

**South Carolina Electric & Gas Company**

**NND-13-0127**

**Enclosure 1B**

**Virgil C. Summer Nuclear Station (VCSNS) Units 2 and 3**

**Request for License Amendment Regarding Revision to AP1000 Human Factors  
Engineering Integrated System Validation Plan  
(LAR 13-10)**

**(Non-Proprietary)**

NND-13-0127

Enclosure 1B

License Amendment Request (LAR 13-10): Revision to AP1000 Human Factors Engineering Integrated System Validation Plan (Non-Proprietary)

## Table of Contents

1. Summary Description
2. Detailed Description and Technical Evaluation
3. Technical Evaluation (Incorporated into Section 2, above)
4. Regulatory Evaluation
  - 4.1 Applicable Regulatory Requirements/Criteria
  - 4.2 Precedent
  - 4.3 Significant Hazards Consideration Determination
  - 4.4 Conclusions
5. Environmental Considerations
6. References

## 1. Summary Description

Pursuant to 10 CFR 50.90, South Carolina Electric & Gas Company (SCE&G) requests an amendment to Combined License (COL) Nos. NPF-93 and NPF-94 for the Virgil C. Summer Nuclear Station (VCSNS), Units 2 and 3, 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."

SCE&G 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 SCE&G's ability to operate Virgil C. Summer Nuclear Station Units 2 and 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.

## 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 2. 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. 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 (sheet 20 of 21), Material Referenced: APP-OCS-GEH-320, "AP1000 Human Factors Engineering Integrated System Validation Plan," will be changed from Revision D to Revision 2. 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 2. 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 2). 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 as Tier 2\* information in the UFSAR.

#### Justifications for all changes

The twenty-three 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. 2, the guidance of NUREG-0711, Rev. 2 was followed, and APP-OCS-GEH-320, Rev. 2 is consistent with NUREG-0711, Rev. 2.

Specific changes

1. 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."

2. 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."

3. 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").

4. 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.

5. 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.

[

6. 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.

7. 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.

8. 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 2. 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 Distributed Control and Information System (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.

9. 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.

10. 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 [

] <sup>a,c,e</sup>

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

[

] <sup>a,c,e</sup>

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.

11. 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 [ <sup>a,c,e</sup> ] This information is added to the existing pilot test requirements.

12. 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.

13. 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.

14. 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.

15. 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 [

] <sup>a,c,e</sup>

16. 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." [

] <sup>a,c,e</sup>

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 Table 2.5.1-4, 2.5.01.05.

17. 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.

18. [not used]

19. Section 5.1.3 "Complications," is being changed to remove references to task walk throughs 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 walk throughs or maintenance trials utilizing manufactured equipment. Therefore, Revision 2 is removing this reference.

20. Section 5.2.1 "General Procedure and Documentation," is being revised to state that [

]a,c,e

The ISV Plan included a statement that limited the time allowed at the beginning at each trial for the ISV crews to [

]a,c,e

21. Section 6.2, "Methods," is being changed to include the [

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.

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

J<sup>a,c,e</sup>

23. 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. Revision 2 of APP-OSC-GEH-320 re-instates these two factors (and the corresponding questions and rating scales) into Appendix A.

### Summary

SCE&G requests an amendment to Combined License Numbers NPF-93 and NPF-94 for VCSNS Units 2 and 3, 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 2. 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) or 10 CFR 55.46.

#### **4.2 Precedent**

This proposed change is consistent and identical in technical content with License Amendment Request, LAR-13-001 (Adams Accession Number ML13050A214), requested by Southern Nuclear Operating Company, and accepted for review by the Nuclear Regulatory Commission on February 28, 2013 (Adams Accession Number ML13058A122).

#### **4.3 No Significant Hazards Consideration Determination**

The requested change would revise the Combined Licenses NPF-93 and NPF-94, VCSNS Units 2 and 3, 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 Conclusions**

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 2. 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) 1 Westinghouse Electric Company, "AP1000 Design Control Document," Revision 19, June 2011