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Perry Nuclear Power Plant
Docket No. 50-440

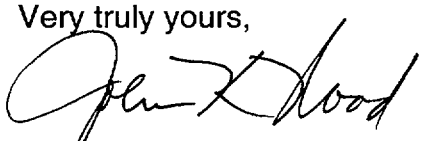
Response to a Request for Additional Information Associated with the Submittal of an In-Service Examination Program Relief Request, IR-049

Ladies and Gentlemen:

On February 12, 2001, the Perry Nuclear Power Plant (PNPP) staff submitted a In-Service Examination Relief Request, IR-049, (PY-CEI/NRR-2528L) to the NRC requesting the implementation of a Risk-Informed In-service Inspection Program for certain American Society for Mechanical Engineers Class 1 welds. The PNPP staff received a Request for Additional Information (RAI) from the NRC staff on April 18, 2001 for this relief request. The response to the RAI is contained in Attachment 1.

If you have questions or require additional information, please contact Mr. Gregory A. Dunn, Manager, Regulatory Affairs, at (440) 280-5305.

Very truly yours,



Attachment

cc: NRC Project Manager
NRC Resident Inspector
NRC Region III

A047

Perry Nuclear Power Plant Responses to an NRC Request for Additional Information (RAI)

The Perry Nuclear Power Plant (PNPP) staff received a Request for Additional Information (RAI) from the NRC dated April 18, 2001. The RAI deals with questions associated with the PNPP relief request associated with incorporating a Risk-Informed In-service Inspection (RI-ISI) Program for certain American Society for Mechanical Engineers Class 1 welds. The RAI questions and responses are contained in the following paragraphs.

1. **Please provide the core damage frequency (CDF) and the large early release frequency (LERF) estimates from the PRA version used to support this RI-ISI submittal.**

   Response:

   The CDF and LERF estimates that were used in support of PNPP's RI-ISI submittal were 1.4E-5/yr and ~2E-6/yr respectively.

2. **Table 3.6-1 (page 17 of 24) shows a segment that is susceptible to multiple damage mechanisms. Were synergistic effects between multiple damage mechanisms working on the same location considered, and if so, how was this synergy reflected in the risk impact calculations and/or safety significance categorization? If not, please explain why synergistic effects do not exist between the multiple damage mechanisms in this segment or why the potential for synergistic effects does not need to be considered.**

   Response:

   The degradation mechanism evaluation for the PNPP RI-ISI submittal was conducted in accordance with EPRI TR-112657, Rev B-A (Reference 1) except as noted in Section 3 of the PNPP RI-ISI Submittal (Reference 2). The degradation mechanism evaluation criteria in Reference 1 assigns the failure potential of segments into three broad categories (i.e., high, medium or low). For the segments identified in Table 3.6-1 of Reference 2 with multiple mechanism, each is assigned a failure potential of medium, excluding the impact of Flow Accelerated Corrosion (FAC) which is treated separately.

   During the development of the EPRI RI-ISI methodology, the synergistic effects of multiple mechanisms was considered. It was concluded that these effects would not cause the assignment of the failure potential of a segment

to move from a medium failure potential category to a high failure potential category. The rationale behind this position included the following.

- The degradation mechanism criteria contained in Reference 1 provides a conservative assessment of a segment's susceptibility to the various types of degradation discussed in Reference 1. As such, a positive assignment does not mean that the mechanism is operative (i.e., active) only that there is some small potential that the conditions are such that it is conceivable that the mechanism could occur.

- Those mechanisms that operating experience has shown to be more aggressive (e.g., FAC and IGSCC non-category A weldments for BWRs) are treated explicitly by augmented programs (including inspection frequency),

- Mechanisms assigned to the medium failure potential, when operative, tend to produce small leaks as opposed to large piping failures.

- The inspection element selection process of Reference 1 requires that inspection elements be selected such that each potentially operative degradation mechanism be selected for examination. For example, a segment potentially susceptible to both crevice corrosion and thermal fatigue would receive an examination (and examination volumes) that would capture both mechanisms.

In summary, the degradation mechanism evaluation for the PNPP RI-ISI application was conducted consistent with the requirements of EPRI TR-112657, Rev B-A.

3. **Sections 3.3.4 and 3.3.5 of EPRI TR-112657 Rev. B-A requires the consideration of operation modes outside the scope of the PRA (e.g., shutdown) and external events (e.g., seismic events), respectively, in the categorization of segments. Were external events and operation modes outside the scope of the PRA systematically considered and was the plant expert/review panel involved in this evaluation? If so, please briefly describe the external events and other operational mode considerations and the role of the expert panel in the categorization process.**

Response:

The RI-ISI process described in Reference 1 does not require the use of an expert panel. However, as discussed in the RAI, Reference 1 does require that an assessment of the impact of non-power operation and external events

on the RI-ISI results, which is typically conducted using an at-power PRA and other relevant information. For the PNPP RI-ISI application, these events were considered during the consequence evaluation portion of the RI-ISI analyses and determined not to change the results of the RI-ISI application.