



# PECO NUCLEAR

A Unit of PECO Energy

DOCKET # 72

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965 Chesterbrook Boulevard  
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November 5, 1999

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Secretary  
U.S. Nuclear Regulatory Commission  
Attn: Rulemakings and Adjudications Staff  
Washington, DC 20555-0001

DOCKET NUMBER  
PROPOSED RULE PR 72  
(64FR45920)

Subject: Comments Concerning Proposed Rule 10CFR72,  
"List of Approved Spent Fuel Storage Casks: (TN-88) Addition"  
(64FR45920, dated August 23, 1999)

Dear Sir:

This letter is being submitted in response to the NRC's request for comments concerning Proposed Rule 10CFR72, "List of Approved Spent Fuel Storage Casks: (TN-88) Addition," which was published in the Federal Register (i.e., 64FR45920, dated August 23, 1999). The NRC is proposing to amend its regulations to add the Transnuclear TN-88 cask system to the list of approved spent fuel storage casks. This amendment will allow the holders of power reactor operating licenses to store spent fuel in the Transnuclear TN-88 cask system under a general license.

PECO Energy appreciates the opportunity to comment on this proposed rule. We believe that the proposed rule provides for increased flexibility and competitiveness while maintaining adequate protection of public health and safety.

PECO Energy and Transnuclear endorse the comments presented by the Transnuclear owners group on this subject. In addition, we fully support the adoption of Dry Cask Storage Technical Specifications proposed in Nuclear Energy Institute (NEI) guideline 99-06. Specific comments on the Technical Specifications attached to the draft Certificate of Compliance are provided at Attachment 1. Comments on the preliminary safety evaluation report are provided at Attachment 2. Comments on the TN-88 Safety Analysis Report are provided at Attachment 3.

If you have any questions, please do not hesitate to contact us.

Very truly yours,

PECO Energy Company

Transnuclear

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Director - Licensing

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Attachments

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**ATTACHMENT 1**

The Technical Specifications for the TN-68 dry storage cask should follow the form and content of Nuclear Energy Institute (NEI) guideline 99-06, "Dry Cask Storage Technical Specifications." NEI has developed standard Technical Specifications that are applicable to all cask designs. Adoption of NEI 99-06 will improve licensee understanding of the Technical Specifications requirements through standardization of terminology and format. NEI 99-06 provides Technical Specifications compatible with the Improved Technical Specifications governing the operation of Peach Bottom Atomic Power Station, Units 2 and 3. PECO Energy volunteers its services to develop TN-68 dry storage cask Technical Specifications based on NEI 99-06. Should the decision be made to retain the Technical Specifications published with the draft Certificate of Compliance, then the following changes are necessary:

1. An example 1.4-3 of an "otherwise stated" exception to the applicability of the surveillance required by LCO 3.1.6 should be added. A new page 1.4-5 is provided for consideration.
2. On page 2.0-1, fuel specifications of maximum rod pitch, minimum rod outside diameter and maximum uranium content are listed. Rather than minimum or maximum values for the various fuel types, the fuel vendor provides nominal values. The Bases for 2.1.1 recognize that the uranium content is nominal and that user verification of fuel parameters may be done by administrative review. Therefore, these fuel specifications should be identified as nominal on page 2.0-1.
3. On page 2.0-1, channel thickness up to 0.120 inches thick is acceptable. The channel thickness is a nominal value that should be identified as such.
4. Table 2.1.1-1 provides minimum acceptable cooling times as a function of burnup and initial enrichment. The title should be changed to "Minimum Acceptable Cooling Time as a Function of Maximum Burnup and Minimum Initial Enrichment."
5. On page 3.1.1-1, LCO 3.1.1 requires, "...from the pumping system." For consistency in terminology, "pumping" should be change to "vacuum drying."
6. On page 3.1.1-2, SR 3.1.1.1 should be changed to read, "Verify that the equilibrium cask cavity vacuum drying pressure is brought to  $\leq 4$  mbar absolute for  $\geq 30$  minutes."
7. On page 3.1.2-1, the Required Action and Completion Times for LCO 3.1.2 are provided without technical basis. A new page 3.1.2-1 is provided for consideration.
8. On page 3.1.2-2, the Frequency for SR 3.1.2.1 should be changed from 42 to 48 hours.
9. On page 3.1.4-2, the Frequency of SR 3.1.4.1 should be changed to, "Once prior to TRANSPORT OPERATIONS OR Once within 48 hours of commencing STORAGE OPERATIONS."
10. On Page 3.1.5-1, all conditions and required actions have not been identified. A new page 3.1.5-1 is provided for consideration.
11. On page 3.1.5-2, the Frequency of SR 3.1.5.2 should be changed to read, "Once, within 7 days of commencing STORAGE OPERATIONS AND 36 months thereafter."

