

# **ENERGY NORTHWEST**

P.O. Box 968 ■ Richland, Washington 99352-0968

November 18, 1999  
GO2-99-202

Docket No. 50-397

U.S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, D.C. 20555

Gentlemen:

Subject: **WNP-2, OPERATING LICENSE NPF-21  
REQUEST FOR AMENDMENT  
TECHNICAL SPECIFICATION 4.3.1.2.b  
FUEL STORAGE**

Reference: NRC Administrative Letter 98-10, December 29, 1998, "Dispositioning of Technical Specifications that are Insufficient to Assure Plant Safety"

In accordance with the Code of Federal Regulations, Title 10, Parts 2.101, 50.59, and 50.90, Energy Northwest hereby submits a request for amendment to the WNP-2 Operating License. Specifically, Energy Northwest is requesting a revision to sub-section 4.3.1.2.b of Technical Specification 4.3.1 "Criticality," to revise the wording that defines the limitations for placement of fuel in the New Fuel Storage Facility.

The current wording of Technical Specification 4.3.1.2.b, adopted as part of the Improved Technical Specifications and documented by NUREG-1434, correctly describes the new fuel vault rack spacing associated with the original rack design. However, it does not accurately reflect the current design features and controls relied upon to adequately limit the spacing of new fuel assemblies in the new fuel vault as required to ensure compliance with Technical Specification 4.3.1.2.a under all postulated conditions; and, therefore constitutes a degraded or non-conforming condition pursuant to the guidance of the Reference. This correction should have been made as part of the review activities in preparation for submittal of the Improved Technical Specifications, but was not. We are proposing an amendment to subsection 4.3.1.2.b of Technical Specification 4.3.1 to address this non-conforming condition.

A001

PDR ADOC 0500397

**REQUEST FOR AMENDMENT  
TECHNICAL SPECIFICATION 4.3.1.2.b  
FUEL STORAGE**

Page 2 of 2

Additional information has been attached to this letter to complete Energy Northwest's amendment request. Attachment 1 provides a detailed description and basis for acceptability of the proposed changes. Attachment 2 describes an evaluation of the proposed changes in accordance with 10CFR50.92(c), and concludes the changes do not result in a significant hazards consideration. Attachment 3 provides the Environmental Assessment Applicability Review and notes that the proposed change meets the eligibility criteria for a categorical exclusion as set forth in 10CFR51.22(c)(9). Therefore, in accordance with 10CFR51.22(b), an environmental assessment of the change is not required. Attachment 4 summarizes the proposed change and provides a marked up page of the Technical Specification. Attachment 5 submits the typed Technical Specification page as proposed by this request.

This request for an amendment has been approved by the WNP-2 Plant Operations Committee and reviewed by Energy Northwest's Corporate Nuclear Safety Review Board. In accordance with 10CFR50.91, the State of Washington has been provided a copy of this letter.

Should you have any questions or desire additional information regarding this matter, please contact me or PJ Inserra at (509) 377-4147.

Respectfully,



RL Webring  
Vice President, Operations Support/PIO  
Mail Drop PE08

Attachments

cc: EW Merschoff -- NRC RIV  
JS Cushing -- NRC NRR  
NRC Resident Inspector -- 927N

DJ Ross -- EFSEC  
TC Poindexter -- Winston & Strawn  
DL Williams -- BPA/1399

STATE OF WASHINGTON )  
 )  
COUNTY OF BENTON )

Subject: Request for Amendment  
Technical Specification 4.3.1.2.b  
Fuel Storage

I, DK ATKINSON, being duly sworn, subscribe to and say that I am the Acting Vice President, Operations Support/PIO for ENERGY NORTHWEST, the applicant herein; that I have the full authority to execute this oath; that I have reviewed the foregoing; and that to the best of my knowledge, information, and belief the statements made in it are true.

