

NRC Staff Comments on Technical Specifications Task Force (TSTF) Traveler TSTF-576, “Revise Safety/Relief Valve [SRV] Requirements” – Draft Revision 1 and Draft Request for Additional Information (RAI) Responses

1. **Related to RAI 11.** Title 10 of the *Code of Federal Regulations* (10 CFR) 50.36(c)(1)(ii)(A), requires: Limiting safety system settings (LSSS) for nuclear reactors are settings for automatic protective devices related to those variables having significant safety functions. Where an LSSS is specified for a variable on which a safety limit has been placed, the setting must be so chosen that automatic protective action will correct the abnormal situation before a safety limit is exceeded. SRVs are automatic protective devices related to a variable that has a safety limit and is therefore significant to safety. The draft RAI responses state that the LSSS apply only to reactor protection system (RPS) related functions. However, a plain English read of the CFR does not lead to this conclusion. Additionally, the staff found examples that show LSSS are assigned to other instrumentation recently (current standard technical specification (STS) emergency core coolant system (ECCS) and reactor core isolation cooling (RCIC)) and examples of the safety valve settings being included as LSSS. **Explain why the SRV setpoints should not be an LSSS as defined in 10 CFR 50.36.**

**Items to consider:**

- Nine Mile Point 1 and Oyster Creek technical specification (TS) include safety valve settings as LSSS
- The November 1968 document does not exclude safety valves from the description of LSSS
- NUREG-0123 only included RPS settings as LSSS. NUREG-1433 includes RPS, ECCS, and RCIC setpoints as LSSS. Why were ECCS and RCIC setpoints added if LSSS are only applicable to RPS?
- The NRC staff cannot find any reference to show that SRV setpoints should not be LSSS

2. **Related to RAI 6.** The explanation in the TSTF and the Bases markups do not provide a pathway for each plant to clearly define the number of SRVs required to meet the overpressure protection system (OPS) requirement or actions required when any SRV(s) is (are) inoperable. **How does a plant determine OPS operability when one or more SRVs have lost “operability”? For plants that require all installed SRVs, how does this apply (i.e., can they remove the related action statement)?** Each licensee needs to define in the Bases and license amendment what is required for them to meet the safety limit.

3. **In addition, the draft RAI responses continue to lack justification for removal of the Bases statement regarding reliability of the OPS if one or more “not required” SRVs is inoperable.**

4. **Are there TS implications and/or safety significance in boiling-water reactors (BWRs) for SRVs that open early or stick open?** Provide justification for removing the low setpoint tolerance from TS.

5. The traveler states “If the as-found individual SRV performance is not within the inputs and assumptions of the previous cycle reload licensing analysis (RLA), the previous cycle overpressure RLA is reevaluated using revised inputs considering the as-found test results and the NRC-approved methodology for the licensee.” This only discusses overpressure and doesn’t specifically include checking other items such as the assumptions used in the

containment load analysis, effects on high-pressure system performance, etc. Note that these other items are described in GE document NEDC-32511P, "Safety Review for Hope Creek Generating Station Safety/Relief Valve Tolerance Analyses," April 1996. **Are these other items always addressed as part of a normal reload analysis? If not, they should be included in the traveler.**

6. It appears that the description of (at least) the RPS Neutron Flux High Trip in the Bases should be revised as part of this traveler. Instead of crediting the SRVs there, maybe the OPS would be credited. There may be other locations as well. **The TSTF should review the Bases for references to the SRVs to be sure that the OPS is referred to where appropriate.**

7. On page 5 for the draft response to **RAI 1.b.ii**, it states "The assumptions related to out-of-service SRVs vary based on licensee and by vendor methodology but are not affected by the proposed change." This appears inconsistent with previous discussions on this topic as well as the response to RAI 8 which states that the number of valves assumed out-of-service would be considered changes in input parameters. The BWR/4 STS state "The safety function of the [11] SRVs shall be OPERABLE." For the majority of plants, the total number of valves is larger than the number required to be OPERABLE, so their existing analysis only considers the valves required to be OPERABLE. However, under the proposed TS, this would no longer be a requirement, and licensees could credit all valves in their analysis. In these cases, the assumptions related to out-of-service SRVs *could be* affected by the proposed change. **The traveler and RAI responses should be revised to provide clarity and consistency for this issue.**

