

Attachment 3

Clarifications to WCAP-17385-NP, Revision 5 (Non-Proprietary)

**“Clarifications to WCAP-17385-P, Revision 5”
Revision 1**

Question 1.

WCAP-17385-P, “STP Unit 3 Steam Dryer Flow-Induced Vibration Assessment,” Revision 5, April 2013; Section 6.5.3, “End-to-End Comparison,” page 6-14 item 3: [

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The conservatism of this approach [

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Response:

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WCAP-17385-P, section 6.5.3 will be revised to reflect the modified criteria. Proposed mark-ups of section 6.5.3 are as follows:

6.5.3 End-to-End Comparison

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Question 2.

WCAP-17385-P is not clear on when the end-to-end comparison would be performed. This should be performed before reaching the 100% power level; for example, 80% would be an acceptable power level.

Response:

The power ascension plan uses limit curves, using pressure transducers mounted directly on the steam dryer, and checks the stresses (and structural adequacy of the dryer) starting at 60% and then at subsequent 10% power increments up to 100% power. The end-to-end comparison at 100% power is planned, in addition to the use of limits curves, to provide an additional comparison using strain gages (see Nuclear Innovation North America (NINA) letter U7-C-NINA-NRC-130025, dated May 7, 2013). The strain gages will provide a direct stress comparison and additional confirmation that the predicted stresses are conservative. However, NINA would not object if the NRC were to decide to include in the license condition a requirement that:

At the 80% and 90% power levels, an end-to-end comparison between the measured and predicted strains will be performed as described in Section 6.5.3 of FSAR Reference 3.9-25. If the result of the comparison at each of these power levels is that the measured strains are bounded by the predicted strains, power ascension may proceed to the next power level based on the revised limit curves. However, if the result indicates that the measured strains are not bounded by the predicted strains, the NRC will be promptly informed and power ascension to the next power level will not proceed until a real-time stress analysis has been performed to develop new limit curves (see Section 6.3 of FSAR Reference 3.9-25).

The proposed license condition provided in the response to RAI 03.09.02-53 will be revised to reflect the addition of these power levels for the performance of the end-to-end strain gage comparison.

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Question 3.

WCAP-17385-P, Section 6.2, “Limit Curve Methodology,” page 6-3 discusses that the limit curves for continuing power ascension will be developed from the minimum stress ratio. The limit curves will be based on pressure measurements [

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The NRC reviewer would like some clarification of [

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Response:

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Revisions to the affected topical reports will be made to reflect the change in the minimum number of pressure transducers to be used in the development of the limit curves.

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Question 4.

WCAP-17385-P Section 6.3, “Power Ascension Process,” page 6-4 (as does the Executive Summary and Section 1.2, “Approach – Overview”) discusses that power ascension will continue to 100% power and the limit curves will be redrawn.

The NRC reviewer asked for clarification on why the limit curves would be redrawn at 100% power.

Response:

Limit curves are computed at the maximum power achieved, so that there would be an understanding of the margins existing in the plant at that power level.

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Question 5.

WCAP-17385-P Section 1, “Introduction,” does not discuss the end-to-end comparison that is discussed later in Section 6.5.3.

Response:

The introduction to a report does not generally review everything discussed in the report. The end-to-end comparison discussion is not a main section of the report; thus, it was not mentioned in the introduction.

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Question 6.

WCAP-17385-P Section 7, “Conclusion,” page 7-2 discusses that the RJ-ABWR (K-6) and J-ABWR []^{a,c} have accumulated over 12 years of operation without any indication of damage to the dryers.

The NRC reviewer thought that these two units together had operated longer than 12 years and requested that the 12 years be confirmed and what this was based on (e.g., actual operation).

Response:

In the introduction to WCAP-17369-P, it is stated that K-6 began commercial operation in November 1996 and completed a thorough flow-induced vibration (FIV) test, measurement, and inspection plan during plant start-up. The dryer has been routinely inspected visually during refueling outages and there has been no evidence of any service-induced degradation.

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]^{a,c} It should be noted that in Japan, outage times are typically scheduled more frequently and are longer than those in the U.S. and, with outage time considered, the time at power is properly characterized as over 12 years total for the two units, as stated in Section 7 of WCAP-17385-P, as well as in WCAP-17369-P.

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Question 7.

WCAP-17385-P Section 6.5.3, “End-to-End Comparison,” page 6-14, item 3.b [

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The NRC reviewer asked for clarification of the basis [

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Response:

Dryer locations with measured [

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