RESOLUTION OF WESTINGHOUSE ELECTRIC COMPANY

COMMENTS ON DRAFT SAFETY EVALUATION FOR

TOPICAL REPORT WCAP-12472-P/WCAP-12472-NP, ADDENDUM 4,

REVISION 0, "BEACON™ CORE MONITORING AND OPERATION

SUPPORT SYSTEM, ADDENDUM 4"

WESTINGHOUSE ELECTRIC COMPANY

PROJECT NO. 700

By letter dated March 13, 2012, Westinghouse Electric Company (Westinghouse) provided eighteen comments on the draft safety evaluation (SE) for Topical Report (TR) WCAP-12472-P/WCAP-12472-NP, Addendum 4, Revision 0, "BEACON™ Core Monitoring and Operation Support System, Addendum 4." 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 NRC staff's resolution of these comments:

Draft SE comments for TR WCAP-12472-P/WCAP-12472-NP, Addendum 4, Revision 0:

1. The first sentence of Section 1.0, paragraph 4, reads:

> The purpose of the Addendum 4 to WCAP-12472-P/WCAP-12472-NP is to: a) Provide the information needed to review and approve the updated thermocouple uncertainty analysis process that will be applied in the BEACON on-line core monitoring system and b) Affirm the continued use of the NRC approved Westinghouse design model methodology, currently PHOENIX-P/ANC, PARAGON/ANC, and NEXUS/ANC, in the BEACON system.

Westinghouse proposed the following change for the first sentence of Section 1.0, paragraph 4:

> The purpose of the Addendum 4 to WCAP-12472-P/WCAP-12472-NP is to: a) Provide the information needed to review and approve the updated thermocouple uncertainty analysis process that will be applied in the BEACON on-line core monitoring system, b) Affirm the continued use of the NRC approved Westinghouse design model methodology, currently PHOENIX-P/ANC, PARAGON/ANC, and NEXUS/ANC, in the BEACON

> system, and c) Affirm that uncertainties applied to power distribution monitoring using fixed in-core detectors are valid using higher order polynomial fits of the detector variability and fraction of inoperable detectors than provided in Reference 4.

NRC Resolution for Comment 1 on Draft SE:

The NRC staff reviewed the Westinghouse recommendation 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.

The first sentence of Section 1.0, paragraph 4, is changed to read:

> The purpose of the Addendum 4 to WCAP-12472-P/WCAP-12472-NP is to: a) Provide the information needed to review and approve the updated thermocouple uncertainty analysis process that will be applied in the BEACON on-line core monitoring system, b) Affirm the continued use of the NRC approved Westinghouse design model methodology, currently PHOENIX-P/ANC, PARAGON/ANC, and NEXUS/ANC, in the BEACON system, and c) Affirm that uncertainties applied to power distribution monitoring using fixed in-core detectors are valid using higher order polynomial fits of the detector variability and fraction of inoperable detectors than provided in Reference 4.

2. Westinghouse proposed the following change to the paragraph 6 of Section 2.2:

> In the updated thermocouple evaluation process, equation 2 is used in the equation 3 instead of equation 1, and the radial assembly uncertainty function is a function of the average thermocouple deviation which is a function **[**
>
> **]**

NRC Resolution for Comment 2 on Draft SE:

The NRC staff reviewed the Westinghouse recommendation and finds the proposed proprietary markings acceptable.

The paragraph 6 of Section 2.2 is changed to read:

> In the updated thermocouple evaluation process, equation 2 is used in the equation 3 instead of equation 1, and the radial

assembly uncertainty function is a function of the average thermocouple deviation which is a function **[**

]

3. Westinghouse proposed the following change to the second and third sentences of the last paragraph of Section 2.2:

   At reduced power levels the trends of the thermocouple mixing factor standard deviations and the radial assembly uncertainties will be different **[**

   ]

   NRC Resolution for Comment 3 on Draft SE:

   The NRC staff reviewed the Westinghouse recommendation and finds the proposed revision acceptable.

