

WOLF CREEK

NUCLEAR OPERATING CORPORATION

Jaime H. McCoy
Vice President Engineering

May 29, 2018

ET 18-0016

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555

Reference: Letter dated December 18, 2017, from D. A. Broaddus, USNRC, to A. C. Heflin, WCNOC, Generic Letter 2016-01, "Monitoring of Neutron Absorbing Materials in Spent Fuel Pools" – Request for Supplemental Information

Subject: Docket No. 50-482: Response to Generic Letter 2016-01, "Monitoring of Neutron Absorbing Materials in Spent Fuel Pools" Request for Supplemental Information

To Whom It May Concern:

Nuclear Regulatory Commission (NRC) Generic Letter (GL) 2016-01, "Monitoring of Neutron-Absorbing Materials in Spent Fuel Pools," dated April 7, 2016, was issued to all power reactor licensees except those that have permanently ceased operation with all power reactor fuel removed from onsite spent fuel pool (SFP) storage. The NRC has issued GL 2016-01 for two purposes:

- 1) To request that addressees submit information, or provide references to previously docketed information, which demonstrates that credited neutron-absorbing materials in the SFP of power reactors and the fuel storage pool, reactor pool, or other wet locations designed for the purpose of fuel storage, as applicable, for non-power reactors, are in compliance with the licensing and design basis, and with applicable regulatory requirements; and that there are measures in place to maintain this compliance.
- 2) To collect the requested information and determine if additional regulatory action is required.

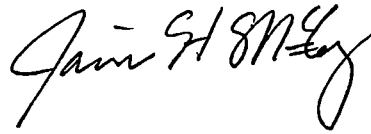
Reference 1 provided a request for supplemental information to Generic Letter 2016-01.

The attachment to this letter provides Wolf Creek Nuclear Operating Corporation's response to the request for supplemental information.

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NRR

This letter contains no commitments. If you have any questions concerning this matter, please contact me at (620) 364-4156, or Cynthia R. Hafenstine at (620) 364-4204.

Sincerely,

A handwritten signature in black ink, appearing to read "Jaime H. McCoy". The signature is fluid and cursive, with the first name "Jaime" being the most prominent.

Jaime H. McCoy

JHM/rit

Attachment

cc: K. M. Kennedy (NRC), w/a
B. K. Singal (NRC), w/a
N. H. Taylor (NRC), w/a
Senior Resident Inspector (NRC), w/a

STATE OF KANSAS)
) SS
COUNTY OF COFFEY)

Jaime H. McCoy, of lawful age, being first duly sworn upon oath says that he is Vice President Engineering of Wolf Creek Nuclear Operating Corporation; that he has read the foregoing document and knows the contents thereof; that he has executed the same for and on behalf of said Corporation with full power and authority to do so; and that the facts therein stated are true and correct to the best of his knowledge, information and belief.

By *Jaime H McCoy*
Jaime H. McCoy
Vice President Engineering

SUBSCRIBED and sworn to before me this 29th day of May, 2018.

Gayle Shepherd
Notary Public



Expiration Date 7/24/2019

WCNOC Response to Generic Letter 2016-01, "Monitoring Neutron-Absorbing Materials in Spent Fuel Pools" Request for Supplemental Information

Below is Wolf Creek Nuclear Operating Corporation's (WCNOC) response to Nuclear Regulatory Commission (NRC) Generic Letter (GL) 2016-01, "Monitoring of Neutron-Absorbing Materials in Spent Fuel Pools," – Request for supplemental Information dated December 18, 2017. The NRC requests are provided in italics followed by WCNOC's response in that area.

NRC Wolf Creek Generating Station, Unit 1, RAIs

The licensee's November 2, 2016, letter states that Wolf Creek Generating Station, Unit 1 does not have a site-specific monitoring program. Instead, the licensee is relying on general industry operating experience as a surrogate for the condition of the Boral installed in the Wolf Creek Generating Station, Unit 1 spent fuel pool.

