

August 16, 2007

Mr. Robert E. Brown  
Senior Vice President, Regulatory Affairs  
GE-Hitachi Nuclear Energy Americas LLC  
3901 Castle Hayne Rd MC A-45  
Wilmington NC 28401

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION LETTER NO. 105 RELATED TO  
ESBWR DESIGN CERTIFICATION APPLICATION

Dear Mr. Brown:

By letter dated August 24, 2005, GE-Hitachi Nuclear Energy Americas, LLC (GEH) submitted an application for final design approval and standard design certification of the economic simplified boiling water reactor (ESBWR) standard plant design pursuant to 10 CFR Part 52. The Nuclear Regulatory Commission (NRC) staff is performing a detailed review of this application to enable the staff to reach a conclusion on the safety of the proposed design.

The NRC staff has identified that additional information is needed to continue portions of the review. The staff's request for additional information (RAI) is contained in the enclosure to this letter.

Pursuant to 10 CFR 2.390, we have determined that the enclosed RAI contains proprietary information. The proprietary information is indicated in brackets and underlined in Enclosure 2. We have prepared a non-proprietary version of the RAI (Enclosure 1) that does not contain proprietary information. We will delay placing this document in the public document room for a period of ten (10) working days from the date of this letter to provide you with the opportunity to comment on the proprietary aspects only. If you believe that any additional information in the enclosure is proprietary, please identify such information line by line and define the basis pursuant to the criteria of 10 CFR 2.390 before the public release date.

To support the review schedule, you are requested to provide the requested additional information within 45 days of the date of this letter.

R. Brown

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If you have any questions or comments concerning this matter, you may contact me at 301-492-3195 or [djg3@nrc.gov](mailto:djg3@nrc.gov) or you may contact Amy Cubbage at (301) 415-2875 or [aec@nrc.gov](mailto:aec@nrc.gov).

Sincerely,

**/RA/**

Dennis Galvin, Project Manager  
ESBWR/ABWR Projects Branch 1  
Division of New Reactor Licensing  
Office of New Reactors

Docket No. 52-010

Enclosure:

1. Request for Additional Information (Non-Proprietary)
2. Request for Additional Information (Proprietary)

cc: See next page (w/o enclosure 2)

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cc: See next page (w/o enclosure 2)

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Requests for Additional Information (RAIs)  
ESBWR Design Control Document (DCD), Revision 3

RAI Number	Reviewer	Question Summary	Full Text
6.2-131, Supplement No. 1, (MFN 07-283, June 29, 2007)	Raj Goel	Containment setpoint pressure that initiates containment isolation for nonessential penetrations	<p>The responses to parts (A) and (B) of the original RAI 6.2-131 are acceptable. However, the staff has a further request for part (C).</p> <p>Part (C) requested a discussion of reducing the containment setpoint pressure that initiates containment isolation for nonessential penetrations to the minimum compatible with normal operating conditions. In the response to this RAI, GEH proposed a change to DCD Tier 2, Appendix IA to include the following: The alarm and initiation setpoints of the LD&amp;IS are set to the minimum compatible with normal operating conditions to initiate containment isolation for containment penetrations containing process lines that are not required for emergency operation. The values for these setpoints are determined analytically or are based on actual measurements made during startup and preoperational tests.</p> <p>If setpoints are to be determined analytically, provide the actual numerical value of the containment setpoint pressure that initiates containment isolation for nonessential penetrations and justify that it is the minimum compatible with normal operating conditions. If the setpoints are to be based on actual measurements during startup and preoperational tests then revise the DCD to provide more details regarding how and when this setpoint will be determined.</p>
RAI 6.2-144, Supplement No. 1 (MFN 07-310, 6/7/07)	Wagage H	Revise the DCD to include the response.	<p>GE's response to RAI 6.2-144 is satisfactory except for the final statement, "No DCD changes will be made in response to this RAI." The information provided in the response is necessary to be incorporated in the DCD for the staff to issue a reasonable assurance finding for Standard Review Plan Section 6.2.1.5.</p> <p>Revise the DCD to incorporate the response to 6.2-144. Please include the figures.</p>

