

**RESPONSES TO STAFF COMMENTS  
ON INDUSTRY GUIDANCE ON  
54.4(a)(2) SCOPING CRITERION**

1. The position paper should state the staff's evaluations have indicated that a combination of a desk-top review of structures, systems, and components (SSCs) and a plant walkdown of areas containing a combination of safety-related and non-safety-related SSCs is the most effective means of identifying SSCs which meet the criterion, and that the results of these activities should be maintained in a retrievable and auditable form.

**Response:** Experience suggests that the best method is application dependent. In some cases a desk-top review is appropriate, in some case a walkdown, and in some cases a combination. In any event, the review process chosen will comply with 54.37 (a).

2. **Section. 5.2. Preventive Option**

The Nuclear Energy Institute (NEI) position states that pipe whip, jet impingement, spray or flooding from non-safety-related (NSR) systems could create additional failures of safety-related (SR) SSCs. The staff believes that this sentence should be revised as follow: "Physical impacts, such as pipe contact (pipe falling such that it physically contacts safety-related equipment), pipe whip, jet impingement, spray or flooding, etc. from NSR SSCs could create additional failures of SR SSCs. This revision specifically identifies the need to consider the potential for structures and components (SCs) falling onto SR SCs and is consistent with industry operating experience with identified failures.

**Response:** Operating experience suggests that only high-energy FAC failures need to be addressed. The definition of high energy should be in accordance with the plant licensing basis.

3. **Section 5.2.1.1, Loss of a Safety-Related Component vs Loss of a Safety-Related Function**

The NEI position implies that a NSR SSC need not come into scope if its failure will not adversely impact on a safety-related function. The staff does not agree. This issue has been the topic of discussion during all license renewal application (LRA) audit review activities, and to date applicants have not implemented such an approach. The Commission in the Statement of Consideration (SOC) for the Rule clearly articulated that the applicant should consider the potential for failure of safety-related systems, structures, or components from performing their intended function(s) and did not limit the scope to that of system intended function(s) solely. Specifically, the SOC states, in part: "The first two categories of systems, structures and components discussed in the new scope section (Sec. 54.4(a)(1) and (a)(2)) are the same categories defined in the previous definition of systems, structures, and components important to license renewal. These

scoping categories concern (1) all safety-related systems, structures, and components, and (2) all non-safety related systems, structures, and components that support the function of a safety-related system, structure, or component or whose failure could prevent a safety-related system, structure, or component from satisfactorily fulfilling its intended function(s). The staff has therefore taken the position that all non-safety-related systems, structures and components that support the function of a safety-related system, structure, or component or whose failure could prevent a safety-related system, structure, or component from satisfactorily fulfilling its intended function(s), should be initially included in scope.

**Response:** 10CFR54.4 (a)(2) states that *"All nonsafety-related systems, structures, and components whose failure could prevent satisfactory accomplishment of any of the functions identified in paragraphs (a)(1) (i), (ii), or (iii) of this section"* are in scope. The SOC expands this definition to include SR *"systems, structures, or component"* intended function(s), and hence the issue.

We agree that this position has not been taken by previous applicants, and foresee it as being seldom used in the future. However, if an applicant chooses to take and defend this position based on their CLB, it is their prerogative to do so.

#### **4. Section 5.2.1.2, Equipment Used to Establish Initial Conditions**

The NEI position states that the function of NSR equipment to establish initial conditions for equipment operation or accident assumptions does not constitute the basis for inclusion within the scope. The staff does not agree. The determination to include SSCs is needed to ensure initial conditions is plant-specific, and has been addressed this way in previous license renewal application (LRA) reviews. The applicant should identify design basis events (DBE) and whether the NSR SSCs are needed to ensure the initial plant conditions assumed in addressing the DBE.

**Response:** NSR SSCs governed by plant Technical Specifications are not in scope unless they meet the criteria of 54.4. Tech Spec limiting conditions for operations were in the original rule, and were removed in 1995 because *"...the Commission concludes that current activities for such systems, structures, and components, including licensee programs and the NRC regulatory process, are sufficient and that no additional evaluation is necessary for license renewal"* (quoted from the SOC).

An additional point of reference is in Table 2.3-1 of NUREG-1800, where the failure of NSR cavity cooling HVAC ductwork *"will not prevent the satisfactory completion of any critical safety function during and following a design basis event. Thus this ductwork is not within the scope of license renewal."*

#### **5. Section 5.2.2.1 Systems and Components Containing Air/Gas**

The NEI position states that operating experience for systems containing air/gas has shown no failures due to aging that have adversely impacted the accomplishment of a safety function, and that a review of site-specific operating experience should be performed to verify this assumption. This implies that the basis for exclusion from scope is plant-specific. The staff agrees and requests that NEI revise the guidance to state that the applicant should include the references to industry and plant-specific operating experience credited for establishing this position. The review results should be maintained in a retrievable and auditable form.

**Response:** We modified Section 5.2.2.1 to incorporate staff's request. We included industry OE sources in this section, and also added requirements for plant-specific OE review. The review results will be maintained in accordance with the requirements of 54.37(a).

**6. Section 5.2.2.2.1 High-Energy Systems**

The staff needs clarification about what is being addressed in this section. Specifically, does the discussion of physical impact of high-energy systems include seismic and non seismic components, or is this addressed in Subsection 5.2.2.3 (see below)? Also, is pipe failure/separation considered a credible source of physical impact?

