

# WOLF CREEK NUCLEAR OPERATING CORPORATION

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ET 17-0017

U. S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, DC 20555

- Reference:
- 1) NEI 12-06, "Diverse and Flexible Coping Strategies (FLEX) Implementation Guide," Revision 4, December 2016
  - 2) Letter ET 17-0003, dated January 19, 2017, from J. H. McCoy, WCNOG, to USNRC
  - 3) NRC Interim Staff Guidance JLD-ISG-2012-01, "Compliance with Order EA-12-049, Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events," Revision 2, February 8, 2017

Subject: Docket No. 50-482: Wolf Creek Generating Station (WCGS) Seismic Mitigating Strategies Assessment (MSA) Report for the Reevaluated Seismic Hazard Information – NEI 12-06, Appendix H, Revision 4, H.4.4 Path 4: GMRS < 2xSSE

To Whom It May Concern:

The purpose of this letter is to provide the results of the assessment for WCGS to demonstrate that the FLEX strategies developed, implemented and maintained in accordance with Nuclear Regulatory Commission (NRC) Order EA-12-049 can be implemented considering the impacts of the reevaluated seismic hazard. The assessment was performed in accordance with the guidance provided in Appendix H Section H.4.4 of NEI 12-06, Revision 4 (Reference 1) which was endorsed by the NRC (Reference 3).

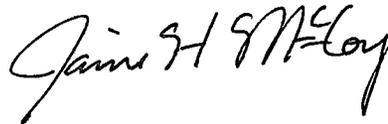
Based upon the mitigating strategies assessment in the Attachment, the mitigating strategies for WCGS considering the impacts of the reevaluated seismic hazard is acceptable as described in Final Integrated Plan (Reference 2), with the exception of a FLEX portable diesel driven pump trailer and a front end loader in the alternate FLEX building, and a FLEX portable front loader tractor in the primary FLEX storage building which are not currently tied down, and an unanchored Health Physics (HP) cabinet with a large aspect ratio adjacent to a FLEX Reactor Coolant System (RCS) Makeup pump control board in the Auxiliary Building hallway at elevation 1974'.

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Regarding the FLEX portable equipment located inside the FLEX storage buildings, WCGS initiated an evaluation and preliminary results determined that the three FLEX items are adequately protected based on their stability and spacing from other FLEX equipment. Regarding the HP cabinet in the Auxiliary Building hallway, the FLEX RCS Makeup pump mounting cart has been rotated so that the HP cabinet is away from the FLEX control board and adjacent to the cart handle, to preclude impact with the pump controls. The aforementioned actions are being tracked by the Wolf Creek Nuclear Operating Corporation (WCNOC) corrective action program.

This letter contains no commitments. If you have any questions concerning this matter, please contact me at (620) 364-4156, or Cynthia R. Hafenstine (620) 364-4204.

Sincerely,

A handwritten signature in black ink that reads "Jaime H. McCoy". The signature is written in a cursive style with a large, stylized "J" and "M".

Jaime H. McCoy

JHM/rlt

Attachment

cc: K. M. Kennedy (NRC), w/a  
B. K. Singal (NRC), w/a  
N. H. Taylor (NRC), w/a  
Senior Resident Inspector (NRC), w/a

**Mitigating Strategies Assessment for Wolf Creek Generating Station  
(WCGS)**

**NEI 12-06 Appendix H – Seismic “Path 4”**

**(8 pages)**

## **1. Background**

Wolf Creek Generating Station (WCGS) has completed a mitigating strategies assessment (MSA) for the impacts of the reevaluated seismic hazard to determine if the mitigating (FLEX) strategies developed, implemented and maintained in accordance with Nuclear Regulatory Commission (NRC) Order EA-12-049 remain acceptable at the reevaluated seismic hazard levels. The MSA was performed in accordance with the guidance provided in Appendix H of NEI 12-06, Revision 4 (Reference 1) which was endorsed by the NRC (Reference 2).