RAI Number	Reviewer	Question Summary	Full Text
RAI 7.1-12 Supplement No. 1 (MFN 07-402, July 27, 2007)	Li H	Address digital I&C equipment EQ and EMI qualification.	The response states that no COL action requirements are proposed because environmental qualification (EQ) of safety-related equipment will be performed as part of the basic configuration ITAAC. However, in Tier 1 Section 1.2.2.1, Verification for Basic Configuration for Systems, states that equipment located in a mild environment during or following a DBA need not be tested or analyzed. The DCD has not addressed mild environment qualification and electromagnetic interference (EMI) qualification of safety system I&C equipment. The digital I&C equipment EQ issue should be addressed either by DAC process or by the COL action requirement.
RAI 7.1-13 Supplement No. 1 (MFN 07-402, July 27, 2007)	Li H	DAC for equipment qualification test reports	The response states that summaries of the equipment qualification test reports and failure modes and effects analyses (FMEAs) will be included in future revisions of the platform specific safety-related system licensing topical report (LTRs). However, because these LTRs will not be submitted before the final SER for design certification, this issue should be in the DAC process.
7.1-27, Supplement No.1 (MFN 07-402, July 27, 2007)	Li H	PRMS should comply with IEEE 603 requirements	The process radiation monitoring system (PRMS) should also comply with Sections 5.7 and 6.5 of IEEE 603 requirements.
7.1-50, Supplement No.1 (MFN 07-402, July 27, 2007)	Li H	DAC for NUMAC design	Because the LTR NEDO-33288 Revision 1 and Revision 2 will not be submitted before the final SER for design certification, this issue should be in the DAC process.
7.2-11, Supplement No.1 (MFN 07-162, May 31, 2007)	Yarsky P	[[  ]]	The response states that the model [[  ]]. The staff, therefore, will not review the application of this model at this time. Potential future application of the model will require a revision to the topical report. Please update the LTR to include this language, taken verbatim from the RAI response.

RAI Number	Reviewer	Question Summary	Full Text
7.2-14, Supplement No. 1 (MFN 07-162, May 31, 2007)	Yarsky P	AFIP uncertainty analysis and qualification basis for the adaption method	The response refers to the AFIP uncertainty analysis and qualification basis for the adaption method. This information has not been provided to the NRC. Please provide this information as a revision to the LTR.
7.2-16, Supplement 1- (MFN 07-162, May 31, 2007)	Yarsky P	Describe [[ ]]	Which GTs in the string were removed from the [[ ]]?
7.2-18, Supplement 1- (MFN 07-162, May 31, 2007)	Yarsky P	LPRM adaption	<p>The RAI requested a correction for an inconsistency in the LTR. The response indicates that [[ ]].</p> <p>However, the LTR statements regarding [[ ]] remain inconsistent with this approach and should be corrected in the next revision. LPRM adaption [[ ]] and the AFIP uncertainty analysis is inconsistent with LPRM adaption. Such an uncertainty term would account for [[ ]] Update the LTR to remove LPRM adaption or update the AFIP uncertainty analysis in the LTR to be consistent with such an adaption technique.</p>

