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10 CFR 50.90

U.S. Nuclear Regulatory Commission
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Southern Nuclear Operating Company
Vogtle Electric Generating Plant Units 3 and 4
Second Supplement to Request for License Amendment:
Revision to AP1000 Human Factors Engineering
Integrated System Validation Plan / GEH-320 (LAR-13-001S2)

Ladies and Gentlemen:

Southern Nuclear Operating Company (SNC), the licensee for Vogtle Electrical Generating Plant (VEGP) Units 3 and 4, previously submitted a license amendment request (LAR-13-001) for the Combined Licenses for VEGP Units 3 and 4, Numbers NPF-91 and NPF-92, respectively. The original LAR was dated February 15, 2013, and its ADAMS Accession Number is ML13050A214. SNC submitted its first supplement to the LAR by letter dated May 21, 2013, ADAMS Accession Number ML13144A125.

This second supplement to the LAR addresses concerns raised by the NRC Staff regarding the scope of the claim of proprietary information in the original LAR submittal. Specifically, the NRC Staff requested that certain portions of the original LAR not be considered proprietary. Further, SNC proposes additional modifications to the original LAR, including replacing Revision 2 of APP-OCS-GEH-320 with a new Revision 3.

Enclosed with this letter are replacements for the LAR's Enclosure 1A (proprietary) and Enclosure 1B (nonproprietary) previously submitted on February 15, 2013, ADAMS Accession Number ML13050A214. These are, respectively, **Enclosure 8 (proprietary)** and Enclosure 9 (nonproprietary). Enclosure 10 contains the proposed changes to the Updated Final Safety Analysis Report (UFSAR) for VEGP Units 3 and 4 and replaces Enclosure 2. **Enclosure 11 (proprietary)** is a copy of APP-OCS-GEH-320, Revision 3. Enclosure 12 is the nonproprietary version of Enclosure 11 and is labeled APP-OCS-GEH-322. **Enclosure 13 (proprietary)** is a redline generated by Microsoft Word between Revision 3 and Revision 2 of APP-OCS-GEH-320. Enclosures 14 and 15 are affidavits supporting withholding requests (discussed below).

The information provided in Enclosure 8 does not materially change the scope of the LAR. Consequently, this supplement does not require a revised Significant Hazards Consideration determination.

This letter contains no regulatory commitments.

Enclosures 8, 11, and 13 contain proprietary information that Westinghouse and SNC request to be withheld from public disclosure under 10 CFR 2.390. Enclosures 14 and 15 support this request and are affidavits signed by appropriate representatives of Westinghouse and SNC. The affidavits set forth the bases upon which the information may be withheld from public disclosure by the Commission and address the considerations in 10 CFR 2.390(b)(4).

Correspondence with respect to the copyright or proprietary aspects of the items listed above or the supporting affidavits should reference CAW-13-3775 and should be addressed to J.A. Gresham, Manager, Regulatory Compliance, Westinghouse Electric Company, Suite 428, 1000 Westinghouse Drive, Cranberry Township, PA 16066, and also to Brian H. Whitley, SNC, at the contact information within this letter.

SNC requests staff approval of the license amendment by October 30, 2013, to support the timelines for executing the Integrated System validation. Delayed approval of this license amendment may result in a delay of the licensing of the operators, thereby delaying SNC's ability to operate VEGP Units 3 and 4. SNC expects to implement the proposed amendment (through incorporation into the UFSAR) within 30 days of approval of the requested changes.

In accordance with 10 CFR 50.91, SNC is notifying the State of Georgia of this LAR by transmitting a copy of this letter and enclosures to the designated State Official.

Should you have any questions, please contact Brian Meadors at (205) 992-7331.

(Affirmation and signature are provided on the following page)

Mr. B. H. Whitley states that he is the Regulatory Affairs Director of Southern Nuclear Operating Company, is authorized to execute this oath on behalf of Southern Nuclear Operating Company and to the best of his knowledge and belief, the facts set forth in this letter are true.

Respectfully submitted,

SOUTHERN NUCLEAR OPERATING COMPANY



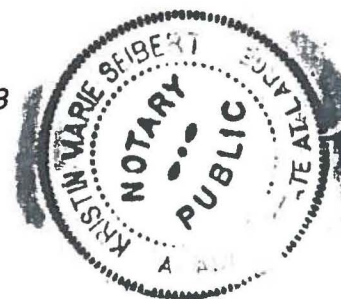
B. H. Whitley

BHW/CBM/kms

Sworn to and subscribed before me this 22nd day of August, 2013

Notary Public: Kristin Marie Seibert

My commission expires: August 16, 2016



- Enclosures: 8) Vogtle Electric Generating Plant (VEGP) Units 3 and 4 – Request for License Amendment, Revision to AP1000 Human Factors Engineering Integrated System Validation Plan / GEH-320 (LAR-13-001S2) (**proprietary**)
- 9) Vogtle Electric Generating Plant (VEGP) Units 3 and 4 – Request for License Amendment, Revision to AP1000 Human Factors Engineering Integrated System Validation Plan / GEH-320 (LAR-13-001S2) (nonproprietary)
- 10) Vogtle Electric Generating Plant (VEGP) Units 3 and 4 – Proposed Changes to the Updated Final Safety Analysis Report (UFSAR) (LAR-13-001S2) (nonproprietary)
- 11) APP-OCS-GEH-320, "AP1000 Human Factors Engineering Integrated System Validation Plan," Revision 3 (**proprietary**)
- 12) APP-OCS-GEH-322, "AP1000 Human Factors Engineering Integrated System Validation Plan," Revision 3 (nonproprietary)
- 13) Redline generated by Microsoft Word between Revision 3 and Revision 2 of APP-OCS-GEH-320 (**proprietary**)
- 14) Affidavit of Brian H. Whitley, Southern Nuclear Operating Co.
- 15) Westinghouse Authorization Letter CAW-13-3775, its accompanying affidavit, Proprietary Information Notice, and Copyright Notice

cc:

Southern Nuclear Operating Company/ Georgia Power Company

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Southern Nuclear Operating Company

ND-13-1824

Enclosure 9 replacing Enclosure 1B

Vogtle Electric Generating Plant (VEGP) Units 3 and 4

Request for License Amendment

Revision to AP1000 Human Factors Engineering

Integrated System Validation Plan / GEH-320

(LAR-13-001S2)

(nonproprietary)

ND-13-1824

Enclosure 9 replacing Enclosure 1B

Request for License Amendment Revision to AP1000 Human Factors Engineering Integrated System Validation Plan / GEH-320 (LAR-13-001S2) (nonproprietary)

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1. Summary Description

Pursuant to 10 CFR 50.90, Southern Nuclear Operating Company (SNC) requests an amendment to Combined License (COL) Nos. NPF-91 and NPF-92 for Vogtle Electric Generating Plant (VEGP) Units 3 and 4, respectively. The amendment arises from a proposed revision to a Tier 2* reference document, APP-OCS-GEH-320, "AP1000 Human Factors Engineering Integrated System Validation Plan," (ISV) from Revision D to Revision 2.

During the preparations for Integrated System Validation (ISV), it was identified that a number of changes to the details of implementation described in the ISV Plan would be appropriate. The ISV Plan changes would be reflected in the Updated Final Safety Analysis Report (UFSAR) as a revision to Tier 2* reference document APP-OCS-GEH-320, "AP1000 Human Factors Engineering Integrated System Validation Plan."

SNC requests staff approval of the license amendment by September 20, 2013 to support the timelines for executing the ISV. Approval after this date may result in a delay of the licensing of the operators, thereby delaying SNC's ability to operate VEGP Units 3 and 4.

The proposed changes would revise the COLs in regard to a Tier 2* reference listed in UFSAR Chapter 1, Table 1.6-1 (sheet 20 of 21) and Chapter 18, Section 18.11.2, Reference 5.

2. Detailed Description and Technical Evaluation

Overview

The Integrated System Validation (ISV) provides a comprehensive human performance-based assessment of the design of the AP1000 Human-System Interface (HSI) resources, based on their realistic operation within a simulator-driven Main Control Room (MCR). The ISV is part of the overall AP1000 Human Factors Engineering (HFE) program.

The main body of the HFE ISV document includes the scope, methodology, and description of the ISV facility, test design, participants, scenario definition process, test criteria, and the processing and documentation of the results. The HFE ISV document's Appendices comprise details on the workload rating forms, post-trial questionnaires, and debriefing protocol.

The objective of ISV is to ensure that before fuel load, "the functions and tasks allocated to the plant personnel can be accomplished with the HSI design implementation." The ISV uses a representative set of scenarios to assess the usability of the MCR and HSI resources and the tolerance of or susceptibility to error. The ISV will also assess the adequacy of procedures, training, work organization and staffing levels. Individual scenarios identify specific objectives, including shift turnover and simulated interactions (e.g., with local operators) that extend beyond the MCR. Aspects of crew communication and coordination are addressed throughout the ISV.

The ISV facility employs a high fidelity simulator to represent the AP1000 plant, systems, MCR, and Remote Shutdown Workstation (RSW) capabilities. The ISV scenarios include a full range of operating modes, including startup, power production, transients, abnormal and emergency operations, low power and shutdown conditions including remote shutdown. The

scope of simulation for ISV will be adequate for the procedures, scenarios, and HSI to be exercised.

A license amendment is necessary because a Tier 2* reference document, APP-OCS-GEH-320, "AP1000 Human Factors Engineering Integrated System Validation Plan," (ISV) is being revised. The existing document is Revision D; the new document will be Revision 3. The proposed changes would revise the COLs in regard to a Tier 2* reference listed in UFSAR Chapter 1, Table 1.6-1 and Chapter 18, Section 18.11.2, Reference 5. Subsequent to the NRC approving the AP1000 Design Control Document (DCD), more detailed information has become available regarding the plant design, operating procedures and the development of the Plant Reference Simulator (PRS). This information impacts the ISV Plan referenced in the UFSAR.

Tier 2*

UFSAR Chapter 1, Section 1.6, Table 1.6-1, Material Referenced, APP-OCS-GEH-320, "AP1000 Human Factors Engineering Integrated System Validation Plan," will be changed from Revision D to Revision 3. This document is a Tier 2* reference.

