

Response to SDAA Audit Question

Question Number: A-11.5-1

Receipt Date: 06/05/2023

Question:

In SDAA section 11.5, discussions about the injection of Ar-40 into the RCS for leakage detection are not found. In review of the previous DCA 11.5 the discussions were previously contained in DCA 11.5.2 for system descriptions. The staff observes that the reference for EPRI 1022832 remains in the SDAA but no discussion is provided surrounding the plans to detect primary leakage. In review of the monitors in SDAA Table 11.5-1, the ABS, ACCS/CARS, CES, MSS, and the TGS monitors appear to use the same measurement ranges as specified in the DCA which accounted for injection of natural argon into the RCS for leakage detection purposes. The staff seeks to clarify the following:

- 1) Confirm if the applicant still plans on using Ar-41 for leakage detection purposes.
- 2) Is the response provided in response to DCA RAI 9236 Question 11.5-01 still valid?
- 3) Looking to understand if there are other sections in the SDAA that discuss Ar-41 injection for leak detection. Pointers to those discussions that may be elsewhere in the SDAA for this topic area.
- 4) If the measurement ranges specified for ACCS Ar-41 Monitors are intended to be different from the other Ar-41 measurement ranges. Currently listed as 1E-6 to 1E-1 $\mu\text{Ci/cc}$.

Response:

- 1) NuScale confirms gaseous Ar-41 can be added to the primary coolant to support primary to secondary leakage detection.
- 2) The response for DCA RAI 9236 is valid with a the following updates to reflect the NuScale US460 design changes:

- The Condenser Air Removal System (CARS) no longer exists as it been replaced by the Air Cooled Condenser System (ACCS). The CARS radiation monitor's function in the DCA has been relocated to the ACCS. The US460 ACCS radiation monitor types (adjacent-to-line and off-line (PING)) and their associated measurement ranges remain the same as the CARS monitors in the DCA.
- The Turbine Gland Sealing System (TGGS) is now a part of the Turbine Generator System (TGS). The type of monitor (off-line (PING)) remains the same, however, the measurement range is now 1E-6 to 1E-1 $\mu\text{Ci/cc}$. The revised low end measurement range is more appropriate for detecting a realistic concentration of Ar-41 in the secondary coolant.

3) Injection of Ar-41 for primary to secondary leak detection is described in the following sections:

- 5.2.3 Fabrication and Processing of Ferritic Materials
- 9.3.4 Chemical and Volume Control System
- 11.1.1 Design Basis Reactor Coolant Activity
- 12.2 Radiation Sources
- 12.3 Radiation Protection Design Features

4) NuScale confirms the measurement range stated in Table 11.5-1 for the Ar-41 ACCS monitor is correct and intended to be different from the other Ar-41 monitors.

No changes to the SDAA are necessary.