecting seams. This enables each spent fuel rack module to become a free-standing module that meets the seismic design requirements without mechanical dependence on neighboring modules or fuel pool walls for support. The rack modules are classified ANS Safety Class III and Seismic Category I.

Both regions of the spent fuel pool have been designed to store fuel assemblies in a safe, coolable, subcritical configuration with K_{eff} less than or equal to 0.95.

The racks have been designed and will be provided by Combustion Engineering, Inc. (CE). CE racks of this type have been most recently licensed by the NRC for use at Florida Power and Light Company's St. Lucie Plant and at Arizona Public Services Company's Palo Verde nuclear plants. This amendment was

requested in the licensee's application for amendment dated July 24, 1985.

The additional assemblies that can be stored will have a lower heat generation rate and radioactivity content than the assemblies currently allowed to be stored. However, the increase in the total number of assemblies that can be stored will increase the total fuel pool heat load and radioactivity content but only by a small amount. The replacement spent fuel storage rack modules are freestanding without depending on neighboring modules or the fuel pool walls for support. Racks of similar design have been licensed at other nuclear facilities. The use of two diverse regions is not unique and two region spent fuel pools have been previously approved by the Commission.

The technical evaluation of whether or not an increased spent fuel pool storage capacity involves significant hazards consideration is centered on three standards:

A. First Standard

Involve a significant increase in the probability or consequences of an accident previously evaluated.

The licensee's safety analysis of the proposed reracking has been accomplished using current NRC Staff accepted Codes and Standards. The results of the safety analysis demonstrate that the proposal meets the specified acceptance criteria set forth in these standards. In addition, the licensee has reviewed NRC Staff SE for prior spent fuel pool rerackings involving spent fuel pool rack replacements to ensure that there are no identified concerns not fully addressed. The licensee has identified no such concerns.

The licensee has identified the following potential accident scenarios: (1) spent fuel cask drop; (2) loss of spent fuel pool forced cooling; (3) seismic event; (4) spent fuel assembly drop; (5) criticality accident; and (6) Load Handling Accident. The probability of the occurrence of any of the first four listed accidents is not affected by the racks themselves; thus, reracking cannot increase the probability of these accidents.

All potential events which could involve accidental criticality have been examined in the licensee's safety analysis. It was concluded that the bounding accident was dropping an unirradiated fuel assembly into a blocked fourth location in Region II. The probability of dropping a fuel assembly during fuel movement operations is not affected by the fuel storage racks.

The proposed Millstone Unit 2 spent fuel pool reracking will not involve an increase in probability of any previously evaluated load handling accident as accepted standards and procedures will be utilized as described in the licensee's safety analysis.

The consequences of the spent fuel cask drop accident have been evaluated as described in Sections 5.4 and 9.8 of the Millstone Unit 2 Final Safety Analysis Report (FSAR). By controlling the decay time for fuel stored within a specified distance from the cask set-down area to not less than 120 days prior to cask movement together with an administrative control specifying a minimum required boron concentration in the water of the spent fuel pool, the consequences of this accident type will remain well within 10 CFR Part 100 guidelines.

There is, however, an increase in the value of the 2-hour whole body dose at the site exclusion boundary for a postulated cask drop accident. The new racks increase the storage density of spent fuel within the distance L of the

cask set-down area. This results in a calculated increase of the 2-hour whole body dose from 140 millirem to 240 millirem, an increase of 100 millirem. In review of this submittal, the licensee has recognized this increase and has designated it an unreviewed safety question. The calculated dose is well within the guidelines specified by 10 CFR Part 100 and, as such, the consequences of this type of accident will not be significantly increased from previously evaluated events.

The consequences of the loss of spent fuel pool forced cooling accident have been evaluated and are described in the licensee's safety analysis. There is ample time to effect repairs of the cooling system or to establish makeup flow to the spent fuel pool. The consequences of this type accident will not be significantly increased from previously evaluated accidents by this proposed reracking.

The consequences of a seismic event have been evaluated against the appropriate NRC standards. The results of the seismic and structural analysis show that the proposed racks meet all of the NRC structural acceptance criteria and are consistent with results found acceptable by the NRC Staff in previous poison rerack SEs. Thus, the consequences of seismic event will not significantly increase from previously evaluated seismic events.

