

## **NRR-PMDAPEm Resource**

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**Sent:** Monday, March 14, 2016 8:59 AM  
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**Subject:** Second Round RAIs - Duane Arnold Energy Center - LAR (TSCR-143) to Extend Containment Leakage Test Frequency - MF6619

In a letter dated August 18, 2015, (Agencywide Documents Access and Management System (ADAMS) Accession No. ML15246A445), as supplemented by letter dated January 29, 2016 (ADAMS Accession No. ML16034A031), NextEra Energy Duane Arnold, LLC requested an amendment to Duane Arnold Energy Center (DAEC) Technical Specifications (TS). The proposed amendment will revise DAEC TS Section 5.5.12, "Primary Containment Leakage Rate Testing Program," to allow extension of the Type A test interval up to one test in 15 years and extension of the Type C test interval up to 75 months.

The Probabilistic Risk Assessment Licensing Branch issued Request for Additional Information (RAI) by letter dated November 24, 2015 (ADAMS Accession No. ML15327A476) and the licensee provided responses to the RAI in letter dated January 29, 2016. The NRC staff has reviewed the responses and has determined that additional information is needed for the staff to complete its evaluation. The request for additional information is provided as below:

**Second Round of Request for Additional Information**  
**Regarding Duane Arnold Energy Center Request to Permanently**  
**Extend the Integrated Leak Rate Test Frequency to 15 Years**

In an electronic communication dated December 15, 2015, the NRC staff requested a list of all findings from the past peer reviews and self-assessments relevant to the Integrated Leak Rate Test (ILRT) extension submittal, dated August 18, 2015, for which the internal events probabilistic risk assessment (PRA) did not meet the American Society of Mechanical Engineers (ASME) PRA Standard Capability Category (CC) I supporting requirements (SRs) and requested the licensee to summarize why not meeting each CC I requirement would have no impact on this application (PRA request for additional information (RAI)-1.b). In response to PRA RAI-1.b, the licensee identified five SRs, IE-B3, IE-C6, HR-A1, HR-A2 and HR-C1, which were assessed as not meeting CC I. The licensee further discussed the impact of findings associated with those SRs on the Duane Arnold Energy Center (DAEC) containment leakage test frequency extension request in Table 1 of the response.

In discussing the impact of not meeting SRs IE-B3 and IE-C6, the licensee stated, in part, that:

Substantial margin to the guidelines contained in Regulatory Guide 1.174 have been demonstrated for this ILRT test interval extension request with respect to acceptable changes in [large early release frequency] LERF. ... Change in the Type A ILRT test interval from the three in ten years to one in fifteen years is conservatively estimated to represent a 2.57E-08/yr increase in LERF. Postulated increase in baseline values of [core damage frequency] CDF and LERF result in approximately the same fractional increase in the calculated delta-LERF for this application. For example, a large increase in baseline CDF and LERF, such as 10 percent, would translate into an increase in delta-LERF of about 10 percent, resulting in a final delta-LERF that is still well below the 1E-07 criteria for which the impact of the requested ILRT testing extension is considered to be very small. As such, these criteria would also

not be exceeded by inclusion of additional initiators in the PRA as required for closure of this Peer Review item.

In discussing the impact of not meeting SR HR-C1, the licensee stated that:

The impact of evaluating pre- initiators at the train level instead of the system level, or at the system level instead of the train level, is judged to have little or no impact on baseline values of CDF and LERF. Even if the actual impact of addressing this gap is more than minor, the change translates into only a small reduction in margin to criteria established for the ILRT testing interval extension application as described earlier with respect to finding IE-B3-01A. As such, the conclusions of the risk evaluation performed for this application are not changed by this variance from the standard.

The estimated increase in LERF of  $2.57E-08/\text{yr}$  does not include the risk from external events. In the original submittal, the licensee estimated the total increase in LERF from both internal and external events as  $8.14E-08/\text{yr}$ . Furthermore, this impact estimate (from both external hazards and internal events) provided in the original submittal does not include the new seismic hazard CDF and LERF estimates, which were provided in response to PRA RAI-2. The new seismic CDF estimate in response to PRA RAI-2 is larger than the seismic CDF estimate in the original submittal by more than a factor of 8. Although the licensee provided an estimate change in LERF of  $6.80E-08/\text{yr}$  in response to PRA RAI-2 when providing the new seismic CDF estimate, this change in LERF estimate does not appear to include the risk from other external hazards or internal events.

The NRC staff believes that the change in LERF could increase to a value greater than  $1E-07/\text{yr}$  when the impact from external events is considered, the new seismic CDF and LERF estimates from response to PRA RAI-2 are used, and the findings related to IE-B3, IE-C6, and HR-C1 are resolved. For a change in LERF greater than  $1E-07/\text{yr}$ , the licensee should provide total LERF and demonstrate that the RG 1.174 guidelines are met. The licensee provided total LERF estimate of  $9.79E-06/\text{yr}$  in the original submittal. Again, this estimate could exceed the guideline value of  $1E-05/\text{yr}$  once the new seismic risk estimates are considered and the findings associated with the above SRs are resolved.

In summary, the NRC staff does not find the information provided by the licensee in the original submittal and in response to PRA RAIs to be sufficient for determining that the change in LERF is less than  $1E-07/\text{yr}$  (to meet the guidelines of RG 1.174 Region III) or the total LERF is less than  $1E-05/\text{yr}$  (to meet the guidelines of RG 1.174 Region II).

Show that the change in LERF does not exceed  $1E-07/\text{yr}$  by including the impact of external hazards, using updated seismic risk estimates and providing a sensitivity analysis that estimates the impact of not meeting SRs IE-B3, IE-C6 and HR-C1. Alternatively, show that the total LERF does not exceed  $1E-05/\text{yr}$  when external hazards are considered, updated seismic risk estimates are used, and a sensitivity analysis is performed to estimate the impact of not meeting SRs listed above.

***Please arrange a teleconference with the NRC staff to discuss this additional request. Please provide your response on the docket no later than 30 days from the receipt of this request.***

***Thanks***

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