From:	Perry Buckberg
To:	Nuclear Energy Oversight Project
Bcc:	James Kim; Daniel King; Natreon Jordan
Subject:	Initial Assessment - 2.206 Petition - Turkey Point Nuclear Units 3 & 4 Subsequent License Renewal
Date:	Friday, November 3, 2023 1:59:00 PM

Mr. Saporito,

The Petition Review Board (PRB) has completed its initial assessment of the petition you submitted on September 17, 2023, regarding the Turkey Point Nuclear Plant Units 3 and 4 (Turkey Point) subsequent license renewal (SLR).

Your petition requested that the U.S. Nuclear Regulatory Commission (NRC) deny the licensee's SLR for Turkey Point. Your justification for the requested action is that the reactor pressure vessel (RPV) condition has not been adequately assessed for the subsequent period of extended operation, rising sea levels could lead to a severe accident, and that solar power is a safe alternative to the Turkey Point SLR.

On October 23, 2023, I informed you via e-mail that your concerns related to Charpy testing of RPV materials, rising sea level, and solar power screened out of the 10 CFR 2.206 process, and your remaining concerns regarding the RPV would be evaluated by a petition review board (PRB).

Specific concerns listed in your petition that the PRB is evaluating include:

1. The RPV sample process was only intended for the original 40-year safety design basis as there were not enough samples to continue that process beyond 40-years.

2. Consideration of core samples taken from other reactors cannot provide reasonable assurance that the Turkey Point reactor vessels can be safely operated beyond their license expiration dates of July 19, 2032, and April 10, 2033, respectively for several reasons:
   - The exact position of the sample metals in other reactors differs from the Turkey Point reactors; and
   - The stress on the reactor vessels in the other reactors differs from the stress on the Turkey Point reactor vessels stemming from emergency shutdowns or “SCRAMS.”

The PRB performed its initial assessment to determine whether the above RPV concerns in your petition meet the applicable acceptance criteria in NRC’s Management Directive (MD) 8.11, “Review Process for 10 CFR 2.206 Petitions,” and its associated Directive Handbook (DH) 8.11, Section III.C.1 (Agencywide Documents Access and Management System (ADAMS) Accession number ML18296A043).

The PRB’s initial assessment is that the RPV concerns in your petition do not meet the DH 8.11 acceptance criteria in Section III.C.1(b)(ii) which includes, “The issues raised have previously been the subject of a facility-specific or generic NRC staff review…” and the petition does not provide significant new information that the staff did not consider in the prior review. Our initial assessment is to not accept your petition for review.

The NRC staff position regarding the adequacy of the applicant's aging management programs, aging management review, and assessment of the RPV through the subsequent period of extended operation, as represented in the July 22, 2019, Safety Evaluation Report (SER) for the Turkey Point Subsequent License Renewal (ADAMS ML19191A054), considered your concerns and supports approval of the Turkey Point SLR. The 2019 SLR SER review of the Turkey Point RPVs includes:

- Section 3.0.3.1.3, "Reactor Vessel Material Surveillance," which discusses the staff's review of Turkey Point's approach to monitoring the changes in fracture toughness to the ferritic reactor vessel beltline materials by withdrawing and testing of a surveillance capsule and includes discussion of the availability of standby capsules in both RPVs.
- Section 3.1, "Aging Management of Reactor Coolant System" which discusses the staff's review of the Turkey Point aging management of the reactor coolant system.
- Section 4.2, "Reactor Vessel Neutron Embrittlement Analysis" which includes the NRC Staff analysis of pressurized thermal shock (4.2.2), upper shelf energy (4.2.3), and adjusted reference temperature (4.2.4) which are all associated with neutron embrittlement of the RPV through 80 years of operation.

The following is additional background on RPV assessment at Turkey Point:

- Your petition describes that the Turkey Point RPVs are made of stainless steel. The Turkey Point RPVs are actually fabricated of low-alloy steel with austenitic stainless steel cladding on internal surfaces which are exposed to reactor coolant. Instead of stainless steel cladding, the lower 15 ¾ inches of the lower shell is clad with nickel alloy.
- In 1985 the NRC approved an Integrated Surveillance Program (ISP) for Turkey Point Units 3 and 4 in accordance with Appendix H to 10 CFR Part 50 (ML17346A982). This approval permitted the reactor vessel material surveillance program for the 2 units to be combined into a single ISP for the site and includes data sharing.
- Additionally, Turkey Point participates in an ISP that supports the Babcock & Wilcox designed operating plants and those Westinghouse-designed operating plants that have Babcock & Wilcox fabricated reactor vessels. The latest revision of this ISP was approved in 2018 (ML1884A520) and allows "data sharing." Turkey Point's participation in this program is only to supplement the data provided by its site-specific Integrated Surveillance Program. The use of surveillance data from a different plant to supplement a surveillance program at a particular plant or site is required for PWR plants by the pressurized thermal shock (PTS) rule (10 CFR 50.61), to ensure the most accurate estimates of RPV embrittlement.
- The parameters that influence embrittlement (i.e., neutron fluence, neutron spectrum, irradiation temperature, and material chemistry) are well understood and are part of the NRC staff's review of plant-specific RPV embrittlement estimates. Other factors raised in the petition, such as transient behavior during emergency shutdowns or "SCRAMS," have no discernable impact on the ability of surveillance specimens from one plant to provide relevant data to assess radiation embrittlement of another plant, since the elastic deformation of the RPV steel due to such evolutions does not affect the degree of embrittlement.

I am happy to offer you the opportunity to clarify or supplement your petition in a virtual public meeting with the PRB. If you decide to take advantage of this opportunity, the meeting with the
PRB would be conducted consistent with the format described in MD 8.11 Section III.F. The PRB will consider your statements and information presented at the meeting, along with the original petition, in making its final determination on whether to accept your petition for

review. Please indicate by **November 17, 2023**, whether you wish to have this public meeting before we
close the petition.

If you have any questions regarding this e-mail, please feel free to contact me at Perry.Buckberg@nrc.gov.

Thanks,

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