

**RESPONSE TO PUBLIC COMMENTS ON DRAFT STANDARD REVIEW PLAN (SRP) 19.5:  
ADEQUACY OF DESIGN FEATURES AND FUNCTIONAL CAPABILITIES IDENTIFIED AND  
DESCRIBED FOR WITHSTANDING AIRCRAFT IMPACTS**

On July 25, 2012, a Notice of Opportunity for Public Comment was published in the Federal Register (77 FR 46128) on the proposed Revision 0 to NUREG-0800, Standard Review Plan (SRP) Section 19.5. This revision included a draft (new) U.S. Nuclear Regulatory Commission (NRC) SRP 19.5 “Adequacy of Design Features and Functional Capabilities Identified and Described for Withstanding Aircraft Impacts” to provide Staff guidance in reviewing aircraft impact submittals. Comments were received from two (2) organizations and one (1) individual.

1. ERIN Engineering and Research, Inc 2105 S. Bascom Ave, Suite 350 Campbell, CA 95008 ADAMS Accession No. ML12249A406 (Comments 1 through 7 in the following Table)	2. KEPCO-E&C through ERIN Engineering and Research Inc. 2105 Bascom Ave., Suite 350 Campbell, CA 95008 ADAMS Accession No ML12258A071 (Comments 8 and 9 in the following table)	3. Larry Wheeler Nuclear Regulatory Commission Washington DC 20555-0001 ADAMS Accession No. ML12237A139 (Comment 10 in the following Table)
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The NRC Staff’s review and disposition of the comments are provided in the following Table.

No.	Section of draft SRP 19.5	Originator	Comment	NRC Resolution
1.	Section III, 8, Item C on page 19.5.5	ERIN Eng	<p>Section III.8 of the draft SRP states In part, An intervening structure having the following features to be able to protect a building wall from aircraft impact:</p> <p>C. The structure has multiple interior walls in the flight path that are made of reinforced concrete</p> <p>ERIN's recommendation is to delete the word "interior" from item C. Because NEI 07-13, Revision 8 states,</p> <p>Only reinforced concrete walls that are at least 18" thick are considered to provide screening protection. An intervening structure can only be credited if N (see SGI Appendix A) walls, including the minimum 24" thick exterior wall of the structure containing the safe shutdown equipment of concern, are encountered in the projected flight path of the aircraft. Other structures may be acceptable but their acceptability needs to be verified by a structural analysis.</p> <p>Without the deletion of "Interior," the SRP could be interpreted to state that the N walls are counted inside the intervening structure (multiple interior walls of the intervening structure); however, NEI 07-13 states that the walls (interior or exterior) of the intervening structure are counted in the N number of walls as long as they are 1) a minimum of 18" of reinforced concrete and 2) the exterior walls of the "structure containing the safe shutdown equipment of concern" is a minimum of 24" of reinforced concrete.</p>	<p>The Staff believes that in Section III.8.C, the word 'interior' should be kept to distinguish exterior walls (in Section III.8.B) from the interior walls because:</p> <ol style="list-style-type: none"> <li>1. By removing the word "interior" it may also be interpreted to mean that no interior walls are required since two exterior walls across each other in the flight path will qualify the requirement that there are multiple walls (more than one wall) in the flight path.</li> <li>2. The SRP19.5 does not discuss nor is required to provide any information regarding the SGI information, number of walls 'N'. Therefore there is no reason for any misinterpretation of 'counting' the N number of walls. The Staff must look for any description in the DCD or FSAR for credit given to 'interior' walls. The determination of the adequacy of the 'N' number of walls – whether interior and or exterior – is subject to Staff inspection.</li> </ol> <p>Section III.8.C will be modified to read "Interior walls in the flight path are made of reinforced concrete" to make it consistent with the wording in Section III.8.B.</p>