UFSAR Chapter 18, Section 18.11.2, Reference 5, APP-OCS-GEH-320, "AP1000 Human Factors Engineering Integrated System Validation Plan," will be changed from Revision D to Revision 3. This document is a Tier 2* reference.

References to other documents

The summary of the proposed changes to APP-OCS-GEH-320 detailed below frequently make reference to other Westinghouse documents. All the Westinghouse documents referenced are proprietary information and are withheld from the public pursuant to 10 CFR 2.390. Further, the scope of this license amendment request is limited to NRC approval of the proposed changes to APP-OCS-GEH-320 and the UFSAR references to APP-OCS-GEH-320 (i.e., from Revision D to Revision 3). Other documents discussed in this license amendment request and referenced by the proposed changes to APP-OCS-GEH-320, while available to support the NRC's review of this license amendment request, are not being submitted for NRC approval. This is because NRC approval is only required for APP-OCS-GEH-320 itself, as it is incorporated by reference in a Tier 2* table in the UFSAR.

Justifications for all changes

The changes below share a common licensing justification. That justification is as follows: The current version of APP-OCS-GEH-320 is consistent with NUREG-0711, Rev. 2. The proposed changes to APP-OCS-GEH-320 (detailed below) are justified because the proposed changes to APP-OCS-GEH-320 will continue to be consistent with the guidance in NUREG-0711, Rev. 2. The proposed changes are intended to better align the ISV with the AP1000 design activities. NUREG-0711, Rev. 2, Human Factors Engineering Program Review Model, provides guidance for definition and execution of a human factors program. In development of the APP-OCS-GEH-320, Rev. 3, the guidance of NUREG-0711, Rev. 2 was followed, and APP-OCS-GEH-320, Rev. 3 is consistent with NUREG-0711, Rev. 2.

Specific Changes

1. "Bibliography" updated document revision numbers for APP-OCS-GEH-120, APP-OCS-GEH-220, APP-OCS-GEH-420 and APP-OCS-GEH-520. Updated other revision numbers, as required, in-line with current approved documents. APP-GW-GJP-150, Rev. 0 is added to the Bibliography. Updates are also provided for APP-PMS-T5-001 (Proprietary), Rev. 3, APP-OCS-J1R-220 (Proprietary), Rev. 1, and APP-GW-GBH-361 (Proprietary), Rev.1 in the Reference section.

Updated document revision numbers for the related HF V&V plan in order for the revision numbers to be consistent throughout the documents.

2. Section 1.1 "Background," is changed to account for design and procedure changes after the ISV test is complete. There was also a need to add a description of the mechanism to deal with changes post-ISV.

For the purposes of ISV testing, the design is considered complete when all necessary hardware and software elements have been integrated and tested to the extent that they can support all aspects of the ISV. When the design is considered complete, the ISV test will be performed. After completion of the ISV testing, there may be design and procedure changes. APP-OCS-GEH-320, Rev. D, did not include any acknowledgement of post-ISV changes. A description of the necessity of changes and the process for addressing these changes was added.

The new revision includes a short description of the configuration management process and how this process will be utilized to assess and maintain the validity of the ISV results against subsequent design or operating procedure changes. The new, proposed revision adds references to this configuration management process, APP-GW-G0Y-002, "AP1000 Configuration Management Plan" and WNA-PC-00005-WAPP, "AP1000 I&C Projects Configuration Management Plan."

3. Section 1.1, "Background", Figure 1.1-1 "AP1000 Verification and Validation Activities" revised, Section 1.5, "List of Exceptions from WCAP-15860" Item 3 added, and modifications to Section 3.1, "Number of Trial Replications" (2nd to last paragraph) to describe that the task support verification and design verification activities will not be complete prior to running ISV.

The previous version of Figure 1.1-1 showed the task support verification and design verification activities being complete prior to conducting ISV, and implied that the results of these two activities feed into the ISV. This Figure was corrected to show that the task support verification and design verification will not be complete prior to ISV, and the results will not feed into the ISV.

Item 3 was added to Section 1.5 "List of Exceptions to WCAP-15860" to explain that this sequence of HF V&V activities is not in accordance with the information in WCAP-15860. In addition, it is noted that any Human Engineering Discrepancies (HEDs) identified from the task support verification and design verification assessments may not be fully resolved and implemented in the HSI design, the Engineering Development

Simulator, simulator model or operating procedures prior to ISV. The consequences of this are that identical or similar HEDs identified from the task support verification and design verification activities may also be identified in ISV, and relatively 'simple' HEDs are likely to not be fully resolved prior to undertaking ISV. However, all HEDs will be addressed per APP-OCS-GEH-420, "AP1000 Human Engineering Discrepancy Resolution Process", including re-verification and re-validation, where required.

4. Section 1.2 "Purpose," is being revised to update the description of the contents of APP-OCS-GEH-321, "AP1000 Human Factors Engineering Integrated System Validation Scenario Information". This document provides information on the scenario descriptions, as well as scenario-specific objectives, scenario observer guides, shift turnover reports, simulator operator guides, and scenario scripts including details of the communications with people outside of the main control room (MCR). The earlier revisions of APP-OCS-GEH-320 directed the reader to APP-OCS-GEH-321 for the scope of simulation and simulator testing. However, the scope of simulation and simulator testing has been removed from the scope of APP-OCS-GEH-321, and the new revision of APP-OCS-GEH-320 reflects this by providing the references to the Simulator Test documentation.

APP-OCS-GEH-321 is a "sister" document to APP-OCS-GEH-320 containing detailed scenario information that will be developed throughout the preparations for ISV and finalized in Pilot Testing. APP-OCS-GEH-320 describes the content of APP-OCS-GEH-321, and the new, proposed revision of APP-OCS-GEH-320 has an enhanced description of the scope and content of APP-OCS-GEH-321.

The new description of APP-OCS-GEH-321 reflects that APP-OCS-GEH-321 will still contain the detailed scenario descriptions, scenario-specific objectives and the observer guides. In addition, APP-OCS-GEH-321 will contain the shift turnover reports, simulator operator guides, and the scenario scripts that detail the communications with personnel outside of the Main Control Room (MCR). The new description of APP-OCS-GEH-321 shows that the scope of the simulator and scope of simulator testing were removed from APP-OCS-GEH-321. This information is in APP-STS-T5-001, "AP1000 Full Scope Training Simulator Test Plan."

5. In Section 1.3, "Scope," changes were made to clarify the description regarding the inclusion of local control stations in ISV. This description will state that the local control stations are only included to the extent the MCR operator needs to communicate with local plant operators.

The original wording regarding the use of local control stations was clarified. Previously, the document stated, "The use of local control stations are included in the ISV scenarios, but local control stations are outside the scope of the ISV simulation." This was changed to state that local control stations are included only to the extent that the operators in the MCR need to communicate with the local plant operators. In practical terms, this means that the ISV scenarios include the requirement for bi-directional communications between the MCR operators and local plant operators via the telephone. The ISV facility provides the equipment to do this, and the ISV Westinghouse staff will play the part of the local plant operator on the other end of the telephone. The actual local control

stations are not part of the simulation. (Note that a "local control station" is not considered to be a "remote shutdown work station").

6. Section 2, "ISV Facility," is being changed to clarify the use of ANSI/ANS 3.5. The current statement that the simulator will satisfy the requirements of ANSI/ANS 3.5, Sections 3 and 4 is changed to state that Sections 3 and 4 of ANSI/ANS 3.5 will be used to develop a Westinghouse simulator test plan that will be used to test the ISV simulator facility in a manner consistent with the requirements of ANS/ANSI 3.5, 1998. While the Westinghouse simulator test plan, APP-STS-T5-001 will not result in a Certification of the ISV simulation facility, it will ensure the simulator is tested to the equivalent extent that ANS/ANSI 3.5, 1998 prescribes.

The ISV will be conducted prior to the simulator completing ANSI/ANS 3.5 certification. The original wording implied that the simulator used in ISV will satisfy the requirements of ANSI/ANS 3.5 Sections 3 and 4. This claim cannot be satisfied until the simulator is certified. Therefore, the wording was changed to state that ANSI/ANS 3.5 Sections 3 and 4 are used to develop simulator testing plans that will assure ISV simulator scope, fidelity, and functionality. Note the addition of reference to APP-STS-T5-001, "AP1000 Full Scope Simulator Test Plan" in Section 1.2 of the APP-OCS-GEH-320 document. The APP-STS-T5-001 document provides a description of simulator testing to be completed prior to ISV.

7. Section 2, "ISV Facility," is being changed to state that there is a potential to use the Training Development Simulator (TDS) in addition to or in place of the Engineering Development Simulator (EDS) for running ISV.



8. Section 2 "ISV Facility," is being changed to provide for the potential use of an AP1000 Training Facility at a licensee's site for performing ISV Pilot Testing. This is being added to provide additional flexibility for conducting the ISV Pilot Testing.

The use of the site simulator facilities provides an option to use an alternate facility and will enable Pilot Testing to be conducted in two or more places simultaneously. Again, these facilities provide the same control room layout, hardware, simulator model, etc., as the EDS. Alternative simulator facilities match the design and functions of the EDS.

9. Section 2.1, "Physical Scope and Fidelity," corrects an inaccurate description of the operation of the Remote Shutdown Workstation (RSW) switches.

Incorrect information regarding the operation of the switches in the RSW was removed. Originally, it was stated that the switches on the RSW need to be operated in

conjunction with a soft control on the non-safety control system or a local plant control action. This is not the case. The operation of the RSW switches is sufficient to effect a control action.

10. Section 2.3, "Simulator Testing," is being revised to change the reference from WCAP-16096 "Software Program Manual for Common Q Systems," Rev 1, to APP-PMS-T5-001, "AP1000 Protection and Safety Monitoring System Test Plan," Rev 3. The level of detail in this section of APP-OCS-GEH-320 is not reduced. There is also the addition of a statement that Channel Integration Testing will be completed. These changes to the test activities are needed to demonstrate EDS and simulator readiness.

Section 2.3 was updated to be in accordance with the current design and development process for the PMS software that will be used in the ISV simulator model. The APP-PMS-T5-001 document provides more specific information than the WCAP-16096 document. In addition, the APP-PMS-T5-001 document describes the different levels of software testing, and the software that has completed Channel Integration Test (CIT) that will be utilized in the simulator model. The WCAP-16096 document does not provide the detailed information on the levels of testing. The change that is being made is from unit testing to CIT. Unit testing only tested software units; CIT is a more comprehensive and full-functional test that includes integrated software and hardware.

