

USED FUEL STORAGE AND TRANSPORTATION ISSUE CLOSURE FORM

Issue Number: I-10-01

Title: PWR Fuel Top Nozzle Stress Corrosion Cracking

I. Closure Summary

Issue Resolution

NRC and Industry reached agreement on issue resolution during the NRC Public Meetings on December 21, 2011 and February 14, 2012. The agreed upon issue resolution satisfies both Success Criteria #1 and #2 for all of the four variants of Top Nozzle SCC susceptible fuel assemblies ("Top Nozzle Assemblies"). The agreed upon resolution to the issue is as follows:

Variants of Top Nozzle Assemblies

There are currently four variants of Top Nozzle Assemblies, based on physical configuration and handling techniques:

1. Unmodified –by visual– Top Nozzle Assembly without any physical modifications loaded using a standard grapple after visual inspections of guide tubes were performed to verify that the SCC-susceptible guide tube joints can withstand lifting loads.
2. Unmodified –by tool– Top Nozzle Assembly without any physical modifications loaded using a handling tool (e.g., the "thimble grip" handling tool) that does not utilize the top nozzle for lifting, and ensures there is no lifting load transmitted through the SCC-susceptible guide tube joints
3. Modified –by guide tube– Top Nozzle Assembly with permanently installed anchors in the guide tubes. These assemblies are loaded using a standard grapple. The anchors ensure there is no lifting load transmitted through the SCC-susceptible guide tube joints.
4. Modified –by instrument tube– Top Nozzle Assembly with a permanently installed instrument tube tie rod (ITTR). These assemblies are loaded using a standard grapple. The ITTR ensures there is no lifting load transmitted through the SCC-susceptible guide tube joints.

Variants #1 and #2 are hereafter referred to as "unmodified", and variants #3 and #4 are referred to as "modified".

License/CoC Amendment Determination

The following guidance should be considered when CoC Holders and Licensees make their determination on whether a license/CoC amendment is necessary for modified or unmodified Top Nozzle Assemblies.

Cases where Storage (Part 72) License/CoC Amendment May Not Be Required

A license/CoC amendment may or may not be required for Top Nozzle Assemblies (variants #1, #2, #3 and #4) in storage casks. CoC holders and licensees are permitted, under 10 CFR 72.48, to evaluate whether changes to the storage cask or ISFSI FSAR are permitted without prior NRC approval. The following should be considered for each variant:

For unmodified assemblies (variants #1 and #2), fuel classification and actions (e.g., canning) will be performed according to the applicable NRC guidance (e.g. ISG-1 Revision 2) and any specific CoC or license requirements. This is the same process used for any fuel assembly with potential physical damage of some kind. The classification criteria and results of the classification for each fuel assembly are documented and subject to NRC inspection. No change to the CoC, specific license, or supporting FSAR is required. The classification criteria and results of the classification for each fuel assembly are documented and subject to NRC inspection.

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For modified assemblies (variants #3 and #4), the ITTR/GTA hardware does not need to be explicitly listed in the cask's "Approved Contents" in the CoC or license because they are non-separable constituent hardware, integral to the fuel assembly. For these variants, a revision to the "Approved Contents" in the CoC or license is not necessary as long as 1) the assembly type being modified is already included in the "Approved Contents", 2) the assembly, as modified, is bounded by the parameters for that assembly listed in the "Approved Contents" (e.g., total weight, overall length, etc), AND 3) the 72.48 review for storing this hardware concludes prior NRC approval is not required. (Reference 1)

For modified assemblies (variants #3 and #4), the 72.48 process will determine whether or not there is a need for prior NRC approval in order to store IITR/GTA hardware integral to Top Nozzle Assemblies (variants #3, and #4). The 72.48 review will be performed based upon the analyses/evaluations discussed below, which ensure safety and regulatory compliance. If the 72.48 screening or evaluation determines that prior NRC approval is not required, then a license/CoC amendment is not required for storage of assemblies containing these components. In these cases, a description of the modified assembly hardware (ITTR and/or GTA) and any supporting analysis/evaluation results, as applicable, will be added to the cask or ISFSI FSAR. The analyses/evaluations and 72.48 review are subject to NRC inspection.

Cases where Transport (Part 71) License/CoC Amendment May Not Be Required

A Part 71 CoC amendment may not be required for unmodified assemblies (variants #1 and #2) in transportation casks. Fuel classification will be performed for these assemblies according to the applicable NRC guidance (e.g. ISG-1 Revision 2) and any specific CoC requirements. If there is no need to change the conditions specified in the CoC or SAR, based upon the fuel classification and any analyses and evaluations (as described below), if applicable, then unmodified assemblies may be loaded without a CoC amendment. This is the same process used for any fuel assembly with potential physical damage of some kind. The classification criteria and results of the classification for each fuel assembly are documented and subject to NRC inspection.

Cases where Transport (Part 71) License/CoC Amendment May be Required

Currently, there is no SAR change authority for CoC holders of a transportation cask certified under Part 71. If the spent fuel configuration with the additional hardware (e.g. ITTR or GTA) is not defined in the SAR supporting application, then a CoC amendment is required for modified assemblies (variants #3 and #4) in transportation casks. This is because the SAR supporting the Part 71 CoC will require revision and that would put the new SAR revision in conflict with the SAR revision listed on the CoC. (Reference 1)

Analyses/Evaluations

Modified fuel assemblies require analyses and evaluation in the technical areas of structural, criticality, shielding, thermal, confinement/containment, and retrievability (storage only). All analyses will be documented and retained as quality records, available for NRC inspection. These analyses/evaluations provide the bases for the 72.48 review in storage and for the CoC amendment application in transportation.

Unmodified top nozzle fuel assemblies require analysis or evaluation in the same technical areas listed above to the extent necessary to support the fuel classification process.

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References

- 1) NRC Letter from Ms. Vonna Ordaz to NEI's Mr. Rod McCullum, "NRC Response to NEI White Paper on Contents Definition for Spent Fuel Casks and Transportation Packages", September 22, 2011.

Additional Actions

This issue closure form documents the resolution as agreed upon by NRC and Industry. However, a durable regulatory record is needed to achieve final issue closure. The NRC has committed to develop a durable regulatory record. Due to the timeframe for developing and issuing a durable record, industry recommends that the NRC issue a generic communication as an interim durable record. This closure form will serve as a record until the generic communication is issued by the NRC.

II. Tracking Items and Responsibility

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| NRC to issue a letter to NEI or generic communication to industry on the issue resolution as an interim durable record. | April 30, 2012 |
| NRC to issue a durable record on the issue resolution as the final durable regulatory record on issue closure. | To be determined as defined in the above communication |

III. Measurement of Success

Industry will monitor implementation of the agreed-upon closure resolution, assess its effectiveness and provide feedback to licensees and NRC.

Date: _____