DATE November, 18, 1999

DK Atkinson  
DK Atkinson  
Acting Vice President, Operations Support/PIO

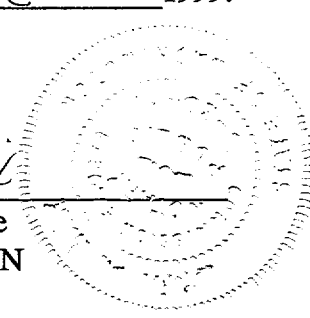
On this date personally appeared before me DK Atkinson, to me known to be the individual who executed the foregoing instrument, and acknowledged that he signed the same as his free act and deed for the uses and purposes herein mentioned.

GIVEN under my hand and seal this 18 day of November 1999.

L. A. Mij  
Notary Public in and for the  
STATE OF WASHINGTON

Residing at N. Richland

My Commission Expires 3-29-01



## Evaluation of Significant Hazards Consideration

### Summary of Proposed Change

Energy Northwest is proposing an amendment to sub-section 4.3.1.2.b of Technical Specification 4.3.1, "Criticality." We propose to change the current wording, which describes the new fuel racks, with wording that would limit the number of fuel assemblies that may be stored in the facility, and establish geometrical limitations for storage of new fuel assemblies in the racks. The proposed wording is as follows (changes are underlined):

- 4.3.1.2 The new fuel storage racks are designed and, with fuel assemblies inserted, shall be maintained with:
- a. (no change)
  - b. A maximum of 60 new fuel assemblies stored in the new fuel storage racks, arranged in 6 spatially separated zones. Within a storage zone, the nominal center-to-center distance between cells for storing fuel assemblies is 14 inches. The nominal center-to-center distance between cells for storing fuel assemblies in adjacent zones is 37 inches. Design features relied upon to spatially limit the placement of fuel bundles within the new fuel vault are required to be installed prior to placement of new fuel bundles in the vault.

### No Significant Hazards Consideration Determination

Energy Northwest has evaluated the proposed change to Technical Specifications using the criteria established in 10CFR50.92(c), and has determined that it does not represent a significant hazards consideration as described below:

- **The operation of WNP-2 in accordance with the proposed amendment will not involve a significant increase in the probability or consequences of an accident previously evaluated.**

The proposed change does not increase the consequences of any previously analyzed accident or transient, since the arrangement of new nuclear fuel in storage racks maintains the effective neutron multiplication factor much less than 0.95. The change in configuration requirements will not increase the probability of any previously analyzed accident, because physical constraints are installed in the storage racks when new fuel assemblies are inserted, assuring that only certain cells can be used for storage of new fuel.

Therefore, operation of WNP-2 in accordance with the proposed amendment will not involve a significant increase in the probability or consequences of an accident previously evaluated.

**REQUEST FOR AMENDMENT  
TECHNICAL SPECIFICATION 4.3.1.2.b  
FUEL STORAGE**

**Attachment 2**

Page 2 of 2

- **The operation of WNP-2 in accordance with the proposed amendment will not create the possibility of a new or different kind of accident from any accident previously evaluated.**

The proposed change is consistent with a new fuel criticality analysis performed in support of a previously implemented change to Section 9.1 of the FSAR. A variety of accidents were considered in that analysis, and it was determined that the effective neutron multiplication factor was well below specified limits for any normal or accident case.

Therefore, operation of WNP-2 in accordance with the proposed amendment will not create the possibility of a new or different kind of accident previously evaluated.

- **The operation of WNP-2 in accordance with the proposed amendment will not involve a significant reduction in the margin of safety.**

The current wording of Technical Specification 4.3.1.2.b was determined to not provide sufficient margin of safety to assure that the requirements of Technical Specification 4.3.1.2.a would be maintained. The proposed amendment modifies the requirements for new fuel storage configuration for Technical Specification 4.3.1.2.b, to assure the margin of safety is maintained for optimum moderation conditions.

Therefore, operation of WNP-2 in accordance with the proposed amendment will not involve a significant reduction in the margin of safety.

