

## Response to NuScale Technical Report Audit Question

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**Question Number:** A-4.Fluence.TeR-6

**Receipt Date:** 04/22/2024

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**Question:**

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}}<sup>2(a),(c),ECI</sup> However, Table B-13 of TR-118976-P shows that the maximum fluence of RPV at the inner surface {{  
}}<sup>2(a),(c),ECI</sup>. Revise the technical report TR-118976-P to reflect the maximum fluence {{  
}}<sup>2(a),(c),ECI</sup>.

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**Response:**

The peak reactor pressure vessel beltline inner surface fluence of {{  
}}<sup>2(a),(c),ECI</sup> (located in the electronic reading room as an attachment to the response to audit question A-4.3-5) is found in Table 5-1 of TR-118976-P, Revision 0. Section B.1.14 and Table B-13 of TR-118976-P, Revision 0, provide a sensitivity case to estimate the uncertainty in the peak neutron fluence due to using a {{  
}}<sup>2(a),(c),ECI</sup> tally subdivision size.

The maximum uncertainty in the peak neutron fluence values due to {{  
}}<sup>2(a),(c),ECI</sup> in Table B-13 of TR-118976-P, Revision 0. Equation 4-5 of Section 4.3 of TR-118976-P, Revision 0, implements this uncertainty to quantify the overall uncertainty in the NuScale best-estimate fluence MCNP6 model.

Discussed in the response to A-4.Fluence.TeR-7, the sensitivity case to estimate the uncertainty for tally mesh size (angular tally subdivision size) {{  
}}<sup>2(a),(c),ECI</sup>. The percent differences of Table B-13 are the relevant information in the table for the calculation of the overall uncertainty. The fluence and relative error values do not impact the fluence calculation methodology or results of TR-118976-P, Revision 0. NuScale has removed the fluence and relative error values from

Table B-13 to clarify the relevant information of the table. Changes to Table B-13 also include updates to the table title due to the response to audit question A-4.Flucence.TeR-7. NuScale also updated the text of Section B.1.14 to clarify the results of Table B-13 in response to audit question A-4.Flucence.TeR-7.

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

**B.1.14 Tally Mesh Size**

Audit Question A-4.Fluence.TeR-6, Audit Question A-4.Fluence.TeR-7

This section presents the results of the determination of the tally subdivision size uncertainty,  $\sigma_{tally}$ .

Audit Question A-4.Fluence.TeR-6, Audit Question A-4.Fluence.TeR-7

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Audit Question A-4.Fluence.TeR-6, Audit Question A-4.Fluence.TeR-7

Audit Question A-4.Fluence.TeR-6, Audit Question A-4.Fluence.TeR-7

}}<sup>2(a),(c)</sup>

Audit Question A-4.Fluence.TeR-6, Audit Question A-4.Fluence.TeR-7

**Table B-13 Tally Subdivision Size Uncertainty ~~Peak Fluence Results for Axially Varied-Coolant Density~~**

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}}<sup>2(a),(c)</sup>