8. **Related to RAI 4.** The traveler, TS, Bases, and RAI responses confuse manual actuation with mechanical function of the valve. The specified manual actuation is to assure *mechanical* operation, not manual actuation. If mechanical operation of only the actuator is required, then the TS and Bases should clearly state this and provide a justification for not requiring that the safety valve mechanical function be verified. (For example, the valve is verified to function mechanically during as-left testing.) The Bases for surveillance requirement (SR) 3.4.3.2 state that The LOGIC SYSTEM FUNCTIONAL TEST in SR 3.3.6.3.7 overlaps this SR to provide complete testing of the relief mode function. The relief mode function will not work if the valve does not lift. This function is verified during as-left testing. The description should include all aspects of testing that make up a full test of the function. The note and SR language in SR 3.4.3.2 are contradictory and confusing. Suggestion is to revise the SR to verify that the actuator actuates. **Revise TS and Bases to clarify the mechanical requirements for the valves and the actuators and what is done to ensure each requirement is met. Remove confusion between manual actuation versus mechanical function.**

9. With respect to the downstream piping being unobstructed, the traveler and draft RAI response provide an example from an SE that found that a foreign material exclusion (FME) program at a single plant was adequate to minimize the potential for blockage. The NRC staff would have to accept that all plants have adequate FME programs in their SE. **Revise the model application to include a statement that the plant has an adequate FME program to prevent blockage of piping downstream of the SRVs.**

10. **Related to RAI 5.** The Code allows the licensee to determine an acceptable setpoint tolerance outside the suggested +/- 3%. Such a change could reduce the amount of testing required for the SRVs. On page 10, it states "With the removal of the SRV setpoints and

tolerances from the TS and basing the TS on the OPS capability, there is no incentive for a licensee to justify a wider testing tolerance for the inservice test and it is expected that SRV testing and maintenance will continue to be based on  $\pm 3\%$  or the tolerance currently in the TS.” If the tolerance is increased by the licensee, fewer valves would be expected to fail the testing which could ultimately result in less testing. In addition, there would be less work for licensees as they wouldn’t have to do as many evaluations in the Corrective Action Program. Three licensees (covering four units) have already expanded their lower tolerance (done through the license amendment review process) to use a -5% lower tolerance. Clearly, there was an incentive for these licensees to expand the tolerance. Placing valve setpoint tolerance under control of the Code may lead to reduced testing and maintenance of valves that have had inconsistent performance that has not yet been explained or resolved. **Revise the traveler to remove discussion/references related to the statements that there is no incentive to make such a change.**

11. **Language throughout traveler and draft RAI responses.** The proposed change would not be needed if the SRVs behaved as the Code assumes. The traveler provides little discussion of the unexpected and unresolved valve behavior as the impetus for the proposal. The proposal is presented as an improvement because it better reflects the specified safety function. The wording in the traveler implies that the current TS is inadequate or does not ensure the intended safety function. This is incorrect. The traveler further states that SR requirements on each valve are overly conservative for assuring that the safety limit (SL) will not be exceeded. This is an opinion that is not universally accepted. Maintaining the valve setpoints in the TS results in operation within the SL at least as effectively as the proposed change. Much of the language in the traveler has similar issues. For example, on page 8, the traveler states “The existing SR does not meet the regulatory guidance that the SR will assure that facility operation will be within safety limits, as the SR requirements on each SRV are overly conservative for that purpose.” The existing SR *does* meet the regulatory requirements, although it *may* be overly conservative. **The traveler should clearly state the underlying reason that the change is being proposed and opinion and inaccurate language should be eliminated.**

10. **TS Bases markups.** The verb tense in some of the SR Bases that describe the evaluation to determine if the SL “is” protected is incorrect. The evaluation of the test results is initially performed for the past cycle and therefore should be past tense (N-1). For example, on page 9, the proposed Bases state “Should one or more of the credited SRVs not actuate within the assumed tolerance, the actual lift values will be used to evaluate the affected overpressure analyses to determine whether the Safety Limit is protected.” The actual lift values would be used to evaluate the previous cycle (N-1), but actual lift values would not be used for the current cycle (N). The actual lift values are used to determine if the SL was protected. Maybe a description of the current/future evaluation (N) should be included for the present tense. **Correct the verb tense and add a more complete description of the N and N-1 analyses to the Bases. The Bases should describe the methods that will be used for these evaluations that were presented during the audit. For example, RLA methods are used.**

13. On page 11, it states “The nature of the changes to the inputs will depend on the cause of the as-found failures and the similarities or differences between the previous cycle and the current cycle.” **Revise to read “previous cycles” (plural) so it considers more than just the**

**previous cycle.** Check rest of the traveler for other instances to ensure multiple cycle data is considered when applicable.

14. In the BWR/6 LCO Bases, a significant amount of information that could help with an understanding of the OPS is deleted. The proposed change seems to ignore the fact that the OPS is dependent upon proper operation of the SRVs to fulfill its safety function. Similar for the BWR/4 Bases, but to a lesser extent. **Provide a justification for deleting this information.**