**REQUEST FOR AMENDMENT**  
**TECHNICAL SPECIFICATION 4.3.1.2.b**  
**FUEL STORAGE**  
**Attachment 1**  
Page 1 of 3

**Description of Proposed Changes**

**Summary Of Proposed Technical Specification Change**

Energy Northwest is proposing an amendment to sub-section 4.3.1.2.b of Technical Specification 4.3.1, "Criticality." We propose to change the current wording, which describes the new fuel racks, with wording that would limit the number of fuel assemblies that may be stored in the facility, and establish geometrical limitations for storage of new fuel assemblies in the racks. The proposed wording is as follows (changes are underlined):

- 4.3.1.2 The new fuel storage racks are designed and, with fuel assemblies inserted, shall be maintained with:
- a. (no change)
  - b. A maximum of 60 new fuel assemblies stored in the new fuel storage racks, arranged in 6 spatially separated zones. Within a storage zone, the nominal center-to-center distance between cells for storing fuel assemblies is 14 inches. The nominal center-to-center distance between cells for storing fuel assemblies in adjacent zones is 37 inches. Design features relied upon to spatially limit the placement of fuel bundles within the new fuel vault are required to be installed prior to placement of new fuel bundles in the vault.

**Basis for the Proposed Technical Specification Change**

The New Fuel Storage Facility is a dry storage facility with air as the medium surrounding stored fuel. The facility is a concrete vault; both the vertical and horizontal cross-sections are rectangular. The floor of the vault includes a drain to remove water that may accidentally or unknowingly be introduced into the vault.

The cell utilization pattern for the fuel consists of 2 contiguous rows in which fuel assemblies may be stored, alternating with 2 contiguous rows in which fuel storage is prohibited. Within a 2-row set in which fuel is stored, alternate cells are physically blocked, in a checkerboard pattern, to prevent inadvertent cell usage. This results in a nominal center-to-center distance between cells for storing fuel assemblies of 14 inches. The nominal center-to-center distance between cells used to store fuel, across the 2-row set in which fuel storage is prohibited, is 37 inches. A sketch of this utilization pattern is included on Page 3 of this attachment.

The above configuration was analyzed to determine the effective neutron multiplication factor,  $k_{eff}$ , for (1) geometrical variations resulting from tolerances for the installation, (2) air as the vault atmosphere, and (3) water as the vault atmosphere in a range of densities varying from 1 to 0.02 gm./cc.