RAI Number	Reviewer	Question Summary	Full Text
7.2-20, Supplement 1- (MFN 07-321, June 20, 2007)	Yarsky P	Explain the uncertainties in Tables 9-14 and 9-15.	<p>A. The explanation provided in this response is not acceptable to the staff. The origin of the [[ ]] is NEDC-32964P-A. The measurements that the response refers to relied on using TIPs. TIPs are not included in the ESBWR design. Therefore, while a greater number of measurements were included in the determination of the NEDC-32964P-A uncertainty these measurements are not indicative of the monitoring to be performed for the ESBWR. Furthermore, the NEDC-32964P-A topical report requires that the applicability of the numbers be demonstrated, specifically item (3) requires that the 3D MONICORE bundle power calculational uncertainty should be verified when applied to fuel and core designs not included in the benchmark comparisons. It is worth noting that in developing the uncertainty [[</p> <p style="text-align: right;">]] therefore the staff does not agree with the statement that these benchmark comparisons are necessarily indicative of the ESBWR 3D MONICORE. Please provide additional descriptive details, in light of more recent qualification against high power density plants and specific testing relevant to the ESBWR instrumentation design and core monitoring methodology.</p> <p>B. The response states that [[ ]] is addressed in the response to RAI 7.2-9. The staff does not agree with the applicant because the response to RAI 7.2-9 addresses the [[ ]] only. Furthermore, the staff disagrees with the applicant's statement that the uncertainty is unexpected to change. The staff disagrees because a TIP trace provides direct measurement of the [[ ]] at every nodal level, while the GT arrangement cannot. The staff finds it counterintuitive to conclude that fewer measurements can result in the same uncertainty. Qualitatively address the unique aspects regarding the ESBWR specific core monitoring approach that would compensate for a reduced number of measurements? Comment specifically on the ramification of having an anomaly in one axial node that perturbs the power distribution locally and the efficacy of the GT arrangement to</p>

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			<p>identify such an anomaly.</p> <p>C. This response is acceptable.</p> <p>D. The results in Table 7-18 refer to the GT core monitor study. It appears to the staff that a [[ ]] technique would have to be employed to perform core wide [[ ]]. Verify that the gamma scan comparisons were carried out based on off-line predicted barium concentrations where the power shapes input into the offline methodology were those that were determined by adapting the [[ ]]. If intermediate TIP adaption was performed, justify the direct applicability of the gamma scan RMS differences.</p> <p>E. The staff requested clarification of the term [[ ]] in a supplemental request for information pursuant to RAI 7.2-58. The staff also asked for clarification regarding the value in Table 8-7 in terms of its relation to the data in Tables 7-3 and 7-4. The staff does not understand the applicability of these data considering that they are based on [[ ]] GTs per string, which is not the proposed design for the ESBWR.</p> <p>Provide justification for the applicability of the [[ ]] data considering the difference in the ESBWR design. This justification should consider any additional uncertainty associated with having fewer sensors including a determination of an equivalent [[ ]] value ignoring all but [[ ]] of the GT instruments in a way that is realistic by providing an equivalent [[ ]] uncertainty where all but [[ ]] of the GT signals per string in the [[ ]] are not considered in the adaption and RMS difference analysis.</p> <p>F. This response is acceptable.</p> <p>G. The staff finds this response to be inconsistent with general adaption practices and the uncertainty analysis provided in NEDC-33197P. First,</p>



RAI Number	Reviewer	Question Summary	Full Text
			<p>the response indicates that [[ ]], is this practice proposed for the ESBWR? Second, the use of [[ ]] therefore the uncertainty analysis should consider LPRM uncertainties associated with LPRM drift between calibrations. Please clarify this response.</p> <p>H. This response is acceptable.</p>
7.2-50, Supplement No. 1 (MFN 07-402 July 27, 2007)	Beacom R	ITAAC for Commercially Dedicated PLCs	Response is unacceptable. Per the RAI, the staff is requesting an ITAAC for Commercially Dedicated PLCs and any other devices using commercially available software.
7.2-51, Supplement 1- (MFN 07-321, June 20, 2007)	Yarsky P	Explain the Gamma Thermometer [[ ]]	<p>The response to 7.2-14 only states that the AFIP uncertainty analysis qualification basis will address the number of required GT sensors. 7.2-64 describes the two techniques under consideration. RAI 7.2-51 requested that the qualification basis address the advantages of either technique under consideration when adapting to double-humped power shapes, or challenging power shapes, such as the [[ ]].</p> <p>RAI 7.2-51 also requests an update to the topical report to address core monitor performance using either technique when the core power shape is double humped. Update the LTR to quantitatively assess core monitor performance using GT adaption with either [[ ]] technique for axial power shapes with multiple local peaks.</p> <p>Provide a plot showing a TIP trace of a double humped power shape as well as the GT adapted axial power shape based on [[ ]] simulated instruments and the proposed [[ ]] techniques.</p> <p>Comment on the [[ ]] uncertainty for this scenario.</p>