Section 2.3 "Simulator Testing," is also being revised to change the reference for the DCIS software testing from WNA-SQ-00047-GEN, "DCIS Standard Test Strategy" to APP-GW-GBH-361, "AP1000 Integrated I&C Test Strategy." The level of software testing remains unchanged at Level 3. The reference was changed to be in-line with the latest I&C test documentation being employed by the DCIS Team.

11. Section 2.3 "Simulator Testing," is being revised to delete a cross-reference to APP-OCS-GEH-321 for details on simulator testing, and replace with reference APP-STS-T5-001 "AP1000 Full Scope Simulator Test Plan."

The information on the simulator testing will not be provided in subsequent revisions of APP-OCS-GEH-321. This information will be provided in APP-STS-T5-001. This documentation provides a more complete description of the simulator model testing, scope, strategy, and different levels of testing.

12. Section 3.1, "Number of Trial Replications" and Section 3.2 "Trial Assignment and Scheduling," are being updated to reflect the change in the number of scenarios [REDACTED]

[REDACTED] a,c,e

During the preparations for ISV, and based on the current plant design and operating procedures, the details of each of the original [REDACTED] a,c,e has been further developed. One outcome of this process was the determination that it was appropriate to combine a small number of the scenarios.

[REDACTED]

[REDACTED]

[REDACTED]

a,c,e

Finally, a note was added to acknowledge that the details of the scenarios will continue to be developed, and this may result in a change in the number of scenarios. If the number of scenarios must change, the assignment of crews to scenario trials will be adjusted but will remain aligned with the basis described in Section 3.2. The scope of the scenarios will not be reduced, and the operational condition sampling will remain the same.

13. Section 3.3 "Pilot Testing," is being updated to include the testing of data recording techniques.

Additional tests are being added. For each scenario, there will be additional pilot testing to confirm the readiness of the data recording techniques. This information is added to the existing pilot test requirements.

14. Section 3.3 "Pilot Testing," is being updated to allow support for the ISV pilot testing using personnel from the utilities.

This change will provide additional testing flexibility. Previously, Pilot Testing was described as being undertaken by just Westinghouse personnel. However, this was expanded to enable additional resources from the licensees to provide support. Licensee personnel providing support will gain knowledge of the scenarios and will therefore not be eligible to become ISV participants, and they will be required not to divulge scenario information to anyone outside of the ISV preparation team.

15. Section 4.1, "Subjects," and Section 4.1.1, "Selection," are being changed to revise the description of ISV test subjects' training to ensure that their training is in line with the actual training that the test subjects/operators-in-training would have received at the time of ISV.

These sections were updated to align with the current information on the ISV test subjects. This includes adding a statement that the test subjects may receive their AP1000 simulator-based training at a site other than the EDS or TDS, deleting the statement that the test subjects may include individuals who have partially completed the Senior Reactor Operator (SRO) Instructor Certification Program (i.e., they would have completed the entire course), and adding a statement that licensee-trained operators who had received AP1000 classroom and simulator-based training other than the SRO Instructor Certification Program could also serve as ISV test subjects. The subjects will

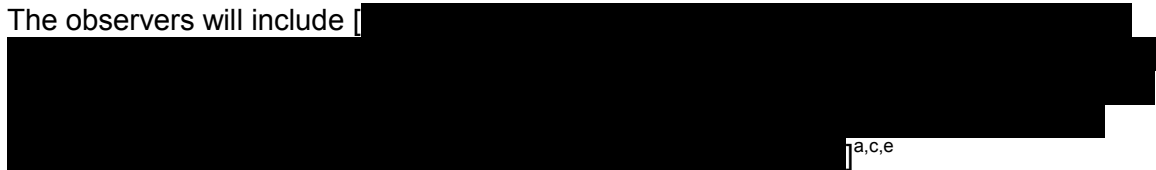
now have more training (32 weeks versus 26 weeks) in an INPO accredited training program.

16. The change to Section 4.1.3 "Training," deletes duplicate information.

This subsection had duplicate information that was also included in Sections 4.1 and 4.1.1.

17. The current revision of APP-OCS-GEH-320 makes reference to observers that are independent of the project. Section 4.2, "Observers," is being revised to also allow ISV observers who are not independent of the project.

The observers will include [



a,c,e

18. Corrected typographical error in Section 4.2, "Observers" as follows:

The ISV observer data will be collected using structured tools comprising the scenario observer guides in APP-OCS-GEH-321, Appendix B (Bibliog 1), and the post-trial questionnaires (see Appendix C and D of this report) and debriefings (see Appendix F of this report).

19. Section 5.1.1, "Events," is being changed to add a necessary reference to APP-OCS-GLR-001, "AP1000 Post-Accident Risk-Important Human Actions Summary Report." This report summarizes the results of an assessment performed to provide up-to-date and more detailed information on the post-accident risk-important human actions and Diverse Actuation System (DAS) manual-only operator actions (as identified in the AP1000 plant Probabilistic Risk Assessment (PRA)).

APP-OCS-GLR-001 was created to provide more up-to-date and detailed information regarding the risk-important human action to align with the current plant design and operating procedures.

The list of risk-important human actions remains unchanged; however, it was necessary to provide documentation to update the assumptions and provide further details on these actions.

In addition, this reference provides the details on the DAS manual actions that have no automatic DAS action. These are now included in the ISV scenarios and are related to ITAAC 3.2.00.01c.

20. Section 5.1.2 "Procedures," includes a new paragraph clarifying that the validation of procedures to be performed prior to ISV will be performed by the Westinghouse Operations Procedures Group. The change also provides an additional clarifying statement that the final validation of the procedures conducted by the utilities will not be

complete at the time of ISV.

This statement is a change to clearly show that Westinghouse Operations Procedures Group is responsible for the validation of the procedures prior to ISV. Further validation will be necessary for subsequent changes to procedures in the plant prior to fuel load and plant start up.

21. Section 5.1.2, "Procedures" adds a reference to APP-GW-GJP-150, "Operating Procedures Verification and Validation".

APP-GW-GJP-150 provides details of the procedure V&V process undertaken by the Westinghouse Procedures Group. The information in this document includes a description of the scope of V&V, the different methods employed for the different types of procedures, the composition of the V&V teams, documentation requirements and copies of the checklists, comment forms and questionnaires. This provides assurance that the V&V of the procedures is adequately addressed.

22. Section 5.1.3 "Complications," is being changed to remove references to task walkthroughs and maintenance trials utilizing manufactured equipment.

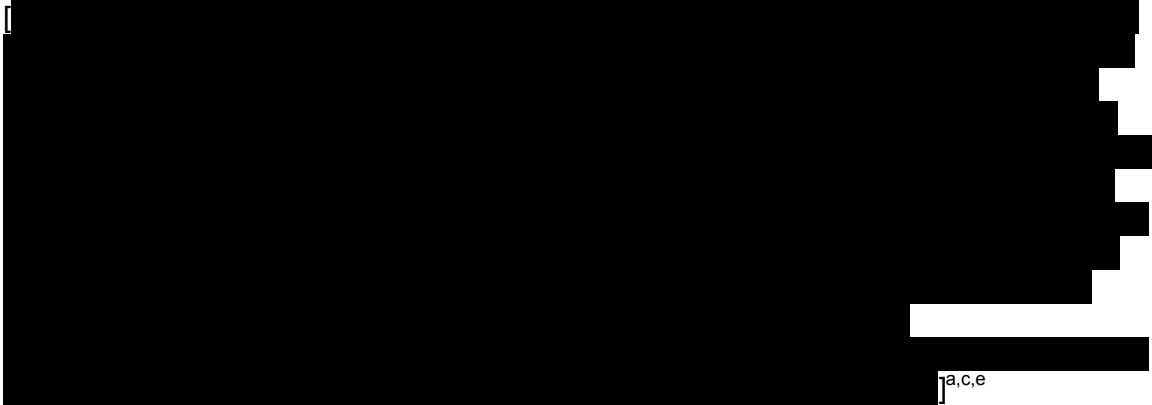
The description of the scope of the HFE maintenance assessments has been modified. Revision D of APP-OCS-GEH-320 made reference to task walkthroughs or maintenance trials utilizing manufactured equipment. Therefore, Revision 3 is removing this reference.

23. Section 5.2.1 "General Procedure and Documentation," is being revised to state that following the briefing, the crew is allowed time to familiarize themselves with the plant conditions. This will be limited to ten minutes, at which time the crew will assume their respective stations and the simulator scenario will be set in running mode. Additional time may be provided if needed by the crew to complete the review of plant conditions when in shutdown mode.

The ISV Plan included a statement that limited the time allowed at the beginning at each trial for the ISV crews to familiarize themselves with the plant conditions to 10 minutes. During ISV preparations, it was recognized that this requirement was unnecessarily restrictive. The 10 minute limit could have interfered with crew turnover and could have reduced the realism of certain scenarios. Therefore, the option of allowing more than 10 minutes was added.

24. Section 6.2, "Methods," is being changed to include the use of computer-based data collection methods for the completion of the questionnaires. The previous version of Section 6.2 did not include the computerization of the data collection techniques. During ISV preparations it was determined that the questionnaires are amenable to computerization. By virtue of the participants entering their questionnaire responses directly into a computer, the efficiency of the data collection, representation and analysis will be substantially improved.

25. Section 7.3, "Addressing HEDs and Re-Test Requirements," is being revised to add a



26. Section 6.2, "Methods," and Appendix A, "Post-Trial Questionnaire for Subjects," Section A.2, are being changed to include two additional workload rating scales.

Appendix A, "Post-Trial Questionnaire for Subjects", Section A.2, contains the questions and rating scales that will be used to measure the workload levels of the ISV subjects at the end of each trial. This is based on the NASA TLX measurement tool, which addresses a total of eight factors (i.e., effort, performance, frustration level, temporal demand, mental demand, physical demand, communication demand, and coordination demand). During the transition of APP-OCS-GEH-320 from Rev B to Rev C, the last two factors (i.e., communication and coordination demand) were unintentionally omitted. Rev 3 of APP-OSC-GEH-320 re-instates these two factors (and the corresponding questions and rating scales) into Appendix A.

