

**RESOLUTION OF COMMENTS ON DRAFT SAFETY EVALUATION FOR**  
**TOPICAL REPORT (TR) WCAP-16500-P/WCAP-16500-NP, SUPPLEMENT 2,**  
**“EVOLUTIONARY DESIGN CHANGES TO CE 16X16 NEXT GENERATION FUEL AND**  
**METHOD FOR ADDRESSING THE EFFECTS OF END-OF-LIFE PROPERTIES ON**  
**SEISMIC AND LOSS-OF-COOLANT-ACCIDENT ANALYSES”**  
**WESTINGHOUSE ELECTRIC COMPANY**  
**PROJECT NO. 700**

By letter dated May 9, 2016, Westinghouse Electric Company (Westinghouse) provided comments on the draft safety evaluation (SE) for Topical Report (TR) WCAP-16500-P/WCAP-16500-NP, Supplement 2, “Evolutionary Design Changes to CE 16X16 Next Generation Fuel and Method for Addressing the Effects of End-of-Life Properties on Seismic and Loss of Coolant Accident Analyses.” Some information in the draft SE for this TR was identified as proprietary; therefore, the draft of this SE will not be made publicly available. The following are the U.S. Nuclear Regulatory Commission (NRC) staff’s resolution of these comments:

**Draft SE comments for TR WCAP-16500-P/WCAP-16500-NP, Supplement 2:**

1. Westinghouse proposed to remove last sentence of Section 1.2, paragraph 2 that reads: “However, a reduced DNB margin penalty of three percent was imposed.” Westinghouse stated that final SE for the previously approved Supplement 1 to WCAP-16500-P-A removes the 3 percent penalty.

**NRC Resolution for Comment 1 on Draft SE:**

The NRC staff reviewed the Westinghouse comment and finds it acceptable, because the suggested revision clarifies the staff scope and context of the staff review. The NRC staff agrees that such a revision is consistent with the staff’s review findings and provides additional clarification. Last sentence of Section 1.2, paragraph 2, is removed.

2. The first two sentences of Section 3.1.1, paragraph 2, reads:

PIE of test assemblies using spacer grids with MOS has shown an improvement in GTRF performance of the outer strap. However, the effects of the modifications to the outermost inner grid straps on GTRF performance were unclear from the examination.

Westinghouse proposed the following change to the first two sentences of paragraph 2 of Section 3.1.1:

PIE of test assemblies for the original CE 16x16 NGF design demonstrates superior GTRF performance of the outer strap springs which were incorporated at all locations on the outer strap of the MOS design. However, the effects of the modifications to the outermost inner grid straps on GTRF performance required additional testing.

NRC Resolution for Comment 2 on Draft SE:

The NRC staff reviewed the Westinghouse comment and finds the proposed change acceptable, because the suggested revision clarifies the staff scope and context of the staff review. The NRC staff agrees that such a revision is consistent with the staff's review findings and provides additional clarification.

The first two sentences of paragraph 2 of Section 3.1.1 is changed to read:

PIE of test assemblies for the original CE 16x16 NGF design demonstrates superior GTRF performance of the outer strap springs which were incorporated at all locations on the outer strap of the MOS design. However, the effects of the modifications to the outermost inner grid straps on GTRF performance required additional testing.

3. Westinghouse proposed to replace "grid spacer" with "spacer grid" in the third sentence of the fourth paragraph of Section 3.1.1.

NRC Resolution for Comment 3 on Draft SE:

The NRC staff reviewed the Westinghouse comments and finds it acceptable, because the suggested revision clarifies the staff scope and context of the staff review. The NRC staff agrees that such a revision is consistent with the staff's review findings and provides additional clarification.

Third sentence of the fourth paragraph of Section 3.1.1 is changed to read:

It was stated that wear depth for a given spacer grid depends on the contact surface geometry and that double dimple cells maintain the same combination of contact points between the grids and the rods.

4. Westinghouse proposed to insert word "tab" between words "outer strap" and "(OST)" in the third sentence of the second paragraph of Section 3.1.2.

NRC Resolution for Comment 4 on Draft SE:

The NRC staff reviewed the Westinghouse comment and finds the proposed change acceptable, because the suggested revision clarifies the staff scope and context of the staff review. The NRC staff agrees that such a revision is consistent with the staff's review findings and provides additional clarification.

Third sentence of the second paragraph of Section 3.1.2 is changed to read:

Additionally, a small change in flow distribution within the fuel assembly and between fuel assemblies in mixed assembly cores is seen due to the additional outer strap tab (OST) change.