The Mitigating Strategies Seismic Hazard Information (MSSHI) is the reevaluated seismic hazard information at WCGS, and developed using the Probabilistic Seismic Hazard Analysis (PSHA). The MSSHI includes a performance-based Ground Motion Response Spectrum (GMRS), Uniform Hazard Response Spectra (UHRS) at various annual probabilities of exceedance, and a family of seismic hazard curves at various frequencies and fractiles developed at the WCGS control point elevation. WCGS submitted the reevaluated seismic hazard information including the UHRS, GMRS and the hazard curves to the NRC on March 31, 2014 (Reference 3). The following supplemental letters were also submitted to the NRC in response to the 10 CFR 50.54(f) request for information: ADAMS Accession Nos. ML12165A579 (Reference 4), ML12313A009 (Reference 5). The NRC staff concluded that the GMRS that was submitted adequately characterizes the reevaluated seismic hazard for the WCGS site (Reference 6). Section 6.1.1 of Reference 2 identifies the method described in Section H.4.4 of Reference 1 as applicable to WCGS.

## **2. Assessment to MSSHI**

Consistent with Section H.4.4 (Path 4) of Reference 1, the WCGS GMRS has spectral accelerations greater than the Safe Shutdown Earthquake (SSE) but no more than 2 times the SSE anywhere in the 1 to 10 Hz frequency range. As described in the Final Integrated Plan (FIP) (Reference 7), the plant equipment relied on for FLEX strategies have previously been evaluated as seismically robust to the SSE levels (Reference 7). The basic elements within the MSA of Path 4 system, structure, or components (SSCs) are described in Reference 1. Implementation of each of these basic Path 4 elements for the WCGS site is summarized below.

### **2.1 Step 1 – Scope of MSA Plant Equipment**

The scope of SSCs considered for the Path 4 MSA was determined following the guidance used for the expedited seismic evaluation process (ESEP) defined in EPRI 3002000704 (Reference 8). FLEX SSCs excluded from consideration in the ESEP were added to the MSA equipment scope. In addition, SSC failure modes not addressed in the ESEP that could potentially affect the FLEX strategies were added and evaluated.

SSCs associated with the FLEX strategy that are inherently rugged or sufficiently rugged are discussed in Section 2.3 below and identified in Section H.4.4 (Path 4) of Reference 1. These SSCs were not explicitly added to the scope of MSA plant equipment.

### **2.2 Step 2 – ESEP Review**

Equipment used in support of the FLEX strategies has been evaluated to demonstrate seismic adequacy following the guidance in Section 5 of NEI 12-06. As stated in Appendix H of

NEI 12-06, previous seismic evaluations should be credited to the extent that they apply for the assessment of the MSSHI. This includes the ESEP evaluations (Reference 9) for the FLEX strategies which were performed in accordance with EPRI 3002000704 (Reference 8). The ESEP evaluations remain applicable for this MSA since these evaluations directly addressed the most critical part of the new seismic hazard in 1 Hz to 10 Hz frequency range using seismic responses from the scaling of the design basis analyses. In addition, separate evaluations are performed to address high frequency exceedances under the high frequency (HF) sensitive equipment assessment process, as required, and are documented in Section 4 of this attachment.

### **2.3 Step 3 – Inherently/Sufficiently Rugged Equipment**

The qualitative assessment of certain SSCs not included in the ESEP was accomplished using 1) a qualitative screening of inherently rugged SSCs, and 2) evaluation of SSCs to determine if they are sufficiently rugged. Reference 1 documents the process and the justification for this ruggedness assessment. SSCs that are either inherently rugged or sufficiently rugged are described in Reference 1 and no further evaluations for these rugged SSCs are required under the MSA. The qualitative assessment is presented in detail in Reference 10.

### **2.4 Step 4 – Evaluations Using Section H.5 of Reference 1**

Step four for Path 4 plants includes the evaluations of:

1. FLEX equipment storage buildings and Non-Seismic Category 1 Structures that could impact FLEX implementation
2. Operator Pathways
3. Tie down of FLEX portable equipment
4. Seismic Interactions not included in ESEP that could affect FLEX strategies
5. Haul Paths

The results of the reviews of each of these five areas are described in the sections below.

#### **2.4.1 FLEX Equipment Storage Buildings**

The two FLEX storage buildings are part of the WCGS FLEX response strategy and are utilized for the storage of associated FLEX equipment. Per Reference 11, each FLEX storage building has a 60' by 120' footprint, an average height of 21.5', and is designed as a moment-resisting frame system consisting of steel moment frames, concrete walls in the perimeter, and a 4" concrete slab on the roof.

