

Attachment 6 to Oconee Unit 1 Seismic Walkdown Report

 <b>Stone &amp; Webster, Inc.</b> <b>TECHNICAL REPORT</b>	JO No.:	1457690202
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	Location:	South Carolina, USA

**NTTF 2.3 SEISMIC PEER REVIEW REPORT**  
**OCONEE NUCLEAR STATION UNITS 1, 2 AND 3**

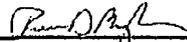
Prepared for:

Duke Energy Carolinas, LLC

Prepared by: Stone & Webster, Inc. and ARES Corporation

November 16, 2012

QA CATEGORY III


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 Peer Reviewer: Paul D. Baughman, P.E.  
 ARES Corporation

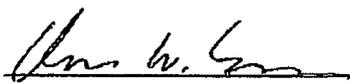
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 Peer Reviewer: George Bushnell, P.E.  
 Shaw Power

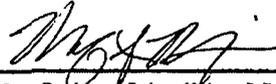
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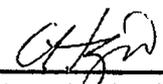
11/16/2012  
 Date


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 Duke Energy

11/16/2012  
 Date


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11/16/2012  
 Date

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Report No. 1457690202-R-M-00004, Rev. 0  
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**Acronyms**

ARES	ARES Corporation
AWC	Area Walk-By Checklist
CAP	Corrective Action Program
EPRI	Electric Power Research Institute
IPEEE	Individual Plant Examination of External Events
NEI	Nuclear Energy Institute
NRC	U.S. Nuclear Regulatory Commission
NTTF	Near-Term Task Force
ONS	Oconee Nuclear Station
PIP	Problem Investigation Process
SCE	Seismic Capability Engineer
SQUG	Seismic Qualification Utility Group
SSC	Structure, System and Component
SWC	Seismic Walkdown Checklist
SWE	Seismic Walkdown Engineer
SWEL	Seismic Walkdown Equipment List



## 1.0 INTRODUCTION

Electric Power Research Institute (EPRI) Report 1025286, *Seismic Walkdown Guidance for Resolution of Fukushima Near-Term Task Force Recommendation 2.3: Seismic*, was issued in June 2012. This document provides guidance and procedures to perform seismic walkdowns as required by the U.S. Nuclear Regulatory Commission's (NRC's) 50.54(f) letter regarding Near-Term Task Force (NTTF) Recommendation 2.3: Seismic. The EPRI guidance covers selection of personnel; selection of a sample of structures, systems, and components (SSCs) that represent diversity of component types and ensures inclusion of components from critical systems/functions; conduct of the walkdowns; evaluation of potentially adverse conditions against the plant seismic licensing basis; peer review; Individual Plant Examination of External Events (IPEEE) vulnerabilities; and reporting requirements. It was intended that all U.S. nuclear power plants utilize this guidance document in meeting the requirements of the NRC 50.54(f) letter.

Duke Energy (Duke) contracted with the Shaw Group (Shaw) / ARES Corporation (ARES) Team to perform the NTTF 2.3 peer review at the Oconee Nuclear Station (ONS). This report documents that peer review.

## 2.0 SCOPE

The scope of this effort was to perform the NTTF 2.3 Seismic Peer Review at ONS, in accordance with the guidelines in Section 6, *Peer Review*, of EPRI 1025286. The peer review is to be documented in a submittal report as discussed in Section 8, *Submittal Report*, of EPRI 1025286. It is intended that the information contained herein will be utilized by Duke as part of its overall NTTF 2.3 submittal report to be delivered to the NRC in November 2012.

Per Section 6 of EPRI 1025286, the peer review should cover the following:

- Review the selection of the SSCs included on the Seismic Walkdown Equipment List (SWEL).
- Review a sample of the checklists prepared for the seismic walkdowns and area walk-bys.
- Review the licensing basis evaluations.
- Review the decisions for entering the potentially adverse conditions in the Corrective Action Program (CAP) process.
- Review the submittal report.
- Summarize the results of the peer review process.

## 3.0 METHODOLOGY

The Shaw/ARES methodology conforms to the guidance in Section 6 of EPRI 1025286. The Peer Review Team consisted of three individuals, all of whom have seismic engineering experience as it

applies to nuclear power plants. These individuals participated in the peer review of each of the activities.

The peer review process for the SWEL development and the seismic walkdowns consisted of the following:

- Reviewing the activity guidance in EPRI 1025286, the NEI Q&A bulletins, the NEI first-mover reports, and NRC Temporary Instruction 2515/188.
- Conducting an in-process review at the plant site, including interviews with the personnel performing the activity and reviewing in-process documentation.
- Performing an in-plant surveillance (for the walkdown activity) of a seismic walkdown and an area walk-by.
- Providing in-process observations and comments to the personnel performing the activities.
- Conducting a final review of a sample of the completed documentation.

The peer review process for the licensing basis evaluations and the decisions for entering potentially adverse conditions into the CAP consisted of reviewing the overall review process and the licensing basis reviews. The peer review process for the submittal report consisted of reviewing the draft submittal prepared by Oconee Design Engineering for licensing review.

#### 4.0 PERSONNEL

The Peer Review Team consisted of the following individuals:

- **Paul Baughman, P.E.**, ARES Corporation, Team Leader. Mr. Baughman is a licensed structural engineer with over 40 years of experience in seismic engineering for nuclear power stations. Mr. Baughman is a subject matter expert and trainer for the Seismic Qualification Utility Group (SQUG). Mr. Baughman has performed seismic assessment activities for ONS and is familiar with the ONS seismic licensing basis. Mr. Baughman has performed many seismic margin assessments and seismic probabilistic risk assessments, and is familiar with systems modeling and development of safe shutdown equipment lists.
- **George Bushnell, P.E.**, Shaw Power Group. Mr. Bushnell is a licensed mechanical engineer with over 40 years of experience in engineering qualification of electrical and mechanical equipment for nuclear power stations. Mr. Bushnell is a qualified SQUG Seismic Capability Engineer (SCE) and company specialist for design and qualification of ASME III components.
- **Robert Keiser, P.E.**, Duke Energy. Mr. Keiser is a licensed professional engineer in North and South Carolina with over 20 years of experience in the seismic qualification of electrical equipment for Duke Energy's McGuire, Catawba, and Oconee Nuclear Stations. Mr. Keiser

received training as a SQUG SCE and was involved with the SQUG effort at Oconee and the IPEEE efforts at all three stations.

## 5.0 SELECTION OF THE SSCs INCLUDED ON THE SWEL

Guidance on development of the SWEL is provided in Section 3 of EPRI 1025286. Two SWELs are prepared: SWEL 1, a sample of items to safely shut down the reactor and maintain containment integrity; and SWEL 2, spent fuel pool related items. SWEL 1 is expected to contain 90-120 items for each unit. The ONS SWEL 1 contains 276 unit-specific items (92 in each unit) and 39 common items, for a total of 105 items per unit. This satisfies the expectation from the EPRI guidance.