RAI Number	Reviewer	Question Summary	Full Text
			Determine the CPR for the bundles with the highest four bundle power based on a TIP adapted power shape as well as a simulated GT adapted power shape. (if [[ ]]).
7.2-55, Supplement No. 1 (MFN 07-162, May 31, 2007)	Yarsky P	Statistical control method details	Provide additional descriptive details of the statistical control method. Does this method rely on historical data?
7.2-56, Supplement No. 1 (MFN 07-162, May 31, 2007)	Yarsky P	Selection of [[ ]]	The response states that the [[ ]], however, the response does not state how an [[ ]] is selected. Provide additional descriptive details of how an [[ ]] is selected.
7.2-58, Supplement No. 1 (MFN 07-162, May 31, 2007)	Yarsky P	Clarify [[ ]]	<p>The response states that the basis for the [[ ]] is based on the information in Table 8-7. The response to RAI 4.3-2 S01 states that it is based on the [[ ]] in Tables 7-3 and 7-4. Please clarify this inconsistency. The number in Table 8-7 does not appear to be a [[ ]], please explain what is meant by the term [[ ]] in RAI 4.3-2 S01 response.</p> <p>The response states that the [[ ]]. Please provide additional descriptive details regarding the uncertainty analysis. These descriptive details should address the effect of the [[ ]] on the accrued exposure in bundles near the four bundles surrounding the GT strings. To assist the staff in understanding the [[ ]], please provide the results of the comparative core follow analyses with TIP adaption and the [[ ]]. The results provided should include the exposure dependent MCPR and the exposure dependent CPR for one high power bundle adjacent to a GT string.</p> <p>The staff agrees with the proposed changes to the LTR.</p>

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7.2-59, Supplement No. 1 (MFN 07-162, May 31, 2007)	Yarsky P	Use of the [[  ]]	<p>The staff will not review the [[ ]] as part of the ESBWR application, and any determination by the staff regarding the acceptability of the topical report will not constitute a regulatory decision regarding this model.</p> <p>Please augment the update to the LTR to additionally include the following text below Table 4-1 taken verbatim from the RAI response:</p> <p>“GTs will be used only to calibrate the LPRMs and not be used for core monitoring under transient conditions (the LPRMs will be used for core monitoring during transient conditions). Therefore the [[ ]] is not likely to be needed.</p> <p>If GTs are chosen as AFIPs for the BWR and the [[ ]] is utilized, its uncertainties will be factored into the total uncertainty analysis.”</p>
7.2-60, Supplement 1- (MFN 07-162, May 31, 2007)	Yarsky P	Explain [[  ]].	<p>This response is self inconsistent. Paragraph 1 states that the [[ ]]; Paragraph 2 states that the [[ ]]. The staff would expect that this [[ ]]. Confirm that this is the case.</p> <p>Based on the simulation of the [[ ]], is it accurate to state that the green plot in Figures 8-1 through 8-4 represents the [[ ]] and the blue curve is the [[ ]]?</p> <p>The green curve is consistently smoother than the blue curve. This is not unexpected as the green curve is based on an [[ ]]. If the green curve represents the [[ ]]</p> <p>comment on the sensitivity of the power distribution uncertainty to exposure, [[ ]].</p>