Per the FIP (Reference 7), the FLEX storage buildings have been designed to conform to the ASCE 7-10 wind and seismic ruggedness requirements, and are located appropriately to provide protection from flooding and to minimize the potential for multiple buildings to be damaged by tornados. The FIP also specifies that redundant equipment is stored in the two FLEX storage buildings such that if any single building was destroyed, sufficient FLEX equipment would remain intact and available for deployment from the remaining building.

Stevenson & Associates Calculation 16C4429-CAL-001 (Reference 12) evaluated the FLEX storage buildings against the GMRS. The review of the FLEX storage building design analysis revealed that the mid-span steel columns on the long side of each FLEX storage building are the most critical structural components. Maximum compressive, bending, and combined stresses in these columns calculated using the GMRS PGA were less than the allowable column stresses. With the controlling structural components qualified, the FLEX storage buildings were determined to have adequate capacity to withstand the GMRS.

#### Non-Seismic Category 1 Structures

Per the Stevenson & Associates Report 16C4429-RPT-002 (Reference 13), the Turbine Building (TB) was identified as the only non-seismic category 1 structure that would be expected to impact the operator paths. Per the Stevenson & Associates Calculation 13C4152-CAL-016 (Reference 14) the TB is designed as a Non-Seismic Category I structure, but designed to prevent collapse on adjacent Category I structures due to the SSE. The TB has been previously evaluated in the ongoing Seismic Probabilistic Risk Assessment (SPRA) (Reference 14) and resulted in a non-collapse High Confidence-Low Probability of Failure (HCLPF) that exceeds the UHRS 10-5 which envelopes the GMRS (Reference 13). Therefore, the building is deemed acceptable for the GMRS and can be screened out accordingly.

#### 2.4.2 Operator Pathways

Pre-determined operator pathways have been previously identified and documented in the FSGs as documented per Table 6.18-1 of Reference 15. The primary operator pathways were reviewed and walked-down (Reference 13). WCGS has reviewed the operator pathways and verified that the operator pathways are not impacted by the MSSH. Considerations for this review included:

- Multiple available pathways or multiple FLEX components
- Pathway includes only seismic Category 1 structures with previous reviews for seismic ruggedness
- FLEX strategies consist of staging most equipment outside the buildings and running hoses and cables to the hookup locations
- Debris removal capabilities for moderate to smaller seismic interactions
- Available time for operator actions
- Operator pathways were reviewed during a walkdown to assess seismic interactions associated with a GMRS level seismic event

During the walkdown of the staging areas (Reference 13), the Seismic Review Team (SRT) noticed the proximity of the Demineralized Water Storage Tank (DWST) to the FLEX core cooling pump staging area. It is judged that if the DWST collapsed under the seismic event, by the time it is required to implement the Phase 2 core cooling strategy, the depleted water should have receded and the staging area should be clear for staging the pump using debris removal capabilities.

#### 2.4.3 Tie Down of FLEX Portable Equipment

The FLEX portable equipment is stored inside the Auxiliary Building and inside two FLEX storage buildings located on the WCGS site. The FLEX equipment includes a variety of components including high, medium and low pressure pumps, debris removal equipment, diesel generators, heaters, flashlights and headband lamps, air compressors, and trailers containing hoses and other light weight equipment, as described per Table 1 of Reference 7.

The FLEX portable equipment stored inside the FLEX storage building were walked-down to ensure stability and restraint and to ensure they are protected from potential seismic interactions. The walkdown also considered unsecured and/or non-seismic components stored around the FLEX equipment and concluded that no damage to the FLEX equipment is credible due to the presence of these components. In addition, the walkdown concluded that large FLEX equipment such as pumps and power supplies were stored as necessary to protect them during a seismic event.

WCGS has reviewed the storage requirements (including any tie-down or restraint devices) in effect for FLEX portable equipment and verified that the equipment has no adverse interactions or significant damage that could impair the ability of the equipment to perform its mitigating strategy function during or following the GMRS-level seismic event using the methods described in Section H.5 of NEI 12-06 (Reference 1).