Summary

SNC requests an amendment to Combined License Numbers NPF-91 and NPF-92 for VEGP Units 3 and 4, respectively.

The proposed amendment arises from a proposed revision to a Tier 2* reference document, APP-OCS-GEH-320, "AP1000 Human Factors Engineering Integrated System Validation Plan," from Revision D to Revision 3. The proposed revision of this document changes the Integrated System Validation (ISV) Plan, and those changes will be reflected in the Updated Final Safety Analysis Report (UFSAR) as a revision to Tier 2* reference document APP-OCS-GEH-320. The proposed changes would revise the COLs in regard to a Tier 2* reference listed in UFSAR Chapter 1, Table 1.6-1 (sheet 20 of 21) and Chapter 18, Section 18.11.2, Reference 5.

As detailed above, the changes to the ISV plan for the Human Factors Engineering do not adversely affect any design function described in the UFSAR. The newest revision of APP-OCS-GEH-320 more accurately reflects how the ISV Plan will continue to satisfy Revision 2 of NUREG-0711, "Human Factors Engineering Program Review Model." The new ISV Plan continues to be consistent with Revision 2 of NUREG-0711. For these reasons, the proposed changes to the ISV Plan are acceptable.

3. Technical Evaluation (Incorporated into Section 2, above)

4. Regulatory Evaluation

4.1 Applicable Regulatory Requirements/Criteria

10 CFR 50.34 (f)(2)(iii) requires a control room design that reflects state-of-the-art human factors principles. As further examples, 10 CFR 50.34 also requires: a safety parameter display system (SPDS) console, automatic indication of bypassed and operable status of safety systems, and monitoring capability in the control room of a variety of system parameters. 10 CFR 55.46 also requires a plant-referenced simulator capability. The revisions to the referenced document continue to meet the requirements of 10 CFR 50.34(f)(2)(iii) and 10 CFR 55.46.

4.2 Precedent

No precedent is identified.

4.3 No Significant Hazards Consideration Determination

The requested change would revise the Combined Licenses NPF-91 and NPF-92, VEGP Units 3 and 4, respectively, by changing a Tier 2* Reference listed in the Updated Final Safety Analysis Report and incorporated by reference. The reference is part of the AP1000 Human Factors Engineering Integrated System Validation Plan (ISV Plan).

Since the reference is a Tier 2* reference, changing the technical information contained in the ISV Plan constitutes a Tier 2* change, and NRC approval is required prior to implementation. An evaluation to determine whether or not a significant hazards consideration is involved with the proposed amendment was completed by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of Amendment," as discussed below:

4.3.1 Does the proposed amendment involve a significant increase in the probability or consequences of an accident previously evaluated?

Response: No

The Integrated System Validation (ISV) provides a comprehensive human performance-based assessment of the design of the AP1000 Human-System Interface (HSI) resources, based on their realistic operation within a simulator-driven Main Control Room (MCR). The ISV is part of the overall AP1000 Human Factors Engineering (HFE) program. The changes are to the ISV Plan to clarify the scope and amend the details of the methodology. The ISV Plan is needed to perform, in the simulator, the scenarios described in the document. The functions and tasks allocated to plant personnel can still be accomplished after the proposed changes. The performance of the tests governed by the ISV Plan provides additional assurances that the operators can appropriately respond to plant transients. The ISV Plan does not affect the plant itself. Changing the ISV Plan does not affect prevention and mitigation of abnormal events, e.g., accidents,

anticipated operational occurrences, earthquakes, floods and turbine missiles, or their safety or design analyses. No safety-related structure, system, component (SSC) or function is adversely affected. The changes do not involve nor interface with any SSC accident initiator or initiating sequence of events, and thus, the probabilities of the accidents evaluated in the UFSAR are not affected. Because the changes do not involve any safety-related SSC or function used to mitigate an accident, the consequences of the accidents evaluated in the UFSAR are not affected.

Therefore, there is no significant increase in the probability or consequences of an accident previously evaluated.

4.3.2 Does the proposed amendment create the possibility of a new or different kind of accident from any accident previously evaluated?

Response: No

The changes to the ISV Plan affect the testing and validation of the Main Control Room and Human System Interface using a plant simulator. Therefore, the changes do not affect the safety-related equipment itself, nor do they affect equipment which, if it failed, could initiate an accident or a failure of a fission product barrier. No analysis is adversely affected. No system or design function or equipment qualification will be adversely affected by the changes. This activity will not allow for a new fission product release path, nor will it result in a new fission product barrier failure mode, nor create a new sequence of events that would result in significant fuel cladding failures. In addition, the changes do not result in a new failure mode, malfunction or sequence of events that could affect safety or safety-related equipment.

Therefore, this activity does not create the possibility of a new or different kind of accident than any accident previously evaluated.

4.3.3 Does the proposed amendment involve a significant reduction in a margin of safety?

Response: No

The changes to the ISV Plan affect the testing and validation of the Main Control Room and Human System Interface using a plant simulator. Therefore, the changes do not affect the assessments or the plant itself. These changes do not affect safety-related equipment or equipment whose failure could initiate an accident, nor does it adversely interface with safety-related equipment or fission product barriers. No safety analysis or design basis acceptance limit/criterion is challenged or exceeded by the requested change.

Therefore, there is no significant reduction in a margin of safety.

4.4 Conclusion

Based on the considerations discussed above, (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and

(3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

5. Environmental Considerations

As discussed in detail in Section 2 above, the amendment arises from a proposed revision to a Tier 2* reference document, APP-OCS-GEH-320, "AP1000 Human Factors Engineering Integrated System Validation Plan," (ISV) from Revision D to Revision 3. The proposed changes would revise the COLs in regard to a Tier 2* reference listed in UFSAR Chapter 1, Table 1.6-1 (sheet 20 of 21) and Chapter 18, Section 18.11.2, Reference 5.

The ISV is part of the overall AP1000 Human Factors Engineering (HFE) program. The changes are with respect to the ISV Plan involving clarification of the details of implementation. The performance of the tests governed by the ISV Plan provides additional assurances that the operators can appropriately respond to plant transients. The ISV Plan does not affect the plant itself. This license amendment request will have no effect on how the plant is designed or constructed; it will validate the functionality of the Main Control Room and human system interfaces.

The proposed amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9), in that:

(i) *There is no significant hazards consideration.*

As discussed in Section 4.3, No Significant Hazards Consideration, of this license amendment request, an evaluation was completed to determine whether or not a significant hazards consideration is involved by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment." As mentioned above, the change affects the testing of the Main Control Room and Human System Interface using a plant simulator. The ISV Plan is needed to perform, in the simulator, the scenarios described in the document. The performance of the tests governed by the ISV Plan provides additional assurances that the operators can appropriately respond to plant transients. The ISV Plan does not affect the plant itself. The No Significant Hazards Consideration determined that (1) the proposed amendment does not involve a significant increase in the probability or consequences of an accident previously evaluated; (2) the proposed amendment does not create the possibility of a new or different kind of accident from any accident previously evaluated; and (3) the proposed amendment does not involve a significant reduction in a margin of safety. Therefore, it is concluded that the proposed amendment does not involve a significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and accordingly, a finding of "no significant hazards consideration" is justified.

(ii) *There is no significant change in the types or significant increase in the amounts of any effluents that may be released offsite.*

The proposed amendment changes a Tier 2* reference, APP-OCS-GEH-320, "AP1000 Human Factors Engineering Integrated System Validation Plan." As mentioned above, the proposed change will not affect how the plant is designed or constructed, as the change affects the testing of the Main Control Room and Human System Interface using a plant simulator. The ISV Plan, including changes, is unrelated to any aspects of plant

construction or operation that would introduce any changes to effluent types (e.g., effluents containing chemicals or biocides, sanitary system effluents, and other effluents) or affect any plant radiological or non-radiological effluent release quantities. Furthermore, these changes do not diminish the functionality of any design or operational features that are credited with controlling the release of effluents during plant operation. Therefore, it is concluded that the proposed amendment does not involve a significant change in the types or a significant increase in the amounts of any effluents that may be released offsite.

- (iii) *There is no significant increase in individual or cumulative occupational radiation exposure.*

The proposed change to the Tier 2* referenced document is acceptable because it continues to comply with NUREG-0711. As mentioned above, the proposed change will not affect how the plant is designed or constructed, as the change affects the testing of the Main Control Room and Human System Interface using a plant simulator. The ISV Plan is needed to perform, in the simulator, the scenarios described in the document. The ISV Plan does not affect the plant itself. Consequently, the changes to the referenced document details of implementation have no effect on individual or cumulative occupational radiation exposure during plant operation. Therefore, the proposed amendment does not involve a significant increase in individual or cumulative occupational radiation exposure.

Based on the above review of the proposed amendment, it has been determined that there are no anticipated construction and operational effects of the proposed amendment involving (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluents that may be released offsite, or (iii) a significant increase in the individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), an environmental impact statement or environmental assessment of the proposed amendment is not required.

6. References

- 1) Westinghouse Electric Company, "AP1000 Design Control Document," Revision 19, June 2011

Southern Nuclear Operating Company

ND-13-1824

Enclosure 10 replacing Enclosure 2

Vogtle Electric Generating Plant (VEGP) Units 3 and 4

**Proposed Changes to the Updated Final Safety Analysis Report (UFSAR)
(LAR-13-001S2)**

(nonproprietary)

ND-13-1824
Enclosure 10 replacing Enclosure 2
Request for License Amendment Revision to Human Factors Engineering
Task Support Verification Plan / GEH-320 (LAR-13-001S2) (nonproprietary)

UFSAR Tier 2, Subsection 1.6, Table 1.6-1 (sheet 20 of 21)

Revise the Title of Tier 2* Westinghouse Topical Report Number APP-OCS-GEH-320 as shown below.

*AP1000 Human Factors Engineering Integrated System Validation Plan, Revision ~~2~~3, Westinghouse Electric Company LLC]**

UFSAR Tier 2, Subsection 18.11.2

Revise Tier 2* Reference 5 as shown below.

[5. *APP-OCS-GEH-320, "AP1000 Human Factors Engineering Integrated System Validation Plan," Revision ~~2~~3, Westinghouse Electric Company LLC.]**

Southern Nuclear Operating Company

**ND-13-1824
(LAR-13-001S2)**

Enclosure 12

**APP-OCS-GEH-322, "AP1000 Human Factors Engineering
Integrated System Validation Plan," Revision 3**

(nonproprietary)

Note: The following enclosure is a one hundred twelve (112) page stand-alone document.