The development of the ONS SWEL is documented in an Oconee calculation package, OSC-10680, *NTTF 2.3 Seismic Walkdown Equipment Lists (SWEL-1 & SWEL-2)*, Revision 0. The calculation discusses the development of the seismic walkdown equipment list (SWEL 1) and the seismic walkdown spent fuel pool equipment list (SWEL 2). An in-process draft of the calculation was provided to the peer reviewers at the ONS site visit September 11-13, 2012. The final calculation and SWEL lists for each unit were provided to the peer reviewers on October 18, 2012.

The SWEL was originated by Mr. Russell Childs, Senior Engineer, ONS Design Engineering, and checked by Mr. Paul Mabry, Senior Engineer, ONS Design Engineering. Messrs. Childs and Mabry have extensive knowledge of ONS design, licensing and operation. Mr. Childs was responsible for the IPEEE and USI A-46 programs at ONS. Mr. Mabry was a Senior Reactor Operator. Mr. Tommy Loflin reviewed the SWEL for operations. Mr. Loflin is qualified as a Senior Reactor Operator at ONS, is a certified SRO Operations instructor, and is an AP/EOP Procedure Writer. Mr. Loflin's review of the SWEL has been documented in an email attached to the calculation (Attachment 9).

ONS started with the USI A-46/IPEEE Safe Shutdown Equipment List as the base list. This list is documented ONS Calculations OSC-5710 and KC-0091. It contains 2264 components from Units 1, 2, 3 and common, and is included as Attachment 1 of OSC-10680. Using this list is intended to satisfy Screens 1, 2 and 3 of the EPRI guidance document.

SWEL 1 was developed by selecting a sample of equipment from the base list. SWEL 2 was developed separately as described in Calculation OSC-10680. The calculation includes separate attachments for ONS Units 1, 2, 3 and common SWEL 1 and SWEL 2 lists.

The SWEL 1 lists comply with the four screens in the EPRI guidance:

- Screen 1: Seismic Category I. Many of the equipment items in the USI A-46/IPEEE Safe Shutdown Equipment List were not classified as Seismic Category I. However, all of the items were seismically verified with the USI A-46 criteria, and the USI A-46 criteria are considered the seismic licensing basis. Therefore, this screen is satisfied because all of the equipment has a seismic licensing basis.
- Screen 2: Equipment or Systems Only. The IPEEE lists contain equipment only, so structures, penetrations, and piping systems have already been taken out of the sample.

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- Screen 3: Support for the Five Safety Functions. The IPEEE equipment list contains equipment for all of the safety functions. The five safety functions are specified for each item. Attachments 2A, 2B, 2C, and 2D show the unit-specific and common SWEL 1 lists. The safety functions supported by each item are specified. These tables show that all safety functions are represented (a significant number of SWEL items support all five functions).
- Screen 4, Sample Considerations, involves the following:
  - Variety of Types of Systems. The system is specified for each item of the SWEL 1. Attachments 3A, 3B, 3C, and 3D summarize the number of items in each system in each unit and common. The number of systems represented is 26, 23, 24 and 14 for Units 1, 2, 3 and common, respectively. The SWEL 1 meets the requirement for a variety of types of systems.
  - Major New and Replacement Equipment. The SWEL preparers related items on the SWEL to Engineering Changes. Attachments 6A, 6B, 6C and 6D list the SWEL 1 items that have had significant modification (new and replacement items for Units 1, 2, 3 and common). For each modified item, the modification package is referenced. Of the 315 items, 63 have had modifications (17 in Unit 1, 17 in Unit 2, 22 in Unit 3 and 7 common). This is 20% of the items in each unit. Other items also have been modified (not as part of major station modifications), so the actual sample size of modified items is probably larger. It is concluded that the sample contains a sufficient number of modified components.
  - Variety of Types of Equipment. The number of items in each equipment category for Units 1, 2, 3 and common are listed in Attachments 4A, 4B, 4C, and 4D, respectively. All categories are represented, except chillers (11), air compressors (12), motor-generators (13), and engine-generators (17). It is stated that these equipment categories were not in the USI A-46/IPEEE equipment list. It is also noted that the emergency power system is primarily fed from the Keowee Hydro Plant, not the diesel-generator in the Safe Shutdown Facility, which is different than most nuclear plants. Except for the lack of an engine-generator, the distribution among the equipment classes is similar to what one would expect the distribution in the IPEEE equipment list would be. Engine-generators themselves would not be expected to have had anchorage modifications, and are considered seismically rugged (diesel-generator fragilities are governed by peripheral equipment). It is concluded the distribution is good.
  - Variety of Environments. Attachments 5A, 5B, 5C, and 5D contain tables summarizing the number of items in each building and elevation, in the units and common. The items are distributed fairly evenly throughout the plant, rather than being clustered in just a few areas. OSC-10680 discusses the environments corresponding to the different areas. Thirty-six items are inside containment. It is clear that all areas with safety-related equipment are represented. Therefore, it is concluded that all environments are represented.

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- Equipment Enhanced from the IPEEE. Attachments 7A, 7B, 7C, and 7D list the equipment on SWEL 1 that were associated with IPEEE enhancements in Units 1, 2, 3 and common, respectively. There are a total of 40 items. In discussion with the SWEL preparers, it was stated that there were a total of 152 enhancements. However, it is not clear how many of these enhancements were for USI A-46 vs. IPEEE. EPRI 1025286 does not require that all IPEEE enhancements be on the SWEL, only that some are on the SWEL. This requirement is satisfied.
- Consideration of Contribution to Risk. Initially, risk insights were included by the SWEL preparers specifying items they knew to be risk-significant based on their long experience with risk evaluations at the plant. Subsequently, the Probabilistic Risk Assessment group has done a risk categorization of all plant items (and events) using the seismic Probabilistic Risk Assessment model and the IPEEE seismic hazard curves. A table of items having a contribution to risk of 1% or more, in order of risk significance, was provided in an email that is Attachment 8 of the SWEL calculation. Of 40 items with probability greater than 1% listed, 11 are not applicable (e.g., non-equipment items), 18 are included on the SWEL 1, and 11 are not included. It is noted that four of the items on the list are surrogates (SSF, Keowee, Auxiliary Building, and Turbine Building), which contain many equipment items. All of these are represented on the SWEL 1. Thus, the proportion of items that are significant contributors to risk is higher than 18 of 29. It is concluded that risk insights were properly considered.

Calculation OSC-10680 contains a section on the development of the SWEL 2. The section was originated by Mr. Paul Mabry and checked by Jim Weir. Both are Senior Engineers in ONS Design Engineering. Mr. Mabry has systems and operations background (former Senior Reactor Operator), and Jim Weir is a systems engineer. There are two base lists developed for each unit: one for spent fuel cooling system components (Attachments 10A, 10B, and 10C), the other for components that could cause rapid drain down (12A, 12B, and 12C). The rationale for identifying the components for each list is provided. There were 10 spent fuel cooling components identified for each unit, of which six were put on the SWEL 2 in Attachments 11A, 11B and 11C. The SWEL preparers stated that the four were not included because they are in high radiation areas and are similar to the six components included. No rapid drain-down components needed to be added (the reason why each is not required is given in Attachment 12). It is concluded that the SWEL 2 conforms to the EPRI guidance.

