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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

'89 JUL 19 P6:25

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

OFFICE OF SECRETARY
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BRANCH

In the Matter of)

Vermont Yankee Nuclear)
Power Corporation)

(Vermont Yankee Nuclear)
Power Station)

Docket No. 50-271-OLA
(Spent Fuel Pool)

NEW ENGLAND COALITION ON NUCLEAR POLLUTION'S MOTION
FOR LEAVE TO AMEND ENVIRONMENTAL CONTENTIONS 1 AND 3

Introduction

In the hearing on June 21, 1989, regarding Environmental Contention 3, the New England Coalition on Nuclear Pollution ("NECNP") submitted testimony regarding, inter alia, the characteristics of high density spent fuel storage racks and the nature of their contribution to the risk of a serious accident in the Vermont Yankee spent fuel pool. During the hearing, the Licensing Board raised several questions as to whether the characteristics of the racks themselves are encompassed by the basis of Environmental Contention 3. Tr. at 521-22.

NECNP believes that the risk of high-density reracking are plainly encompassed by the so-called "severe accident basis" of Environmental Contention 3, which is also the basis for Environmental Contention 1. The Coalition does not intend by this filing to abandon that position. However, in order to provide the fullest possible assurance that the characteristics of the racks will be litigable if and when Environmental Contentions 1

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and/or 3(B)¹ is remanded to the Licensing Board by the Appeal Board, NECNP hereby moves to amend the basis for those contentions to clarify that the risks and consequences of a spent fuel pool accident would be increased not only by the addition of 870 spent fuel assemblies to the pool, but also by the storage of the 2,870 spent fuel assemblies in high density racks.

NECNP recognizes that the Licensing Board has referred Environmental Contentions 1 and 3(B) to the Appeal Board. However, the requested amendment does not affect the issues before the Appeal Board in any way, and may be ruled on by the Licensing Board without the need for referral to the Appeal Board. NECNP asks the Licensing Board to make a conditional ruling on this motion, pending the Appeal Board's decision, so that discovery on all issues may begin promptly if the contentions are remanded to the Licensing Board.

The Amended Contention

The language submitted today amends the bases of Environmental Contention 1 and Environmental Contention 3, which were submitted on December 30, 1988, and admitted by the Licensing Board in LBP-88-26, 28 NRC 440 (1988). Environmental Contention 1 is repeated below, with the amended portion added in bold type:

The Environmental Assessment prepared by the Staff fails to consider the consequences and risks posed by the proposed amendment of a hypothesized accident (hydrogen

¹ "Environmental Contention 3(B)" is the Licensing Board's appellation for the accident-related portion of Environmental Contention 3, which has been referred to the Appeal Board. See Memorandum and Order of June 30, 1989, at 2.

detonation in the reactor building), resulting in a self-sustaining zircaloy cladding fire in a spent fuel pool, which would be greater than those previously evaluated in connection with the Vermont Yankee reactor. This risk is sufficient to constitute the proposed amendment as a "major federal action significantly affecting the environment" requiring the preparation and issuance of an Environmental Impact Statement prior to approval of the amendment.

Basis

The National Environmental Policy Act (NEPA) requires the preparation of an environmental impact statement detailing, inter alia, the environmental impact of the proposal and considering alternatives, for any "major federal action significantly affecting the quality of the human environment." 42 U.S.C. § 4332(C). The proposed amendment, which would substantially increase the risk to public health and safety associated with operation of the Vermont Yankee Plant, is such an action. The NRC has not prepared an environmental impact statement, as required by law and by 10 C.F.R. § 51.20.

The Environmental Assessment prepared by the NRC incorrectly concludes that no environmental impact statement is required, based on a failure to consider significant environmental hazards posed by the proposed amendment: a self-sustaining zircaloy cladding fire. According to NUREG/CR-4982, "Severe Accidents in Spent Fuel Pools in Support of Generic Safety Issue 82," Brookhaven National Laboratory (July 1987), one postulated event initiating a severe accident in a spent fuel pool storage pool includes pool heatup due to loss of cooling water circulation capability, resulting in a self-sustaining oxidation of the Zircaloy cladding (i.e. a cladding fire) or a cladding rupture.

The spent fuel pool at Vermont Yankee is located inside the reactor building. The NRC's most recent risk estimate for the Containment structure of the General Electric Mark I plants, such as Vermont Yankee, is that they are as likely as not to fail in a severe accident.² Neither the reactor building, which surrounds the spent fuel pool, nor the spent fuel pool itself, is designed to withstand the pressure and temperature loads that could be generated inside the reactor

² See NUREG-1150, "Reactor Risk Reference Document," Draft for Comment (February 1987), At 4-33 - 4-39 (describing the vulnerability of the Mark I containment design used by the Peach Bottom plant).

building by a severe accident.³ Moreover, the spent fuel pool cooling systems which are also in the reactor building, are not designed for the environmental conditions associated with severe accidents. Such an accident would threaten the spent fuel pool cooling system and/or the structural integrity of the pool, while simultaneously preventing access to the building for repairs or accident mitigation activities, due to the high radiation levels that would follow some accident scenarios.

A self-sustaining zirconium fire in a spent fuel pool with high density racking could be caused by partial fuel melt and hydrogen release to the reactor building, where the pool is located. By increasing the amount of fuel stored by 40%, the potential consequences of a reactor accident are greatly increased, and could result in severe long-term health effects in terms of radiation exposure.

A self-sustaining fuel cladding fire in a spent fuel pool with high density racking could also be caused by an accident which involves substantial fuel damage without full core melt, if hydrogen leaks to the reactor building. See NUREG-1150, Reactor Risk Reference Document, Draft for Comment, Feb, 1987, at 4-34 and 4-35. This is within the design basis for fuel damage, and could result in severe long-term health effects (i.e. person-rem).

