

From: [Carolyn Lauron](#)
To: [Justin Hawkins](#)
Cc: [Demetrius Murray](#); [Greg Cranston](#); [Michael Dudek](#)
Subject: NRC Staff response to follow-up question re: CRDS (SRP 3.9.4)
Date: Tuesday, October 25, 2022 12:22:00 PM

Hi Justin –

Please see the NRC staff response to the subject question.

Please let us know if you need additional information.

Thank you,
Carolyn Lauron
USNRC

Question:

We have a follow-up clarification question regarding SRP 3.9.4:

Q: “Life cycle” and “Prototype” testing is discussed in SRP 3.9.4. If an applicant chooses to perform this testing in lieu of using existing testing results, when are the actual results of this physical testing required for review in the Part 50 licensing process (PSAR submittal or FSAR submittal or somewhere in between)? Based on my read of the SRP, it appears like the **bolded red** statement below from Section III answers my question, but I would just like to make sure I’m reading it correctly.

Context:

SRP 3.9.4

I. Areas of Review, 2. states in part, *“If an experimental testing program is used in lieu of analysis, the program is reviewed to determine whether it adequately addresses stress, deformation, and fatigue. Whether analysis or testing is used to support the CRDS design, it should be based on the limiting plant operating conditions with worst-case static and alternating loads.”* 3. states in part, *“If the applicant selects an experimental testing option in lieu of establishing a set of stress and deformation allowables, a detailed description of the testing program must be provided for review. The load combinations (which for CRDS internal to the vessel assembly include both static and all postulated alternating flow, acoustic, and mechanical loads, including those from other components throughout the reactor), design stress limits and allowable deformations criteria should be provided for review in the preliminary safety analysis report (PSAR). In the final safety analysis report (FSAR) for an operating license, or the final safety evaluation report (FSER) for design certification (DC) applications, the actual design should be compared with the design criteria and limits to demonstrate that the criteria and limits have not been exceeded.”*

III. Review Procedures, 1. States in part, ***“In the DC or construction permit (CP) review, it should be determined that the design criteria utilize proper load combinations, stress and deformation limits, and that operability assurance is provided by reference to a previously accepted testing program, or provisions are specified to perform a testing program that includes the essential***

elements listed below. In the operating license (OL) review, the results of any testing program not previously reviewed should be evaluated.”

NRC Staff Response:

The bolded statement referenced above is appropriate. Testing can be conducted prior to CP application, but results could also be reviewed during the OL application review. As noted in SRP 3.9.4, if the applicant selects an experimental testing option in lieu of establishing a set of stress and deformation allowables, a detailed description of the testing program must be provided for review. The load combinations (which for CRDS internal to the vessel assembly include both static and all postulated alternating flow, acoustic, and mechanical loads, including those from other components throughout the reactor), design stress limits and allowable deformations criteria should be provided for review in the PSAR.