B. H. Whitley
Director
Regulatory Affairs

Southern Nuclear
Operating Company, Inc.
42 Inverness Center Parkway
Post Office Box 1295
Birmingham, AL 35242

SOUTHERN COMPANY

MAY 10 2013

Docket Nos.: 52-025
52-026

ND-13-0683
10 CFR 50.90

U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555-0001

Southern Nuclear Operating Company
Vogtle Electric Generating Plant Units 3 and 4
Request for License Amendment
Revision to AP1000 Plant Startup Human Factors Engineering
Design Verification Plan / GEH-520 (LAR-13-013)

Ladies and Gentlemen:

In accordance with 10 CFR 50.90, Southern Nuclear Operating Company (SNC), the licensee for Vogtle Electrical Generating Plant (VEGP) Units 3 and 4, requests an amendment to the Combined Licenses for VEGP Units 3 and 4, Numbers NPF-91 and NPF-92, respectively.

The amendment arises from a proposed revision to a Tier 2* reference document, APP-OCS-GEH-520, from Revision B to Revision 1 and a change to the title from "AP1000 Plant Startup Human Factors Engineering Verification Plan" to "AP1000 Plant Startup Human Factors Engineering Design Verification Plan." The APP-OCS-GEH-520 activities are used in support of the verification and validation (V&V) performed on Human System Interface (HSI) resources and Operation and Control Centers Systems (OCS). The changes would be reflected in the Updated Final Safety Analysis Report (UFSAR) as a revision to Tier 2* reference document APP-OCS-GEH-520, "AP1000 Plant Startup Human Factors Engineering Design Verification Plan."

The execution of APP-OCS-GEH-520, "AP1000 Plant Startup Human Factors Engineering Design Verification Plan," is required in order to close Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC) 3.2.00.01e. There is no change to the overall HFE scope or methodology.

The description, technical evaluation, regulatory evaluation (including the Significant Hazards Consideration determination), and environmental considerations for the proposed changes in the License Amendment Request (LAR) are contained in Enclosures 1A **(Proprietary)** and 1B (Non-Proprietary) to this letter. Enclosure 2 provides markups depicting the requested changes to the UFSAR. Enclosures 3 and 4 provide the bases for the withholding of proprietary information. Enclosure 5 **(Proprietary)** is a copy of APP-OCS-GEH-520, "AP1000 Plant Startup Human Factors Engineering Design Verification Plan," Revision 1. Enclosure 6 is a

non−proprietary copy of Enclosure 5 and is called APP-OCS-GEH-522, “AP1000 Plant Startup Human Factors Engineering Design Verification Plan,” Revision 1. The differences between the APP-OCS-GEH-520 revisions are shown by including, in Enclosure 7 **(Proprietary)**, an electronic file generated by running the MS Word compare feature between revisions B and 1.

This letter contains no regulatory commitments.

As discussed above, Enclosures 1A, 5, and 7 contain proprietary information that Westinghouse and SNC request to be withheld from public disclosure under 10 CFR 2.390. Enclosures 3 and 4 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-13-3694 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 September 20, 2013, to support the timelines for executing the ISV. 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 Mr. Wesley A. Sparkman at (205) 992-5061.

(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 10th *day of* May, *2013*

Notary Public: Kristin Marie Seibert

My commission expires: August 16, 2016

Enclosures:
- 1A) Request for License Amendment, Revision to AP1000 Plant Startup Human Factors Engineering Design Verification Plan / GEH-520 (LAR-13-013) **(Proprietary)**
- 1B) Request for License Amendment, Revision to AP1000 Plant Startup Human Factors Engineering Design Verification Plan / GEH-520 (LAR-13-013) (Non-Proprietary)
- 2) Proposed Changes to the Updated Final Safety Analysis Report (LAR-13-013) (1 page)
- 3) Westinghouse Authorization Letter CAW-13-3694, its accompanying affidavit, Proprietary Information Notice, and Copyright Notice (7 pages)
- 4) Affidavit of B.H. Whitley, Southern Nuclear Operating Co. (2 pages)
- 5) APP-OCS-GEH-520, "AP1000 Plant Startup Human Factors Engineering Design Verification Plan," Revision 1 (17 pages) **(Proprietary)**
- 6) APP-OCS-GEH-522, "AP1000 Plant Startup Human Factors Engineering Design Verification Plan," Revision 1 (17 pages) (Non-Proprietary)
- 7) Comparison, via MS Word, between Revisions B and 1 of APP-OCS-GEH-520, "AP1000 Plant Startup Human Factors Engineering Design Verification Plan." (22 pages) **(Proprietary)**

cc:

Southern Nuclear Operating Company/ Georgia Power Company
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Mr. J. A. Miller
Mr. D. A. Bost (w/o enclosures)
Mr. B. L. Ivey
Mr. M. D. Rauckhorst (w/o enclosures)
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Westinghouse Electric Company, LLC
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Mr. S. W. Gray (w/o enclosures)
Mr. P. A. Russ
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Mr. G. F. Couture
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Mr. T. J. Ray