Westinghouse Non-Proprietary Class 3

AP1000

Human Factors Engineering Integrated System Validation Plan

APP-OCS-GEH-322,
Rev. 1

August 2013

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REVISION HISTORY**RECORD OF CHANGES**

Revision	Author	Description	Completed
A	Robert B. Fuld	Preliminary Issue	06/08
B	Robert B. Fuld Zachary T. Casella	Added scenario specifications and other details across sections. Added proprietary markings.	05/09
C	Julie I. Reed	<p>Tracked changes are not shown in this document due to extensive revision. These are summarized below:</p> <p>Deleted Appendices A, E, and F (which are now part of APP-OCS-GEH-321). Provided cross-references to this document.</p> <p>Deleted Appendices B and D. Replaced with the new Appendices A, B, C, and D.</p> <p>Rev. B of Appendix B is now Appendix E, and Appendix G is now Appendix F.</p> <p>Updated document to provide more detailed information in the following sections:</p> <p>Section 1.2 to include detailed objectives.</p> <p>Section 1.3 to address the Technical Support Center.</p> <p>Section 2.1 to describe the Engineering Development Facility.</p> <p>Combined Section 3.2 into Section 3.1 to include information on trial replications, the requirements to run a fourth trial and the limitations to making changes part way through ISV.</p> <p>Section 4.1 revised to describe the qualifications of the test subjects.</p> <p>Section 4.1.2 to describe the minimum and maximum staffing levels.</p> <p>Section 4.3 to include test staff training information.</p> <p>Section 5.2.1 to delete information on procedures that is now included in APP-OCS-GEH-321.</p> <p>Section 6.2.1 to include a description of the questionnaires and observer guides.</p> <p>Section 6.2.2 to include a description of the situation awareness measurement technique.</p> <p>Section 7.3 to provide a detailed description of the re-test criteria and to add Figure 7.3-1.</p>	02/10

REVISION HISTORY (cont.)**RECORD OF CHANGES (cont.)**

Revision	Author	Description	Completed
D	Julie I. Reed	<p>Added Section 1.5, "List of Exceptions from WCAP-15860."</p> <p>Added a description of the Remote Shutdown Workstation mock-up to Section 2.1.</p> <p>Combined Section 3.3 into Section 3.2, "Trial Assignments and Scheduling." Information added on the assignment of crews to the scenarios.</p> <p>Expanded Section 4.1.1 to include guidance on the selection of the participant personnel.</p> <p>Updated Section 5.2, "ISV Procedures" to include additional information.</p> <p>Completely revised Section 6, "Data."</p> <p>Added information to Section 7.3 to describe the rationale for re-running a trial in the event of a small number of Priority 1 and/or Priority 2 human engineering discrepancies (HEDs) based on diagnostic criteria.</p> <p>Added proprietary markings.</p>	06/10
0	Julie I. Reed	<p>Incorporation of APP-GW-GEE-3628, Rev. 0. Changes, as detailed below, from DCP APP-GW-GEE-3628, Rev. 0, have been incorporated.</p> <p>Added description of the mechanism to deal with design and procedure changes post-ISV, and added reference to APP-GW-G0Y-002 "AP1000 Configuration Management Plan" in Section 1.1, "Background."</p> <p>Revised the description of the contents of APP-OCS-GEH-321, "AP1000 Human Factors Engineering Integrated System Validation Scenario Information" in Section 1.2, "Purpose."</p> <p>Clarified the description on the incorporation of local control stations in ISV in Section 1.3 "Scope".</p> <p>In Section 2, "ISV Facility," clarified the use of ANSI/ANS 3.5 in respect to ISV. Included a note regarding the potential use of the TDS for ISV, and the possible use of an AP1000 Training Facility at a utilities site for Pilot Testing. Corrected the description of the operation of the of the RSW switches.</p>	09/12

REVISION HISTORY (cont.)**RECORD OF CHANGES (cont.)**

Revision	Author	Description	Completed
0 (cont.)	Julie I. Reed	<p>In Section 2.3, “Simulator Testing”, changed reference WCAP-16096 “Software Program Manual for Common Q Systems” to APP-PMS-T5-001, “AP1000 Protection and Safety Monitoring System Test Plan”, and stated that PMS software will have completed Channel Integration Testing. Deleted cross-reference to APP-OCS-GEH-321 for details on simulator testing, and replaced with APP-STS-T5-001 “AP1000 Full Scope Simulator Test Plan.”</p> <p>Updated Section 3.1, “Number of Trial Replications” and Section 3.2, “Trial Assignment and Scheduling” to reflect changes in number of scenarios and number of crews, and resulting changes in trial assignments and scheduling, including Table 3.2-1, “Example of Crew Assignments to ISV Trials.” Included a note stating that the final total number of scenarios and the practicalities of running ISV may be subject to change.</p> <p>Revised Section 3.3, “Pilot Testing” to include the testing of the data recording techniques and allowing the participation of the utilities.</p> <p>Revised description of the ISV participants’ completed training in Section 4.1 “Subjects,” and Section 4.1.1 “Selection.”</p> <p>Deleted subsection 4.1.3, “Training” (due to replicate information).</p> <p>Revision to Section 4.2, “Observers” to allow for non-project-independent observers.</p> <p>Added reference to APP-OCS-GLR-001, “AP1000 Post-Accident Risk-Important Human Actions Summary Report” in Section 5.1.1 “Events.” Included DAS manual actions (that have no automatic DAS action) in scope of ISV.</p> <p>Revised Section 5.1.2 “Procedures” to clarify procedure validation status.</p> <p>Section 5.1.3 “Complications” revised the inclusion of maintenance tasks in ISV, and revised the extent of the HFE maintenance assessments.</p>	09/12

REVISION HISTORY (cont.)**RECORD OF CHANGES (cont.)**

Revision	Author	Description	Completed
0 (cont.)	Julie I. Reed	<p>Section 5.2.1 “General Procedure and Documentation” revised to allow the crew greater than 10 minutes to familiarize themselves with the plant conditions.</p> <p>Revision to Section 6.2, “Methods” to include computer-based data collection for the questionnaires.</p> <p>Information added to Section 7.3 “Addressing HEDs and Re-Test Requirements” to allow alternative re-assessment methods.</p> <p>Updated reference on quality procedures to “Westinghouse Level II Policies and Procedures.”</p>	09/12
1	Julie I. Reed	<p>Incorporation of APP-GW-GEE-4227, Rev. 0.</p> <p>Correction to the title of Reference 13 (APP-GW-GL-011).</p> <p>Added reference to WNA-PC-00005-WAPP, “AP1000 I&C Projects Configuration Management Plan” in Section 1.1, “Background.”</p> <p>In Section 1.3, “Scope,” clarified that the RSW is within the scope of ISV and the simulation.</p> <p>In Section 2, “The ISV Facility,” clarified the use of ANSI 3.5 as a basis for the scope, fidelity, and functionality of the simulator model.</p> <p>In Section 2, “The ISV Facility,” added details on the scope and functionality of the TDS and the AP1000 Training Facilities at the utility sites.</p> <p>In Section 2.3, “Simulator Testing,” changed the reference WNA-SQ-00047-GEN, “DCIS Test Strategy,” to APP-GW-GBH-361, “Westinghouse AP1000 Integrated I&C Test Strategy.”</p> <p>In Section 3.1, “Number of Trial Replications,” and Section 3.2, “Trial Assignments and Scheduling,” provided further detail on the basis for changing the total number of ISV scenarios and the ISV scheduling.</p> <p>Updated Section 4.1, “Subjects,” Item 2, to include further details on the training received by the ISV subjects.</p>	01/13

REVISION HISTORY (cont.)**RECORD OF CHANGES (cont.)**

Revision	Author	Description	Completed
1 (cont.)	Julie I. Reed	<p>Noted in subsection 5.1.1, “Events,” that the latest version of APP-OCS-GLR-001, “AP1000 Post-Accident Risk-Important Human Actions Summary Report,” will be used in the ISV.</p> <p>In subsection 5.1.3, “Complications,” deleted the sentence stating that the inclusion of MTIS tasks is limited and added the reference to APP-GW-GL-011, “AP1000 Identification of Critical Human Actions and Risk-Important Tasks.”</p> <p>Section 7, “Processing of Results,” added a description of the personnel.</p> <p>In Section 7.3, “Addressing HEDs and Re-Test Requirements,” moved Item 7 from the first numbered list to Item 3 in the second numbered list, plus added details on the re-assessment criteria.</p> <p>Updated Section 6.2, “Methods,” and Appendix A, “Post-Trial Questionnaire for Subjects,” Section A.2 to include two additional workload rating scales.</p>	01/13
2	Zhonghai Li	<p>Incorporation of APP-OCS-GEF-022, Rev. 0.</p> <p>Added Proprietary markings.</p> <p>Note: There are no change bars in this revision because addition of proprietary markings is the only change to this document.</p> <p>Note: An alternate document number is APP-OCS-GEH-320 (non-proprietary version).</p>	2/13
3	Julie I. Reed	<p>Incorporation of APP-GW-GEE-4523, Rev. 0.</p> <p>Updated document revision numbers in the Bibliography.</p> <p>Section 4.2, “Observers,” corrected typographical error.</p> <p>Section 1.1, “Background”, Figure 1.1-1 “AP1000 Verification and Validation Activities” revised, Section 1.5, “List of Exceptions from WCAP-15860” Item 3 added, and modifications to Section 3.1, “Number of Trial Replications” to describe that the Task Support Verification and Design Verification activities will not be complete prior to running ISV.</p>	See EDMS

REVISION HISTORY (cont.)**RECORD OF CHANGES (cont.)**

Revision	Author	Description	Completed
3 (cont.)	Julie I. Reed	Section 5.1.2, "Procedures", added a reference to APP-GW-GJP-150, "Operating Procedures Verification and Validation." Section 7.3, "Addressing HEDs and Re-Test Requirements", changed to state that all HEDs are entered into the Human Factors Tracking System. Note: An alternate document number is APP-OCS-GEH-320 (proprietary version).	See EDMS

DOCUMENT TRACEABILITY & COMPLIANCE

Created to Support the Following Document(s)	Document Number	Revision
Programmatic Level Description of the AP1000 Human Factors Verification and Validation Plan	WCAP-15860	2
AP1000 Human Factors Engineering Program Plan	APP-OCS-GBH-001	1

OPEN ITEMS

Item	Description	Status
None.		