2.	Section III, 9, Item B on page 19.5.5	ERIN Eng	<p>In Section III,9.B the draft SRP states, "Floor, ceiling and wall plugs installed to fill open penetrations that are fire-rated for at least 3-hours; and will withstand any over pressure."</p> <p>ERIN's recommendation is to replace "any" with "5-psid." This is consistent with NEI 07-13, Revision 8.</p>	<p>The NRC Staff agrees that the use of "5-psid" is consistent with NEI 07-13 Revision 8. Also, "5-psid" has been the criteria used in the review of previous aircraft impact assessment submittals.</p> <p>Replaced the word "any" with "5 psid"</p>
3.	Section III, heading, "Review of Design Features for Core Cooling" on page 19.5-6	ERIN Eng	<p>In Section III.9, paragraph "Review of Design Features for Core Cooling" of the draft SRP states, "The AIA reviewer shall examine the description provided by the applicant and confirm that it describes all equipment in the heat removal path."</p> <p>ERIN's recommendation is to replace "all equipment" with "or references descriptions of the key design features and functional capabilities of." It is unreasonable to describe "all" equipment in the heat removal path in Section 19.5. The applicant should identify the key design features and functional capabilities with references to other sections for further descriptions.</p>	<p>The Staff considers this requirement to be reasonable. The AIA rule in 10 CFR50.150 (b)( 1) requires the applicants to include the description of the design features and functional capabilities relied on in meeting the rule requirements of core cooling or intact containment and the spent fuel cooling or the spent fuel pool integrity is maintained.</p> <p>In section 19.5 of the application, it is acceptable to make reference to other sections of the application where the description of the design features and functional capabilities of equipment in the heat removal path is provided. However the Staff is required to confirm that a description of the design features and functional capabilities of all equipment in the heat removal path that are relied on meeting the requirement of the AIA rule in 10CFR150 (a) (1) is provided – either in Section 19.5 or by reference to the other section of the application. The Staff considers this requirement to be reasonable. In order to clarify that only the credited equipment needs to be described the sentence will be modified as follows.</p> <p>"The Staff reviewer shall examine the description provided by the applicant and confirm that it describes or references descriptions of the key design features and functional capabilities of all equipment credited in the heat removal path."</p>
4.	Section III, heading, "Review of Design Features for Core Cooling," second paragraph on page 19.5-6	ERIN Eng	<p>In Section III.9 and the same paragraph as comment #3 above, the draft SRP states, "The AIA reviewer also shall determine if the features credited for core cooling are designed to accomplish this function with the reactor critical and producing power."</p> <p>ERIN's recommendation is to delete this sentence. NEI 07-13 states in Table 3-4 that the initial condition for AIA is that the reactor is scrammed from full power. Thus the reactor is assumed to be shutdown for the assessment.</p>	<p>The NRC Staff agrees with the recommendation to delete the sentence "The AIA reviewer also shall determine if the features credited for core cooling are designed to accomplish this function with the reactor critical and producing power." NEI 07-13 Revision 8 table 3-4 part 3 describes the reactor scram prior to strike. "The baseline assumption will be successful reactor scram prior to damage. However, in reviewing damage footprints in areas with equipment essential to reactor scram an</p>