Other
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Mr. R. W. Prunty, Bechtel Power Corporation
Ms. K. K. Patterson, Tetra Tech NUS, Inc.
Dr. W. R. Jacobs, Jr., Ph.D., GDS Associates, Inc.
Mr. S. Roetger, Georgia Public Service Commission
Ms. S. W. Kernizan, Georgia Public Service Commission
Mr. K. C. Greene, Troutman Sanders
Mr. S. Blanton, Balch Bingham
Ms. A. Monroe, South Carolina Electric & Gas Company
Mr. B. Kitchen, Duke Energy
Mr. S. Franzone, Florida Power & Light

Southern Nuclear Operating Company
Vogtle Electric Generating Plant Units 3 and 4

ND-13-0683

Enclosure 1B

Request for License Amendment

Revision to AP1000 Plant Startup Human Factors Engineering Design Verification Plan / GEH-520

(LAR-13-013) (Non-Proprietary)

Table of Contents

1. Summary Description

In accordance with 10 CFR 50.90, Southern Nuclear Operating Company (SNC), the licensee for Vogtle Electrical Generating Plant (VEGP) Units 3 and 4, requests an amendment to the Combined Licenses (COLs) for VEGP Units 3 and 4, Numbers NPF-91 and NPF-92, respectively. The amendment arises from a proposed revision to a Tier 2* reference document, APP-OCS-GEH-520, from Revision B to Revision 1 in the Updated Final Safety Analysis Report (UFSAR). The APP-OCS-GEH-520 activities are used in support of the verification and validation (V&V) performed on Human System Interface (HSI) resources and Operation and Control Centers Systems (OCS). The changes would also be reflected in the UFSAR as a revision to Tier 2* reference document APP-OCS-GEH-520 and by changing the title in the UFSAR from "AP1000 Plant Startup Human Factors Engineering Verification Plan," to "AP1000 Plant Startup Human Factors Engineering Design Verification Plan." The proposed changes would revise the COLs in regard to a Tier 2* reference listed in UFSAR Chapter 1, Table 1.6-1 (sheet 21 of 21), and Chapter 18, Section 18.11.2, Reference 7.

In APP-OCS-GEH-520, a [ ]^{a,c} Human Factors Engineering (HFE) V&V activities. Execution of the plan also confirms that the as-built in the plant [ ]^{a,c} the HFE program. Additionally, execution of the plan confirms that all HFE-related issues (including HEDs) documented in the [ ]^{a,c} are verified as adequately addressed or resolved. Finally, execution of the plan confirms the HFE adequacy for [ ]^{a,c} The execution of the plan is required in order to close Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC) 3.2.00.01e.

2. Detailed Description and Technical Evaluation

Overview

APP-OCS-GEH-520, "AP1000 Plant Startup Human Factors Engineering Design Verification Plan," is used in support of the V&V activities performed on [ ]^{a,c} Formal V&V activities are an integral part of the overall HFE design process. The plan confirms aspects of the [ ]^{a,c} The plan confirms that the as-built in the plant [ ]^{a,c} that resulted from the HFE program. Additionally, it confirms that all HFE-related issues (including HEDs) documented in the [ ]^{a,c} are verified as adequately addressed or resolved. Finally, it confirms the HFE adequacy for [ ]^{a,c}

The plan activities are used to support the overall final check of the adequacy of the HFE design of the [ ]a,c APP-OCS-GEH-520 is part of the V&V activities performed on the [ ]a,c

A license amendment is necessary because a Tier 2* reference document, APP-OCS-GEH-520, is being revised.

The existing document is Revision B; the new document will be Revision 1. The proposed changes would revise the COLs in regard to a Tier 2* reference listed in UFSAR Chapter 1, Table 1.6-1 (sheet 21 of 21), and Chapter 18, Section 18.11.2, Reference 7. Subsequent to the NRC approving the AP1000 DCD, more detailed information has become available regarding the plant design, operating procedures and the development of the HSI and OCS. This information impacts the APP-OCS-GEH-520 document referenced in the UFSAR requiring a change from Revision B to Revision 1.

References to other documents

The summary of the proposed changes to APP-OCS-GEH-520 detailed below frequently makes reference to other Westinghouse documents. All the Westinghouse documents referenced are proprietary documents and are withheld from the public pursuant to 10 CFR 2.390. Other documents discussed in this license amendment request and referenced by the proposed changes to APP-OCS-GEH-520, 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-520 itself, as it is incorporated by reference as Tier 2* information in the UFSAR.

Tier 2*

UFSAR Chapter 1, Section 1.6, Table 1.6-1 (sheet 21 of 21), Material Referenced, APP-OCS-GEH-520, will be changed from Revision B to Revision 1 and the title will be changed from "AP1000 Plant Startup Human Factors Engineering Verification Plan" to "AP1000 Plant Startup Human Factors Engineering Design Verification Plan." This document is a Tier 2* reference.