One FLEX portable diesel driven pump trailer and a motorized front end loader (Pettibone) in the alternate FLEX storage building, and a FLEX front loader tractor in the primary FLEX storage building were not tied down. It was recommended that an evaluation be performed to determine if tie-downs are required. Other remaining unstrapped items, such as the FLEX fuel truck in the alternate FLEX building and the non-FLEX fire truck in the primary FLEX storage building, have enough space in their proximity and are not susceptible to turn over, and hence are acceptable. Following the walkdown, WCGS initiated an evaluation and preliminarily determined these three items are adequately protected based on space in their proximity in their storage location and are not susceptible to turn over. These issues related to the FLEX diesel driven pump trailer motorized front end loader, and the FLEX front wheel loader tractor, noted during the seismic walkdowns, have been documented in the WCNOG Corrective Action Program Condition Report 00114020 (Reference 16).

#### 2.4.4 Additional Seismic Interactions

Seismic interactions that could potentially affect the FLEX strategies and were not previously reviewed as part of the ESEP program (e.g., flooding from non-seismically robust tanks, interactions to distributed systems associated with the ESEP equipment list, etc.) were reviewed for WCGS.

General flooding of areas from ruptured fire mains are governed by failing block walls. However, block walls have been evaluated during the ESEP to have capacities in excess of the GMRS and no seismic interaction concerns are credited.

During the walkdown of the Auxiliary Building hallway at elevation 1974' (Reference 13), the SRT noticed an unanchored HP cabinet with a large aspect ratio adjacent to a FLEX RCS Makeup pump control board. It was recommended to move the HP cabinet away from the pump proximity or rotate the pump mounting cart so that the cabinet is away from the control board and adjacent to the cart handle. With that configuration, should the cabinet overturn, the more rugged cart handle would preclude impact with the pump controls. Subsequently, the FLEX RCS Makeup Pump cart was rotated to place the cart handle towards the cabinet. WCGS Report CR 00114020 (Reference 16) has also documented the above discrepancy noted during the seismic walkdowns.

During the walkdown of the Auxiliary Building hallway at elevation 2000' (Reference 13), it was noted that an alternate FLEX connection panel in the south west corner has a significant storage area adjacent. However, the primary box has no seismic interaction concerns so no action is required. The storage area could be easily relocated if required, but this is not necessary.

During the walkdown of the Fuel Building operator pathways on Elevation 2026' (Reference 13), the SRT noticed an alternate spent fuel pool (SFP) connection adjacent to a large fan on vibrator isolators. Since this is an alternate connection, no action is required. However, it is judged that if the fan topples, it should not damage the connection and with debris removal capabilities the connection could be used if necessary. No other seismic interaction concerns were noticed during the walkdown.

This assessment was conducted by a walkdown of non-ESEP MSA items which identified that credible seismic interactions are not present (Reference 12).

WCGS has reviewed the additional seismic interactions and verified that the Mitigation Strategy is not adversely impacted by the GMRS.

#### 2.4.5 Haul Path

The FLEX equipment haul paths have been identified and documented in the FLEX Support Guidelines as documented per Table 6.18-1 of Reference 15. These haul paths have been previously reviewed for potential soil liquefaction and have been determined to be stable following a seismic event, as is discussed in Section 4.5 of Stevenson & Associates Report 16C4429-RPT-001 (Reference 10). Section 2.5.1.2.5.5 of the USAR (Reference 17) states that subsurface materials at the site lack the potential for liquefaction. Additionally, the haul paths attempt to avoid areas with trees, power lines, narrow passages, etc. when practical. However, high winds can cause debris from distant sources to interfere with planned haul paths. Debris removal equipment is stored inside both of the FLEX storage buildings. Therefore, at least one piece of equipment remains functional and deployable to clear obstructions from the pathway between the FLEX storage buildings and its deployment location(s).

The haul path walkdowns (Reference 13) concentrated on assuring that sufficient space is available to maneuver around any potential debris from Non-seismic category 1 structures maintaining the determined haul paths. The walkdowns concluded that excess space is available and even if debris exists, the haul paths are maintained and no potential seismic interactions are considered credible.

WCGS has reviewed the haul paths and verified that the haul paths are not adversely impacted by the MSSHI.