				<p>assessment will be made of the potential for damage to prevent a scram should it have not occurred.”</p> <p>To better describe this requirement the Staff deleted the last two sentences of the second paragraph and added a third paragraph as follows:          “In most cases, operators are expected to have some warning prior to damage so a reactor scram would be expected to occur prior to damage. However, in other cases, damage could impair the ability of the reactor to scram. An assessment will be made of the potential for damage to prevent a scram should it have not previously occurred. The Staff reviewer shall initiate a review to confirm that design features are in place to protect equipment relied upon for reactor scram.”</p>
5.	Section III, heading, "Review of Design Features for Maintaining the Containment Intact on page 19.5-7	ERIN Eng	In Section III.9, paragraph entitled, "Review of Design Features for Maintaining the Containment Intact" the same "all" is used for "all equipment" as in comment 3 above.	<p>See response to comment number 3 above. In order to clarify that only the credited equipment needs to be described the sentence will be modified as follows.</p> <p>“The Staff reviewer shall examine the description provided by the applicant of features relied upon to maintain the containment intact following a core damage event and confirm that it describes or references descriptions of the key design features and functional capabilities of all credited equipment needed to maintain ultimate pressure capability until effective mitigation strategies can be implemented.”</p>
6.	Section III, heading, "Review of Design Features for Maintaining Spent Fuel Pool Integrity," Item Number 1 on page 19.5-7	ERIN Eng	<p>In Section III.9, paragraph entitled, "Review of Design Features for Maintaining Spent Fuel Pool Integrity" in sub-item (1) the draft SRP states,</p> <p>"...designed such that there will be no leakage from the pool following impact of the aircraft..."</p> <p>ERIN's recommendation is to replace "from the pool" with "through the spent fuel pool liner below the required minimum level of the pool." This will make this statement consistent with Section III.6 of the draft SRP and with NEI 07-13, Revision 8.</p>	<p>Staff agrees with ERIN Engineering that in order to be consistent with NEI 07-13 the wording should be changed.</p> <p>See NEI 07-13 page 31 and page 73 where spent fuel pool integrity is discussed.</p> <p>Replaced "from the pool" with "through the spent fuel pool liner below the required minimum water level of the pool"</p>
7	Section III, heading, "Review of Design Features for Spent Fuel Pool Cooling "on pages 19.5-7,8	ERIN Eng	<p>In Section III, paragraph entitled, "Review of Design for Spent Fuel Pool Cooling" the draft SRP uses the term "all."</p> <p>ERIN's recommendation is the same as described in comment #3 above,</p>	No change to the SRP. Staff could not find where the word "all" is used in this section.

8	Section III, heading, "Review of Design Features for Core Cooling," second paragraph on page 19.5-6	KEPCO E&C through ERIN Eng	On page 19.5-6, second paragraph of subsection "Review of Design Features for Core Cooling" delete the last two sentences.	This is same comment as comment number 4 above. See response to comment 4.
9	Section III, heading, "Review of Design Features for Spent Fuel Pool Cooling "on pages 19.5-7,8	KEPCO E&C through ERIN Eng	<p>On page 19.5-8, the first full paragraph on this page, there is the statement, "...the AIA reviewer shall confirm that they satisfy review procedures III.5, III.7 and III.8 of this the SRP."</p> <p>It is recommended that this statement be modified to read, "...the AIA reviewer shall confirm that they satisfy review procedures III.7, III.8, and III.9 of this SRP."</p>	<p>Staff agrees with KEPCO E&amp;C and added review procedure III.9 to this section of the SRP since a spreading jet fuel fire has the potential to damage equipment that may be required for spent fuel pool cooling.</p> <p>Staff disagrees with the request to remove Review Procedure III.5. This Review Procedure was left as is, since some existing plants (BWR6) and the ESBWR DCD (buffer pool) have some spent fuel stored in smaller pools inside the containment. This is to speed up refueling. So the containment vessel does provide protection for these fuel assemblies.</p>
10	Section III, heading, "Review of Design Features for Core Cooling," first paragraph on page 19.5-6	Larry Wheeler	<p>Review for Design Features for Core Cooling</p> <p>There is no discussion in this SRP or referenced NEI 07-13 R/8 related to maintaining the core subcritical post AIA event.</p> <p>For example for a PWR that operates with a borated core, all control rods in may not maintain the core subcritical (shutdown margin) as the reactor coolant system cools down.</p> <p>Boration is used to compensate for fuel burning during the core cycle and at the end of core life the boron concentration is near 0 PPM (zero) as opposed to ~ 1300 PPM at the beginning of core life.</p> <p>Key design features may need to include several borated sources such as the refueling water storage tanks (RWST) to maintain the core subcritical thus maintaining the core cooled.</p> <p>Since the BWRs do not operated [sic] with a borated core, this is not applicable.</p>	Staff agrees with the commenter that all control rods in may not maintain the core subcritical (shutdown margin) as the reactor coolant system cools down. Added the following to section "Review of Design Features for Core Cooling" after the first sentence in the first paragraph: "As part of core cooling, front line systems, support systems, and borated water may be required to maintain the core subcritical (shutdown margin)."