UFSAR Chapter 18, Section 18.11.2, Reference 7, APP-OCS-GEH-520, will be changed from Revision B to Revision 1, and the title will be changed from "AP1000 Plant Startup Human Factors Engineering Verification Plan" to "AP1000 Plant Startup Human Factors Engineering Design Verification Plan." This document is a Tier 2* reference.

Justification for all changes

The changes below share a common licensing justification. The proposed changes to APP-OCS-GEH-520 are justified because the proposed changes to APP-OCS-GEH-520 are consistent with the guidance in Revision 2 of NUREG-0711, Human Factors Engineering Program Review Model. The proposed changes are intended to better align the APP-OCS-GEH-520 document with the AP1000 design activities. Revision 2 of NUREG-0711 provides guidance for definition and execution of a human factors program.

Changes to APP-OCS-GEH-520

1. "Glossary of Terms" is revised to reflect the changed definition of [ ]a,c and add a new reference. This is a change to be consistent with NSNP 3.3.3, Revision 4, "Design Verification by Independent Review or Alternate Calculations," Westinghouse Electric Company LLC, effective March 21, 2011. The definition change and the addition of a new reference are made to be in conformance with current Westinghouse Electric Company procedures regarding the [ ]a,c

2. Section 1.1.3, "Process Strategy," is revised in the last paragraph as a clarification. [ ]a,c

3. Section 1.2.2, "List of Design Features Requiring Verification," has the following revisions: [ ]a,c

4. Section 2, "Verification Process," adds [ ]a,c from the bibliography section as a clarification in the first paragraph. [

] [a,c] in the associated report and addressed by resolution or justification.

5. Section 3.1, "Personnel Requirements and Techniques," changed the term [

] [a,c]

6. There are several other minor editorial changes in sections of APP-OCS-GEH-520. These changes make the document more clear and have no effect on the objectives and scope of the AP1000 Plant Startup Human Factors Engineering Design Verification Plan. These other changes may be seen in the comparison version of the documents provided as Enclosure 7 (Proprietary).

Summary

The requested amendment reflects a proposed revision to a Tier 2* reference document, APP-OCS-GEH-520, from Revision B to Revision 1 and a change to the title of the document in the UFSAR. The proposed revision of this document changes the AP1000 Plant Startup Human Factors Engineering Design Verification Plan and those changes will be reflected in the UFSAR as a revision to Tier 2* reference document APP-OCS-GEH-520. The proposed changes would revise the COLs in regard to a Tier 2* reference listed in UFSAR Chapter 1, Table 1.6-1 (sheet 21 of 21), and Chapter 18, Section 18.11.2, Reference 7, by changing the revision number of the APP-OCS-GEH-520 document from Revision B to Revision 1.

As detailed above, the changes to APP-OCS-GEH-520, "AP1000 Plant Startup Human Factors Engineering Design Verification Plan," for HFE do not adversely affect any design function described in the UFSAR. The new revision of APP-OCS-GEH-520 [
]^{a,c} Revision 2 of NUREG-0711, "Human Factors Engineering Program Review Model." The new process continues to be consistent with Revision 2 of NUREG-0711. There is no physical change to the plant itself, nor its operations. For these reasons, the proposed changes to APP-OCS-GEH-520 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, 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. The revisions to APP-OCS-GEH-520 do not impact the requirements of 10 CFR 50.34(f)(2)(iii).

10 CFR 55.46 requires a plant-referenced simulator capability. The revisions to APP-OCS-GEH-520 do not impact the requirements of 10 CFR 55.46.

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 Significant Hazards Consideration Determination

The requested change(s) would revise the Combined Licenses for Vogtle Electrical Generating Plant (VEGP) Units 3 and 4, Numbers NPF-91 and NPF-92, respectively, by revising a reference that implements part of the Human Factor Engineering program. There is no physical change to the plant itself, nor its operation.

Since the reference is a Tier 2* reference, changing the technical information contained in APP-OCS-GEH-520, "AP1000 Plant Startup Human Factors Engineering Design Verification 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 APP-OCS-GEH-520, document confirms aspects of the human system interface (HSI) and Operation and Control Centers Systems (OCS) design features that could not be evaluated in other Human Factors Engineering (HFE) verification and validation (V&V) activities. It also confirms that the as-built in the plant HSIs, procedures, and training conform to the design that resulted from the HFE program. Additionally, it confirms that all HFE-related issues (including human error discrepancies (HEDs)) documented in the SmartPlant Foundation (SPF) Human Factors (HF) Tracking System are verified as adequately addressed or resolved. Finally, it confirms the HFE adequacy for risk-important human actions in the local plant, including the ability for the tasks to be completed within the time window according to the Probabilistic Risk Assessment (PRA). The changes to the plan are to clarify the scope and amend the details of

the methodology. The plan does not affect the plant itself. Changing the 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. The PRA is not affected. No safety-related Structure, System, or Component (SSC) or function is adversely affected. The document revision change does not involve nor interface with any SSC accident initiator or initiating sequence of events, and thus, the probabilities of the accidents evaluated in the Updated Final Safety Analysis Report (UFSAR) are not affected. Because the changes to the plan 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

