

Response to SDAA Audit Question

Question Number: A-15.4.3-3

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Question:

FSAR Section 15.4.3.1 states that the configuration with one CRA fully inserted and other CRAs withdrawn to the 20 percent power PDIL is not credible because "reactor hold points prohibit the movement of rods for that severe peaking distortion". NRC staff understands this statement to mean that operating procedures would prohibit continuing with power ascension above this hold point after core power distribution mapping indicates that one CRA is not within PDILs. Confirm NRC staff's understanding or otherwise provide clarification.

Response:

Technical Specification (TS) Limiting Condition for Operation (LCO) 3.1.4 requires that individual control rod assembly (CRA) positions be within 6 steps of their group position during Mode 1 (i.e., reactor critical). From this perspective, CRA misalignment beyond 6 steps is prohibited by LCO 3.1.4 and does not require analysis.

As a bounding misalignment, Final Safety Analysis Report (FSAR) Section 15.4.3.3.2 considers a case where all CRAs are withdrawn except for one that is inserted to the 20 percent power power dependent insertion limit (PDIL). The misaligned CRA (i.e., the one still inserted to the 20 percent power PDIL) is also assumed to be inserted 6 steps past the PDIL to account for position uncertainty. The PDILs are shown in FSAR Figure 4.3-1. As a result of these assumptions, the analyzed misalignment is {{ }}^{2(a),(c)} and is therefore much more severe than the 6 steps allowed by LCO 3.1.4.

The FSAR Section 15.4.3.1 discussion also includes a misalignment of all CRAs at the full power PDILs with one rod fully withdrawn. This misalignment is {{

}}^{2(a),(c)} and is therefore less severe than the one analyzed. It is also identified as bounded by the single CRA withdrawal analysis.



The FSAR Section 15.4.3.1 discussion then includes a misalignment of all CRAs at the PDILs with one rod fully inserted. This misalignment is {{

}^{2(a),(c)} Therefore, this misalignment is much more severe than the case described as analyzed above. For this reason, additional explanation is provided for why this misalignment was not selected as the limiting misalignment. The justification is that operating procedures that implement the requirements of LCO 3.1.4 prohibit such a misalignment. This case is also bounded by the rod drop analysis.

The NRC understanding is correct that operating procedures that implement the requirements of LCO 3.1.4 prohibit a CRA misalignment where all CRAs are at the PDILs and one CRA is fully inserted.

No changes to the SDAA are necessary.