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MFN 09-370

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Subject: **Response to Portion of NRC Request for Additional Information Letter No. 331 Related to ESBWR Design Certification Application – Technical Specifications – RAI Number 16.2-156, Supplement 3**

Enclosures 1 and 2 contain the GE Hitachi Nuclear Energy (GEH) response to the subject NRC RAI transmitted via the Reference 1 letter.

If you have any questions or require additional information regarding the information provided here, please contact me.

Sincerely,

Richard E. Kingston
Vice President, ESBWR Licensing

Reference:

1. MFN 09-278, Letter from U.S. Nuclear Regulatory Commission to Jerald G. Head, *Request for Additional Information Letter No. 331 Related to ESBWR Design Certification Application*, April 20, 2009

Enclosures:

1. MFN 09-370 – Response to Portion of NRC Request for Additional Information Letter No. 331 Related to ESBWR Design Certification Application – Technical Specifications – RAI Number 16.2-156, Supplement 3
2. MFN 09-370 – DCD Markups for RAI Number 16.2-156, Supplement 3

cc: AE Cabbage USNRC (with enclosures)
JG Head GEH (with enclosures)
DH Hinds GEH (with enclosures)
eDRF 102-6795

Enclosure 1

MFN 09-370

**Response to Portion of NRC Request for
Additional Information Letter No. 331
Related to ESBWR Design Certification Application
- Technical Specifications -
RAI Number 16.2-156, Supplement 3**

NRC RAI 16.2-156, Supplement 3

{{ NOTE: RAI Enclosure 2, Example SCP, is not repeated here }}

In consideration of the response to RAI 16.2-156 supplement 2, the applicant is requested to revise the proposed setpoint control program specification by adopting the model specification and reviewer's note provided in Enclosure 2. It is the staff's position that this will be necessary for the staff to conclude that the SCP satisfies 10 CFR 50.36(c)(1)(ii)(a).

In particular, the reviewer's note should direct that (1) the guidance related to establishing the limiting as-found setting value (the AFT) and (2) the requirement to trend and evaluate differences between each as-found setting and either the previous as-left value or the specified NTSP_F, either be included in the SCP Specification, or be incorporated into the NRC approved methodology. The latter requirement should include trending and evaluation of all as-found settings, not just those outside the AFT.

The requirement that changes to instrumentation settings be governed by 10 CFR 50.59, in addition to the approved methodology, has been restored to the SCP model. The requirement that the document required by [5.5.11.d] contain a "record of changes" is removed, since regulations already require appropriate record keeping.

In paragraph 5.5.11.c.1.i of the SCP model, the phrase "evaluated to verify that it is functioning in accordance with its design basis" is retained, and in paragraph 5.5.11.c.1.ii, the phrase "then until 5.5.11.c.1.i and 5.5.11.c.2 are met" is deleted. These changes are necessary to ensure that an instrument channel that is found with a setting that is non-conservative compared to the AV will not be declared OPERABLE based solely upon entering this condition into the plant's corrective action program for dispositioning at some later time. Also, it is not necessary to explain in the SCP Specification how to restore a channel to OPERABLE status.

GEH Response

RAI: *In particular, the reviewer's note should direct that (1) the guidance related to establishing the limiting as-found setting value (the AFT) ... either be included in the SCP Specification, or be incorporated into the NRC approved methodology*

This RAI Item relates to presenting ESBWR DCD COL Item 5.5.11-1, Item 4 as a bracketed option in Setpoint Control Program (SCP) in Technical Specification (TS) 5.5.11. Since the scope of the DCD certification includes a setpoint methodology that is known to meet the criteria of this item, the bracketed option would not be adopted as an explicit TS requirement. The COL Item Reviewer's Note captures the intent for the setpoint methodology content.

RAI: *...and (2) the requirement to trend and evaluate differences between each as-found setting and either the previous as-left value or the specified NTSP_F, either be included in the SCP Specification, or be incorporated into the NRC approved methodology. The latter requirement should include trending and evaluation of all as-found settings, not just those outside the AFT.*

This RAI Item relates to the ESBWR COL Item 5.5.11-1, final paragraph currently requiring an Applicant commitment to a trending program. GEH will relocate this making it a TS requirement in the SCP as Item 5.5.11.d as presented in the RAI Example SCP. Since the scope of the DCD certification includes a setpoint methodology that is known to not require implementation of an operational trending program, this will not be shown as a bracketed option.

Note that Specification 5.5.11.c.1.i also requires the channel to be evaluated when differences between each as-found setting and either the previous as-left value or the specified $NTSP_F$ but only when the differences exceeds the AFT. The added 5.5.11.d duplicates this and expands the evaluation to address trending all differences, i.e., including when the difference is within the AFT. When the difference between each as-found setting and either the previous as-left value or the specified $NTSP_F$ is within the AFT, the intent of "trended and evaluated" is met by maintaining a record of the calibration results for use in future trending of that instrument.

RAI: *The requirement that changes to instrumentation settings be governed by 10 CFR 50.59, in addition to the approved methodology, has been restored to the SCP model. The requirement that the document required by [5.5.11.d] contain a "record of changes" is removed, since regulations already require appropriate record keeping.*

GEH DCD is consistent with this description and its presentation in RAI Enclosure 2. These changes were made in response to RAI 16.2-156, Supplement 2, transmitted in MFN 09-072, and are represented in Enclosure 2 in renumbered TS 5.5.11.e.