APP-OCS-GEH-520, "AP1000 Plant Startup Human Factors Engineering Design Verification Plan" is the plan to confirm aspects of the HSI and OCS design features that could not be evaluated in other HFE V&V activities. The plan also confirms that the as-built in the plant HSIs, procedures, and training conform to the design that resulted from the HFE program. Additionally, it confirms that all HFE-related issues (including HEDs) documented in the SPF HF Tracking System are verified as adequately addressed or resolved. Finally, it confirms the HFE adequacy for risk-important human actions in the local plant, including the ability for the tasks to be completed within the time window according to the PRA. These functions support evaluating the HSI and OCS. 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

APP-OCS-GEH-520, "AP1000 Plant Startup Human Factors Engineering Design Verification Plan" is the plan to confirm aspects of the HSI and OCS design features that could not be evaluated in other HFE V&V activities. The plan also confirms that the as-built in the plant HSIs, procedures, and training conform to the design that resulted from the HFE program. Additionally, it confirms that all HFE-related issues (including HEDs) documented in the SPF HF Tracking System are verified as adequately addressed or resolved. Finally, it confirms the HFE adequacy for risk-important human actions in the local plant, including the ability for the tasks to be completed within the time windows in the PRA. These functions support evaluating the HSI and OCS. The proposed changes to the plan do not affect the design or operation of safety-related equipment or equipment whose failure could initiate an accident, nor does the plan adversely affect the interfaces with safety-related equipment or fission product barriers. No safety analysis or design basis acceptance limit/criterion is challenged or exceeded by the requested changes. Therefore, the changes do not involve a significant reduction in a margin of safety.

Based on the above, 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.

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. The above evaluations demonstrate that the proposed changes can be accommodated without an increase in the probability or consequences of an accident previously evaluated, without creating the possibility of a new or different kind of accident from any accident previously evaluated, and without a significant reduction in a margin of safety. Having arrived at negative declarations with regard to the criteria of 10 CFR 50.92, this assessment determined that the proposed change does not involve a Significant Hazards Consideration.

5. Environmental Considerations

The requested amendment reflects a proposed revision to reference document, APP-OCS-GEH-520, "AP1000 Plant Startup Human Factors Engineering Design Verification Plan," from Revision B to Revision 1. The proposed changes would revise the COLs in regard to the Tier 2*

reference listed in UFSAR Chapter 1, Table 1.6-1 (sheet 21 of 21), and Chapter 18, Section 18.11.2, Reference 7.

APP-OCS-GEH-520, "AP1000 Plant Startup Human Factors Engineering Design Verification Plan," confirms aspects of the HSI and OCS design features that could not be evaluated in other HFE V&V activities. It also confirms that the as-built in the plant HSIs, procedures, and training conform to the design that resulted from the HFE program. Additionally, it confirms that all HFE-related issues (including HEDs) documented in the SPF HF Tracking System are verified as adequately addressed or resolved. Finally, it confirms the HFE adequacy for risk-important human actions in the local plant, including the ability for the tasks to be completed within the time windows in the PRA. The activities in the plan do not affect the plant itself. The changes to the plan are needed to support the closure of ITACC 3.2.00.01e.

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 documented 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 changes affect the verification and validation of the HSI/OCS. APP-OCS-GEH-520, "AP1000 Plant Startup Human Factors Engineering Design Verification Plan," does not affect the plant itself, nor its operations. 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 for APP-OCS-GEH-520, "AP1000 Plant Startup Human Factors Engineering Design Verification Plan." As mentioned above, the proposed changes will not affect how the plant is designed, constructed, or operated as the changes affect the verification and validation of the HSI and OCS. APP-OCS-GEH-520, "AP1000 Plant Startup Human Factors Engineering Design Verification 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, 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 changes to the Tier 2* referenced document is acceptable because it continues to comply with NUREG-0711, Revision 2. As mentioned above, the proposed changes will not affect how the plant is designed, constructed, or operated as the changes affect the verification and validation of the HSI and OCS. The changes to APP-OCS-GEH-520 "AP1000 Plant Startup Human Factors Engineering Design Verification Plan," do not affect the plant itself, nor its operation. Consequently, the changes to the APP-OCS-GEH-520 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). Pursuant to 10 CFR 51.22(b), an environmental impact statement or environmental assessment of the proposed amendment is not required.

6. References

None.

Southern Nuclear Operating Company
Vogtle Electric Generating Plant Units 3 and 4

ND-13-0683

Enclosure 2

Proposed Changes to the Updated Final Safety Analysis Report
(LAR-13-013) (1 page)

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

Revise the title of Tier 2* Westinghouse Topical Report Number APP-OCS-GEH-520 as shown below.