A preliminary peer review checklist was developed with specific comments to be addressed. This checklist is included as Appendix A to this report. The checklist and comments were discussed with Mr. Russell Childs at the site exit meeting. The final calculation was reviewed to see if the comments were resolved. All of the comments are considered resolved. The final checklist is included as Appendix B of this report.

### 6.0 SEISMIC WALKDOWNS AND AREA WALK-BYS

The equipment items and areas to be walked down were specified in the SWEL provided by Duke (OSC-10680). The walkdowns consist of two parts: equipment-specific seismic walkdowns and area walk-bys. The specific instructions for each part are delineated in EPRI 1025286.



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The seismic walkdown results are documented in Shaw / ARES Reports 1457690202-R-M-00001, -00002, and -00003 for Units 1, 2 and 3, respectively. For purposes of these reports, common items have been included in each unit. Thus, the reported number of items for each unit is different than in the SWEL calculation because the SWEL calculation counts the common items separately.

Seismic walkdowns of specific items on the SWEL (SWEL 1 plus SWEL 2) focused on identifying adverse anchorage conditions, adverse seismic interactions, and other adverse seismic conditions that could challenge the seismic adequacy of a SWEL item.

Anchorage was examined for degraded, nonconforming or unanalyzed conditions. This included visual inspection of the anchorage and verification of anchorage condition. The visual inspections looked for bent, broken, missing or loose hardware; corrosion that is more than mild surface oxidation; visible cracks in the concrete near anchors; and other potentially adverse seismic conditions. This did not apply to line-mounted items.

Anchorage configuration was verified to be consistent with the existing plant documentation for a portion of the equipment with anchorage. The anchorage configuration verification must be done for at least 50% of the non-line-mounted SWEL items. The percentages for ONS were 51%, 50%, and 54% for Units 1, 2 and 3, respectively. This meets the EPRI 1025286 requirement.

The area adjacent to and surrounding the SWEL item was inspected for nearby SSCs that could be seismic interaction hazards due to proximity, failure, and falling, or insufficient flexibility of attached lines and cables. Detailed guidance on seismic spatial interactions is given in Appendix D of EPRI 1025286.

The SWEL item was also examined to see if there were any other potentially adverse seismic conditions besides anchorage and seismic interaction. These could include other degraded conditions, loose or missing subcomponent fasteners, unusual large or heavy subcomponents, doors or panels not latched or fastened, or any other condition which might be seismically adverse. Where possible, cabinets and enclosures were opened for examination of internals.

Area walk-bys consisted of examining the general area surrounding the specific SWEL items for potentially adverse seismic conditions. The area examined included either the entire room enclosing the SWEL item or at least 35 feet in any direction. The examination looked for degraded anchorage conditions of equipment in the area; significantly degraded equipment; poorly supported cable/conduit raceways, HVAC ducting, or piping; and unsecured temporary equipment that could cause seismic interactions (seismic housekeeping concerns). The area walk-by included looking for potential seismic interactions from flooding, spray, or fire. These potential seismic interactions are described in Section 4 of EPRI 1025286.

The Peer Review Team reviewed the qualifications of the engineers performing the walkdowns and verified that they meet the requirements for Seismic Walkdown Engineer in EPRI 1025286. The Peer Review Team also conducted interviews with the walkdown teams to confirm that they had a good understanding of the guidance in EPRI 1025286.

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The individuals interviewed were:

- Charles Conselman – ARES, Walkdown Team Lead
- James White – ARES, Walkdown Team Lead
- John North - ARES, Walkdown Team Lead
- Michael Donnelly – ARES, Walkdown Team Member
- Anthony Fazio – Shaw, Walkdown Team Member
- John Spizuoco – Shaw, Walkdown Team Lead
- Arthur Richert – Shaw, Walkdown Team Member (Not at site during peer review visit.)

Interviews of walkdown personnel were jointly performed by the Duke, ARES, and Shaw members of the Peer Review Team. Personnel were interviewed as teams (two at a time) to assess their working synergy as well as individual capabilities/knowledge. Messrs. Conselman, North, Fazio, Spizuoco, and Richert were verified to have received the EPRI NTTF 2.3 Seismic Walkdown Training Course from an individual (Mr. Mark Eli) who had taken the EPRI course in person. Messrs. White and Donnelly had received the SQUG Walkdown Screening and Seismic Evaluation Training Course. Discussion provided positive indication that the walkdown personnel had adequate experience and training to perform walkdown and walk-by activities in compliance with the EPRI Seismic Walkdown Guidance. As teams, they displayed knowledge of the primary objectives of the walkdowns, appropriate levels of dialog between themselves to reach common agreement without excessive discussion, and adequate objectivity in identification of significant discrepancies between as-designed and as-found conditions. Team member qualifications are included in the unit-specific walkdown reports.

In-process review of the walkdown documentation packages verified sufficient information included to allow ready identification and location of in-situ SWEL components. Appropriate vendor drawings, anchorage details, calculations and/or license definitions or IPEEE documentation were included for the 50% population of floor-mounted components specified for detailed inspection of anchorage provisions. A few inconsistencies were noted between document identifiers in the checklist entries and the package contents; however, these were easily resolved.

The Peer Review Team reviewed a number of in-process Area Walkdown Checklists (AWCs) and Seismic Walkdown Checklists (SWCs). The reviews are summarized in Appendix C. At the time of Peer Review Team site visit, insufficient in-process checklists were completed to a stage that would allow a significant percentage of the SWEL to be assessed. Therefore, initial Peer Review activity related to walkdown implementation concentrated on personal interviews and discussions with the walkdown teams, individually and as a group. Interaction with individual teams relied on posing hypothetical situations related to potential component configurations and assessing responses related to completion of the checklists. Group meetings, some including participation of Duke Energy personnel, addressed more generic issues such as how to deal with “non-50%” component anchorages, including obstructed views of anchorage provisions and cabinet interior conditions. Clarification was provided on



SWC questions 2, 3, 4 and 6 to address general as-found conditions without requiring design basis comparisons.

Significant discussion centered on documentation of justifications for assessing in-situ conditions as acceptable with respect to seismic interaction considerations. Clarification was provided that informed judgment of SQUG/EPRI-trained individuals does not require explicit documentation, but that ambiguous or unusual conditions would be documented through written notes and/or the use of photographs.

