

NuScaleDCRaisPEm Resource

From: Cranston, Gregory
Sent: Friday, August 04, 2017 5:38 PM
To: RAI@nuscalepower.com
Cc: NuScaleDCRaisPEm Resource; Lee, Samuel; Chowdhury, Prosanta; Dias, Antonio; Vettori, Robert; Markley, Anthony
Subject: RE: Request for Additional Information No. 126, RAI 9048 (9.5.1)
Attachments: Request for Additional Information No. 126 (eRAI No. 9048).pdf

Attached please find NRC staff's request for additional information concerning review of the NuScale Design Certification Application.

Please submit your technically correct and complete response within 60 days of the date of this RAI to the NRC Document Control Desk.

If you have any questions, please contact me.

Thank you.

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Licensing Branch 1 (NuScale)
Division of New Reactor Licensing
Office of New Reactors
U.S. Nuclear Regulatory Commission
301-415-0546

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Request for Additional Information No. 126 (eRAI No. 9048)

Issue Date: 08/04/2017

Application Title: NuScale Standard Design Certification - 52-048

Operating Company: NuScale Power, LLC

Docket No. 52-048

Review Section: 09.05.01 - Fire Protection Program

Application Section:

QUESTIONS

09.05.01-2

General Design Criterion 3, "Fire protection," states in part that:

Structures, systems, and components important to safety shall be designed and located to minimize, consistent with other safety requirements, the probability and effect of fires and explosions. Noncombustible and heat resistant materials shall be used wherever practical throughout the unit, particularly in locations such as the containment and control room.

Regulatory Guide 1.189, "Fire Protection for Nuclear Power Plants," Section 2.1.3, "Flammable and Combustible Liquids and Gases," states in part that:

Flammable and combustible liquids and gases are potentially significant fire hazards and procedures should clearly define their use, handling, and storage, which should, at a minimum, comply with the provisions of the National Fire Protection Association (NFPA) 30, "Flammable and Combustible Liquids Code."

In the FSAR, the applicant describes the hydraulic fluid used for the mechanical valves controlling the various reactor systems under the bioshield as being "noncombustible," "non-flammable," and "not flammable."

In FSAR Tier 2, Section 9A.5.19 through Section 9A.5.30, the fire hazard analysis for the area under the bioshield of each module, the applicant states that

Based on the minimal combustibles (all conductors in metal conduit, and the use of non-flammable hydraulic fluid) the only postulated fire during power operations would be located in an electrical junction box caused by a deficient connection.

NFPA 30, Section 4.2.3 defines a flammable liquid as any liquid that has a flash point below 100°

F. NFPA 30, Section 4.2.2 defines a combustible liquid as any liquid that has a flash point at or above 100° F. Liquid mixtures that do not sustain combustion are considered to be noncombustible.

The applicant is requested to:

1. Define the type of hydraulic fluid used as flammable, combustible, or noncombustible.
2. If the hydraulic fluid used is considered flammable or combustible, postulate a fire beneath the bioshield due to a leak in the hydraulic fluid system. If applicable, the applicant is requested to provide justification for not postulating a fire beneath the bioshield.

Information provided in response to the above request should be included in an update to the FSAR.

09.05.01-3

10 CFR 52.47(a)(18) requires a DC application to contain a description and analysis of the fire protection design features for the standard plant necessary to comply with 10 CFR 50.48 and GDC 3 in 10 CFR part 50, Appendix A.

In FSAR Tier 2, Table 9.5.1-2, "Compliance Table versus Regulatory Guide 1.189," for regulatory guide position numbers 3.2.1, 3.2.2, 3.2.3, and 3.3 that applicant states:

"Additional detailed requirements exist in this section and all will be met or do not apply."

The applicant is requested to:

List the additional requirements and indicate which requirements will be met or do not apply or provide justification for not listing which requirements will be met or do not apply.

Information provided in response to the above request should be included in an update to the FSAR.

09.05.01-4

10 CFR 52.47(a)(18) requires a DC application to contain a description and analysis of the fire protection design features for the standard plant necessary to comply with 10 CFR 50.48 and GDC 3 in 10 CFR part 50, Appendix A.

In FSAR Tier 2, Section 9A.7.1, "Preparation for the Expert Panel Meeting," the applicant stated that the expert panel was trained on the generic pressurized water reactor MSO List from NEI 00-01 Revision 3, as applicable for the NuScale design"

The staff note that the NRC has not endorsed NEI 00-01 Revision 3.

The applicant is requested to:

Perform an evaluation for the effects of multiple spurious actuations due to a fire that is consistent with NEI 00-01, Revision 2, as modified in Regulatory Guide 1.189, Revision 2, or, if an alternative approach is used, justify how the alternative approach complies with NRC regulations.

Information provided in response to the above request should be included in an update to the FSAR.

09.05.01-5

General Design Criterion 3, "Fire protection," states in part that:

Structures, systems, and components important to safety shall be designed and located to minimize, consistent with other safety requirements, the probability and effect of fires and explosions.

In FSAR Tier 2, Section 9A.5.82, "Reactor Building – Fire Area 010-208, 010-242, 010-275," the applicant states:

Unmitigated fire could result in loss of one division of safety-related equipment for 12 reactor modules.

In FSAR Tier 2, Table 19.1-44, "Fire Induced Initiating Events," fire initiating event IE-FIRE-3-ECCS indicates that a fire in this fire area will affect both Divisions I and II.

The applicant is requested to reconcile the inconsistency of whether a fire in this fire area will affect one or both divisions of safety-related equipment or provide justification as to why the inconsistency is acceptable.

Information provided in response to the above request should be included in an update to the FSAR.