NRC-Wolf Creek Generating Station, Unit 1-RAI-1

Please describe how industry operating experience bounds the condition of the Boral at Wolf Creek Generating Station, Unit 1, thereby providing assurance that any degradation or deformation that may affect the Boral at Wolf Creek Generating Station, Unit 1 is identified.

Wolf Creek Generating Station, Unit 1 Response to Wolf Creek Generating Station, Unit 1-RAI-1

Through its Nuclear Safety Culture, procedures, and processes, Wolf Creek Nuclear Operating Corporation (WCNOC) systematically and effectively collects, evaluates, and implements relevant internal and external operating experience (OE) in a timely manner. Issues emerging from the use of Boral in the spent fuel racks are monitored through the WCNOC OE Program and Corrective Action Program.

As indicated in the original Generic Letter response for Wolf Creek Generating Station, Unit 1, the site will continue to monitor industry OE related to Boral, which includes ongoing participation in the Electric Power Research Institute (EPRI) Neutron Absorber Users Group (NAUG) and its related programs (e.g., industrywide learning aging management). Industry-wide, to date, there have been no indications of a loss of Boral material of a nature that diminished the neutron-absorbing capability of the Boral (Reference 1). Wolf Creek Generating Station, Unit 1, follows the EPRI Water Chemistry Control Program and there been no indications of a loss of Boral neutron-absorbing capabilities at a plant following the guidelines. In addition, to date there are no plant-specific operating conditions or rack attributes that would merit concern that the Wolf Creek Generating Station, Unit 1 spent fuel racks or spent fuel pool (SFP) environment are not bounded by the industry-wide OE. Finally, EPRI Report 3002013119 (Reference 2) documents that observed or foreseen degradation or deformation of the Boral has an insignificant impact on SFP criticality. The industry OE aligns with the Wolf Creek Generating Station, Unit 1 licensing basis.

The NAUG, through EPRI, is currently developing an industrywide program/database to aid in monitoring indications of potential Boral degradation and deformation. Over 70,000 water chemistry data points have been collected to date, from over 30 SFPs, for this program. Surveillance data from 50 coupons across 25 SFPs has also been collected to date. The

program, supported by EPRI NAUG and industry participants, is described in EPRI document 3002013122 (Reference 3) and includes insights and feedback received from numerous communications with the NRC. Relevant issues emerging from this industry effort will be monitored through the Wolf Creek Generating Station, Unit 1 OE Program and Corrective Action Program.

NRC-Wolf Creek Generating Station, Unit 1-RAI-2

Please discuss the criticality impact due to relevant material deformation identified in general industry operating experience, and how it can be accommodated by the nuclear criticality safety analysis of record for Wolf Creek Generating Station, Unit 1 without exceeding subcriticality requirements.

Wolf Creek Generating Station, Unit 1 Response to Wolf Creek Generating Station, Unit 1-RAI-2

To date, the industry OE has revealed no instances of an impact on SFP criticality due to observed Boral deformation (e.g., blistering) or degradation (e.g. pitting). The NAUG, through EPRI, has recently completed a study (Reference 2) which analyzes the criticality impact of blisters and pits on Boral. Simulations were performed for varying enrichment, burnup, areal density values, at unborated conditions (0 ppm), which is conservative for Pressurized Water Reactors such as WCGS. The study results demonstrate that pitting and blistering, on a scale much larger than any that has been observed in the industry OE, has an insignificant impact on SFP criticality. Therefore, the SFP criticality safety analysis of record remains applicable.

REFERENCES

1. EPRI Report 1021052, "Overview of Boral Performance Based Upon Surveillance Coupon Measurements," December 15, 2010.
2. EPRI Report 3002013119, "Evaluation of the Impact of Neutron Absorber Material Blistering and Pitting on Spent Fuel Pool Reactivity," May 21, 2018.
3. EPRI document 3002013122, "Roadmap for Industrywide Learning Aging Management Program (i-LAMP)," May 11, 2018.