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ACRONYMS AND TRADEMARKS

Acronyms used in the document are defined in APP-GW-J9Y-001 (WNA-PS-00016-GEN), “Standard Acronyms and Definitions” (Reference 1), or included below to ensure unambiguous understanding of their use within this document.

Acronym	Definition
ADS	Automatic Depressurization System
APS	Alarm Presentation System
CPS	Computerized Procedure System
EDS	Engineering Development Simulator
HED	Human Error Discrepancy
HEP	Human Error Probability
LBLOCA	Large-break Loss of Coolant Accident
MTIS	Maintenance, Test, Inspections and Surveillance
NASA	National Aeronautics and Space Administration
PMS	Protection and Safety Monitoring System
SART	Situation Awareness Rating Technique
SBLOCA	Small-break Loss of Coolant Accident
TDS	Training Development Simulator
TLX	Task Load Index

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All other product and corporate names used in this document may be trademarks or registered trademarks of other companies, and are used only for explanation and to the owners’ benefit, without intent to infringe.

GLOSSARY OF TERMS

Standard terms used in the document are defined in APP-GW-J9Y-001 (WNA-PS-00016-GEN), “Standard Acronyms and Definitions” (Reference 1), or included below to ensure unambiguous understanding of their use within this document.

Term	Definition
Exception	A justified (i.e., documented and approved) departure from specified guidance or requirements.
Human Engineering Discrepancy	A departure of the AP1000 [®] Human Factors Engineering (HFE) design from guidance and criteria identified during the execution of HFE verification and validation activities.

REFERENCES

Following is a list of references used throughout this document.

1. APP-GW-J9Y-001, Rev. 0 (WNA-PS-00016-GEN [Proprietary], Rev. 5), “Standard Acronyms and Definitions,” Westinghouse Electric Company LLC.
2. APP-OCS-GBH-001 (Proprietary), Rev. 1, “AP1000 Human Factors Engineering Program Plan,” Westinghouse Electric Company LLC.
3. WCAP-15860, Rev. 2, “Programmatic Level Description of the AP1000 Human Factors Verification and Validation Plan,” Westinghouse Electric Company LLC.
4. APP-GW-G0Y-002, Rev. 3, “AP1000 Configuration Management Plan,” Westinghouse Electric Company LLC.
5. WNA-PC-00005-WAPP, Rev. 2, “AP1000 I&C Projects Configuration Management Plan,” Westinghouse Electric Company LLC.
6. WCAP-14655, Rev. 1, “Designer’s Input for the Training of the Human Factors Engineering Verification and Validation Personnel,” Westinghouse Electric Corporation.
7. NUREG-0711, Rev. 2, “Human Factors Engineering Program Review Model,” U.S. Nuclear Regulatory Commission, February 2004.
8. APP-OCS-GGR-110-P, Rev. 1, “AP1000 Technical Support Center and Emergency Operations Facility Workshop,” Westinghouse Electric Company LLC.
9. ANSI/ANS-3.5-1998, “Nuclear Power Plant Simulators for Use in Operator Training and Examination,” American National Standards Institute/American Nuclear Society.
10. APP-PMS-T5-001 (Proprietary), Rev. 3, “AP1000 Protection and Safety Monitoring System Test Plan,” Westinghouse Electric Company LLC.
11. APP-GW-GBH-361 (Proprietary), Rev. 1, “Westinghouse AP1000 Integrated I&C Test Strategy” Westinghouse Electric Company LLC.
12. APP-STS-T5-001 (Proprietary), Rev. 1, “AP1000 Full Scope Training Simulator Test Plan,” Westinghouse Electric Company LLC.
13. APP-OCS-GJR-003 (Proprietary), Rev. 2, “AP1000 Main Control Room Staff Roles and Responsibilities,” Westinghouse Electric Company LLC.
14. APP-GW-GL-011 (WCAP-16555), Rev. 0, “AP1000 Identification of Critical Human Actions and Risk Important Tasks,” Westinghouse Electric Company LLC.

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15. APP-OCS-GLR-001 (Proprietary), Rev. 0, "AP1000 Post-Accident Risk-Important Human Actions Summary Report," Westinghouse Electric Company LLC.
16. APP-GW-GLR-040, Rev. 1, "Plant Operations, Surveillance, and Maintenance Procedures," Westinghouse Electric Company LLC.
17. NUREG-1021, Rev. 9, "Operator Licensing Examination Standards For Power Reactors," U.S. Nuclear Regulatory Commission, July 2004.
18. APP-OCS-J1R-220 (Proprietary), Rev. 1, "AP1000 Operational Sequence Analysis (OSA-2) Summary Report," Westinghouse Electric Company LLC.
19. APP-OCS-GJR-001, Rev. 0, "Human Factors Engineering Operating Experience Review Report for the AP1000 Nuclear Power Plant," Westinghouse Electric Company LLC.
20. Taylor, R. M., "Situational awareness rating technique (SART): The Development of a Tool for Aircrew Systems Design." In "Situational Awareness in Aerospace Operations (AGARD-CP-478)," Neuilly-sur-Seine, France: NATO-AGARD, 3/1-3/17, 1990.
21. Taylor, R. M., and S. J. Selcon, "Situation in Mind: Theory, Application and Measurement of Situational Awareness." In R. D. Gilson, D. J. Garland, & J. M. Koonce (Eds.), "Situational Awareness in Complex Settings," Daytona Beach, FL: Embry-Riddle Aeronautical University Press, 69-78, 1994.
22. "Westinghouse Level 2 Policies and Procedures," Westinghouse Electric Company LLC, effective January 16, 2013.

BIBLIOGRAPHY

Following is a list of sources that were considered in preparing this document, or that provide additional information.

1. APP-OCS-GEH-321 (Proprietary), Rev. C, "AP1000 Human Factors Engineering Integrated System Validation Scenario Information," Westinghouse Electric Company LLC.
2. APP-OCS-GEH-120 (Proprietary), Rev. 1, "AP1000 Human Factors Engineering Design Verification Plan," Westinghouse Electric Company LLC.
3. APP-OCS-GEH-420 (Proprietary), Rev. 1, "AP1000 Human Engineering Discrepancy Resolution Process," Westinghouse Electric Company LLC.
4. APP-GW-GJP-150, Rev. 0, "Operating Procedures Verification and Validation," Westinghouse Electric Company LLC. (Proprietary)
5. APP-OCS-GEH-520 (Proprietary), Rev. 2, "AP1000 Plant Startup Human Factors Engineering Design Verification Plan," Westinghouse Electric Company LLC.
6. APP-GW-GL-700 (Proprietary), Rev. 19, "AP1000 Design Control Document," Westinghouse Electric Company LLC.

(Last Page of Front Matter)

SECTION 1 INTRODUCTION

1.1 BACKGROUND

The Integrated System Validation (ISV) provides a comprehensive human performance-based assessment of the final design of the AP1000® Human-System Interface (HSI) resources, based on their realistic operation within a simulator-driven Main Control Room (MCR). [

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Figure 1.1-1. [

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1.2 PURPOSE

This document describes the ISV implementation plan for AP1000 as directed by APP-OCS-GBH-001, “Human Factors Engineering Program Plan” (Reference 2), WCAP-15860, “Programmatic Level Description of the AP1000 Human Factors Verification and Validation Plan” (Reference 3), WCAP-14655, “Designer’s Input for the Training of the Human Factors Engineering Verification and Validation Personnel” (Reference 6), and NUREG-0711, “Human Factors Engineering Program Review Model” (Reference 7).

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The main body of this document includes the scope, methodology, description of the ISV facility, test design, participants, scenario selection process, test criteria, and the processing and documentation of the results. The Appendices comprise details on the workload rating forms, post-trial questionnaires, and the debriefing protocol.

A “sister” document APP-OCS-GEH-321, “AP1000 Human Factors Engineering Integrated System Validation Scenario Information” (Bibliog 1) provides the detailed information on the scenario descriptions, scenario-specific objectives, scenario observer guides, shift turnover reports, simulator operator guides, and the scenario scripts that detail the communications with people outside of the MCR. This information was placed in a separate document for two main reasons. Firstly, this will assist in restricting access to the scenario information from the ISV participants, and secondly, the details of the scenario information will be updated and further developed prior to the implementation of ISV.

1.3 SCOPE

The following are utilized to represent the final MCR and HSI design:

- HSI hardware (consoles, visual display units, workstations, keyboards, mice, trackballs, panels, printers, tables, bookcases, etc.)
- HSI software (non-safety control system, safety control system, alarms, displays, soft controls, computerized procedures, local area network displays, etc.)
- Communications facilities
- Plant emergency, operations, surveillance, and maintenance procedures
- Realistic work environment, including the room dimensions and general arrangement
- Operating crews.

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1.4 SCOPE OF ISV ISSUES

WCAP-15860, “Programmatic Level Description of the AP1000 Human Factors Verification and Validation Plan” (Reference 3), Section 4.1 lists the issues to be addressed by the ISV implementation plan. These issues are listed below and mapped to the sections of the present document that addresses them:

- Objectives – Section 1.1, “Background”
- Personnel performance issues – Section 4, “Participants”
- Test methodology and procedures – Section 3, “Test Design”
- Test participants – Section 4, “Participants”
- Test conditions (including plant conditions, operating sequences, and accident scenarios) – Section 5, “Scenario Set”
- HSI description – Section 2, “ISV Facility”
- Performance measures – Section 6, “Data”
- Data analysis – Section 6, “Data”
- Acceptance criteria – Section 6, “Data”
- Processing of results – Section 7, “Processing of Results”

1.5 LIST OF EXCEPTIONS FROM WCAP-15860

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SECTION 2 THE ISV FACILITY

The ISV will be performed at a dedicated, purpose built facility. The facility will employ a high fidelity, near full-scope simulator to represent the AP1000 systems and the MCR. ANSI/ANS-3.5-1998, "Nuclear Power Plant Simulators for Use in Operator Training and Examination" (Reference 9), is used as a basis for the scope, fidelity, and functionality of the simulator model, and the development of the simulator test plan. See Section 2.3, "Simulator Testing," for information on the simulator testing activities.

