

# NRC Staff's Questions for NuScale to Discuss at August 1, 2018 Public Meeting

## Decay Heat Removal System (DHRS):

The DHRS serves a safety- and risk-significant function. Currently, there is no information in the final safety analysis report (FSAR) related to testing that would demonstrate how the complete, as-built DHRS thermal performance will meet its design assumptions. As the system has been demonstrated as risk-significant (A1), the DHRS must demonstrate adequate thermal performance of the as-built, as-installed system, commensurate with the safety- and risk-significance. Accordingly, the staff requests NuScale provide a test such that the thermal performance of the system can be measured under natural circulation conditions (with a complementary analysis demonstrating adequate performance comparing design basis and test conditions if necessary).

## Module Protection System (MPS) functions as described in Table 17.4-1:

- a. Identify what Initial Test Program (ITP) test demonstrates the MPS function to support containment for providing power to sensors.
- b. Identify what ITP test demonstrates the MPS function to support DHR for providing power to main steam pressure sensors.
- c. Identify what ITP test demonstrates the MPS function to support RCS for providing power to sensors

## Editorial Items for Correction:

### Table 14.2-63, MPS Test #63:

- Test #63-2 refers to the incorrect table for engineered safety feature (ESF) actuation functions (Table 7.1-3 instead of Table 7.1-4), which could lead to inadequate testing if not fixed.
- For Test #63-4, should audible alarms also annunciate in the main control room (in addition to reactor trip and ESF signals being displayed)?
- Test #63-6: Acceptance Criterion (i) refers to the wrong table (Table 7 instead of Table 7.1-4).
- Test #63-7: Test method lists the wrong table (Table 6.2-10 instead of Table 6.2-5).

### Table 14.2-98, Control Rod Assembly Misalignment Test #98:

- The abstract states that the test is performed between 30-50 percent power, but test objective (ii) also includes 100 percent power. Clarify.
- If the outcome of the test is that measured power distributions and power peaking factors are within technical specification limits, then it would seem

appropriate to use the most limiting misalignment(s), rather than arbitrarily selected misalignments. Clarify.

- The sensitivity of the instrumentation should be demonstrated to be consistent with the limiting misalignment assumptions in FSAR Section 15.4.7.

#### Under-the-bioshield

- a. Missing from Table 17.4-1: The Under-the-bioshield sensors should be described on Table 17.4-1, under “System Function Column” for MPS, pages 17.4-11/12.

#### Table 14.2-63: MPS Test #63

- b. System Level Test #63-11: Explain what ITP test fully satisfies Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC) 2.5-20 and 2.5-26 pertaining to Tables 2.5-4 and 2.5-6.

#### ITAAC

- c. ITAAC 02.05.12: Are all manual actuations (i.e., inputs to MPS) for reactor trip functions tested in system level test #63-5?
- d. ITAAC 02.05.13: Are all manual actuations (i.e., inputs to MPS) for engineered safety feature tested in system level test #63-6?
- e. ITAAC 02.05.18, 02.05.19, and 02.05.22: ITAAC 02.05.18, 02.05.19, and 02.05.22 refers to Table 7.1-5, whereas ITAACs 02.05.18 and 02.05.19 refer to Table 2.5-4. Explain NuScale’s approach to close these ITAAC since the ITP refers to Tier 2 Tables, while ITAAC refers to Tier 1 Tables.
- f. ITAAC 02.05.20 and 02.05.26: Refer to comment 3.c above.
- g. ITAAC 02.05.27: Explain why an ITP test is not needed for this ITAAC.
- h. ITAAC 02.05.29: Explain why an ITP test is not needed for this ITAAC.