Response to SDAA Audit Question

Question Number: A-11.4-1 (Follow Up)

Receipt Date: 07/13/2023

Question:

Original Question:
Information regarding the break pot tank was removed in SDAA Section 11.4. In the DCA the break pot tanks served to indicate when a tank was overflowing and had level indication. With the removal in the SDAA design, what indication is the applicant using to determine tank overflow, and the subsequent spread of contamination if the PST and the SRST overflow?

NRC Feedback:
The response to Question 11.4-1 refers to FSAR Table 12.3-38 for the requested information, but it appears that Table 12.3-38 may need to be clarified.

The staff needs to ask NuScale the following question:
FSAR Section 11.4 indicates that there are two spent resin storage tanks and two phase separator tanks. FSAR Table 12.3-38 discusses there being phase separator tanks and spent resin storage tanks but then under Objective 2 it indicates that there are four resin storage tanks equipped with level transmitters. It appears that Table 12.3-38 is intending to refer to the two spent resin storage tanks and two phase separator tanks when it says “four resin storage tanks.” The staff needs to ask NuScale to clarify and Table 12.3-38 should be updated accordingly.

Response:

Table 12.3-38 is updated to state there are two spent resin storage tanks and two phase separator tanks.

Markups of the affected changes, as described in the response, are provided below:

Audit Item A-11.4-1, Audit item A-12.3.1.1-2

Table 12.3-38: Regulatory Guide 4.21 Design Features for Solid Radioactive Waste System

Objective	Design Features
Objective 1 - Minimize the potential for leaks or spills and provide containment areas	The low activity phase separator tanks and the high activity SRSTs are designed with stainless steel material and welded construction to minimize degradation over the life of the plant due to corrosion.
	The HEPA filter, downstream of the dewatering fill head vent and the Compactor vent, captures radioactive particles before discharging to the RWBVS.
	The high and low activity waste storage areas (Class A and B) are designed with epoxy-coated floors and drainpipes to direct drainage to a floor drain sump for collection and subsequent pumping to the LRWS for treatment and release to the environment.
	Tank cubicles, in which contaminated materials are handled and stored, have lined stainless steel walls and floors to contain the whole tank content if a leak develops. The floors are sloped to direct leakage to a low point floor drain in the tank room for ease of transfer and cleaning. Drain lines direct floor drains to the local sump tanks, which are equipped with level switches to detect liquid accumulation and pumps are provided to transfer the fluid to the LRWS for proper treatment.
	The SRWS is designed with above-ground piping to the extent practical. Buried or embedded piping is minimized. In the event that buried or embedded piping cannot be avoided, double-wall piping is used.
Objective 2 - Provide leak detection capability	~~Four~~ The two phase separator tanks and two spent resin storage tanks are designed with vibrating fork level switches and radar level transmitters to provide reasonable assurance of the integrity of the SSC. Leak detection (level switches) is located in each tank cubicle and provides alarm to warn the operators of leaks.
	Video monitoring is provided in the high and low activity waste storage area for waste handling operation and to monitor for container leakages.
	The fill head is designed with a local control panel with closed-circuit television and level indication to monitor HIC level during the resin transfer and dewatering operations. The closed-circuit television in the dewatering room monitors external leakages associated with HIC overflow or hose or joint failures in the dewatering room.
Objective 3 - Reduce contamination to minimize releases, cross-contamination and waste generation	The SSC are designed with life-cycle planning using nuclear, industry-proven materials compatible with the chemical, physical, and radiological environment, thus minimizing cross-contamination and waste generation.
	The process piping containing contaminated slurry is sized properly to facilitate easier flow and with sufficient velocity to prevent settling. The piping is designed to reduce fluid traps, thus reducing the decontamination needs and waste generation. Decontamination fluid is collected and routed to the LRWS for processing and release.
	Utility connections are designed with a minimum of two barriers (double isolation valves) to prevent contamination of non-radioactive systems from potentially radioactive systems.
	An air gap between the storage tank vent piping and the vent hood minimizes contamination from entering the RWBVS.
Objective 4 - Facilitate decommissioning	The SSC are designed for the 60-year design life and are fabricated, to the maximum extent practicable, as individual assemblies for removal.
	The SSC are designed with decontamination capabilities. Design features, such as welding techniques and surface finishes, are included to minimize the need for decontamination and minimize waste generation.
	Instruments that interface with contaminated fluid or slurry are designed with diaphragm seals to reduce decontamination requirements during decommissioning.