12. On page 3.1.6-1, SR 3.1.6.,1 Frequency and Requirements are unclear and in error. A new page 3.1.6-1 is provided for consideration.
13. On page 3.2.1-2, the Applicability of LCO 3.2.1, the Required Action, and its associated Completion Time does not adequately address the retrieval of a cask from an ISFSI to the spent fuel pool to unload the cask in accordance with the Technical Specifications. SR 3.2.1.1 should be performed prior to moving a cask from any restricted area. In addition, LCO 3.2.1 would require entry into the Action as soon as Loading Operations commenced. This is a significant administrative burden without commensurate benefit. A new page 3.2.1-1 is provided for consideration.
14. On page 4.0-3, the title and first paragraph should be changed from site specific to ISFSI specific for clarity. This avoids confusing the ISFSI site requirements with reactor site requirements. Item 3 should be changed to state, "Seismic loads on the ISFSI pad...." This clarifies the intent of Item 3. Also, item 6 should be deleted. Engineered features to reduce radiation exposure should be classified as "not important to safety" to be consistent with the optional cask shield ring specified in Technical Specification 5.2.3.
15. On pages 5.0-3 through 5.0-5 describing the cask surface dose rate evaluation program, inconsistent terminology is used regarding the neutron shielding. "Radial neutron shield," "neutron shield," and "radial shield" are terms used interchangeably. A single term, "radial neutron shield," should be used consistently throughout the cask surface dose rate evaluation program.
16. On page 5.0-5, the reference to Figure 5.2.3-1 should be deleted. The description for the locations to perform surface dose rate measurement is sufficiently clear without reliance on Figure 5.2.3-1. Additionally, Figure 5.2.3-1 depicts point A at a location that is inconsistent with the description in Technical Specification 5.2.3.7.a.
17. Editorial corrections should be made for the following items:
  - a. On the bottom of page 1.2-1, "continued" should be moved above the line.
  - b. On page 1.3-5, "Time the" should be moved from the first column to the second column of information.
  - c. On the bottom of page 3.0-1, "continued" should be added below the line.
  - d. At the top of page 3.0-2, "3.0 LCO APPLICABILITY (continued)" should be added.
  - e. At the bottom of page 3.0-3, "continued" should be moved above the line.
  - f. At the top of page 3.0-4, the "continued" above the line should be deleted and the "continued" below the line should begin with a lower case letter
  - g. On page 3.1.1-1, the double line separating conditions B and C should be changed to a single line.

1.4 Frequency

EXAMPLES  
(continued)

EXAMPLE 1.4-3

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>-----NOTE-----            Not required to be performed if the ambient temperature is known to be above 32°F.            -----</p> <p>Verify ambient temperature is within the limit. If ambient temperature is below the limit, verify by direct measurement that cask surface temperature is within the limit.</p>	<p>Once prior to cask transfer to ISFSI</p>

Example 1.4-3 specifies that the requirements of this Surveillance do not have to be met if the ambient temperature is known to be above 32°F. The Note constitutes an "otherwise stated" exception to the Applicability of this Surveillance. Therefore, if the Surveillance were not performed prior to movement of cask, but the ambient temperature is known to exceed 32°F, there would be no failure of the SR nor failure to meet the LCO.

3.1 CASK INTEGRITY

3.1.2 Cask Helium Backfill Pressure

LCO 3.1.2 The cask cavity shall be filled with helium to a pressure of 2.0 atm absolute (+0/-10%).