   The second and third sentences of the last paragraph of Section 2.2 are changed to read:

   At reduced power levels the trends of the thermocouple mixing factor standard deviations and the radial assembly uncertainties will be different **[**

   ]

4. Westinghouse proposed the following change to paragraph 2, Section 2.3:

   Westinghouse has provided a methodology for implementing an updated thermocouple uncertainty analysis process in the submitted TR. **[**

   ]

   NRC Resolution for Comment 4 on Draft SE:

   The NRC staff reviewed the Westinghouse recommendation and found 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.

Paragraph 2, Section 2.3, is changed to read:

> Westinghouse has provided a methodology for implementing an updated thermocouple uncertainty analysis process in the submitted TR. **[**
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> **]**

5. Westinghouse indicated that there is Westinghouse technical inaccuracy in its original submittal WCAP-12472-P/WCAP-12472-NP, Addendum 4, Revision 0. Westinghouse asked NRC to change "197 fuel assemblies" to "193 fuel assemblies."

   NRC Resolution for Comment 5 on Draft SE:

   The NRC staff reviewed the Westinghouse request and finds it acceptable. "197 fuel assemblies" are changed to "193 fuel assemblies" in the staff SE.

6. Westinghouse proposed the following change to the last sentence of paragraph 5, Section 2.3:

   [

   ]

   NRC Resolution for Comment 6 on Draft SE:

   The NRC staff reviewed the Westinghouse recommendation and finds it acceptable.

   Last sentence of paragraph 5, Section 2.3, is changed to read:

   [

   ]

7. Westinghouse proposed the following proprietary markings for Sentence 3, paragraph 6, Section 2.3:

> The average thermocouple mixing factor standard deviation at HFP conditions was determined to be **[** **]** which is larger than plant X, indicating greater variability in the thermocouple behavior at full power conditions.

NRC Resolution for Comment 7 on Draft SE:

The NRC staff reviewed the Westinghouse proposed proprietary markings and finds it acceptable.

Portion of the Sentence 3, paragraph 6, Section 2.3, is marked proprietary:

> The average thermocouple mixing factor standard deviation at HFP conditions was determined to be **[** **]** which is larger than plant X, indicating greater variability in the thermocouple behavior at full power conditions.

8. Westinghouse proposed the following proprietary markings:

> Westinghouse responded by stating that the **[**
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> **]**

NRC Resolution for Comment 8 on Draft SE:

The NRC staff reviewed the Westinghouse recommendation and found proprietary markings acceptable.

The portion of sentence 7 and sentences 8 and 9 of Paragraph 5, Section 2.3 are marked proprietary:

> Westinghouse responded by stating that the **[**
>
> **]**

9. The first sentence of Section 3.0 of the draft SE states:

> The NRC staff has reviewed the Westinghouse submittal TR WCAP-12472-P/WCAP-12472-NP, Addendum 4, Revision 0, and finds it acceptable.

Westinghouse proposed the following change to the first sentence of Section 3.0:

> The NRC staff has reviewed the Westinghouse submittal TR WCAP-12472-P/WCAP-12472-NP, Addendum 4, Revision 0, and found the updated thermocouple methodology, the use of approved Westinghouse design model methodology and the use of higher order polynomial fits for FID uncertainties provided in the TR acceptable.

NRC Resolution for Comment 9 on Draft SE:

The NRC staff reviewed the Westinghouse recommendation and found it acceptable, because the suggested revision clarifies the 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 sentence of Section 3.0 is changed to read:

> The NRC staff has reviewed the Westinghouse submittal TR WCAP-12472-P/WCAP-12472-NP, Addendum 4, Revision 0, and found the updated thermocouple methodology, the use of approved Westinghouse design model methodology and the use of higher order polynomial fits for FID uncertainties provided in the TR acceptable.

10. Westinghouse provided six comments related to typographical errors and stylistic changes.

NRC Resolution for Comment 10 on Draft SE:

The NRC staff reviewed the Westinghouse recommendation and found it acceptable, because the changes are editorial in nature.