The ISV facility will be provided at the EDS based at the Westinghouse Headquarters Building in Cranberry, Pennsylvania, USA. Note, the Training Development Simulator (TDS) may be used for the ISV, and the TDS and/or an AP1000 Training Facility at a utilities' site may be used in addition to or instead of the EDS for the Pilot Testing. These facilities are essentially identical to the EDS in that they possess the same physical characteristics with respect to the control room layout and dimensions, hardware, panels, software, displays, and the same simulator model. The simulator models will be tested as described in Section 2.3, "Simulator Testing."

2.1 PHYSICAL SCOPE AND FIDELITY

To the extent practical, the HSI resources provided by the EDS will be identical to those to be delivered for the actual AP1000 MCR. These resources will include full hardware representation for the following:
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2.2 FUNCTIONAL SCOPE AND FIDELITY

The simulation capability of the EDS will be adequate for the procedures, scenarios, and HSI to be exercised in the ISV. Sufficient simulation scope and systems modeling is determined by the scenarios selected for ISV (see Section 5). Features of the simulation that are not relevant to ISV may be of lesser fidelity or omitted. The development of the required simulator models and software is coordinated with the Simulator Design and Development group. Details of the scope of simulation by individual plant systems can be found in APP-OCS-GEH-321, Appendix C (Bibliog 1).

2.3 SIMULATOR TESTING

The EDS and simulator readiness is demonstrated by the following test activities (also see Section 3.3 for further information).

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SECTION 3 TEST DESIGN

This section addresses the number of individual trials, requirements for trial replications, and their assignment to crews. The minimum number of trials is a function of the number of scenarios and the number of replications of each scenario.

3.1 NUMBER OF TRIAL REPLICATIONS

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3.2 TRIAL ASSIGNMENTS AND SCHEDULING

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Table 3.2-1. [

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3.3 PILOT TESTING

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SECTION 4 PARTICIPANTS

This section describes the personnel involved in ISV. The ISV participants include the test subjects, observers, and the EDS staff.

4.1 SUBJECTS

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4.1.1 Selection

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4.1.2 Crew Size and Number

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4.2 OBSERVERS

The ISV observers will be assigned to evaluate performance and generate results data in each trial. The observers will include personnel that are independent from the AP1000 project as well as personnel that are familiar with the AP1000 project. This mix of observers will provide project independence, plus also allow the observation of human performance behaviors that may only be identified by observers possessing a good knowledge and understanding of the plant design and operations.

These observers will include one of each of the following specialists:

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4.3 ISV STAFF

For each trial, the ISV staff will include at least one of each of the following specialists:

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SECTION 5 SCENARIO SET

A scenario comprises the simulated events, anticipated procedure usage, and added complications. A set of scenarios has been developed for ISV. Each scenario will be performed in multiple (i.e., replicate) trials. This section describes the selection and development of the representative set of validation scenarios for ISV. Full details of the scenarios can be found in APP-OCS-GEH-321 (Bibliog 1), Appendix A.

The ISV scenarios are developed by a multi-disciplinary team. This team includes human factors specialists, procedure writers, operator training developers, and personnel from the simulation group. A number of the team members possess previous operating experience, thereby also contributing to the credibility and realism of the ISV scenarios.

5.1 SCENARIO REQUIREMENTS

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5.1.1 Events

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5.1.2 Procedures

The procedures to be addressed by ISV are outlined in a number of sections in WCAP-15860, “Programmatic Level Description of the AP1000 Human Factors Verification and Validation Plan” (Reference 3).

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5.1.3 Complications

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5.2 ISV PROCEDURES

5.2.1 General Procedure and Documentation

The ISV procedures for each scenario (i.e., the “scenario package”) will be prepared prior to ISV and maintained under the ISV Coordinator’s control in order to prevent the ISV participants from obtaining prior knowledge of the scenarios. The scenario packages include the following:

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5.2.2 Communications with ISV Personnel

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5.2.3 Unforeseen Events

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5.2.4 Storage of Data

The ISV Coordinator will be responsible for the ISV documentation and data. In addition to maintaining and controlling the “scenario packages,” the ISV Coordinator will collect the ISV results data and will be in charge of ensuring that this data is not “lost.”

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SECTION 6 DATA

The techniques used to collect the ISV results data are described in this section. This data serves as the basis for determining whether the task goals and performance requirements are achieved, per WCAP-15860, “Programmatic Level Description of the AP1000 Human Factors Verification and Validation Plan” (Reference 3) Section 4.8.

6.1 MEASURES

A set of performance measures is identified and selected to collect data on operator performance, as follows:

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6.2 METHODS

Data collection will use a variety of computer-based and paper-and-pencil techniques, structured discussions, and digital recording methods, as follows:

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6.3 CRITERIA

This subsection describes how the measurement results are applied to the determination of the success of the ISV trials in respect to the pass/fail criteria and the diagnostic criteria. A set of performance measures, as described in Section 6.1, will be used which includes measures of the performance of the plant and personnel.

6.3.1 Pass/Fail Criteria

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Table 6.3-1. [

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6.3.2 Diagnostic Criteria

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Table 6.3-2. Diagnostic Criteria

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SECTION 7 PROCESSING OF RESULTS

The final results of the ISV trials will be processed to promptly to determine the overall results and conclusions, identify HEDs and to assign HED priorities, and to assess the need for added trial replications.

The processing of the results, as described in this section, will be led by a human factors specialist, supported by a multi-disciplinary team. This team includes additional human factors specialists, procedure writers, operator training developers, and personnel from the simulation group. A number of the team members will possess previous plant operating experience.

7.1 RAW DATA PROCESSING

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7.2 ANALYSIS AND INTERPRETATION

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7.3 ADDRESSING HEDS AND RE-TEST REQUIREMENTS

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Figure 7.3-1. [

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7.4 RESULTS REPORT

The final ISV report will document the results and detailed findings from the analysis, including any HEDs. Any limitations of the ISV plan, implementation, and execution will also be addressed. The basis for concluding whether the AP1000 MCR, HSI resources, procedures, and operator training are adequate will be described (i.e., that the integrated system performed acceptably during testing and can be expected to support safe operation in actual use).

The final results report will be communicated to the Training Group, Procedures Group, and the PRA Group. This will enable the results of ISV to be incorporated into the development/updates of the training programs, revisions to procedures, and any updates to the PRA in terms of the assumptions claimed on operator performance.

(Last Page of Section 7)

**APPENDIX A
POST-TRIAL QUESTIONNAIRE FOR SUBJECTS**

A.1 PROTOCOL

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A.2 POST-TRIAL QUESTIONNAIRE FOR SUBJECTS

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APPENDIX B
FINAL QUESTIONNAIRE FOR SUBJECTS

Note, additional line spaces for the participants to provide comments have been removed in this report. However, the printed version used in ISV will contain adequate space for the participants to provide written comments.

Name: _____ Position: _____ Crew: _____ Date: _____

Circle your level of agreement with the statements below based on your experience in all of the preceding trials.

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APPENDIX C
POST-TRIAL QUESTIONNAIRE FOR OBSERVERS

Note, additional line spaces for the participants to provide comments have been removed in this report. However, the printed version used in ISV will contain adequate space for the participants to provide written comments.

Name: _____ Scenario: _____

Trial: _____ Date: _____

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APPENDIX D
FINAL QUESTIONNAIRE FOR OBSERVERS

Note, additional line spaces for the participants to provide comments have been removed in this report. However, the printed version used in ISV will contain adequate space for the participants to provide written comments.

Name: _____ Date: _____

Circle your level of agreement with the statements below based on your experience in all of the preceding trials.

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APPENDIX E TRIAL PROTOCOL

This Appendix provides the protocol and general sequence of events for running the ISV trials.

PRETRIAL PREPARATIONS

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START TRIAL RUN

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AP1000

Human Factors Engineering Integrated System Validation Plan

END TRIAL RUN

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BREAK

(Last Page of Appendix E)

APPENDIX F DEBRIEFING PROTOCOL

An informal debriefing of the test participants will be performed after each separate trial run. A formal debriefing will be held after each major period (typically one week) of testing. Guidance for the formal debriefing process is provided as follows:

PREPARATION

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START

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DISCUSSION

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CLOSE

1. Thank participants for their support.

(Last Page of Appendix F)

Southern Nuclear Operating Company

**ND-13-1824
(LAR-13-001S2)**

Enclosure 14

Affidavit of Brian H. Whitley, Southern Nuclear Operating Co.

Prepared in Accordance with 10 CFR 2.390

Note: The following enclosure is a two page stand-alone document.

Affidavit of Brian H. Whitley

1. My name is Brian H. Whitley. I am the Regulatory Affairs Director, Nuclear Development, for Southern Nuclear Operating Company (SNC). I have been delegated the function of reviewing proprietary information sought to be withheld from public disclosure and am authorized to apply for its withholding on behalf of SNC.
2. I am making this affidavit on personal knowledge, in conformance with the provisions of 10 CFR Section 2.390 of the Commission's regulations, and in conjunction with SNC's filings and supplement(s) on dockets 52-025 and 52-026, Vogtle Electric Generating Plant (VEGP) Units 3 and 4, Request for License Amendment, Revision to Human Factors Engineering Integrated System Validation Plan / GEH-320 (LAR-13-001S2). I have personal knowledge of the criteria and procedures used by SNC to designate information as a trade secret, privileged or as confidential commercial or financial information.
3. Based on the reason(s) at 10 CFR 2.390(a)(4), this affidavit seeks to withhold from public disclosure Enclosures 8, 11, and 13 of Vogtle Electric Generating Plant (VEGP) Units 3 and 4, Request for License Amendment, Revision to Human Factors Engineering Integrated System Validation Plan / GEH-320 (LAR-13-001S2).
4. The following is furnished for consideration by the Commission in determining whether the information sought to be withheld from public disclosure should be withheld.
 - a. The information sought to be withheld from public disclosure has been held in confidence by SNC and Westinghouse Electric Company.
 - b. The information is of a type customarily held in confidence by SNC and Westinghouse and not customarily disclosed to the public.
 - c. The release of the information might result in the loss of an existing or potential competitive advantage to SNC and/or Westinghouse.