APPLICABILITY: During LOADING OPERATIONS.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>-----NOTE----- Not applicable until SR 3.1.2.1 is performed. -----</p> <p>A. Cask helium backfill pressure limit not met.</p>	<p>A.1 Establish cask helium backfill pressure within limits.</p>	<p>48 hours</p>
<p>B. Required Action and Associated Completion Time of Condition A not met.</p>	<p>-----NOTE----- Required Action B.1 applies until helium is removed for Required Actions. -----</p> <p>B.1 Pressurize the cask cavity with helium to &gt;0.1 atm absolute.</p> <p><u>AND</u></p> <p>B.2 Remove all fuel assemblies from the cask.</p>	<p>12 hours</p> <p>30 days</p>

3.1 CASK INTEGRITY

3.1.5 Cask Interseal Pressure

LCO 3.1.5 Each cask interseal pressure shall be  $\geq 3.0$  atm absolute.

APPLICABILITY: During TRANSPORT OPERATIONS,  
During STORAGE OPERATIONS.

ACTIONS

-----NOTE-----

Separate Condition entry is allowed for each cask.  
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CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Cask interseal pressure not within limits.	A.1 Restore cask interseal pressure to within limits.	7 days
	<u>AND</u> A.2 Determine cause of cask interseal pressure below limit.	7 days
B. Cask interseal pressure not within limits due to closure seal leakage.	B.1 Remove all fuel assemblies from cask.	30 days
C. Required Actions and Associated Completion Time of Condition A not met.	C.1 Remove all fuel assemblies from cask.	30 days

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.1.5.1      Verify cask interseal helium pressure is $\geq 3.0$ atm absolute.	7 days
SR 3.1.5.2      Perform CHANNEL OPERATIONAL TEST (COT) of each cask overpressure system.	Once, within 7 days of entering STORAGE OPERATIONS  <u>AND</u>  36 months thereafter

3.1 CASK INTEGRITY

3.1.6 Cask Minimum Lifting Temperature

LCO 3.1.6 The loaded cask minimum lifting temperature shall be  $\geq -20^{\circ}\text{F}$ .

APPLICABILITY: During TRANSPORT OPERATIONS.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Cask minimum lifting temperature below limit.	A.1 Lower cask to a safe position.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p style="text-align: center;">-----NOTE-----</p> <p>Not required to be performed if the ambient temperature is known to be above 32°F.</p> <p style="text-align: center;">-----</p>	
SR 3.1.6.1 Verify ambient temperature is within the limit. If ambient temperature is below the limit, verify by direct measurement that cask surface temperature is within the limit.	Once, prior to lifting cask

3.2 CASK RADIATION PROTECTION

3.2.1 Cask Surface Contamination

LCO 3.2.1 Removable contamination on the cask exterior surfaces shall not exceed:

- a. 1000 dpm/100 cm<sup>2</sup> from beta and gamma sources; and
- b. 20 dpm/100 cm<sup>2</sup> from alpha sources.

APPLICABILITY: During TRANSPORT OPERATIONS.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Cask removable surface contamination limits not met.	A.1 Place cask in a safe position and suspend TRANSPORT OPERATIONS if in progress.  <u>AND</u>  A.2 Restore cask removable surface contamination to within limits if not within spent fuel containment building.	Immediately          48 hours
B. Required Action and Associated Completion Time OF Condition A not met.	B.1 Remove all fuel assemblies from cask.	30 days

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.2.1.1      Verify that the removable contamination on exterior surfaces of the cask containing spent fuel is within limits.	Once, prior to TRANSPORT OPERATIONS

**ATTACHMENT 2**

The following comments are provided on the TN-68 Dry Storage Cask System Preliminary Safety Evaluation Report:

1. On page 3-5, the third paragraph ends in an extraneous Ø.
2. On page 3-5, the basis for the allowable stress for the 6061-T6 alloy is in error.
3. On page 3-17, Reference 4 should be changed to, "ANSI N 14.6, Special Lifting Devices for Shipping Containers Weighing 10,000 pounds or More for Nuclear Materials, 1986".
4. On page 4-9, the second sentence in the first paragraph under Section 4.5.2.4 should be changed to, "Assuming design basis heat load fuel and completion of cask cavity drying, helium backfill should be completed within 48 hours...." This change is needed to conform with Technical Specification 3.1.2.
5. On page 5-3, exception was taken to the TN-68 SAR peaking factors and source distribution. In a number of meetings at Rockville, PECO Nuclear personnel explained to NRC personnel the concept of spectral shift and how BWR core designers use it to enhance fuel bundle energy efficiency. One aspect of spectral shift is flow spectral shift (others are bundle and control rod) which is modeled by TN by void history. With a bottom peaked power distribution early in cycle, there is a lower power, hardened neutron spectrum in the upper part of the bundle. In the latter part of the cycle, the power distribution shifts toward the upper part of the core but continues to be limited in being completely homogeneous in exposure distribution due to voiding in the top of the core. The use of spectral shift void history on early design fuel (7x7) by TN lends a considerable conservatism and should be reconsidered.
6. On page 7-4, ISG-5 was used to review the TN-68 submittal. NEI, EPRI and PECO Nuclear has taken exception to a number of the assumptions and values used in the guidance. While a formal NEI position paper is forthcoming, the following draft SER specific comments are offered:
  - a) In Table 7-1, the % rods failed in the off-normal and accident condition (10% and 100%) are not consistent with industry experience and research. More reasonable values are on the order of 0.0001% and 0.01% for off-normal and accident respectively.
  - b) In Table 7-1, the meteorological conditions to be used to analyze the offsite dose consequences should be consistent with that used for the power plant.
  - c) In Table 7-2, there should be a TEDE limit only. The "Total Effective Dose Equivalent" is the sum of the deep dose equivalent for external exposure and the committed effective dose equivalent for internal exposure. The calculation of other doses is redundant.
7. On page 7-6, Reference 5 should be updated to reflect issuance of ISG-5, Revision 1 by Mr. E. W. Brach in 1999.

8. On page 8-4, the last paragraph in Section 8.3.2 refers to a check valve to restrict cooling water flow if cask pressure exceeds 90 psia. A check valve will not provide this function if the pump is capable of providing cooling water flow at a pressure greater than 90 psia. A pressure control valve would provide the desired capability.
9. On page 9-8, Reference 5 should be changed from ANSI N14.6-1993 to ANSI N14.6-1986.
10. On page 10-3, the last paragraph under Section 10.3.1 should be deleted. Engineered features should be treated consistent with the optional cask shield ring which is not considered Important to Safety.
11. On page 11-1, the last sentence under Section 11.0 should be changed from SAR Revision 4 to SAR Revision 5.

**ATTACHMENT 3**

The following comments are provided on the TN-68 Dry Storage Cask Safety Analysis Report:

1. On page 8.1-3, the cask transporter is identified as equipment required for loading and unloading the TN-68 casks. The first sentence of the description for the cask transporter should be changed to read, "The cask transporter is generally set to limit the lift height of the cask to ensure that the maximum gravitational loading force limit in the event of a cask drop is met."
2. Chapter 1 drawings should be revised as follows:
  - a. 972-70-1 Add tolerance of  $+0/-0.25$  to 13.25 inch dimension to accommodate variations due to welding.
  - b. 972-70-2 Change material of protective cover to SA-516 GR. 70 or SA-105 to allow cover flange to be made from a forging. The material properties are the same.
  - c. 972-70-3 Add note to allow protective cover flange to be made from a one piece forging.
  - d. 972-70-4 Add note 6 to allow clearance hole in rail at end to be optional. The clearance hole is required to allow access for torqueing and is not necessary at the ends of the rails. Increase size of clearance hole from 2.00 inch diameter to 2.56 inch diameter to allow sufficient clearance for socket wrench.
  - e. 972-70-5 Note 2. Revise to 100% full penetration required. PT examination per ASME Section III, subsection NG-5231. If automatic welding process is used, PT examination is in accordance with ASME Section III, subsection NG-5233.
  - f. 972-70-6 Add note to allow alternate plumbing configurations. This is a Not Important to Safety item and some flexibility should be allowed for operational efficiency. Also, an additional connection may be required through the protective cover for helium leak testing the OP system.
3. The material of the metallic seals described in Chapters 2 and 7 should be changed from a stainless steel liner to a stainless steel or nickel alloy liner. This is a correction to what was previously submitted. The larger o-rings have a nickel alloy liner.
4. In fabrication of the basket cells, we have run into a concern regarding the progressive examination of the longitudinal seam welds of the boxes. The process selected is a Plasma Arc welding process which is followed immediately by GTAW process to smooth over and make the surface geometry even. It is not possible to perform PT on the PAW part of the weld since the GTAW is part of the same automatic welding equipment. The GTAW process does not add filler metal to the weld. Transnuclear has proposed a code case to Section III, Subsection NG on this issue for guidance.