The consequences of a spent fuel assembly drop accident are described in Section 14.19 of the Millstone Unit 2 FSAR. A complete list of assumptions is provided in FSAR Table 14.19-1. Results of the analysis are well below the limits of 10 CFR Part 100 and are presented in Section 14.19.3. The consequences of this type accident will not be significantly increased from previously evaluated accidents by this proposed reracking.

The consequences of a criticality accident have been evaluated for all potential events which could involve accidental criticality. The bounding criticality accident was found to be the dropping of a fresh fuel assembly into a blocked fourth location in Region II. Administrative controls in the form of a Technical Specification of minimum boron concentration for the water of the spent fuel pool will preclude the bounding criticality accident; therefore, the consequences of this type accident will not be significantly increased from previous accident evaluations by this proposed reracking.

The consequences of a load handling accident have been evaluated. The work to be done in the spent fuel pool will be performed in accordance with accepted construction practices, standards, and procedures. The consequences of this type accident will not be significantly increased from previous accident evaluations by this proposed reracking. Therefore, it is shown that the proposed Millstone Unit 2 spent fuel rack replacement will not involve a significant increase in the probability or consequences of an accident previously evaluated.

B. Second Standard

Create the possibility of a new or different kind of accident from any accident previously evaluated.

The licensee has evaluated the proposed rack replacement in accordance with the "NRC Position for Review and Acceptance of Spent Fuel Storage and Handling Applications," appropriate NRC Regulatory Guides, appropriate NRC Standard Review Plan sections, and appropriate Industry Codes and Standards. In addition, the licensee has reviewed the NRC SE for the previous Millstone Unit 2 spent fuel rack replacement application and for other prior spent fuel pool rerackings.

The change to a two-region spent fuel pool creates the requirement to perform additional evaluations to ensure the criticality requirement is maintained. These include the evaluation of the limiting condition (dropping a fresh fuel assembly into a blocked fourth location in Region II). This evaluation shows that, when the boron concentration requirement is met per the proposed Technical Specifications, the criticality criterion is satisfied. Although this change does create the requirement to address additional aspects of a previously analyzed accident, it does not create the possibility of a previously unanalyzed accident.

C. Third Standard

Involve a significant reduction in a margin of safety.

The issue of "margin of safety," when applied to a spent fuel rack replacement, includes the following considerations:

- a. Nuclear criticality considerations.
- b. Thermal hydraulic considerations.
- c. Mechanical, material, and structural considerations.

The margin of safety that has been established for nuclear criticality is that the neutron multiplication factor (K_{eff}) in the spent fuel pool is to be less than or equal to 0.95, including all uncertainties, under all conditions. For the proposed modification, the criticality analysis is described in the licensee's safety analysis. The methods utilized in the analysis conform with ANSI N210-1976, "Design Objectives for LWR Spent Fuel Storage Facilities at Nuclear Power Stations"; ANSI N16.9-1975, "Validation of Computational Methods for Nuclear Criticality Safety"; the NRC guidance, "NRC Position for Review and Acceptance of Spent Fuel Storage and Handling Applications" (April 1978),

as modified (January 1976); and Regulatory Guide 1.13, "Spent Fuel Facility Design Basis," proposed Revision 2. The computer programs, data libraries, and benchmarking data used in the evaluation have been used in previous spent fuel rack replacement applications by other NRC licensees and have been reviewed and approved by the NRC. The results of the licensee's analysis indicate that K_{eff} is less than or equal to 0.95 under all postulated conditions, including uncertainties, at a 95/95 probability/confidence level. Thus, meeting the acceptance criteria for criticality, the proposed reracking does not involve a significant reduction in the margin of safety for nuclear criticality.