### **3. Spent Fuel Pool Makeup Review**

#### Spent Fuel Pool Makeup Evaluation

The evaluation of spent fuel pool makeup strategy for WCGS was performed based on the initial conditions established in NEI 12-06 (Reference 1) for spent fuel makeup coping in the event of an extended loss of ac power/loss of Ultimate Heat Sink (ELAP/LUHS). The evaluation also used the results of pool heat up analyses from the ELAP evaluation as input.

The FLEX strategy for SFP makeup utilizes SFP level monitoring and make-up capability as described in the WCGS FLEX FIP (Reference 7). SFP make-up capability is provided using the portable FLEX Spent Fuel Pump taking suction through a portable non-collapsible flexible hose and discharging through the permanently installed FLEX SFP makeup connection tie-in to elevation 2047' of the Fuel Building. The source of make-up water is the plant Refueling Water Storage Tank (RWST). The alternate suction flow path takes make-up water from the Condensate Storage Tank (CST) and discharges through the permanently installed alternate spent fuel makeup connection to the 'A' SFP Cooling Train.

The permanently installed plant equipment relied on for the implementation of the SFP Makeup FLEX strategy has been designed and installed, or evaluated to remain functional, in accordance with the plant design basis to the SSE loading conditions in Reference 18. The spent fuel pool integrity evaluations demonstrated inherent margins of the spent fuel pool structure and interfacing plant equipment above the SSE to a peak spectral acceleration of 0.8g (Reference 18). The portable FLEX equipment availability, including its storage and deployment pathways, and the permanently installed plant equipment needed to accomplish SFP makeup have subsequently been evaluated considering the GMRS-consistent loading conditions in the other portions of Section 3.0 of this document.

### **4. High Frequency Review**

The high frequency review is included as an Enclosure to this Attachment.

The selection process for high frequency evaluation is described in detail in Stevenson & Associates Report 16C4429-RPT-003 (Reference 19). The analysis described in this report functionally screened out all devices in these categories, and thus there were no devices selected for further evaluation.

### **5. Conclusion**

Therefore, the FLEX strategies for WCGS as described in the FIP (Reference 7) are acceptable as specified with the supplemental modifications discussed above, with follow-up actions to complete the evaluation for lack of restraints associated with one portable FLEX diesel driven pump trailer and one motorized front loader in the alternate FLEX storage building, and one FLEX wheel front loader tractor in the primary FLEX storage building, and completion of actions to maintain storage configuration of the FLEX RCS Makeup pump in the Auxiliary building hallway at elevation 1974' to

preclude interaction with an unsecured cabinet. These follow-up issues from the seismic walkdowns are documented and tracked by Condition Report 00114020 (Reference 16).

## 6. References

1. NEI 12-06, Revision 4, "Diverse and Flexible Coping Strategies (FLEX) Implementation Guide," December 12 2016. ADAMS Accession No. ML16354B421.
2. JLD-ISG-2012-01, Revision 2, "Compliance with Order EA-12-049, Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events," February 8 2017. ADAMS Accession No. ML17005A188.
3. WCNOC Letter WO 14-0042 Wolf Creek Nuclear Operating Corporation's Seismic Hazard and Screening Report (CEUS Sites), Response NRC Request for Information Pursuant to 10 CFR 50.54(f) Regarding Recommendation 2.1 of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident," March 31, 2014. ADAMS Accession No. ML14097A020.
4. WCNOC Letter WO 14-0049, "Wolf Creek Nuclear Operating Corporation 90-day Response to Request for Information Pursuant to Title 10 of the Code of Federal Regulations 50.54(f) Regarding Recommendation 9.3 of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident," June 6, 2012. ADAMS Accession No. ML12165A579.
5. WCNOC Letter WM 12-0041, "Wolf Creek Nuclear Operating Corporation submittal of Emergency Preparedness Communications Assessment Results in Response to Request for Information Pursuant to Title 10 of the Code of Federal Regulations 50.54(f) Regarding Recommendation 9.3 of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident," October 31, 2012. ADAMS Accession No. ML12313A009.
6. Letter from F. G. Vega, USNRC, to A. C. Heflin, WCNOC, "Wolf Creek Generating Station - Staff Assessment of Information provided Pursuant to Title 10 of the Code of Federal Regulations Part 50, Section 50.54(f), Seismic Hazard Reevaluations for Recommendation 2.1 of the Near-Term Task Force Review of Insights from the Fukushima DAI-ICHI Accident (TAC Nos. MF3755)," August 12, 2015. ADAMS Accession No. ML15216A320.
7. WCNOC Letter ET 17-0003, "Wolf Creek Nuclear Operating Corporation's Compliance Report for the Implementation of Order EA-12-049, 'Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events' and Final Integrated Plan," January 19, 2017. ADAMS Accession No. ML17026A194.
8. EPRI Report 3002000704, "Seismic Evaluation Guidance: Augmented Approach for the Resolution of Fukushima Near-Term Task Force Recommendation 2.1: Seismic", May 31, 2013.
9. WCNOC Letter WO 14-0095, "Expedited Seismic Evaluation Process Report (CEUS Sites), Response NRC Request for Information Pursuant to 10 CFR 50.54(f) Regarding Recommendation 2.1 of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident," December 23, 2014. ADAMS Accession No. ML14365A262.
10. Stevenson and Associates, Report No. 16C4429-RPT-001, Revision 0, "Screening of Selected Plant Equipment for MSA - NEI 12-06 Appendix H Path 4."