RAI: *In paragraph 5.5.11.c.1.i of the SCP model, the phrase "evaluated to verify that it is functioning in accordance with its design basis" is retained, and in paragraph 5.5.11.c.1.ii, the phrase "then until 5.5.11.c.1.i and 5.5.11.c.2 are met" is deleted. These changes are necessary to ensure that an instrument channel that is found with a setting that is non-conservative compared to the AV will not be declared OPERABLE based solely upon entering this condition into the plant's corrective action program for dispositioning at some later time. Also, it is not necessary to explain in the SCP Specification how to restore a channel to OPERABLE status*

The RAI Item and Example SCP changes described in this portion of the RAI will be adopted in the ESBWR SCP.

DCD Impact

DCD Chapter 16 will be revised as described above and as shown in Enclosure 2.

Enclosure 2

MFN 09-370

**DCD Markups for
RAI Number 16.2-156, Supplement 3**

Table 16.0-1-A (page 8 of 10)
COL - Applicant Open Items

COL Item	Description	Reviewer's Note
5.5.11-1	Setpoint Control Program Methodology and Implementation	<p>The referenced NRC approved setpoint methodology shall meet the following guidance, and shall be applicable to Technical Specification required automatic protection instrumentation function surveillances that require verification that setpoints (or channel outputs) are within the necessary range and accuracy (e.g., CHANNEL CALIBRATIONS:</p> <ol style="list-style-type: none"> 1. The methodology allows little variation in the values calculated by different analysts using identical input values (such as uncertainties and channel calibration drift) 2. The as-left value of the instrument channel trip setting shall be the value at which the channel was set at the completion of the surveillance with no additional adjustment of the instrument channel. 3. The as-found value of the instrument channel trip setting shall be the trip setting value measured during the subsequent performance of the surveillance before making any adjustment to the instrument channel that could change the trip setting value. 4. If the requirements of 5.5.11.c.1 include an allowance for the as-found value to be compared with the specified $NTSP_F$, the following conditions shall be applied: <ol style="list-style-type: none"> a. The setting tolerance band (i.e., the specified ALT) must be less than or equal to the square root of the sum of the squares of reference accuracy, measurement and test equipment errors, and readability uncertainties; b. The setting tolerance band (i.e., the specified ALT) must be included in the total loop uncertainty; and c. The pre-defined test acceptance criteria band (i.e., the specified AFT) for the as found value must include either the setting tolerance band (the specified ALT) or the uncertainties associated with the setting tolerance band (the specified ALT), but not both of these.
		<p style="color: red;">Additionally, the COL applicant shall commit to the following: When the difference between the instrument channel trip setting as found value and either the previous as left value or the specified $NTSP_F$ differ by more than the pre defined test acceptance criteria band (i.e., the specified AFT) for each Technical Specification required automatic protection instrumentation function, the results shall be trended and evaluated to verify that the instrument channel is functioning in accordance with its design basis.</p>

5.5 Programs and Manuals

5.5.11 Setpoint Control Program (SCP)

COL 16.0-1-A
5.5.11-1

- a. The Setpoint Control Program (SCP) implements the regulatory requirement of 10 CFR 50.36(c)(1)(ii)(A) that technical specifications will include items in the category of limiting safety system settings (LSSS), which are settings for automatic protective devices related to those variables having significant safety functions.
- b. The Limiting Trip Setpoint (LTSP), Nominal Trip Setpoint (NTSP_F), Allowable Value (AV), As-Found Tolerance (AFT), and As-Left Tolerance (ALT) for each Technical Specification required automatic protection instrumentation function shall be calculated in conformance with the instrumentation setpoint methodology previously reviewed and approved by the NRC in NEDE- 33304P-A, "GEH ABWR/ESBWR Setpoint Methodology," [Revision #, dated Month dd, yyyy, (MLxxxxxxx)], and the conditions stated in the associated NRC safety evaluation, [Letter to GEH from NRC, Title, dated Month, dd, yyyy, (MLxxxxxxx)].
- c. For each Technical Specification required automatic protection instrumentation function, performance of a CHANNEL CALIBRATION surveillance shall include the following:
 - 1. The as-found value of the instrument channel trip setting shall be compared with the previous as-left value or the specified NTSP_F.
 - i. If the as-found value of the instrument channel trip setting differs from the previous as-left value or the specified NTSP_F by more than the pre-defined test acceptance criteria band (i.e., the specified AFT), then the instrument channel shall be evaluated [to verify that it is functioning in accordance with its design basis](#) before declaring the surveillance requirement met and returning the instrument channel to service. This condition shall be dispositioned by the plant's corrective action program.
 - ii. If the as-found value of the instrument channel trip setting is less conservative than the specified AV, ~~then until 5.5.11.c.1.i and 5.5.11.c.2 are met,~~ the surveillance requirement is not met and the instrument channel shall be immediately declared inoperable.
 - 2. The instrument channel trip setting shall be set to a value within the specified ALT around the specified NTSP_F at the completion of the surveillance; otherwise, the surveillance requirement is not met and the instrument channel shall be immediately declared inoperable.

5.5 Programs and Manuals

d. The difference between the instrument channel trip setting as-found value and either the previous as-left value or the specified $NTSP_F$, for each Technical Specification required automatic protection instrumentation function shall be trended and evaluated to verify that the instrument channel is functioning in accordance with its design basis.

ed. The SCP shall establish a document containing the current value of the specified LTSP, $NTSP_F$, AV, AFT, and ALT for each Technical Specification required automatic protection instrumentation function and references to the calculation documentation. Changes to this document shall be governed by the regulatory requirements of 10 CFR 50.59. In addition, changes to the specified LTSP, $NTSP_F$, AV, AFT, and ALT values shall be governed by the approved setpoint methodology. This document, including any midcycle revisions or supplements, shall be provided upon issuance for each reload cycle to the NRC.