AP1000 Plant Startup Human Factors Engineering Design Verification Plan, Revision ~~B~~1, Westinghouse Electric Company LLC]*

UFSAR Tier 2, Chapter 18, Section 18.11.2

Revise Tier 2* Reference 7 as shown below.

APP-OCS-GEH-520, "AP1000 Plant Startup Human Factors Engineering Design Verification Plan," Revision ~~B~~1, Westinghouse Electric Company LLC.]*

ND-13-0683

Enclosure 3

Westinghouse Authorization Letter CAW-13-3694,
its accompanying affidavit, Proprietary Information Notice, and Copyright Notice
(7 pages)

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

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Nuclear Power Plants
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Cranberry Township, Pennsylvania 16066
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U S Nuclear Regulatory Commission
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Project letter: SVP_SV0_001871

Our ref: CAW-13-3694

May 8, 2013

APPLICATION FOR WITHHOLDING PROPRIETARY INFORMATION FROM PUBLIC DISCLOSURE

Subject: Transmittal of APP-OCS-GEH-520 Revision 1, AP1000 Plant Startup Human Factors Engineering Design Verification Plan (Proprietary) and APP-OCS-GEH-522 Revision 1, AP1000 Plant Startup Human Factors Engineering Design Verification 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-13-3694 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,

Robert B. Sisk
Program Manager Korea/UAE

CAW-13-3694
May 8, 2013

AFFIDAVIT

COMMONWEALTH OF PENNSYLVANIA:

ss

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
Manager, Passive Plant Technology

Sworn to and subscribed
before me this 8th day
of May 2013.

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

Notary Public

(1) I am Program Manager Korea/UAE, 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-520, Revision 1, AP1000 Plant Startup Human Factors Engineering Design Verification 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.

ND-13-0683

Enclosure 4

Affidavit of B.H. Whitley, Southern Nuclear Operating Co. (2 pages)

Affidavit of B.H. Whitley

1. My name is Brian H. Whitley. I am the Director, Regulatory Affairs, 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 on dockets 52-025 and 52-026, Vogtle Electric Generating Plant (VEGP) Units 3 and 4, Request for License Amendment, Revision to AP1000 Plant Startup Human Factors Engineering Design Verification Plan / GEH-520 (LAR-13-013), ND-13-0683. 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 Enclosure 1A and 7 of Vogtle Electric Generating Plant (VEGP) Units 3 and 4, Request for License Amendment, Revision to AP1000 Plant Startup Human Factors Engineering Design Verification Plan / GEH-520 (LAR-13-013), ND-13-0683 (dockets 52-025 and 52-026).

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 3 of Vogtle Electric Generating Plant (VEGP) Units 3 and 4, Request for License Amendment, Revision to AP1000 Plant Startup Human Factors Engineering Design Verification Plan / GEH-520 (LAR-13-013), ND-13-0683 (dockets 52-025 and 52-026), and those reasons are incorporated here by reference.

    e. For Enclosure 7, for the additional reason that Revision B of APP-OCS-GEH-520 was previously identified as proprietary, see ML102170037. The application for withholding set forth at ML102170037 is adopted in support of this affidavit.

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. To satisfy the requirements of 10 CFR 2.390(b)(1)(i)(B) and (b)(1)(ii)(E), SNC requests that Enclosure 1A in its entirety be withheld, but is providing a publicly available version

at Enclosure 1B. SNC requests that Enclosure 7 be withheld in its entirety as it was generated from two proprietary documents.

7. 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.

8. 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.

B. H. Whitley

Brian H. Whitley

Executed on 5/10/13
Date

ND-13-0683

Enclosure 6

APP-OCS-GEH-522, "AP1000 Plant Startup Human Factors Engineering Design Verification Plan," Revision 1 (17 pages) (Non-Proprietary)

F-6.1-2 Rev 1

DOCUMENT COVER SHEET

DOCUMENT NO.	REVISION	PAGE	OPEN ITEMS
APP-OCS-GEH-522	1	1 of 17	N

DOCUMENT STATUS: **DES** | AP1000 SAFETY CLASS: **NA**

LICENSING REVIEW STATUS: Completed by Reference

PLANT APPLICABILITY:

☒ All AP1000 Plants except:
No Exceptions

☐ Only the following plants:

Westinghouse Acceptance of AP1000 Design Partner Document by:

(Print Full Name)

(Signature/Date)

ALTERNATE DOCUMENT NUMBER: N/A

ORIGINATING ORGANIZATION: Westinghouse Nuclear Automation

TITLE: AP1000 Plant Startup Human Factors Engineering Design Verification Plan

DCP/DCA/SUPPLEMENTS/EDCR # INCORPORATED IN THIS DOCUMENT REVISION:
APP-OCS-GEF-061, Rev. 0

ATTACHMENTS:
N/A

PARENT DOCUMENT: N/A

LEGAL REVIEW	SIGNATURE / DATE (If processing electronic approval select option)
T. J. White	**Electronically Approved*** **
PATENT REVIEW	SIGNATURE / DATE
Jonathan L. Barkich	**Electronically Approved*** **