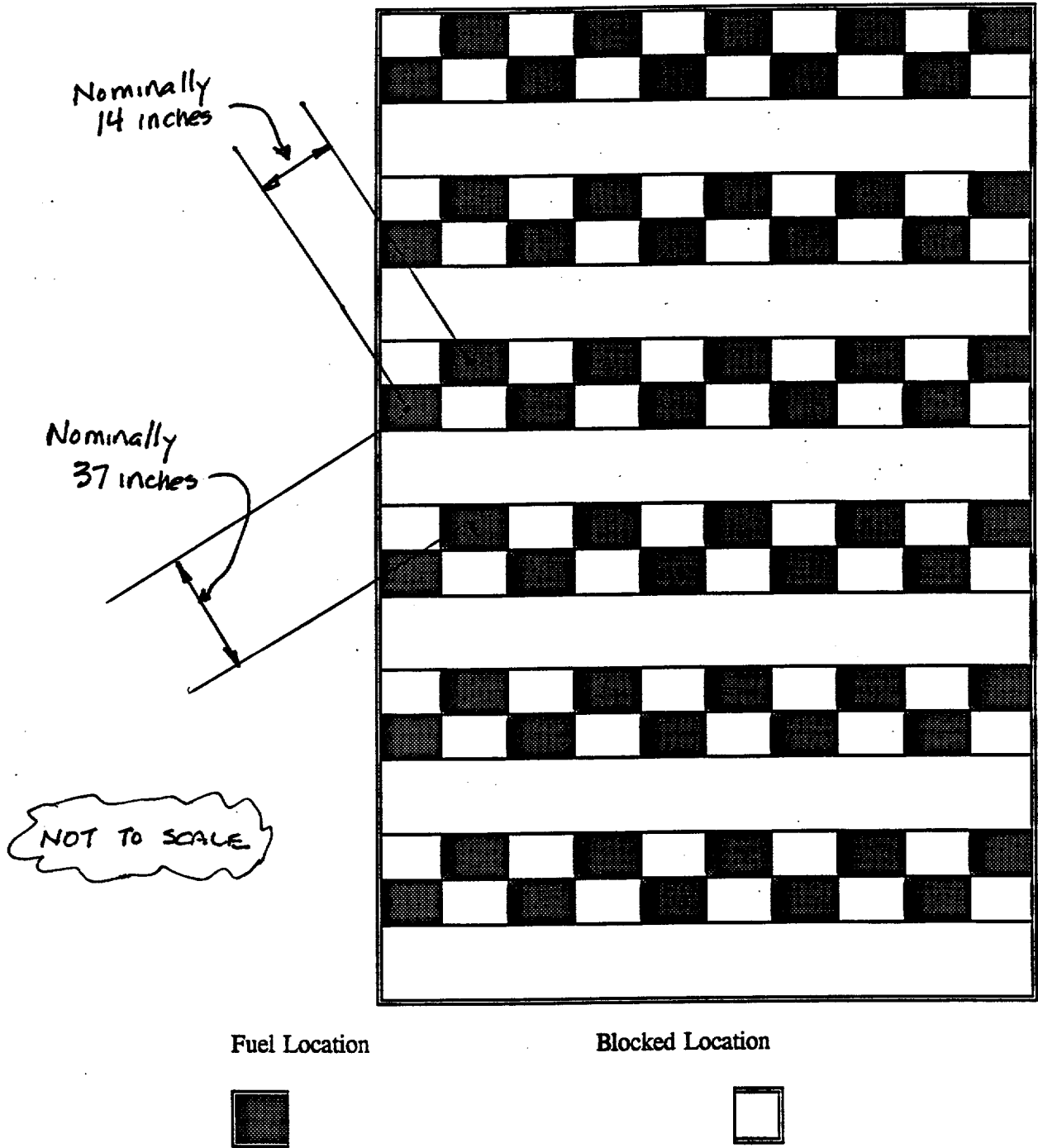
**REQUEST FOR AMENDMENT  
TECHNICAL SPECIFICATION 4.3.1.2.b  
FUEL STORAGE**

**Attachment 1**

Page 2 of 3

Additionally, postulated accidents were included in the analysis: assemblies dropped on the vault floor, and insertion patterns that varied from the baseline configuration described above. No credit was taken for the neutron absorptive effect of metals comprising the storage rack, the gadolinium and the zirconium cladding in the fuel assemblies, and any metal in the concrete structure of the vault. The analysis was performed using the computer code KENO, with neutron cross-sections calculated using the PHOENIX code. The NRC has approved both codes. The conclusion of the analysis of this configuration is that  $k_{\text{eff}}$  ranges between 0.64 and 0.86 for normal geometry and is 0.898 for a worst-case accident involving an insertion pattern that varied from the specified baseline configuration. The dropped fuel bundle accident resulted in a range of  $k_{\text{eff}}$  of 0.87 to 0.88. Technical Specification 4.3.1.2.a specifies a limiting value of 0.95 for  $k_{\text{eff}}$  when fully flooded with unborated water. In short, the KENO analysis shows a considerable margin of safety for the configuration described above, graphically presented on Page 3 of this attachment, and for configurations resulting from accidents involving dropped fuel assemblies and insertion errors.

NEW FUEL STORAGE VAULT FUEL LOADING PATTERN





**REQUEST FOR AMENDMENT**  
**TECHNICAL SPECIFICATION 4.3.1.2.b**  
**FUEL STORAGE**  
**Attachment 3**  
Page 1 of 1

**Environmental Assessment Applicability Review**

Energy Northwest has evaluated the proposed amendment against the criteria for identification of licensing and regulatory actions requiring environmental assessment in accordance with 10CFR51.21.