The Peer Review Team also performed an in-plant surveillance of the walkdown activities. This consisted of two parts: 1) independently reviewing a completed SWC and AWC, and 2) observing a walkdown team during a walkdown. The Peer Review Team first did a seismic walk-by of the Unit 1 and Unit 2 Control Room (AB34 and AB35) and seismic walkdowns of the Unit 1 Control Boards 1UB1, 1UB2, and 1VB2; the Unit 1 Electrical Board 1EB7; the Unit 2 Control Boards 2AB1 and 2UB1; and the Unit 2 Electrical Board 2EF6. The Peer Review Team then did a seismic walk-by of the Keowee Electrical Room (KEO03) and seismic walkdowns of the Miscellaneous Terminal Cabinets 1MTC1 and 2MTC1, the Battery Banks KBI and DCSF, and the DC Distribution Center 2DA.

The Peer Review Team also reviewed the following entries into the ONS CAP via PIP: O-12-10466, O-12-10223, O-12-10212, O-12-10216, O-12-10214, O-12-10222, and O-12-10221. The PIPs were determined to accurately reflect the walkdown team findings.

The Peer Review Team concluded that the walkdowns were being conducted in accordance with the EPRI guidance.

The Peer Review Team has reviewed the final walkdown reports (Shaw / ARES Technical Reports 1457690202-R-M-00001, 1457690202-R-M-00002 and 1457690202-R-M-00003). The reports describe the walkdowns and summarize the results. The reports contain all of the information required by the EPRI guidance.

After completion of the Walkdowns, the Peer Review Team reviewed a sample of the final SWCs and AWCs. The review is summarized in Appendix D. The table in Appendix D lists the 75 SWCs and AWCs reviewed. This is more than the 10% sample that the EPRI guidance requires.

## 7.0 LICENSING BASIS REVIEWS

All potentially adverse conditions require a licensing basis review in accordance with the EPRI guidance. For ONS, the licensing basis reviews were performed by Duke Design Engineering personnel. Mr. Russell Childs performed most of the licensing basis reviews. He was assisted by Messrs. Ray McCoy and Robert Hester on some of the reviews. These individuals meet the personnel requirements in EPRI 1025286.

Each potentially adverse condition identified by the walkdown team was entered into the CAP via PIP. Several items may be entered into a single PIP, but they are listed separately. Each PIP has a unique identification number. This enables the problem to be tracked to closure. The Duke Licensing Basis

Reviewer stated that the licensing basis reviews were documented in the PIPs associated with the potentially adverse conditions. No conditions were found to violate the ONS seismic licensing basis.

As noted in Section 6 above, the PIPs associated with the potentially adverse seismic conditions are listed in Appendix B of the walkdown reports. The peer reviewers checked that all of the potentially adverse seismic conditions listed in Appendix B of the walkdown reports had licensing basis reviews documented in the referenced PIPs. The Peer Review Team reviewed the licensing basis evaluations for all of the potentially adverse seismic conditions. The peer reviewers concurred with the evaluations and conclusions.

The Peer Review Team concludes that the licensing basis reviews were conducted in accordance with the EPRI guidance.

### **8.0 DECISIONS ON ENTERING POTENTIALLY ADVERSE SEISMIC CONDITIONS INTO THE CAP PROCESS**

All of the potentially adverse seismic conditions identified by the seismic walkdown teams were entered in the CAP for further evaluation. The Peer Review Team review of the seismic walkdowns determined that the identifications of adverse seismic conditions were conservatively made. Thus, the decision to enter all of them into the CAP was likewise conservative.

The licensing basis reviews determined none of the potentially adverse seismic conditions violated the ONS licensing basis. Therefore, it was not necessary to perform any extent of condition evaluations.

There were a number of enhancements identified as a result of the walkdowns, which were determined to improve the seismic condition of the plant. Work orders were assigned for implementation of the enhancements.

The Peer Review Team concludes that the decisions on entering potentially adverse conditions in the CAP process were in accordance with the EPRI guidance.

### **9.0 SUBMITTAL REPORT**

The Peer Review Team reviewed a draft of the submittal report for ONS Unit 1 provided by Mr. Russell Childs on November 1, 2012. The report contained the required sections and discussions. Several comments on the submittal were provided to Mr. Childs in a preliminary peer review report on November 6, 2012. An updated submittal draft was provided to the Peer Review Team on November 7, 2012. The comments on the previous draft were resolved to the satisfaction of the peer reviewers.

The Peer Review Team concludes that the submittal report is in accordance with the EPRI guidance.

### **10.0 CONCLUSIONS**

The conclusion of the peer review is that the ONS NTTF 2.3 seismic walkdown effort has been conducted in accordance with the guidance in EPRI 1025286. Comments made during the in-process

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review of the SWEL development and the walkdowns have been addressed satisfactorily. Comments on the final walkdown reports, the licensing basis reviews, and the NRC submittal have also been resolved.

### 11.0 REFERENCES

Duke Energy, *ONS IPEEE Seismic Submittal Report*, December 1995.

Duke Energy, *ONS Supplemental IPEEE Submittal Report*, December 1997.

Duke Energy Calculation OSC-10680, *NTTF 2.3 Seismic Walkdown Equipment Lists (SWEL-1 & SWEL-2)*, Revision 0, October 18, 2012 [not final].

Duke Energy, *Fukushima Near-Term Task Force (NTTF) Recommendation 2.3: NRC Submittal Report for Seismic Walkdowns, Oconee Unit 1*, DRAFT.

Duke Energy, *Fukushima Near-Term Task Force (NTTF) Recommendation 2.3: NRC Submittal Report for Seismic Walkdowns, Oconee Unit 2*, DRAFT.

Duke Energy, *Fukushima Near-Term Task Force (NTTF) Recommendation 2.3: NRC Submittal Report for Seismic Walkdowns, Oconee Unit 3*, DRAFT.

EPRI 1025286, *Seismic Walkdown Guidance for Resolution of Fukushima Near-Term Task Force Recommendation 2.3: Seismic*, June 2012, Electric Power Research Institute, Palo Alto, CA.

Letter, E. Leeds and M. Johnson (NRC) to All Power Reactor Licensees et al., "Request for Information Pursuant to Title 10 of the Code of Federal Regulations 50.54(f) Regarding Recommendations 2.1, 2.3, and 9.3, of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident," Enclosure 2.3, "Recommendation 2.3: Seismic," dated March 12, 2012.

Shaw Technical Report 1457690202-R-M-00001, *Seismic Walkdown Report for Duke Energy's Oconee Nuclear Station Unit 1*, Revision 1, November 12, 2012.

Shaw Technical Report 1457690202-R-M-00002, *Seismic Walkdown Report for Duke Energy's Oconee Nuclear Station Unit 2*, Revision 1, November 12, 2012.

Shaw Technical Report 1457690202-R-M-00003, *Seismic Walkdown Report for Duke Energy's Oconee Nuclear Station Unit 3*, Revision 2, November 14, 2012.



