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E-22851

Mr. Joseph Sebrosky
Spent Fuel Project Office, NMSS
US Nuclear Regulatory Commission
11555 Rockville Pike M/S 013-D-13
Rockville, MD 20852

Subject: Docket 72-1030
Corrective Actions Regarding Errors in Structural Evaluation of Fuel Rods

Dear Mr. Sebrosky:

In order to address the issues identified by the NRC staff related to the structural evaluation of fuel rods to demonstrate cladding integrity during drop evaluations, Transnuclear (TN) initiated Corrective Action Report (CAR) 2005-093. The CAR identified three corrective actions as follows:

- Perform an alternate calculation to determine the fuel cladding integrity due to the end drop.
- Conduct an evaluation to determine the root cause(s) of the errors in the calculation and determine why the error was not detected during review, and
- Determine the extent of condition by review of other potentially affected calculations.

This letter addresses the programmatic actions taken by TN as described in the second and third bullets. It does not address the technical issues.

Root Cause Evaluation

A root cause evaluation was performed to evaluate the programmatic issues related to the calculation errors. The root causes of the deficiency were time pressure and overconfidence of the engineers that the end results of the analysis would be acceptable. Causal factors were:

- Acceptance of results that were not fully understood because the engineers were convinced that they would be able to develop an acceptable solution if given more time.
- Reliance on general practices, rather than verbatim compliance with procedures.
- Inadequate implementation of published NRC guidance, because the engineers focused on previously accepted practices.

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The following were contributing factors:

- The Project Manager and the engineers did not acknowledge that the specific RAI questions on the pin side drop would also apply to the fuel pin end drop.
- The calculation team was not supported by the TN management structure, which has been reorganized subsequently as defined in the Quality Assurance Program Description Manual.

The following corrective actions were recommended in the root cause evaluation, many of which have already been implemented by TN.

Remedial Actions

1. Withdraw the calculation from the application and cancel the end drop evaluation from it.
2. Resolve the specific issue by involving additional technical expertise, and perform the calculation consistent with ISG-12.
3. Review related or similar calculations and correct any identified deficiencies that may impact other systems.

Compensatory Actions

Because no actual safety significance attributable to the issue has been identified, no compensatory action is necessary at this time.

Recommended Corrective Actions to Prevent Recurrence

1. Provide training to analysts and management concerning their roles and responsibilities with respect to TN Quality Assurance Procedure TIP 3.2 and to reinforce expectations for verbatim compliance quality procedure requirements. This should include a reaffirmation of the need to maintain independence throughout the process.
2. Revise TN Quality Assurance Procedure TIP 3.2 to include actions when the originator, checker and Project Engineer cannot resolve an issue.
3. Reconfirm corporate expectations to all employees that compliance and correctness prevail over expediency and that incomplete or poorly understood results must not be accepted because of schedule or other pressure.
4. Ensure current guidance and practices are implemented by TN personnel. This includes NRC and other guidance and practices, especially in the context of methods that "have always been done that way."
5. Commit to a design review of all licensing submittals to the NRC including request for additional information (RAI) responses.

6. Implement the management structure as described in the Quality Assurance Program Description Manual (QAPDM).
7. Provide training to management concerning the use of personnel for technical assignments that go beyond their normal activities and expertise. In certain cases, additional expertise outside TN may need to be utilized.

Extent of Condition Review

In addition to the root cause evaluation described above, TN performed a review of the extent of condition. This review consisted of a review of RAIs generated by the NRC on TN license applications and amendments, a review of recently generated CARs, and a review of structural calculations performed in the Hawthorne office by a third party reviewer. The results of this review indicate that the errors were confined to calculations relating to fuel drop evaluations.

If you have any questions or comments regarding the extent of condition review or the root cause evaluation, please contact me at 410-910-6860.

Sincerely,

Tara Neider
Sr. VP Engineering

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