ORIGINATOR(S) WEC 6.1.pdf Zhonghai Li	SIGNATURE / DATE (If processing electronic approval select option) **Electronically Approved*** **	
REVIEWER(S) WEC 6.1.pdf William N. Locke, Project Manager	SIGNATURE / DATE **Electronically Approved*** **	
	SIGNATURE / DATE	
	SIGNATURE / DATE	
VERIFIER(S) WEC 6.1.pdf Julie I. Reed	SIGNATURE / DATE **Electronically Approved*** **	Verification Method: **Independent Review**
APPLICABILITY REVIEWER WEC 6.1.pdf N/A	SIGNATURE / DATE	
RESPONSIBLE MANAGER* WEC 6.1.pdf Craig D. Watson	SIGNATURE / DATE **Electronically Approved*** **	

** Approval of the responsible manager signifies that the document and all required reviews are complete, the appropriate proprietary class has been assigned, electronic file has been provided to the EDMS, and the document is released for use.*

****** Electronically approved records are authenticated in the electronic document management system. This record was final approved on May-07-2013. (This statement was added by the EDMS system to the quality record upon its validation.)***

Westinghouse

Westinghouse Non-Proprietary Class 3

AP1000

Plant Startup Human Factors Engineering Design Verification Plan

APP-OCS-GEH-522,
Rev. 1

May 2013

APPROVALS

Function	Name and Signature
Author	Zhonghai Li* Senior Engineer, Human Factors & and Operations
Reviewer	Julie I. Reed* Fellow Engineer, Human Factors & and Operations
	William N. Locke* Project Manager, Human Factors Engineering
Approver	Craig D. Watson* Manager, Human Factors & and Operations

*Electronically approved records are authenticated in the electronic document management system.

WESTINGHOUSE NON-PROPRIETARY CLASS 3

LIST OF CONTRIBUTORS

Revision	Name and Title
A	Mark A. Caskey Principal Engineer, Human Factors and Operations
A	Todd W. Van Meter Senior Engineer, Simulators & Applications Engineering
A	Steven P. Kerch Manager, Human System Interface Design
A, B	Megan L. Holland Technical Editor, Technical Communications
0	Nina T. O'Hella Technical Writer/Editor, Technical Communications

REVISION HISTORY

RECORD OF CHANGES

Revision	Author	Description	Completed
A	Ruiqi Ma	Preliminary Issue	05/2009
B	Ruiqi Ma	Added scope under Section 1.2.2. Added clarification on the responsibility of potential identified issues or discrepancies during the plant startup HFE design verification under Section 2. Made minor changes on the revision of the references. Added proprietary markings.	06/2010
0	Zhonghai Li	Incorporation of APP-GW-GEE-4259, Rev. 0. Numerous updates to the References and Bibliography in accordance with latest documents and revisions. "Glossary of Terms": Changed definition of Independent Verifier. Subsection 1.1.3, "Process Strategy": Clarified that verification may begin once plant construction is complete and equipment is installed, although some activities will need testing and preparations for plant startup to be underway. Subsection 1.2.2, "List of Design Features Requiring Verification": In item 1, deleted TSC and Radioactive Waste Control Area, plus changed local control stations to local control areas. In item 2, clarified that the scope is as defined by the scope of the HFE V&V activities. In item 3, changed "HFE design issue tracking database" to "Human Factors Tracking System" (and in other sections). In item 4, added the local risk-important action to deactivate the PMS division involved in the fire, and added a reference to APP-OCS-GLR-001, "AP1000 Post-Accident Risk-Important Human Actions Summary Report." Section 2, "Verification Process": Changed the wording for HED resolution in the last paragraph and moved the last sentence to the beginning of Section 3.1.	03/2013

REVISION HISTORY (cont.)

RECORD OF CHANGES (cont.)

Revision	Author	Description	Completed
0 (cont.)	Zhonghai Li	Section 3.1, "Personnel Requirements and Techniques": Changed "HFE verifier" to "HFE specialist" to be line with current organizational structure. Clarified that the scope covers design, operating procedures and training information.	03/2013
1	Zhonghai Li	Incorporation of APP-OCS-GEF-061, Rev. 0. Corrected a typographical error in Section 1.1.3. Note: An alternate document number is APP-OCS-GEH-520 (proprietary version)	See EDMS

DOCUMENT TRACEABILITY & COMPLIANCE

Created to Support the Following Document(s)	Document Number	Revision
AP1000 Human Factors Engineering Program Plan	APP-OCS-GBH-001	1

OPEN ITEMS

Item	Description	Status
None.		

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LIST OF TABLES

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None.

LIST OF FIGURES

Figure	Title	Page

None.