Attachment 6 to Oconee Unit 1 Seismic Walkdown Report

NTTF 2.3 SEISMIC PEER REVIEW REPORT  
OCONEE NUCLEAR STATION UNITS 1, 2 AND 3

Report No. 1457690202-R-M-00004, Rev. 0  
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**APPENDIX A**

**PEER REVIEW CHECKLIST FOR IN-PROCESS SWEL**



**Peer Review Checklist for SWEL**

**Instructions for Completing Checklist**

This peer review checklist may be used to document the review of the Seismic Walkdown Equipment List (SWEL) in accordance with Section 6: Peer Review. The space below each question in this checklist should be used to describe any findings identified during the peer review process and how the SWEL may have changed to address those findings. Additional space is provided at the end of this checklist for documenting other comments.

1. Were the five safety functions adequately represented in the SWEL 1 selection? Y  N

*Oconee used the equipment list from A-46 and IPEEE as the starting point (base list). It is stated to cover first three screens, so no further work is needed on these screens. This complies with the EPRI guidance document.*

*Comment: It is not shown how the final sample has adequate representation of the five functions. It would be good to identify which systems are front line and support systems for each function. Then a report could be generated showing how many of the components in the SWEL are for a given function. Many components will be counted multiple times because they contribute to more than one function (especially support systems, which may contribute to all of the functions.) This should also be done by unit to show adequate representation for each unit (common components would be in the count for each unit).*

2. Does SWEL 1 include an appropriate representation of items having the following sample selection attributes:

- a. Various types of systems? Y  N

*OSC-10680 Attachment 1 to the calculation is a table is generated giving the number of components in each system. There are 43 systems represented. The system with the most components is the EL (electrical) system.*

*Comment: Should have a table for each unit. Common components can be counted for each unit.*

- b. Major new and replacement equipment? Y  N

*OSC-10680 Attachment 2 is a table with a list of components and the mods associated with them. About 50 components. This shows a good representation.*

*Comment: Should have a list for each unit. (Note: Equipment ID shows the unit, and all units are represented.*

*Comment: Should have more explanation of the how they came up with this list. Did they search for mods on each item on SWEL, or get list of all mods and select items from there? There is nothing wrong with the list, there just needs to be an explanation of the process.*

- c. Various types of equipment? Y  N

*OSC-10680 Attachment 3 is a table with the number of equipment items in each category. The distribution is good.*

*Comment: Should have one for each unit.*

Attachment 6 to Oconee Unit 1 Seismic Walkdown Report

**Peer Review Checklist for SWEL**

d. Various environments? Y  N

*Calculation states there are a variety of equipment environments.*

*Comment: Need to have some detail to show this is true. Can relate the locations to environments so that the counts for the different environments mentioned in the EPRI guidance is given. This does not have to be detailed; rather, a given location could be characterized with certain environments, even if those environments vary somewhat within the location.*

*Comment: Need number inside containment.*

*Comment: Need to break this out by unit.*

e. Equipment enhanced based on the findings of the IPEEE (or equivalent) program? Y  N

*Attachment 4 is a table of the IPEEE enhancements and which are included in SWEL-1.*

*Comment: Need text in calculation saying where this list came from. Need to show it by unit. Need to justify why the one enhancement not on SWEL-1 is not included (Note: it is not associated with a specific component; however, it would be included in the Area Walk-By. It could be indicated as included in SWEL-1 by way of the AWBs.)*

f. Were risk insights considered in the development of SWEL 1? Y  N

*The EPRI guidance states: "The development of SWEL 1 should consider the importance of the contribution to risk for the SSCs." There is no discussion of this in the calculation.*

*Comment: Should have discussion of this in the calculation. Show that a sufficient number of risk significant items are included in SWEL-1. Should be able to derive this from the IPEEE report.*

3. For SWEL 2:

a. Were spent fuel pool related items considered, and if applicable included in SWEL 2? Y  N

*There is a detailed discussion of the development of SWEL-2 in the calculation. The material presented seems to be comprehensive.*

*Comment: Need to specify who developed it, what their backgrounds are, and have them sign off or otherwise document their participation. The material presented seems to be comprehensive.*

*Comment: Will need to state when Unit 2 refueling cavity manual drain valves will be done.*

b. Was an appropriate justification documented for spent fuel pool related items not included in SWEL 2? Y  N

*Section contains a discussion for each item not included in SWEL 2.*



**Peer Review Checklist for SWEL**

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4. Provide any other comments related to the peer review of the SWELs.

1. *A section needs to be added that describes the participation of operations in development of SWEL 1 and SWEL 2*
2. *Each person that contributed needs to be identified and their area of expertise described. This is in addition to the originator and checker of the calculation. Need to cover knowledge of IPEEE program.*

---

5. Have all peer review comments been adequately addressed in the final SWEL?

---

Y  N

Peer Reviewer #1: \_\_\_\_\_ Date: \_\_\_\_\_

Peer Reviewer #2: \_\_\_\_\_ Date: \_\_\_\_\_

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**APPENDIX B**

**PEER REVIEW CHECKLIST FOR FINAL SWEL**



**Peer Review Checklist for SWEL**

**Instructions for Completing Checklist**

This peer review checklist may be used to document the review of the Seismic Walkdown Equipment List (SWEL) in accordance with Section 6: Peer Review. The space below each question in this checklist should be used to describe any findings identified during the peer review process and how the SWEL may have changed to address those findings. Additional space is provided at the end of this checklist for documenting other comments.

1. Were the five safety functions adequately represented in the SWEL 1 selection? Y  N

*Oconee used the equipment list from A-46 and IPEEE as the starting point (base list). It is stated to cover the first three screens, so no further work is needed on these screens. This complies with the EPRI guidance document.*

*Comment: It is not shown how the final sample has adequate representation of the five functions. It would be good to identify which systems are front line and support systems for each function. Then a report could be generated showing how many of the components in the SWEL are for a given function. Many components will be counted multiple times because they contribute to more than one function (especially support systems, which may contribute to all of the functions.) This should also be done by unit to show adequate representation for each unit (common components would be in the count for each unit).*

*The final SWEL calculation has this information (Attachment 2). It shows that the five safety functions are adequately represented.*

2. Does SWEL 1 include an appropriate representation of items having the following sample selection attributes:

- a. Various types of systems? Y  N

*OSC-10680 Attachment 1 is a table is giving the number of components in each system. There are 43 systems represented. The system with the most components is the EL (electrical) system.*

*Comment: Should have a table for each unit. Common components can be counted for each unit.*

*The final SWEL calculation has this information in Attachment 3. Each unit is shown to include many systems.*



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**Peer Review Checklist for SWEL**

- b. Major new and replacement equipment? Y  N

*OSC-10680 Attachment 2 is a table with a list of components and the mods associated with them. About 50 components. This shows a good representation.*

*Comment: Should have a list for each unit. (Note: Equipment ID shows the unit, and all units are represented.*

*The final SWEL calculation has this information (Attachment 6). It shows that each unit has modified equipment.*

*Comment: Should have more explanation of how they came up with this list. Did they search for mods on each item on SWEL, or get list of all mods and select items from there? There is nothing wrong with the list, there just needs to be an explanation of the process.*

*The final SWEL calculation has this information.*

- c. Various types of equipment? Y  N

*OSC-10680 Attachment 3 is a table with the number of equipment items in each category. The distribution is good.*

