

## Beaver Valley Unit 1 Master Curve Submittal NRC Staff Observations

- Therefore, based on these observations, the NRC staff requested that FENOC reevaluate their submittal and address, as necessary:
  - (1) What data should be used to establish  $RT_{T_0(U)}$  and the baseline data for measuring shifts in  $T_0$  (i.e.,  $\Delta RT_{T_0}$ ) due to irradiation for BVPS-1 limiting plate B6903-1?
  - (2) Given the answer to (1), what effect does this have on their characterization of the margin term to be applied in the calculation of ART?
  - (3) Given the answer to (1), what effect does this have on their characterization of the bias term to be applied in the calculation of ART?

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- The staff reviewed FENOC's January 25, 2002, submittal and concluded that the general methodology employed by the licensee was consistent with the methodology approved for Kewaunee in the staff's May 1, 2001, safety evaluation.

$$RT_{T0(U)} + \Delta RT_{T0} + \text{Margin Term} + \text{Bias Term} = \text{ART}$$

- However, the staff identified significant issues related to FENOC's use of fracture toughness data available from the testing of unirradiated specimens from BVPS-1 limiting plate B6903-1 (plate heat B6317-1).
- The issues raised by the staff may affect the determination of specific values for  $RT_{T0(U)}$ ,  $\Delta RT_{T0}$ , the margin term, and the bias term used to calculate ART values for BVPS-1 limiting plate B6903-1.

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- FENOC chose to determine their  $RT_{T_0(U)}$  value (and their baseline for measuring shifts in  $T_0$  due to irradiation) based using only the data from the unirradiated  $\frac{1}{2}$  T-CT specimens.
- FENOC claimed that this was “conservative” since it would provide a maximum value for  $RT_{T_0(U)}$ .
- FENOC also claimed that since they were using this “conservative” approach to determine  $RT_{T_0(U)}$  they did not need to account for initial property variability when establishing the margin term used in their calculation of ART.

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- The NRC staff disagrees with FENOC's assertion that the use of only the data from the testing of the unirradiated  $\frac{1}{2}$  T-CT specimens is "conservative."
- While use of the unirradiated  $\frac{1}{2}$  T-CT specimen data alone does give the "most conservative" value for  $RT_{T_0(U)}$ , its use as the baseline for establishing shifts in  $T_0$  due to irradiation results in a minimum (least conservative) value for  $\Delta RT_{T_0}$ .
- The NRC staff concluded that, when resultant ART values are considered, the use of the unirradiated  $\frac{1}{2}$  T-CT specimen data alone results in ART values which are the smallest (least conservative) values which could be determined from the available unirradiated specimen data.