- d. Other reasons identified in Enclosure 15 of Vogtle Electric Generating Plant (VEGP) Units 3 and 4, Request for License Amendment, Revision to Human Factors Engineering Integrated System Validation Plan / GEH-320, (LAR-13-001S2) (dockets 52-025 and 52-026), and those reasons are incorporated here by reference.
5. Additionally, release of the information may harm SNC because SNC has a contractual relationship with the Westinghouse Electric Company regarding proprietary information. SNC is contractually obligated to seek confidential and proprietary treatment of the information.
6. The information is being transmitted to the Commission in confidence and, under the provisions of 10 CFR Section 2.390, it is to be received in confidence by the Commission.
7. To the best of my knowledge and belief, the information sought to be protected is not available in public sources or available information has not been previously employed in the same original manner or method.

I declare under penalty of perjury that the foregoing is true and correct.



Brian H. Whitley

Executed on 8/22/13
Date

Southern Nuclear Operating Company

**ND-13-1824
(LAR-13-001S2)**

Enclosure 15

**Westinghouse Authorization Letter CAW-13-3775,
its accompanying affidavit, Proprietary Information Notice, and Copyright Notice**

Note: The following enclosure is a seven page stand-alone document.

August 14, 2013

PROPRIETARY INFORMATION NOTICE

Transmitted herewith are proprietary and/or non-proprietary versions of documents furnished to the NRC in connection with requests for generic and/or plant-specific review and approval.

In order to conform to the requirements of 10 CFR 2.390 of the Commission's regulations concerning the protection of proprietary information so submitted to the NRC, the information which is proprietary in the proprietary versions is contained within brackets, and where the proprietary information has been deleted in the non-proprietary versions, only the brackets remain (the information that was contained within the brackets in the proprietary versions having been deleted). The justification for claiming the information so designated as proprietary is indicated in both versions by means of lower case letters (a) through (f) located as a superscript immediately following the brackets enclosing each item of information being identified as proprietary or in the margin opposite such information. These lower case letters refer to the types of information Westinghouse customarily holds in confidence identified in Sections (4)(ii)(a) through (4)(ii)(f) of the affidavit accompanying this transmittal pursuant to 10 CFR 2.390(b)(1).

COPYRIGHT NOTICE

The reports transmitted herewith each bear a Westinghouse copyright notice. The NRC is permitted to make the number of copies of the information contained in these reports which are necessary for its internal use in connection with generic and plant-specific reviews and approvals as well as the issuance, denial, amendment, transfer, renewal, modification, suspension, revocation, or violation of a license, permit, order, or regulation subject to the requirements of 10 CFR 2.390 regarding restrictions on public disclosure to the extent such information has been identified as proprietary by Westinghouse, copyright protection notwithstanding. With respect to the non-proprietary versions of these reports, the NRC is permitted to make the number of copies beyond those necessary for its internal use which are necessary in order to have one copy available for public viewing in the appropriate docket files in the public document room in Washington, DC and in local public document rooms as may be required by NRC regulations if the number of copies submitted is insufficient for this purpose. Copies made by the NRC must include the copyright notice in all instances and the proprietary notice if the original was identified as proprietary.



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Direct fax: 724-940-8505
e-mail: sisk1rb@westinghouse.com
Project letter: SVP_SV0_001996

Our ref: CAW-13-3775

August 14, 2013

APPLICATION FOR WITHHOLDING PROPRIETARY
INFORMATION FROM PUBLIC DISCLOSURE

Subject: Transmittal of APP-OCS-GEH-320 Revision 3, AP1000 Human Factors Engineering Integrated System Validation Plan (Proprietary) and APP-OCS-GEH-322 Revision 1, AP1000 Human Factors Engineering Integrated System Validation Plan (Non-Proprietary)

The proprietary information for which withholding is being requested in the above-referenced letter is further identified in the affidavit signed by Westinghouse Electric Company LLC. The affidavit accompanying this letter, sets forth the basis on which the information may be withheld from public disclosure by the Commission and address with specificity the considerations listed in paragraph (b) (4) of 10 CFR Section 2.390 of the Commission's regulations.

Accordingly, this letter authorizes the utilization of the accompanying affidavit by **Southern Nuclear Company**.

Correspondence with respect to the proprietary aspects of this application for withholding or the accompanying affidavit should reference CAW-13-3775 and should be addressed to J. A. Gresham, Manager, Regulatory Compliance, Westinghouse Electric Company, Suite 428, 1000 Westinghouse Drive, Cranberry Township, Pennsylvania 16066.

Very truly yours,

A handwritten signature in black ink, appearing to read 'Robert B. Sisk'.

Robert B. Sisk
Program Manager APR1400 Licensing Support

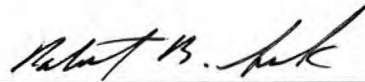
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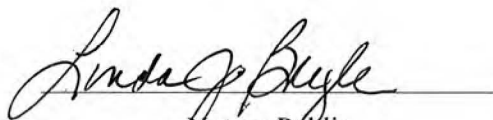
COUNTY OF BUTLER:

Before me, the undersigned authority, personally appeared **Robert B. Sisk**, who, being by me duly sworn according to law, deposes and says that he is authorized to execute this Affidavit on behalf of Westinghouse Electric Company LLC (Westinghouse), and that the averments of fact set forth in this Affidavit are true and correct to the best of his knowledge, information, and belief:



Robert B. Sisk
Program Manager APR1400 Licensing Support

Sworn to and subscribed
before me this 14th day
of August 2013.


Notary Public

COMMONWEALTH OF PENNSYLVANIA
Notarial Seal
Linda J. Bugle, Notary Public
City of Pittsburgh, Allegheny County
My Commission Expires June 18, 2017
MEMBER, PENNSYLVANIA ASSOCIATION OF NOTARIES

- (1) I am Program Manager APR1400 Licensing Support, Westinghouse Electric Company, LLC (Westinghouse), and as such, I have been specifically delegated the function of reviewing the proprietary information sought to be withheld from public disclosure in connection with nuclear power plant licensing and rule making proceedings, and am authorized to apply for its withholding on behalf of Westinghouse.
- (2) I am making this Affidavit in conformance with the provisions of 10 CFR Section 2.390 of the Commission's regulations and in conjunction with the Westinghouse "Application for Withholding" accompanying this Affidavit.
- (3) I have personal knowledge of the criteria and procedures utilized by Westinghouse in designating information as a trade secret, privileged or as confidential commercial or financial information.
- (4) Pursuant to the provisions of paragraph (b)(4) of Section 2.390 of the Commission's regulations, the following is furnished for consideration by the Commission in determining whether the information sought to be withheld from public disclosure should be withheld.
 - (i) The information sought to be withheld from public disclosure is owned and has been held in confidence by Westinghouse.
 - (ii) The information is of a type customarily held in confidence by Westinghouse and not customarily disclosed to the public. Westinghouse has a rational basis for determining the types of information customarily held in confidence by it and, in that connection, utilizes a system to determine when and whether to hold certain types of information in confidence. The application of that system and the substance of that system constitute Westinghouse policy and provide the rational basis required.

Under that system, information is held in confidence if it falls in one or more of several types, the release of which might result in the loss of an existing or potential competitive advantage, as follows:

 - (a) The information reveals the distinguishing aspects of a process (or component, structure, tool, method, etc.) where prevention of its use by any of Westinghouse's competitors without license from Westinghouse constitutes a competitive economic advantage over other companies.

- (b) It consists of supporting data, including test data, relative to a process (or component, structure, tool, method, etc.), the application of which data secures a competitive economic advantage, e.g., by optimization or improved marketability.
- (c) Its use by a competitor would reduce his expenditure of resources or improve his competitive position in the design, manufacture, shipment, installation, assurance of quality, or licensing a similar product.
- (d) It reveals cost or price information, production capacities, budget levels, or commercial strategies of Westinghouse, its customers or suppliers.
- (e) It reveals aspects of past, present, or future Westinghouse or customer funded development plans and programs of potential commercial value to Westinghouse.
- (f) It contains patentable ideas, for which patent protection may be desirable.

There are sound policy reasons behind the Westinghouse system which include the following:

- (a) The use of such information by Westinghouse gives Westinghouse a competitive advantage over its competitors. It is, therefore, withheld from disclosure to protect the Westinghouse competitive position.
- (b) It is information that is marketable in many ways. The extent to which such information is available to competitors diminishes the Westinghouse ability to sell products and services involving the use of the information.
- (c) Use by our competitor would put Westinghouse at a competitive disadvantage by reducing his expenditure of resources at our expense.
- (d) Each component of proprietary information pertinent to a particular competitive advantage is potentially as valuable as the total competitive advantage. If competitors acquire components of proprietary information, any one component

may be the key to the entire puzzle, thereby depriving Westinghouse of a competitive advantage.

- (e) Unrestricted disclosure would jeopardize the position of prominence of Westinghouse in the world market, and thereby give a market advantage to the competition of those countries.
 - (f) The Westinghouse capacity to invest corporate assets in research and development depends upon the success in obtaining and maintaining a competitive advantage.
- (iii) The information is being transmitted to the Commission in confidence and, under the provisions of 10 CFR Section 2.390; it is to be received in confidence by the Commission.
- (iv) The information sought to be protected is not available in public sources or available information has not been previously employed in the same original manner or method to the best of our knowledge and belief.
- (v) The proprietary information sought to be withheld from within the APP-OCS-GEH-320, Revision 3, AP1000 Human Factors Engineering Integrated System Validation Plan, and may be used only for that purpose.

The information requested to be withheld reveals details of the AP1000 design; sequence and method of construction; and timing and content of inspection and testing. This information was developed and continues to be developed by Westinghouse. The information is part of that which enables Westinghouse to manufacture and deliver products to utilities based on proprietary designs.

Public disclosure of this proprietary information is likely to cause substantial harm to the competitive position of Westinghouse because it would enhance the ability of competitors to provide similar commercial power reactors without commensurate expenses.

The information requested to be withheld is the result of applying the results of many years of experience in an intensive Westinghouse effort and the expenditure of a considerable sum of money.

In order for competitors of Westinghouse to duplicate this information, similar technical programs would have to be performed and a significant manpower effort, having the requisite talent and experience, would have to be expended.

Further the deponent sayeth not.