

RS-10-210

December 14, 2010

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

LaSalle County Station, Units 1 and 2
Facility Operating License Nos. NPF-11 and NPF-18
NRC Docket Nos. 50-373 and 50-374

Subject: Additional Information Supporting License Amendment Request Regarding the Use of Neutron Absorbing Inserts in Unit 2 Spent Fuel Pool Storage Racks

- References:**
1. Letter from P. R. Simpson (Exelon Generation Company, LLC) to U.S. NRC, "License Amendment Regarding the Use of Neutron Absorbing Inserts in Unit 2 Spent Fuel Pool Storage Racks," dated October 5, 2009
 2. Letter from E. A. Brown (U.S. NRC) to M. J. Pacilio (Exelon Nuclear), "LaSalle County Station, Units 1 and 2 – Request for Additional Information Related to the Use of Neutron Absorbing Inserts (TAC Nos. ME2376 and ME2377)," dated December 10, 2010

In Reference 1, Exelon Generation Company, LLC (EGC) requested an amendment to Facility Operating License Nos. NPF-11 and NPF-18 for LaSalle County Station (LSCS), Units 1 and 2, respectively. The proposed change revises Technical Specifications (TS) Section 4.3.1, "Criticality," to address a non-conservative TS. Specifically, the proposed change addresses the BORAFLEX™ degradation issue in the Unit 2 spent fuel storage racks by revising TS Section 4.3.1 to allow the use of NETCO-SNAP-IN® rack inserts in Unit 2 spent fuel storage rack cells as a replacement for the neutron absorbing properties of the existing BORAFLEX™ panels.

The NRC requested additional information to complete the review of the proposed license amendment in Reference 2. In response to this request, EGC is providing the attached information.

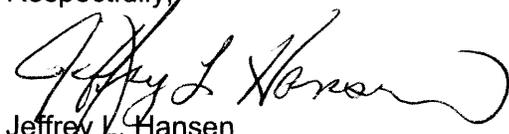
EGC has reviewed the information supporting a finding of no significant hazards consideration, and the environmental consideration, that were previously provided to the NRC in Attachment 1 of Reference 1. The additional information provided in this submittal does not affect the bases for concluding that the proposed license amendment does not involve a significant hazards consideration. In addition, the additional information provided in this submittal does not affect

the bases for concluding that neither an environmental impact statement nor an environmental assessment needs to be prepared in connection with the proposed amendment.

There are no regulatory commitments contained in this letter. Should you have any questions concerning this letter, please contact Mr. Kenneth M. Nicely at (630) 657-2803.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 14th day of December 2010.

Respectfully,

A handwritten signature in black ink, appearing to read "Jeffrey L. Hansen", written over a white background.

Jeffrey L. Hansen
Manager – Licensing

Attachment:

Response to Request for Additional Information

cc: NRC Regional Administrator, Region III
NRC Senior Resident Inspector – LaSalle County Station
Illinois Emergency Management Agency – Division of Nuclear Safety

ATTACHMENT
Response to Request for Additional Information

NRC Request 1

On page 5 of Attachment 1 to the supplement dated November 23, 2010 (Supplement), for the response to 3.a, confirm that "degradation" is thinning degradation. In addition, indicate the amount of areal density degradation that corresponds with each thinning degradation percentage (e.g., 57.5 percent, 79.8 percent, 68.1 percent, 65.3 percent, and 80 percent).

Response

BORAFLEX™ loss manifests itself in three ways: (1) gap formation, (2) edge dissolution, and (3) panel thinning.

BORAFLEX™ shrinks in a high radiation environment causing panel cracking and creating gaps. It has been conservatively assumed in the spent fuel pool criticality analyses that a 1.0 inch coplanar gap exists throughout the spent fuel rack BORAFLEX™ panels. Additionally, the spent fuel pool criticality analyses conservatively assume a 10 percent reduction in the width of every BORAFLEX™ panel throughout the spent fuel rack due to edge dissolution. The resulting Δk_{eff} increases due to these assumptions have been included in the calculated in-rack k_{eff} for each fuel assembly type, and provide additional margin to the criticality criterion (i.e., $k_{\text{eff}} \leq 0.95$) as discussed below.

In addition to the gap formation and edge dissolution effects on k_{eff} for each fuel assembly type, BORAFLEX™ loss in the form of panel thinning will occur. BADGER test results and RACKLIFE calculations determine "equivalent panel loss," taking into account the panel thinning and edge dissolution effects of BORAFLEX™ degradation. For the purpose of determining an individual assembly's ability to be stored in a given rack location, a comparison is made between BADGER and/or RACKLIFE results, and the allowable degradation limit. By comparing BADGER and/or RACKLIFE equivalent panel loss results to the degradation (i.e., panel thinning) limits, as determined from the calculated in-rack k_{eff} results, additional margin to the criticality criterion (i.e., $k_{\text{eff}} \leq 0.95$) is realized. Response 3.a in Attachment 1 of Reference 1 equates degradation to panel thinning only.

Since the approach to determining the limiting degradation is based upon panel thinning only, the amount of areal density degradation is equal to the amount of panel thinning for each percent thinning indicated in Reference 1.

NRC Request 2

In Attachment 3 to the supplement, indicate the amount of areal density degradation that corresponds with each thinning degradation percentage (e.g., 52.27 percent, 29.97 percent).

Response

As noted in EGC's response to NRC Request 1, the approach to determining the limiting degradation is based upon panel thinning only. Therefore, the amount of areal density degradation is equal to the amount of panel thinning for each percent thinning indicated in Reference 1.

ATTACHMENT
Response to Request for Additional Information

NRC Request 3

On page 1 of Attachment 3 to the Supplement, it states:

...Unit 2 spent fuel storage rack cells are declared UNUSABLE when the RACKLIFE projected degradation for the most limiting panel in a spent fuel pool cell exceeds 52.27 percent.

It appears that a BADGER result would also be a necessary criterion to declare the cell UNUSABLE. Clarify if a BADGER measurement was to exceed the allowable degradation thresholds and the RACKLIFE prediction did not, or whether that cell would be declared RESTRICTED or UNUSABLE.

Response

The highest degradation level observed either through BADGER measurement or by RACKLIFE prediction is used to characterize cell designation as UNUSABLE, RESTRICTED, or UNRESTRICTED.

NRC Request 4

On page 3 of Attachment 3 of the supplement, from the table entitled "Summary of BADGER Test Results," clarify the meaning of "loss." Address whether this is thinning degradation or areal density degradation. Discuss whether the "loss" is from nominal thickness or nominal areal density or a different reference value.

Response

BADGER measured loss is reported as percent areal density loss, which includes panel thinning and edge dissolution effects. This is effectively an equivalent uniform areal density loss averaged over the entire panel. The loss is reported relative to the nominal panel areal density.

NRC Request 5

As discussed on page 3 of Attachment 3 of the supplement, explain how panels G74 North and G74 South are "reference panels" since they are being irradiated and exhibit "loss." Also, describe the use of these "reference panels."

Response

Panels G74 North and G74 South were selected based on their RACKLIFE calculated absorbed dose and boron carbide loss. They serve to provide a baseline areal density measurement by which to compare other panel measurements. Reference panels may have received small amounts of radiation. However, doses received by panels G74 North and G74 South are below 1×10^9 rads, and dissolution of BORAFLEX™ is minor at these levels. Scatter in measured values between these panels is the result of BADGER measurement uncertainty and/or variations in as-built BORAFLEX™ areal density.

Reference

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