

Response to SDAA Audit Question

Question Number: A-12.4.1.9-1 Follow-up

Receipt Date:

Question:

Original Question:

Section 12.4.1.9 indicates that the annual dose for a construction worker is estimated to be 1.64 mrem/year from an adjacent NuScale plant. This was the same dose estimated for constructing a new NuScale facility adjacent to an operating US600 NuScale facility in the DCA design.

1. Please discuss in general the assumptions made in calculating the 1.64 mrem/year value.
2. In constructing a new NuScale US460 facility, will construction have been completed before any of the six units in the facility are operating or could one module or supporting systems for a module still be in the process of being installed/constructed while another unit is operating)? If units in the plant could be operating while other units are being installed/constructed, is additional construction worker dose expected (or additional dose to occupational workers expected) or are additional radiological controls expected to be needed in this scenario?

NRC Feedback:

A discussion with NuScale is needed to better understand the response. It is unclear that the methodology used to calculate the 1.64 mrem/year is appropriate for estimating the dose to a construction worker.

Response:

NuScale is updating COL item 12.4-1 in Section 12.4.9 to include any co-located nuclear plants in calculating dose to construction workers. NuScale is removing the current dose estimates as these calculations are in the purview of the COL applicant.

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

outages per year. Table 12.4-1 summarizes the estimated total annual occupational radiation exposures associated with the major activities shown above.

12.4.1.8 Post-Accident Actions

There are no vital areas, as defined by NUREG-0737, Item II.B.2, other than the main control room and the technical support center, which are in compliance with 10 CFR 50.34(f)(2)(vii). Chapter 15 defines post-accident operator actions, and there are no credited post-accident actions outside the main control room. Section 15.0.3 provides operator dose assessments for the main control room and the technical support center.

12.4.1.9 Construction Activities

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~~For the construction of an additional NuScale plant adjacent to an existing NuScale plant, the estimated annual radiation exposure to a construction worker is estimated based upon a construction staffing plan over the estimated construction period. The annual dose for a construction worker is estimated to be 1.64 mrem/year.~~

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COL Item 12.4-1: An applicant that references the NuScale Power Plant US460 standard design will estimate doses to construction personnel from a co-located existing operating nuclear power plant ~~that is not a NuScale Power Plant.~~

12.4.2 Radiation Exposure at the Restricted Area Boundary

The direct radiation to the restricted area boundary from on-site sources, such as buildings, is negligible.

Table 1.8-1: Combined License Information Items (Continued)

Item No.	Description of COL Information Item	Section
COL Item 11.2-2:	An applicant that references the NuScale Power Plant US460 standard design will perform a site-specific evaluation of the consequences of an accidental release of radioactive liquid from the pool surge control system storage tank in accordance with NRC Branch Technical Position 11-6.	11.2
COL Item 11.2-3:	An applicant that references the NuScale Power Plant US460 standard design will perform a site-specific evaluation using the site-specific source term and dilution flow for liquid effluent releases, and confirm that the discharge concentrations do not exceed the limits specified by 10 CFR 20, Appendix B, Table 2.	11.2
COL Item 11.2-4:	An applicant that references the NuScale Power Plant US460 standard design will perform a cost-benefit analysis as required by 10 CFR 50.34a and 10 CFR 50, Appendix I, to demonstrate conformance with regulatory requirements. This cost-benefit analysis is to be performed using the guidance of Regulatory Guide 1.110.	11.2
COL Item 11.3-1:	An applicant that references the NuScale Power Plant US460 standard design will perform a site-specific cost-benefit analysis.	11.3
COL Item 11.3-2:	An applicant that references the NuScale Power Plant US460 standard design will calculate doses to members of the public using the site-specific parameters, compare those gaseous effluent doses to the numerical design objectives of 10 CFR 50, Appendix I, and comply with the requirements of 10 CFR 20.1302 and 40 CFR 190.	11.3
COL Item 11.3-3:	An applicant that references the NuScale Power Plant US460 standard design will perform an analysis in accordance with Branch Technical Position 11-5 using the site-specific parameters.	11.3
COL Item 12.1-1:	An applicant that references the NuScale Power Plant US460 standard design will describe the operational program to maintain exposures to ionizing radiation as far below the dose limits as practical, as low as reasonably achievable (ALARA).	12.1
COL Item 12.2-1:	An applicant that references the NuScale Power Plant US460 standard design will describe additional site-specific contained radiation sources that exceed 100 millicuries (including sources for instrumentation and radiography) not identified in Section 12.2.1.	12.2
COL Item 12.3-1:	An applicant that references the NuScale Power Plant US460 standard design will develop the administrative controls regarding access to high radiation areas per the guidance of Regulatory Guide 8.38.	12.3
COL Item 12.3-2:	An applicant that references the NuScale Power Plant US460 standard design will develop the administrative controls regarding access to very high radiation areas per the guidance of Regulatory Guide 8.38.	12.3
COL Item 12.3-3:	An applicant that references the NuScale Power Plant US460 standard design will specify personnel exposure monitoring hardware, specify contamination identification and removal hardware, and establish administrative controls and procedures to control access into and exiting the radiologically controlled area.	12.3
COL Item 12.3-4:	An applicant that references the NuScale Power Plant US460 standard design will develop the processes and programs necessary for the implementation of 10 CFR 20.1501 related to conducting radiological surveys, maintaining proper records, calibration of equipment, and personnel dosimetry.	12.3
COL Item 12.3-5:	An applicant that references the NuScale Power Plant US460 standard design will develop the processes and programs necessary for the use of portable airborne monitoring instrumentation, including accurately determining the airborne iodine concentration in areas within the facility where plant personnel may be present during an accident.	12.3
COL Item 12.3-6:	An applicant that references the NuScale Power Plant US460 standard design will develop the processes and programs associated with Objectives 5 and 6, to work in conjunction with design features, necessary to demonstrate compliance with 10 CFR 20.1406, and the guidance of Regulatory Guide 4.21.	12.3
COL Item 12.4-1:	An applicant that references the NuScale Power Plant US460 standard design will estimate doses to construction personnel from a co-located existing operating nuclear power plant. that is not a NuScale Power Plant.	12.4

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