*Comment: Should have one for each unit.*

*The final SWEL calculation has this information (Attachment 4). It shows that the equipment classes are well represented.*

- d. Various environments? Y  N

*Calculation states there are a variety of equipment environments.*

*Comment: Need to have some detail to show this is true. Can relate the locations to environments so that the counts for the different environments mentioned in the EPRI guidance is given. This does not have to be detailed; rather, a given location could be characterized with certain environments, even if those environments vary somewhat within the location.*

*The final SWEL calculation contains an explanation of the environments.*

*Comment: Need number inside containment.*

*From examination of final SWEL 1 list for each unit, there are 36 equipment items inside containment. These are distributed among all three units.*

*Comment: Need to break this out by unit.*

*The final SWEL has buildings and locations broken out by unit in Attachment 5.*

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**Peer Review Checklist for SWEL**

- e. Equipment enhanced based on the findings of the IPEEE (or equivalent) program?  Y  N  
*Attachment 4 is a table of the IPEEE enhancements and which are included in SWEL-1.*

*Comment: Need text in calculation saying where this list came from. Need to show it by unit. Need to justify why the one enhancement not on SWEL-1 is not included (Note: it is not associated with a specific component; however, it would be included in the Area Walk-By. It could be indicated as included in SWEL-1 by way of the AWBs.)*

*The final SWEL calculation has text describing this. Attachment 7 gives the IPEEE enhancements included for each unit. The Attachment shows good representation in the sample.*

- f. Were risk insights considered in the development of SWEL 1?  Y  N  
*The EPRI guidance states: "The development of SWEL 1 should include consideration of the importance of the contribution to risk for the SSCs." There is no discussion of this in the calculation.*

*Comment: Should have discussion of this in the calculation. Show that a sufficient number of risk significant items are included in SWEL-1. Should be able to derive this from the IPEEE report.*

*The final calculation includes a discussion of additional input from the General Office PRA Group regarding seismic risk ranking. Attachment 8 contains this input. It shows that many risk-significant items are included in the SWEL.*

3. For SWEL 2:

- a. Were spent fuel pool related items considered, and if applicable included in SWEL 2?  Y  N  
*There is a detailed discussion of the development of SWEL-2 in the calculation. The material presented seems to be comprehensive.*

*Comment: Need to specify who developed it, what their backgrounds are, and have them sign off or otherwise document their participation. The material presented seems to be comprehensive.*

*The final SWEL calculation has this information.*

*Comment: Will need to state when Unit 2 refueling cavity manual drain valves will be done.*

*These are no longer on the SWEL 2 list, so this comment is not relevant.*

- b. Was an appropriate justification documented for spent fuel pool related items not included in SWEL 2?  Y  N  
*Attachment 12 contains a discussion of why each component associated with rapid drain down is not on the list. However, there is no discussion why the four items in each unit spent fuel cooling base list are not included in the SWEL 2 for that unit. The SWEL 2 preparer stated by email that the four items were not included because they were in high radiation areas and were similar to the components included.*

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Sheet 4 of 4

**Peer Review Checklist for SWEL**

4. Provide any other comments related to the peer review of the SWELs.

1. A section needs to be added that describes the participation of operations in development of SWEL 1 and SWEL 2.

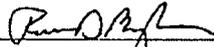
*The final SWEL calculation does not include this. By email the SWEL preparer stated the Paul Mabry is a former Senior Reactor Operator. This satisfies the requirement for operations input.*

2. Each person that contributed needs to be identified and their area of expertise described. This is in addition to the originator and checker of the calculation. Need to cover knowledge of IPEEE program.

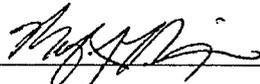
*Each person who contributed is identified. Area of expertise and knowledge of IPEEE program is not described. This has been provided by email from the SWEL preparer.*

5. Have all peer review comments been adequately addressed in the final SWEL?

Y  N

Peer Reviewer #1: Paul D. Baughman, P.E., ARES  Date: 11/16/2012

Peer Reviewer #2: George Bushnell, P.E., SHAW  Date: 11/16/2012

Peer Reviewer #2: Robert L. Keiser, P.E., Duke  Date: 11/16/2012



**APPENDIX C**

**SUMMARY OF PEER REVIEW OF IN-PROCESS SWCs AND AWCs**



Attachment 6 to Oconee Unit 1 Seismic Walkdown Report

NTTF 2.3 SEISMIC PEER REVIEW REPORT  
 OCONEE NUCLEAR STATION UNITS 1, 2 AND 3

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**Walkdown Team Members:** Team 1: Chip Conselman, Tony Fazio  
 Team 2: John North, John Spizuoco  
 Team 3: Jim White, Mike Donnelly

Summary of Peer Review of In-Process SWCs and AWCs

EDB ID	Equipment Class	50% Anchorage	Non 50% Anchorage	Line Mounted	Overall Status	Team	Comments
1ELIX1X9	02	X	-	-	U	3	Component energized; anchorage inaccessible for inspection: 11: identifies apparent condition (breakers racked-out), subsequently evaluated by W-D team to be adequate; checklist should be revised
1ELMX1XP	01	-	X	-	U	3	Anchorage inaccessible; no reason stated [closed cabinet w/ internally mounted anchorage]
1ELTF1XS3A	04	X	-	-	Y	3	5: discussion contains irrelevant detail; should state compliance of as-found condition w/ documentation
1ESVCA1ESV1	20	-	X	-	Y	3	Conclusion of adequacy not justified by review; does not identify why anchorage is inaccessible [closed cabinet w/ internally mounted anchorage]
1ELVR000A	00	-	X	-	N	3	Loose bolt noted in anchorage; PIP follow up needs verification
1ELBK1A	14	-	X	-	N	3	Same support structure as 1ELVR000A: loose anchorage bolt
AB19	-	-	-	-	-	-	Area Walkdown: 1: does not ID component loose bolt observations noted above 2: "expected" degradation should refer to "observed" (in area) 8: racked-out condition covered/resolved in component WD; requires revision to reflect this
1LVPA0006	08A	-	X	X	Y	2	In-line component;
1HPIFT007A	18	X	-	-	Y	2	HPI injection flow transmitter; refers to SEWS for configuration qualification
1LPSFT0124	18	X	-	-	Y	2	LPI circ flow transmitter; refers to SEWS (OSC-8377) for configuration qualification



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**APPENDIX D**

**SUMMARY OF PEER REVIEW OF FINALS SWCs AND AWCs**



Attachment 6 to Oconee Unit 1 Seismic Walkdown Report

NTTF 2.3 SEISMIC PEER REVIEW REPORT  
 OCOONEE NUCLEAR STATION UNITS 1, 2 AND 3

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 November 2012

**Walkdown Team Members:** **Team 1:** Chip Conselman, Tony Fazio (Art Richert, Alternate)  
**Team 2:** John North, John Spizuoco (Art Richert, Alternate)  
**Team 3:** Jim White, Mike Donnelly