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7.2-64, Supplement No. 1 (MFN 07-162, May 31, 2007)	Yarsky P	Method for [[  ]]	The response indicates that the method has not been finalized. Once it is finalized provide a step-by-step description of the final method and any associated evaluations for the method to the staff in support of the basis for the AFIP uncertainty analysis.
7.3-2, Supplement No. 1 (MFN 07-285, May 30, 2007)	Li H	Reference "TRICONEX" as ECCS/ESF platform	The response to this question is not accurate. GE has selected "TRICONEX" as ECCS/ESF platform. DCD Section 7.3.7 should provide proper reference.
7.9-4, Supplement No. 1 (MFN 07-285, May 30, 2007)	Beacom R	Provide the details of the workstations which bridge the control data flow between the ethernet networks.	Response is unacceptable. The details on the network and it's "safeguards to prevent any degradation from outside influences" per the RAI still needs to be addressed. The response also states: "The two ethernet networks are bridged by workstations that control data flow." A supplemental question is as follows:  Provide the details of the workstations which bridge the control data flow between the ethernet networks. That should include, but not be limited to, how data is monitored for malicious, excessive and unexpected network traffic. Also, the software and hardware features of these "bridges" used to prevent these concerns should be provided. If the design is not available, please identify where this information will be identified; as a future Design Certification submittal, ITAAC or COL item.
7.9-6, Supplement No. 1 (MFN 07-336, June 22, 2007)	Beacom R	Provide Information on the seismic monitoring system.	Response is unacceptable. A mimic of the guidance for the possible alternates that the staff is to look for is not sufficient design information. The frequency range should be specifically identified as .2 to 50 Hz <b>or</b> specified by a computational technique, and that technique presented to the staff. If the design is not available, this should be identified as a future Design Certification submittal, ITAAC or COL item. Also, please address the battery characteristics, specific to the Section 4.1 of RG 1.12, in Section 3.7.4
7.9-7, Supplement No. 1 (MFN 07-285, May 30, 2007)	Beacom R	IEEE Std. 603-1991, paragraph 5.6.3.1.	The response, which merely states that communication is described in Section 7.1.3.3, is unacceptable. The RAI references IEEE Std. 603-1991, paragraph 5.6.3.1. The referenced section in the DCD does not address this paragraph of the IEEE std. An analysis should be done for each section and

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			<p>subsection of IEEE Std. 603 to confirm conformance to the SRP as required by 10CFR34 (h)(ii)(2). Review by the staff of Section 7.1.3.3 with regards to IEEE paragraph 5.6.3.1 gives rise to the following major concern. This statement is provided: "A nonsafety-related gateway that translates the safety-related information into a format that the N-DCIS can understand." Please note that subsection (1) of IEEE paragraph 5.6.3.1 states "Isolation devices used to effect a safety system boundary shall be classified as part of the safety system." The use of a nonsafety-related gateway does not appear to be in compliance with this requirement. This should be explained in much more detail including a drawing or schematic of the Q-DCIS network. If that information is not available at this time please identify the specific future Design Certification submittal, ITAAC or COL item which will provide this level of detail.</p>
7.9-8, Supplement No. 1 (MFN 07-285, May 30, 2007)	Beacom R	Time tagging the safety related data and transfer of the time tag to the nonessential (NE) part of the system.	<p>The response is unacceptable. The time tagging descriptions, pointed out by the response, in Sections 7.1.3.3 and 7.1.5.5.10, do not provide sufficient information, hence the necessity for the RAI. The statement provided in the response "Time tagging is generally done in the chassis/components where the data are originally acquired or calculated." invites the following questions; What is meant by "generally done"? When the term "generally" is used, does that mean there are exceptions to this statement? If so, please explain. The RAI asked if there are separate clocks used for E-DCIS and NE-DCIS? The response stated that a pair of nonsafety synchronized clocks are used "as necessary". That part of the RAI needs to be directly answered. The RAI asked "what kind of time tagging delay is possible if the data is not tagged at the source?" This needs to be answered and included in the DCD. If this information is not available at this time, please identify by the specific future Design Certification submittal, ITAAC or COL item which will provide this information.</p>