ACRONYMS AND TRADEMARKS

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

Acronym	Definition
HF	Human Factors
PMS	Protection and Safety Monitoring System

GLOSSARY OF TERMS

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

Term	Definitions
Historical Review	Historical review is most useful for evaluating issues related to system effectiveness in the real setting where the system performance can be evaluated during testing, startup and operation. This technique involves the examination of historical records related to the performance of systems that are identical or similar to the system under evaluation.
Human Engineering Discrepancy	A departure of the AP1000® design from Human Factors Engineering (HFE) design guidance and/or human performance criteria as identified during the execution of HFE verification and validation activities.
Independent Verifier	Any competent individual(s) or group(s) other than those who performed the original design work, but who may be from the same organization or group.
Physical Measurement Techniques	Where appropriate control room environments exist, physical measurements can be taken in relation to key features, including lighting, thermal conditions, acoustics, etc. These measurements are then compared to environment and design specifications.
Walk-Through/Talk-Through	The walk-through/talk-through technique is the most widely used observation technique. The technique consists of having potential users of the system under test "walking and talking through" (in the sense of physically showing and verbally describing) one or more of the tasks that will be done using the system when it is operational.

REFERENCES

Following is a list of references used throughout this document.

1. APP-GW-J9Y-001, Rev. 0 (WNA-PS-00016-GEN, Rev. 5), "Standard Acronyms and Definitions," Westinghouse Electric Company LLC. (Proprietary)

2. APP-OCS-GBH-001, Rev. 1, "AP1000 Human Factors Engineering Program Plan," Westinghouse Electric Company LLC. (Proprietary)

3. APP-OCS-GEH-020, Rev. 2 (WCAP-15860), "Programmatic Level Description of the AP1000 Human Factors Verification and Validation Plan," Westinghouse Electric Company LLC.

4. NUREG-0711, Rev. 2, "Human Factors Engineering Program Review Model," U.S. Nuclear Regulatory Commission.

5. ISO 11064-7, First Edition, "Ergonomic Design of Control Centers, Part 7: Principles for the Evaluation of Control Centers," International Organization for Standardization.

BIBLIOGRAPHY

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

1. APP-OCS-J1-002, Rev. 2, "AP1000 Human System Interface Design Guidelines," Westinghouse Electric Company LLC. (Proprietary)

2. APP-GW-GRP-001, Rev. 1, "AP1000 Local Panels and Maintainability Human Factors Design Guidelines," Westinghouse Electric Company LLC. (Proprietary)

3. APP-OCS-GEH-120, Rev. 0, "AP1000 Human Factors Engineering Design Verification Plan," Westinghouse Electric Company LLC. (Proprietary)

4. APP-OCS-GEH-220, Rev. 0, "AP1000 Human Factors Engineering Task Support Verification Plan," Westinghouse Electric Company LLC. (Proprietary)

5. APP-OCS-GEH-320, Rev. 2, "AP1000 Human Factors Engineering Integrated System Validation Plan," Westinghouse Electric Company LLC. (Proprietary)

6. APP-OCS-GEH-420, Rev. B, "AP1000 Human Factors Engineering Discrepancy Resolution Process," Westinghouse Electric Company LLC. (Proprietary)

7. APP-GW-GL-011, Rev. 0, "AP1000 Identification of Critical Human Actions and Risk Important Tasks," Westinghouse Electric Company LLC.

8. APP-OCS-GLR-001, Rev. 0, "AP1000 Post-Accident Risk-Important Human Actions Summary Report," Westinghouse Electric Company LLC. (Proprietary)

9. NUREG-0700, Rev. 2, "Human-System Interface Design Review Guidelines," U.S. Nuclear Regulatory Commission.

10. WEC 3.3.1, Rev. 4.2, "Design Reviews," Westinghouse Electric Company LLC, effective February 18, 2013.

11. WEC 6.1, Rev. 4.1, "Document Control," Westinghouse Electric Company LLC, effective February 18, 2013.

12. NSNP 3.3.3, Rev. 4, "Design Verification by Independent Review or Alternate Calculations," Westinghouse Electric Company LLC, effective March 21, 2011.

13. APP-GW-GJP-100, Rev. 0, "Writer's Guideline for Operating Procedures," Westinghouse Electric Company LLC. (Proprietary)

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SECTION 1
INTRODUCTION

1.1 OVERVIEW

1.1.1 Purpose

The purpose of this document is to define the Human Factors Engineering (HFE) design verification plan at plant startup for the AP1000® plant. This document is part of the AP1000 HFE verification and validation (V&V) assessments.

The function of the HFE V&V assessments is to demonstrate that the AP1000 design attains a high standard of human factors adequacy and that it conforms to the human factors principles and guidance as specified in APP-OCS-GBH-001, "AP1000 Human Factors Engineering Program Plan" (Reference 2); APP-OCS-GEH-020 (WCAP-15860), "Programmatic Level Description of the AP1000 Human Factors Verification and Validation Plan" (Reference 3); NUREG-0711, "Human Factors Engineering Program Review Model" (Reference 4); and ISO 11064-7, "Ergonomic Design of Control Centers, Part 7: Principles for the Evaluation of Control Centers" (Reference 5).