**Response:** The intent of this section was to discuss the potential failure effects of high energy system piping (without regard to seismic classification). Industry experience has shown that physical impacts can occur due to high energy FAC failures, and therefore this section already included the potential for physical impacts from pipe separation/whip.

**7. Section 5.2.2.2.2 Moderate-/Low-Energy Systems**

The staff needs clarification about what is being addressed in this section. Specifically, does the discussion of spatial interactions of moderate- and low-energy systems include seismic and non-seismic components, or is this addressed in Subsection 5.2.2.3 (see below)? Also, is pipe failure/separation considered credible source of physical impact?

**Response:** The intent of this section was to distinguish the difference between high-energy and non-high energy systems (without regard to seismic classification). Failure effects from non-high energy systems do not include pipe separation/whip or jet impingement. We know of no industry experience (other than high-energy FAC failures) where pipe has fallen if its supports are intact. Section 5.2.2.3 requires aging management of support systems which precludes physical impacts from pipes from falling. We added a slight clarification to Section 5.2.2.2.2.

**8. Section 5.2.2.3. Non-seismic and Seismic II/I Piping and Supports**

The NEI paper states that this section is intended to describe the potential spatial interaction of NSR piping systems that may fall on or otherwise physically impact SR SSCs. It states that operating experience confirms that pipe segments do not fall during seismic events. The staff agrees, but requests that the first sentence be revised to read "This section is intended to describe the potential spatial interaction of non-safety related piping systems that may fall on or otherwise physically impact safety-related SSCs during a seismic event". Given this clarification, the staff believes that the discussion of the impacts of the failure of high-, moderate, and low-energy system components described in Sections 5.2.2.2.1 and 5.2.2.2.2 could be revised to clarify that failure of pipe segments due to non-seismic events can and do occur, and because of this, the physical impact of falling pipes should be considered when determining whether NSR piping should be brought into scope.

**Response:** This section is not specific to seismic events alone. Piping supports need to be managed to prevent pipe from falling during a seismic event. The intent of this section is to show that non-seismic, aged pipe will not fail and fall during a seismic event as long as its support system remains intact. Therefore, if this aged pipe has been shown not to fall during a seismic event, it will certainly not fall as a result of only the aging process of the pipe, as long as its supports remain intact. Experience has shown that aged NSR piping does not fail during seismic events. It is logical to assume that it will also not fail as a result of only the aging process of the pipe, as long as the supports are intact. Aging management of the supports for NSR piping systems with potential for spatial interaction with SR SSCs is already required to preclude physical impacts on SR SSCs. We revised Section 5.2.2.3 slightly to provide clarification.

**9. Section 5.2.3.1, Exposure Duration**

The NEI position states that only NSR SSCs whose failure could result in short-term failure of a SR SSC need not be included within scope. The staff does not agree. Neither the Rule, nor the SOC, considers duration of the failure of a SR SSC or function due to the failure of a NSR as a factor in determining whether a NSR SSC should be in scope. Further, this position has not been taken by previous applicants.

**Response:** The NEI position states "...NSR SSCs whose failure could result in a short-term failure of a SR SSC, would need to be considered in scope for 54.4(a)(2)." This is contrary to the staff's comment (although we are not sure if the word "not" was really intended for the first sentence, or if it was a typo).

The duration of the failure of the SR SSC is not at issue here. The term "short-term failure" was intended to mean a "failure due to a short-term exposure".

The intent of this section is to identify differences in exposure durations, taking credit for realistic plant operations, and the fact that some SR components are inherently resistant to potential environments that could occur if an NSR SSC would fail. If a failure of an NSR SSC would be identified and isolated prior to the

failure of the SR SSC, then the NSR SSC would not be in-scope. Conversely, if the SR SSC could fail prior to the NSR SSC failure being identified and isolated, then the NSR SSC would be in scope.

We clarified Section 5.2.3.1 to address the staff's concern.

**10. Section 5.2.3.2, Fail-Safe Components**

The NEI position states that NSR SSCs that could only cause a failure of a fail-safe component, would not be considered in scope. The staff disagrees. It is not clear from the position taken by industry why a failure of a NSR SSC cannot impact the ability of a SR SSC from attaining its fail-safe state. The staff requests further dialog with the industry on this issue to specifically confirm that a NSR SSC cannot impact a fail-safe SR SSC in such a manner as to preclude the SR SSC from fulfilling it's intended function(s).

**Response:** We clarified Section 5.2.3.2 to address the staff's concern.

**11. Section 6. 0. Industry Guidance - Preventive Option**

In Item F, the NEI position states that the 54.4(a)(2) scoping methodology should be documented, along with the bases for the engineering judgements. The staff agrees. However, in addition , the staff believes that to ensure that actions have been identified and have been or will be taken such that there is reasonable assurance that the SSCs that meet the 54.4(a)(2) criterion are adequately managed during the period of extended operation, the applicant will need to identify for the staff the components which meet 54.4(a)(2) and are subject to an aging management review, along with the associated aging management information (material , environment, aging effect(s), and aging management program/activity). We suggest the following revision:

Document the plant-specific 54.4(a)(2) scoping methodology. The results from the application of this methodology will be plant-specific (commodity lists, component lists or boundary drawings, etc.) and should be documented, including the bases for the engineering judgments made during this review.

**Response:** We revised Item F to indicate that the methodology is in 54.21 (a)(1) and the guidance in NEI 95-10.