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7.9-10, Supplement No. 1 (MFN 07-285, May 30, 2007)	Beacom R	Spare processor memory and network communication speed.	The response is unacceptable. The analysis provided in the response to the RAI does provide some insight to the staff's concerns associated with locking up of processors and gateways which could effect the safety of the plant and its continued operation (Reference Information Notice 2007-15). The staff believes this analysis should be put in the DCD and it should be identified where, if by specific future Design Certification submittal, ITAAC or COL item, the final design will be confirmed for the different variables in the analysis. This would include, but not be limited to, the processor and communication speeds to be identified, when and how the communications are thoroughly factory tested, how similar the ESBWR and Lungmen designs will be (at least in mps) and the final suitability of the design by a deterministic analysis to include the final number of controllers, RMUs, network switches etc.
7.9-16, Supplement No. 1 (MFN 07-336, June 22, 2007)	Beacom R	Data offload, storage, and retrieval.	The response is unacceptable. The response identifies that the design is not yet complete. Therefore, please identify how and where this information will become available. For example, would it be in the form of an ITAAC, COL item or document to be provided as part of the remaining Design Certification Process.
9.1-13, Supplement No. 1 (MFN 06-309, September 8, 2006)	Hernandez J	Makeup flow rate for accidents shortly after a refueling outage	Demonstrate how the proposed total makeup flow rate of 200 gpm is bounding for accidents shortly after a refueling outage.
9.1-14, Supplement No. 1 (MFN 06-309, September 8, 2006)	Hernandez J	Provide size of makeup line pipe for SFP	Pursuant to 10 CFR 52.79(b) and 52.47(a)(1)(vii) provide makeup line pipe size and analyses demonstrating pipe size is adequate for the limiting flow to each pool. Revise the DCD to include this information. Note that the response should be consistent with the response to the staff's inquiry in RAI 9.1-13 regarding the required make up capacity (i.e., the response should incorporate any requirement changes made in response to RAI 9.1-13).

RAI Number	Reviewer	Question Summary	Full Text
9.5-61 Supplement No. 1 & RAI 9.5-63 Supplement No. 1 (MFN 07-401, July 31, 2007)	Pal A	MCR emergency lighting system isolation	In response to RAI 9.5-63, GE stated that "The MCR emergency lighting system including the switches, associated cables and lighting fixtures are safety-related." Additionally, GE stated that the safety-related UPS and the MCR emergency lighting circuitry are isolated by a series of circuit breakers that is coordinated for isolation. This statement was made in response to RAI 9.5-61. If MCR emergency lighting system( power supply, cables, switches, fixtures, etc.) is safety-related and classified as Class 1E, why isolation device is needed?
14.3-80, Supplement No. 1 (MFN 07-276, May 16, 2007)	Beacom R	Identify the separation requirements for I&C cabling	The response does not specifically identify the separation requirements for I&C cabling as is requested. General reference to three subsections and one section of chapter 8 plus the entire section of 2.2, Tier 1 did not specifically answer the RAI. Please identify what those are, then identify where this specific information can be found.
18.4-1, Supplement 1- (NEDO-33219 Rev-1, January 31, 2007; MFN 07-334, June 27, 2007)	Bongarra J	Ensure that all high-level functions are identified using NEDO-33219.	f) Please discuss how the plan, NEDO-33219, "System Functional Requirements Analysis Implementation Plan," ensures that all high-level functions for ESBWR necessary for the achievement of safe operation are identified, and that all requirements of each high-level function are identified. This is not addressed directly in Rev. 1 to NEDO-33219. New response to RAI necessary.
18.4-7, Supplement No. 1 NEDO-33219 Rev-1, January 31, 2007; MFN 06-400, November 1, 2006; MFN 07-334, June 27, 2007)	Bongarra J	Please include the RAI response in a future revision to NEDO-33219.	a) In the RAI response, GEH indicated that as the ESBWR design progresses, future reviews of the important PRA sequences will address plant scenarios beyond those listed in the design basis events (ESBWR DCD Chapter 19) that have a probability of challenging the operators to interact with the plant through the HSI interfaces in different ways. This will be performed during operator training sessions on the simulator.  Please include the RAI response in a future revision to NEDO-33219.  c) In the RAI response, GEH indicated that certain events will be analyzed during the FRA and the TA process and then used by the HFE team to monitor operator interaction with the HSI equipment. They will be included in the overall operator training program to ensure operator proficiency.