5. Westinghouse requested to remove word "tested" in the first sentence of the first paragraph of Section 3.1.4. The request is based on the outcome of the clarification teleconference held on May 5, 2016, when NRC and Westinghouse staff agreed that no additional testing is required to demonstrate acceptable performance of any variation of the changes outside of Limitation and Condition 1 since the changes do not influence each other and the performance characteristics reported in the TR will not be impacted by variations in the combination of design changes.

Currently first sentence of the first paragraph of Section 3.1.4 reads:

The three design changes presented, MOS, OST, and [ ] have each been found acceptable by NRC staff on the bases that: (1) any changes or combination of changes will be tested, analyzed and explicitly accounted for according to approved licensed methodologies, (2) the overall design is not expected to be adversely affected and is expected to continue to satisfy the acceptance criteria identified in SRP Section 4.2, and (3) no new methodologies or design criteria are necessary to accommodate the proposed design changes.

NRC Resolution for Comment 5 on Draft SE:

The NRC staff reviewed the Westinghouse comment and finds the proposed change acceptable, because the suggested revision clarifies the staff scope and context of the staff review. The NRC staff agrees that such a revision is consistent with the staff's review findings and provides additional clarification.

First sentence of the first paragraph of Section 3.1.4 is changed to read:

The three design changes presented, MOS, OST, and [ ] have each been found acceptable by NRC staff on the bases that: (1) any changes or combination of changes will be analyzed and explicitly accounted for according to approved licensed methodologies, (2) the overall design is not expected to be

adversely affected and is expected to continue to satisfy the acceptance criteria identified in SRP Section 4.2, and (3) no new methodologies or design criteria are necessary to accommodate the proposed design changes.

6. Limitations and Conditions 1 and 2 in Section 4.0, currently read:

1. CE 16x16 NGF spacer grids [ ] must also apply the Modified Outer Strap (MOS) design change.
2. Intermediate Flow-Mixing (IFM) grids for which the MOS design change is not applicable may [ ] provided the [ ] do not challenge any safety analyses or design criterion.
3. Any changes or combinations of changes approved in this safety evaluation shall be tested, analyzed, and explicitly accounted for according to approved licensed methodologies prior to implementation.
4. Licensees may not reference the proposed approach to address IN 2012-09 detailed in the Supplemental 2 to WCAP-16500-PA/WCAP-16500-NP-A submittal as this approach has not been reviewed or approved by the NRC staff.

During the teleconference held on May 5, 2016, Westinghouse proposed and NRC staff agreed to combine Limitations and Conditions 1 and 2 based on the fact that Westinghouse response to RAI13 has addressed the NRC concern of safety analyses and design criterion for the design change. The proposed wording recognizes this while retaining the allowable design change for IFMs.

NRC Resolution for Comment 6 on Draft SE:

Section 4.0, "Limitations and Conditions" is changed to read:

Use of WCAP-16500-P/WCAP-16500-NP, Supplement 2, for licensing actions is subject to the following conditions and limitations:

1. CE 16x16 NGF spacer grids [ ] must also apply the Modified Outer Strap (MOS) design change. Intermediate Flow-Mixing (IFM) grids for which the MOS design change is not applicable may [ ] since the [ ] do not challenge any safety analyses or design criterion.
2. Any changes or combinations of changes approved in this safety evaluation shall be analyzed and explicitly accounted for according to approved licensed methodologies prior to implementation.

3. Licensees may not reference the proposed approach to address IN 2012-09 detailed in the Supplement 2 to WCAP-16500-P/ WCAP-16500-NP submittal as this approach has not been reviewed or approved by the NRC staff.
7. Westinghouse provided a comment requesting to remove –A from TR number stating that Westinghouse submitted TR with a number “WCAP-16500-P/WCAP-16500-NP.”

NRC Resolution for Comment 7 on Draft SE:

The NRC staff reviewed the Westinghouse comment requesting to remove –A from TR number stating that Westinghouse submitted TR with a number “WCAP-16500-P/WCAP-16500-NP.” The NRC staff removed –A from TR number in the final SE. The NRC noted that there are other Westinghouse TRs currently under review with similar issues, which will have to be addressed on a case-to-case basis to maintain consistency in the TR identification system for referencing in license applications.

8. Westinghouse provided comments related to the typographical errors and stylistic changes.

NRC Resolution for Comment 8 on Draft SE:

The NRC staff reviewed the Westinghouse recommendations and finds them acceptable because the changes are editorial in nature.