1.1.2 Prerequisite

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1.1.3 Process Strategy

Formal HFE V&V assessments are an integral part of the overall HFE design process. These assessments include the following implementation plans and results reports as defined in the HFE Program Plan (Reference 2):

- APP-OCS-GEH-120, "AP1000 Human Factors Engineering Design Verification Plan" (Bibliog 3)
- APP-OCS-GER-120, "AP1000 Human Factors Engineering Design Verification Report" [LATER]
- APP-OCS-GEH-220, "AP1000 Human Factors Engineering Task Support Verification Plan" (Bibliog 4)
- APP-OCS-GER-220, "AP1000 Human Factors Engineering Task Support Verification Report" [LATER]
- APP-OCS-GEH-320, "AP1000 Human Factors Engineering Integrated System Validation Plan" (Bibliog 5)

- APP-OCS-GER-320, "AP1000 Human Factors Engineering Integrated System Validation Report" [LATER]
- APP-OCS-GEH-420, "AP1000 Human Factors Engineering Discrepancy Resolution Process" (Bibliog 6)
- APP-OCS-GER-420, "AP1000 Human Factors Engineering Resolution Verification Report" [LATER]
- APP-OCS-GER-520, "AP1000 Plant Startup Human Factors Engineering Design Verification Report" [LATER].

These HFE V&V assessments are a check of the adequacy of the Human System Interface (HSI) resources and Operation and Control Centers Systems (OCS). [

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1.2 SCOPE

1.2.1 Applicability

This document is applicable to the AP1000 HSI resources and OCS as identified in subsection 1.2.2 of the document.

1.2.2 List of Design Features Requiring Verification

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1. HFE aspects of the design that could not be fully evaluated in HFE design verification or task support verification. [

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2. The as-built in the plant HSIs, procedures, and training as follows:

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3. All HFE-related issues (including human engineering discrepancies [HEDs]) documented in the Human Factors Tracking System will be verified to ensure they are adequately addressed or resolved.

4. HFE aspects of local actions in risk-important tasks, [

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1.2.3 Limitation of Scope

The Emergency Operations Facility is an offsite facility, which is not included as part of the HFE design verification at plant startup.

1.3 OBJECTIVE

The overall objective of the HFE V&V is to ensure that the AP1000 OCS/HSI design attains a high standard of human factors adequacy and thereby contributes to the safety, operability and maintainability of the plant.

The objectives of the plant startup HFE design verification are to:

- Confirm aspects of the OCS/HSI design features that could not be evaluated in other HFE V&V activities.
- Confirm that the as-built in the plant HSIs, procedures, and training conform to the design that resulted from the HFE program.
- Confirm that all HFE-related issues (including HEDs) documented in the Human Factors Tracking System are verified as adequately addressed or resolved.
- Confirm the HFE adequacy for risk-important human actions in local plant, including the ability for the tasks to be completed within the time windows according to the Probabilistic Risk Assessment (PRA).

(Last Page of Section 1)

SECTION 2
VERIFICATION PROCESS

In general, 1) the specific design features (e.g., control room lighting and noise) are evaluated against HF guidelines (i.e., APP-OCS-J1-002, "AP1000 Human System Interface Design Guidelines" (Bibliog 1), and APP-GW-GRP-001, "AP1000 Local Panels and Maintainability Human Factors Design Guidelines" (Bibliog 2)) by an independent verifier; 2) the as-built in the plant HSI resources are evaluated against the design that resulted from the HFE program by an independent verifier; and 3) all HFE-related issues (including HEDs) documented in the HFE issue tracking system are evaluated by an independent verifier to confirm they have been adequately addressed or resolved.

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The results of the Plant Startup HFE Design Verification will be formally documented in the associated report. [

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(Last Page of Section 2)

SECTION 3
METHODOLOGY AND MEASUREMENTS

3.1 PERSONNEL REQUIREMENTS AND TECHNIQUES

The Human Factors Manager is responsible for the plant startup HFE design verification activity, including the identification of Human Factors (HF) independent verifiers. To provide an independent and unbiased review, the plant startup HFE design verification process is performed by the designated HF independent verifiers. The independent verification will be conducted in accordance with the appropriate quality assurance policies and procedures. [

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The independent verifiers will document the results of the verification in APP-OCS-GER-520, "AP1000 Plant Startup HFE Design Verification Report."

3.2 DELIVERABLES

The deliverables are defined in Section 5.9, "Verification and Validation" of Reference 2.

The results of the plant startup HFE design verification assessment are documented in APP-OCS-GER-520, "AP1000 Plant Startup HFE Design Verification Report." The purpose of this report is to document the results of the plant startup HFE design verification process. [

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(Last Page of Section 3)