**Summary of Peer Review of Final SWCs and AWCs**

EDB ID	Equipment Class	50% Anchorage	Non 50% Anchorage	Line Mounted	Overall Status	Team	Comments
AB01	-	-	-	-	Y	1	Area Walkdown (Aux Bldg Room 301) 1. Identifies four SWEL components in area 2. No additional notes/photos
1HPIFT0007A	18	X	-	-	Y	1	Anchorage detail verified against reference documents IPEEE enhancement modifications cited No adverse conditions noted; no photographs
1LPVA0006	08A	-	X	-	Y	1	No conditions noted; no photographs
1RCSV0231	08B	-	X	-	U	1	Potential seismic interaction: tubing/junction box No additional conditions noted; no photographs
1RCVA0179	07	-	-	X	Y	1	No adverse conditions noted; no photographs
1LPSFT0124	18	X	-	-	Y	1	Anchorage detail verified against reference documents (SEWS) IPEEE enhancement modifications cited No adverse conditions noted; no photographs
AB07	-	-	-	-	Y	1	Area Walkdown (Aux Bldg Room 108) 1. Identifies 3 SWEL components in area 2. No additional notes/photos
1HPVA0071	07	-	X	-	Y	1	No adverse conditions noted; no photographs
1LPIHX000A	21	X	-	-	Y	1	Anchorage detail verified against reference documents No adverse conditions noted; no photographs
1LPITE0210	19	-	-	X	Y	1	No adverse conditions noted; no photographs
AB12	-	-	-	-	-	1	Area Walkdown (Aux Bldg Room 200) 1. Identifies 1 SWEL component in area 2. No adverse conditions noted; no photographs
1LPSSV1001	08B	-	X	-	Y	1	No adverse conditions noted; no photographs
AB15	-	-	-	-	Y	1	Area Walkdown (Aux Bldg Room 208) 1. Identifies 1 SWEL component in area 2. No adverse conditions noted; no photographs
1HPIPS0357	18	X	-	-	Y	1	Anchorage detail verified against reference documents No adverse conditions noted; no photographs



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EDB ID	Equipment Class	50% Anchorage	Non 50% Anchorage	Line Mounted	Overall Status	Team	Comments
AB19	-	-	-	-	U	3	Area Walkdown (Aux Bldg Room 310) 1. Identifies 11 SWEL components in area 2. Non-standard cable support hardware noted 3. Masonry walls verified as seismically qualified 4. Explanatory notes used to justify adequacy of details
1ELB11KX	16	X	-	-	Y	3	Anchorage detail verified against reference documents Explanatory notes used to justify adequacy of details No adverse conditions noted; no photographs
1ELBK1A	14	-	X	-	N	3	Loose anchor bolt cited; photo provided A46/IPEEE modifications noted, identified
1ELDI1ADB	20	-	X	-	Y	3	Block wall verified seismically qualified; reference identified A46/IPEEE modifications noted, identified No adverse conditions noted; no photographs
1ELMX1XP	01	-	X	-	N	3	Anchorage: oversized hole; gap under bolt head Photos provided to illustrate issues
1ELMX1XS1	01	-	X	-	Y	3	Shrinkage cracks evaluated as insignificant A46 modification noted, identified
1ELPL1DCA	01	X	-	-	Y	3	Anchorage anomalies noted; qualifying documentation cited Photograph provided A46/IPEEE modifications noted, identified
1ELPL1DCB	01	X	-	-	Y	3	Anchorage anomalies noted; qualifying documentation cited Photograph provided Temporary scaffolding verified as seismically adequate
1ELTF1XS3A	04	X	-	-	Y	3	Anchorage detail verified against reference documents (SEWS) No adverse conditions noted; no photographs
1ELVR000A	00	-	X	-	N	3	Anchorage details: apparent missing/loose bolts cited Photographs provided
1ESVCA1ESV1	20	-	X	-	Y	3	No adverse conditions noted; no photographs
AB23	-	-	-	-	Y	2	Area Walkdown (Aux Bldg Room 208) 1. Identifies 3 SWEL components in area 2. No adverse conditions noted; no photographs
1ELMX1X1	01	X	-	-	N	2	Moderate/severe corrosion of anchorage provisions Block wall verified as seismically qualified Photographs provided

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Summary of Peer Review of Final SWCs and AWCs

EDB ID	Equipment Class	50% Anchorage	Non 50% Anchorage	Line Mounted	Overall Status	Team	Comments
1HPISV0090	08B	-	X	-	Y	2	-
1LPIFT0004P	18	-	-	-	Y	2	No adverse conditions noted; no photographs Post IPEEE modification noted, reference documents cited
AB24	-	-	-	-	N	3	Area Walkdown (Aux Bldg Room 403) 1. Identifies 10 SWEL components in area 2. Block wall not verifiable as seismically qualified 3. Cable routed outside of raceway; temporary configurations 4. Photo & dwg excerpt provided
1CRDCACC1	20	X	-	-	N	3	Anchor pattern does not agree with design documentation Photos, sketch, references provided
1EHCCAHEHC1	20	-	X	-	Y	3	No adverse conditions noted; no photographs Explanatory notes used to justify adequacy of details
1EHCCAHTC1	20	-	X	-	Y	3	No adverse conditions noted; no photographs Explanatory notes used to justify adequacy of details Abandoned in place unterminated cables noted
1ELCA1AT3	20	X	-	-	Y	3	Anchorage detail verified against reference documents Explanatory notes used to justify adequacy of details No adverse conditions noted; no photographs
1ELCASGLC1	20	X	-	-	Y	3	Anchorage detail verified against reference documents Explanatory notes used to justify adequacy of details No adverse conditions noted; no photographs
1ELIRPIR	18	-	X	-	Y	3	Anchorage detail verified against reference documents Explanatory notes used to justify adequacy of details (cable) No adverse conditions noted; no photographs
1ELPL1DIC	14	-	X	-	Y	3	No adverse conditions noted; no photographs
1ELPL1EPSLP1	20	-	X	-	N	3	Potential seismic interaction: cable bundle support details
1ESCA1ESTC3	20	X	-	-	Y	3	Anchorage detail verified against reference documents Explanatory notes used to justify adequacy of details No adverse conditions noted; no photographs
1FDWPL0369	14	X	-	-	Y	3	Anchorage detail verified against reference documents (SEWS)