For thermal hydraulics, the relevant considerations for evaluating if there is a significant reduction in margin of safety are: (1) maximum fuel temperature, and (2) the increase in temperature of the water in the pool. The licensee's thermal hydraulic evaluation shows that fuel cladding temperatures under abnormal conditions are sufficiently low to preclude structural failure and that boiling does not occur in the water channels between the fuel assemblies nor within the storage cells. However, the proposed rack replacement will result in an increase in the maximum heat load in the Millstone Unit 2 spent fuel pool. The licensee's safety analysis shows that the maximum temperature will not exceed the current margin of safety (150°F). For the maximum normal heat load case (full-core discharge at 150 hr after shutdown, which fills the spent fuel pool to its capacity), the pool temperature will not exceed 150°F. Thus, there is no significant reduction in the margin of safety from a thermal hydraulic standpoint or from a spent fuel pool cooling standpoint.

The mechanical, material, and structural considerations of the proposed rack replacement are also analyzed in the licensee's safety analysis. The racks are designed in accordance with the applicable NRC Regulatory Guides, Standard Review Plan sections, and position papers, and appropriate industry Codes and Standards, as well as to Seismic Category I requirements. The materials utilized are compatible with the spent fuel pool and the spent fuel assemblies. The conclusion of the analysis is that the margin of safety is not significantly reduced by the proposed reracking.

In summation, it has been shown that Northeast Nuclear Energy Company's proposed spent fuel storage facility modifications and proposed technical specifications do not:

1. Involve a significant increase in the probability or consequences of an accident previously evaluated; or
2. Create the possibility of a new or different kind of accident from any accident previously evaluated; or
3. Involve a significant reduction in a margin of safety.

Because the licensee's submittal and the above discussion by the licensee appear to demonstrate that the standards specified in 10 CFR 50.92 are met, and because reracking technology has been well developed and demonstrated, the Commission proposes to determine that operation of the facility in accordance with the proposed amendment does not involve a significant hazards consideration.

The Commission is seeking public comments on this proposed determination. Any comments received within 30 days after the date of publication of this notice will be considered in making any final determination. The Commission will not normally make a final determination unless it receives a request for a hearing.

Comments should be addressed to the Rules and Procedures Branch, Division of Rules and Records, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555.

By Dec. 4, 1985, the licensee may file a request for a hearing with respect to issuance of the amendment to the subject facility operating license and any person whose interest may be affected by this proceeding and who wishes to participate as a party in the proceeding must file a written petition for leave to intervene. Request for a hearing and petitions for leave to intervene shall be filed in accordance with the Commission's "Rules of Practice for Domestic Licensing Proceedings" in 10 CFR Part 2. If a request for a hearing or petition for leave to intervene is filed by the above date, the Commission or an Atomic Safety and Licensing Board, designated by the Commission or by the Chairman of the Atomic Safety and Licensing Board Panel, will rule on the request and/or petition and the Secretary or the designated Atomic Safety and Licensing Board will issue a notice of hearing or an appropriate order.

As required by 10 CFR §2.714, a petition for leave to intervene shall set forth with particularity the interest of the petitioner in the proceeding and how that interest may be affected by the results of the proceeding. The petition should specifically explain the reasons why intervention should be

permitted with particular reference to the following factors: (1) the nature of the petitioner's right under the Act to be made a party to the proceeding; (2) the nature and extent of the petitioner's property, financial, or other interest in the proceeding; and (3) the possible effect of any order which may be entered in the proceeding on the petitioner's interest. The petition should also identify the specific aspect(s) of the subject matter of the proceeding as to which petitioner wishes to intervene. Any person who has filed a petition for leave to intervene or who has been admitted as a party may amend the petition without requesting leave of the Board up to fifteen (15) days prior to the first prehearing conference scheduled in the proceeding, but such an amended petition must satisfy the specificity requirements described above.

Not later than fifteen (15) days prior to the first prehearing conference scheduled in the proceeding, a petitioner is required to file a supplement to the petition to intervene which must include a list of the contentions which are sought to be litigated in the matter, and the bases for each contention set forth with reasonable specificity, pursuant to 10 CFR §2.714(b). Contentions shall be limited to matters within the scope of the amendment under consideration. A petitioner who fails to file such a supplement which satisfies these requirements with respect to at least one contention will not be permitted to participate as a party.