Two principal factors contribute to the increased risk of a spent fuel pool accident posed by the proposed license amendment. First, the addition of 870 spent fuel assemblies to the spent fuel pool would increase the size of the pool's inventory of radionuclides that could be released to the environment during an accident, thus increasing the potential for environmental damage. Second, the use of high-density racking, coupled with the increased density of fuel storage, inhibits heat transfer away from the fuel cladding during a total or partial loss of cooling water from the spent fuel pool, and thus raises the probability of a zircaloy cladding fire. Such a fire may also spread more rapidly where spent fuel assemblies are densely packed.⁴

³ Calculations on the Peach Bottom Plant indicate that following primary containment failure, steam and hydrogen will be released to the reactor building where the hydrogen can burn or detonate. This will result in pressure and temperature loads which the reactor building is unlikely to withstand. NUREG/CR-4624, Vol. 1, at 4-26 - 4-62.

⁴ In further support of this amended basis, NECNP adopts and incorporates by reference the Testimony of Gordon Thompson, filed with the Licensing Board on May 23, 1989.

Accordingly, increasing the spent fuel pool storage capacity would have a significant impact on the public health and safety, requiring preparation of an Environmental Impact Statement.

Satisfaction of Late-filed Contention Standard

A balancing of the five factors listed in 10 C.F.R. § 2.714(a)(1) favors acceptance of NECNP's amended contention.⁵ First, NECNP had good cause for failing to file the amended basis earlier, because it reasonably believed that its original contention covered the entire license amendment, which includes both expansion and reracking.⁶ The contention and the first paragraph of the basis are not limited to the increased number of spent

5 These factors are:

- (i) Good cause, if any, for failure to file on time.
- (ii) The availability of other means whereby the petitioner's interest will be protected.
- (iii) The extent to which the petitioner's participation may reasonably be expected to assist in developing a sound record.
- (iv) The extent to which the petitioner's interest will be represented by existing parties.
- (v) The extent to which the petitioner's participation will broaden the issues or delay the proceeding.

6 In the Federal Register notice announcing the proposed license amendment, NRC stated that the amendment would

revise the Vermont Yankee Technical Specifications to authorize the licensee to increase the storage capacity of the spent fuel pool from the present capacity of 2000 fuel assemblies to 2870 fuel assemblies. The change would be accomplished by the installation of high density fuel rack modules with center to center clearances between cells of 6.218 inches compared to the current design of 7.0 inches. The racks would utilize a neutron absorbing material between cells to assure a subcritical configuration.

fuel assemblies, but speak broadly of the consequences and risks posed by the "proposed amendment." The fourth and fifth paragraphs of the basis also refer to the potential causes of a "self-sustaining fuel cladding fire in a spent fuel pool with high density racking." The contention thereby provided the Board and parties with the requisite "broad outlines" necessary to place the other parties on "general notice" of NECNP's concerns. Texas Utilities Electric Co. (Comanche Peak Steam Electric Station, Unit 1), ALAB-868, 25 NRC 912, 930, 933 (1987). NECNP thus had good cause to believe that the Board would find that the contribution of the high density storage racks to the risks and consequences of an accident were included within the scope of Environmental Contentions 1 and 3.

NECNP also satisfies the second and fourth prongs of the test: there is no other forum for or means of protecting NECNP's interest in litigating the issues raised in its amended contention, and there are no other parties that have gained admission of such a contention and could thereby represent NECNP's interest in it.

With respect to the third criterion, NECNP has already demonstrated that it will assist in developing a sound record in this case, by introducing Dr. Thompson's testimony on Environmental Contention 3, filed May 23, 1989. That testimony summarizes the facts to which Dr. Thompson will testify if the Appeal Board

remands Environmental Contention 1 or basis (B) of Environmental Contention 3.⁷

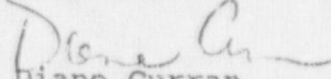
Finally, admission of the amended contention will not broaden or delay the proceedings. As the Appeal Board held in Comanche Peak, the question to be addressed in considering the potential effect of late-filed contentions on a proceeding is "whether, by filing late, the intervenor has occasioned a potential for delay in the completion of the proceeding that would not have been present had the filing been timely." ALAB-868, 25 NRC at 927, quoting Washington Public Power Supply System, (WPPSS Nuclear Project Nos. 1 & 2), ALAB-747, 18 NRC 1167, 1180 (1983) (emphasis in original). Admission of the amended basis to Contentions 1 and 3 would not broaden or delay this proceeding any more than it would have been affected had the language been admitted in the first instance. In fact, for all practical purposes, the litigation of these contentions remains suspended at its earliest stage. The admissibility of Environmental Contentions 1 and 3(B) is still before the Appeal Board, and discovery has not even commenced. Thus, admission of this amended contention will not in any way affect the orderly conduct of the hearings.

⁷ See, in particular, Sections IV and V of Dr. Thompson's testimony, which describe the closed configuration of high density racks and their contribution to the risk of a zircaloy cladding fire in the spent fuel pool.

CONCLUSION

For the foregoing reasons, the amended basis of Environmental Contentions 1 and 3 should be admitted by the Licensing Board, and held in abeyance pending the Appeal Board's ruling on the admissibility of Environmental Contention 1 and the severe accident basis of Environmental Contention 3.

Respectfully submitted,



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July 19, 1989

CERTIFICATE OF SERVICE

I certify that on July 19, 1989, copies of the foregoing pleading were served by hand, first class mail or overnight mail as indicated, on all parties listed below:

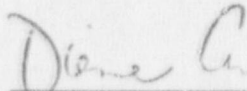
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