The proposed change meets the criteria for categorical exclusion as provided under 10CFR51.22(c)(9) because the change does not pose a significant hazards consideration nor does it involve an increase in the amounts, or a change in the types, of any effluent that may be released offsite.

Furthermore, this request does not involve an increase in individual or cumulative occupational exposure.

**REQUEST FOR AMENDMENT  
TECHNICAL SPECIFICATION 4.3.1.2.b  
FUEL STORAGE  
Attachment 4**

**Marked-Up Version of Technical Specification 4.3.1.2.b**

## 4.0 DESIGN FEATURES (continued)

---

### 4.3 Fuel Storage

#### 4.3.1 Criticality

4.3.1.1 The spent fuel storage racks are designed and shall be maintained with:

- a.  $k_{\text{eff}} \leq 0.95$  if fully flooded with unborated water, which includes an allowance for uncertainties as described in Section 9.1.2 of the FSAR; and
- b. A nominal 6.5 inch center to center distance between fuel assemblies placed in the storage racks. , with fuel assemblies inserted.

4.3.1.2 The new fuel storage racks are designed and shall be maintained with:

- a.  $k_{\text{eff}} \leq 0.95$  if fully flooded with unborated water, which includes an allowance for uncertainties as described in Section 9.1.1 of the FSAR; and
- b. ~~A nominal fuel assembly center to center spacing of 7.0 inches within rows and 12.25 inches between rows in the new fuel storage racks.~~

#### 4.3.2 Drainage

The spent fuel storage pool is designed and shall be maintained to prevent inadvertent draining of the pool below elevation 583 ft 1.25 inches.

#### 4.3.3 Capacity

The spent fuel storage pool is designed and shall be maintained with a storage capacity limited to no more than 2658 fuel assemblies.

---

- b. A maximum of 60 new fuel assemblies stored in the new fuel storage racks, arranged in 6 spatially separated zones. Within a storage zone, the nominal center-to-center distance between cells for storing fuel assemblies is 14 inches. The nominal center-to-center distance between cells for storing fuel assemblies in adjacent zones is 37 inches. Design features relied upon to spatially limit the placement of fuel bundles within the new fuel vault are required to be installed prior to placement of new fuel bundles in the vault.

**REQUEST FOR AMENDMENT**  
**TECHNICAL SPECIFICATION 4.3.1.2.b**  
**FUEL STORAGE**  
**Attachment 5**

**Replacement Page for Technical Specification 4.3.1.2.b**

## 4.0 DESIGN FEATURES (continued)

---

### 4.3 Fuel Storage

#### 4.3.1 Criticality

4.3.1.1 The spent fuel storage racks are designed and shall be maintained with:

- a.  $k_{\text{eff}} \leq 0.95$  if fully flooded with unborated water, which includes an allowance for uncertainties as described in Section 9.1.2 of the FSAR; and
- b. A nominal 6.5 inch center to center distance between fuel assemblies placed in the storage racks.

4.3.1.2 The new fuel storage racks are designed and, with fuel assemblies inserted, shall be maintained with:

- a.  $k_{\text{eff}} \leq 0.95$  if fully flooded with unborated water, which includes an allowance for uncertainties as described in Section 9.1.1 of the FSAR; and
- b. A maximum of 60 new fuel assemblies stored in the new fuel storage racks, arranged in 6 spatially separated zones. Within a storage zone, the nominal center-to-center distance between cells for storing fuel assemblies is 14 inches. The nominal center-to-center distance between cells for storing fuel assemblies in adjacent zones is 37 inches. Design features relied upon to spatially limit the placement of fuel bundles within the new fuel vault are required to be installed prior to placement of new fuel bundles in the vault.

#### 4.3.2 Drainage

The spent fuel storage pool is designed and shall be maintained to prevent inadvertent draining of the pool below elevation 583 ft 1.25 inches.

#### 4.3.3 Capacity

The spent fuel storage pool is designed and shall be maintained with a storage capacity limited to no more than 2658 fuel assemblies.

---