The Commission hereby provides notice that this proceeding is on an application for a license amendment falling within the scope of Section 134 of the Nuclear Waste Policy Act of 1982 (NWP), 42 U.S.C. §10154. Under Section 134 of the NWP, the Commission, at the request of any petitioner or party to the proceeding, is required to employ hybrid hearing procedures

with respect to "any matter which the Commission determines to be in controversy among the parties." Section 134 procedures provide for oral argument on those issues "determined to be in controversy", preceded by discovery under the Rules of Practice, and the designation, following argument, of only those factual issues that involve a genuine and substantial dispute, together with any remaining questions of law to be resolved at an adjudicatory hearing. Actual adjudicatory hearings are to be held only on those issues found to meet the criteria of Section 134 and set for hearing after oral argument on the proposed issues. However, if no petitioner or party requests the use of the hybrid hearing procedures, then the usual 10 CFR Part 2 procedures apply.

(At this time, the Commission does not have effective regulations implementing Section 134 of the NWPRA although it has published rules which became effective November 14, 1985. See Hybrid Hearing Procedures for Expansion of Spent Fuel Storage Capacity at Civilian Nuclear Power Reactors, 50 FR 41662 (October 15, 1985).

Subject to the above requirements and any limitations in the order granting leave to intervene, those permitted to intervene become parties to the proceeding and have the opportunity to participate fully in the conduct of the hearing, including the opportunity to present evidence and cross-examine witnesses.

If a hearing is requested, the Commission will make a final determination on the issue of no significant hazards consideration. The final determination will serve to decide when the hearing is held.

If the final determination is that the amendment request involves no significant hazards consideration, the Commission may issue the amendment

and make it effective, notwithstanding the request for a hearing. Any hearing held would take place after issuance of the amendment.

If the final determination is that the amendment involves a significant hazards consideration, any hearing held would take place before the issuance of any amendment.

Normally, the Commission will not issue the amendment until the expiration of the 30-day notice period. However, should circumstances change during the notice period such that failure to act in a timely way would result, for example, in derating or shutdown of the facility, the Commission may issue the license amendment before the expiration of the 30-day notice period, provided that its final determination is that the amendment involves no significant hazards consideration. The final determination will consider all public and State comments received. Should the Commission take this action, it will publish a notice of issuance and provide for opportunity for a hearing after issuance. The Commission expects that the need to take this action will occur very infrequently.

A request for a hearing or a petition for leave to intervene must be filed with the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Docketing and Service Branch, or may be delivered to the Commission's Public Document Room, 1717 H Street, N.W., Washington, D. C., by the above date. Where petitions are filed during the last ten (10) days of the notice period, it is requested that the petitioner promptly so inform the Commission by a toll-free telephone call to Western Union at (800) 325-6000 (in Missouri (800) 342-6700). The Western Union operator should be given Datagram Identification Number 3737 and the

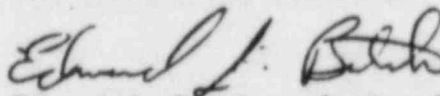
following message addressed to Edward J. Butcher: petitioner's name and telephone number; date petition was mailed; plant name; and publication date and page number of this FEDERAL REGISTER notice. A copy of the petition should also be sent to the Executive Legal Director, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, and to Gerald Garfield, Esq., Day, Berry and Howard, One Constitution Plaza, Hartford, Connecticut 06103, attorney for the licensee.

Nontimely filings of petitions for leave to intervene, amended petitions, supplemental petitions and/or requests for hearing will not be entertained absent a determination by the Commission, the presiding officer or the presiding Atomic Safety and Licensing Board, that the petition and/or request should be granted based upon a balancing of the factors specified in 10 CFR 2.714(a)(1)(i)(v) and 2.714(d).

For further details with respect to this action, see the application for amendment that is available for public inspection at the Commission's Public Document Room, 1717 H Street, N.W., Washington, D.C., and at the Waterford Public Library, 49 Rope Ferry Road, Waterford, Connecticut 06103.

Dated at Bethesda, Maryland, this 29 day of October, 1985.

FOR THE NUCLEAR REGULATORY COMMISSION



Edward J. Butcher, Acting Chief
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