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			Please include the RAI response in a future revision to NEDO-33219.
18.7-9, Supplement No. 1 (NEDO-33267 Rev-2, March 31, 2007; MFN 06- 403, October 27, 2006; MFN 07- 334, June 27, 2007)	Bongarra J	Commit to use specified analyses to determine the risk important HAs.	The RAI response does not clearly commit to the use of both Level 1 and Level 2 analyses and both internal and external events analysis to determine the risk important HAs. Please provide this commitment in NEDO -33267.
18.12-4, Supplement No. 1 (NEDO-33278 Rev-2, January 31, 2007; MFN 06-447, November 18, 2006; MFN 07- 334, June 27, 2007)	Bongarra J	Clarify the role of the COLOG and the verification of "as built".	<p>(1) Section 1.2 of NEDO-33278 Rev-2 describes a somewhat different organization than was identified in the RAI response. It states that the verifications are the responsibility of the COLOG. Clarify the role of the COLOG and the COL license applicant.</p> <p>(2) Section 1.2 of NEDO-33278 Rev-2 indicates that the verifications described for the plan "apply to the initial COL plants associated with the ESBWR design effort." The staff's position is that "as-built" verifications are needed for every new plant construction. Please explain why only the initial plants will be verified.</p>
21.6-92 Supplement No. 1 (MFN-07-257, 5/7/2007)	Yarsky P Klein V	Provide specific codes used to perform analyses in the DCD	<p>GEH's response to RAI 21.6-92 did not provide enough detail regarding the codes used in Chapters 4, 6, and 15. In the original RAI, staff specifically requested the "exact version, revision, and modification designations."</p> <p>The purpose of this RAI is to have a docketed record for of the codes for each analysis performed in Chapters 4, 6, and 15. At the time of a COL application, staff will use this record as benchmark to compare the revised/changed versions in order to ensure any code changes have not adversely impacted the efficacy of the codes. It is not staff's intention to freeze all code changes. Staff understands the codes will most likely be modified throughout the licensing of the DCD. Therefore, staff may request this information for each future revision of the DCD and especially the final revision of the DCD to be incorporated by referenced into 10 CFR Part 52.</p>



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			<p>Provide as a RAI response a table similar to Table 15.0-8 that includes greater detail regarding the codes used in Chapters 4, 6, and 15. This table should specify the code version, platform, and error revision number or program library version number for each code. It should also list all upstream code inputs, for example, the TRACG calculations accept input from PANACEA and GSTRM in the form of the wrap-up file or gap conductance input. Please specify the exact PANACEA, GSTRM, or other codes used for similar purposes. PANACEA in turn, receives upstream code input from TGBLA, provide these details for TGBLA as well. Specify the DCD revision number that this table describes.</p>
21.6-105	Yarsky P Klein V	<p>Include a COL Applicant Item independently review the analysis of record in the COL application and provide the results of the review to the NRC</p>	<p>Include a COL Applicant Item that requires the COL applicant to independently review the analysis of record in the COL application and provide the results of the review to the NRC. The purpose of the review is to determine if any changes have occurred in the codes that implement the NRC approved methods used in establishing the design basis or in the safety analysis for the ESBWR that would result in: (1) changes to any of the elements of the methods described in the DCD and associated licensing topical reports (as referenced); or (2) changes from a method described in the DCD and associated licensing topical reports (as referenced) to another method unless that method has been specifically approved by the NRC for the intended application for the ESBWR; or (3) changes in the execution of a methodology contrary to the conditions, limitations, or restrictions as described in the associated staff safety evaluation reports approving those methods specifically for the ESBWR.</p>

cc:

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