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EDB ID	Equipment Class	50% Anchorage	Non 50% Anchorage	Line Mounted	Overall Status	Team	Comments
AB34	-	-	-	-	U	2	Area Walkdown (Aux Bldg Room 510) 1. Identifies 9 SWEL components in area 2. Adjacent furniture cited as possible interaction (impact might result in contact chatter in cabinets)
1BAGBD1UB2	20	-	X	-	Y	2	No adverse conditions noted; no photographs Explanatory notes used to justify adequacy of details A46/IPEEE modification noted, identified
1BAGBD1VB2	20	X	-	-	Y	2	Anchorage detail verified against reference documents No adverse conditions noted; no photographs
1ELCA1EB7	20	-	X	-	Y	2	A46/IPEEE modification noted, identified Post IPEEE modifications cited No adverse conditions noted; no photographs
1ICCCA0001A	20	-	X	-	Y	2	Carpeted floor; general condition of surrounding area accounted for Post IPEEE modifications cited
1PPSCA0005	20	-	X	-	Y	2	Non-standard anchorage detail verified as acceptable Post IPEEE modifications cited
1PPSCA0009	20	-	X	-	Y	2	Carpeted floor; general condition of surrounding area accounted for Post IPEEE modifications cited
1PPSCA0011	20	X	-	-	Y	2	Anchorage detail verified against reference documents Carpeted floor Post IPEEE modifications cited
1PPSCA0018	20	X	-	-	Y	2	Anchorage detail verified against reference documents Carpeted floor Post IPEEE modifications cited
AB36	-	-	-	-	Y	2	Area Walkdown (Aux Bldg Room 603) 1. Identifies 3 SWEL components in area 2. No adverse conditions noted; no photographs
INTK0003	00	-	-	-	N	2	Adjacent block wall not identified as seismically evaluated per reference documentation
1VSAH0011	10	X	-	-	U	2	Uncertainty based on obstructed view of a subset of anchorage (inside cabinet) A46/IPEEE and post IPEEE modification noted, identified A46 mods included addition of lateral seismic restraints Photos provided



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Summary of Peer Review of Final SWCs and AWCs

EDB ID	Equipment Class	50% Anchorage	Non 50% Anchorage	Line Mounted	Overall Status	Team	Comments
AB37	-	-	-	-	N	2	Area Walkdown (Aux Bldg Room 602) 1. One SWEL component identified 2. O <sub>2</sub> rack in area missing part of anchorage 3. Photos provided
1ELMX1XR	01	-	-	X	U	2	Non-standard anchorage detail noted Some anchors do not accommodate oversized bolt holes No photos provided
BH01	-	-	-	-	Y	2	Area walkdown (BH1 El 796) 1. Five SWEL components identified 2. No adverse conditions noted; no photographs
0ELSHBIT05	03	-	X	-	-	2	No adverse conditions noted; no photographs
0ELTFOCT4	04	X	-	-	Y	2	Anchorage detail verified against reference documents No adverse conditions noted; no photographs
1ELPL1SGFSP	20	X	-	-	Y	2	Anchorage detail verified against reference documents No adverse conditions noted; no photographs
ESV01	-	-	-	-	Y	1	Area walkdown 1. 11 SWEL components identified 2. Reference cited for seismic qualification of pre-engineered bldg (copy included)
1ELP1SKN	20	X	-	-	Y	1	Anchorage detail verified against reference documents No adverse conditions noted; no photographs
1SSWFT1013	18	X	-	-	Y	1	Anchorage detail verified against reference documents (SEWS) No adverse conditions noted; no photographs
INT02	-	-	-	-	Y	1	Area walkdown 1. One SWEL component identified 2. No adverse conditions noted; no photographs
1CCWPU0002	06	X	-	-	Y	1	Anchorage detail verified against reference documents (SEWS) No adverse conditions noted; no photographs
KEO01	-	-	-	-	Y	1	Area walkdown (Keowee) 1. One SWEL component identified 2. No adverse conditions noted; no photographs
KOELKF0001	04	-	X	-	Y	1	No adverse conditions noted; no photographs Post IPEEE modifications cited



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Summary of Peer Review of Final SWCs and AWCs

EDB ID	Equipment Class	50% Anchorage	Non 50% Anchorage	Line Mounted	Overall Status	Team	Comments
KEO02	-	-	-	-	N/A	1	Area walkdown (Keowee) Area inaccessible: potential to be rescheduled
KEO03	-	-	-	-	Y	1	Area walkdown (Keowee) 1. Five SWEL components identified 2. No adverse conditions noted 3. Photo provided for justification of adequacy of safety shower installation
K1ELKBAKB1	15	-	X	-	Y	1	No adverse conditions noted; no photographs Block wall verified as seismically qualified A46/IPEEE and post IPEEE modification noted, identified
K1ELKCA1MTC1	01	X	-	-	Y	1	Anchorage detail verified against reference documents No adverse conditions noted; no photographs
K2ELKBCKC2	16	X	-	-	Y	1	Anchorage detail verified against reference documents No adverse conditions noted; no photographs
K2ELKCA2MTC1	20	-	X	-	Y	1	No adverse conditions noted; no photographs Block wall verified as seismically qualified (SEWS)
K2ELKPL2DA	14	X	-	-	Y	1	Anchorage detail verified against reference documents No adverse conditions noted A46 outlier resolved; reference/photo provided Block wall verified as seismically qualified (SEWS)
KEO04	-	-	-	-	Y	1	Area walkdown (Keowee) 1. Four SWEL components identified 2. No adverse conditions noted 3. Photo provided for justification of adequacy of scaffolding
K1ELKMX1XA	01	X	-	-	Y	1	Anchorage detail verified against reference documents (SEWS) A46/IPEEE modification noted, identified
K1ELKTN0109	14	-	X	-	Y	1	No adverse conditions noted; no photographs
K1OGTK0003	21	X	-	-	Y	1	Anchorage detail verified against reference documents Scaffolding verified as seismically adequate
K1WLVA0011	07	-	-	X	Y	1	No adverse conditions noted; no photographs
SSF02	-	-	-	-	Y	1	Area walkdown 1. Two SWEL components identified 2. No adverse conditions noted; no photographs
OSSFMXSSF	01	X	-	-	Y	1	No adverse conditions noted; no photographs



Attachment 6 to Oconee Unit 1 Seismic Walkdown Report

NTTF 2.3 SEISMIC PEER REVIEW REPORT  
 OCONEE NUCLEAR STATION UNITS 1, 2 AND 3

Report No. 1457690202-R-M-00004, Rev. 0  
 November 2012

Summary of Peer Review of Final SWCs and AWCs

EDB ID	Equipment Class	50% Anchorage	Non 50% Anchorage	Line Mounted	Overall Status	Team	Comments
0SSFSHOTS1	03	-	X	-	Y	1	No adverse conditions noted; no photographs Post IPEEE modification noted, identified
SSF03	-	-	-	-	Y	1	Area walkdown 1. Two SWEL components identified 2. No adverse conditions noted; no photographs
0FOTK0003	21	X	-	-	Y	1	No adverse conditions noted; no photographs Anchorage detail verified against reference documents
1SSFTN1XSFG01	14	X	-	-	Y	1	No adverse conditions noted; no photographs Anchorage detail verified against reference documents Post IPEEE modification noted, identified
SSF04	-	-	-	-	Y	1	Area walkdown 1. One SWEL component identified 2. No adverse conditions noted; no photographs
0DATK000C	21	-	X	-	Y	1	No adverse conditions noted; no photographs