11. Planet Forward Energy Solutions, Calculation PFES-WCNOC-001, Revision 0, Structural Design for WCNOC's FLEX Building No. 1.
12. Stevenson and Associates, Calculation No. 16C4429-CAL-001, Revision 0, Seismic Capacity Calculations for the FLEX Building and the TDAFP Tanks.
13. Stevenson and Associates, Report No. 16C4429-RPT-002, Revision 0, "Walkdown Results for NEI 12-06 Appendix H Path 4 Evaluation."
14. Stevenson and Associates, Calculation No. 13C4152-CAL-016, Revision 0, Seismic Capacity Calculations for Buildings.
15. WCNOC Procedure, AP 21A-002 "Diverse and Flexible Coping Mitigation Strategies (FLEX) Program," Revision 1.
16. WCNOC Condition Report No. 00114020, FLEX Seismic Hazard MSA Walkdown Discrepancies.
17. Wolf Creek Updated Safety Analysis Report (USAR), Revision 30.
18. WCNOC Letter ET 16-0026, "Spent Fuel Pool Evaluation Supplemental Report, Response to NRC Request for Information Pursuant to 10 CFR 50.54(f) Regarding Recommendation 2.1 of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident," November 1, 2016. ADAMS Accession No. ML16313A063.
19. Stevenson and Associates, Report No. 16C4429-RPT-003, Revision 0, "Selection of Relays and Switches for NEI 12-06 Appendix H High Frequency Seismic Evaluation at Wolf Creek Generating Station."

Enclosure to Mitigating Strategies Assessment for  
Wolf Creek Generating Station (WCGS)

**High Frequency Review Consistent with Path 2**  
**(1 page)**

## High Frequency Review Consistent with Path 2

For Path 4 plants, NEI 12-06, Section H.4.4 (Reference 1) requires licensees with GMRS exceedances of the SSE above 10 Hz to perform a high frequency evaluation of relays in accordance with the methodology described in NEI 12-06, Section H.4.2. Section H.4.2 describes the selection process for high frequency evaluation as focusing on moving-contact electrical control devices subject to intermittent states (predominantly relays and contactors) in the control systems of components in four categories:

- (1) *Relays and contactors whose chatter could cause malfunction of a reactor SCRAM.*
- (2) *Relays and contactors in seal-in or lockout circuits whose chatter could cause a reactor coolant system (RCS) leakage pathway that was not considered in the FLEX strategies. Examples include the automatic depressurization system (ADS) actuation relays in boiling-water reactors (BWRs) and relays that could actuate pressurizer power-operated relief valves (PORVs).*
- (3) *Relays and contactors that may lead to circuit seal-ins or lockouts that could impede the Phase 1 FLEX capabilities, including buses fed by station batteries through inverters.*
- (4) *Relays and contactors that may lead to circuit seal-ins or lockouts that could impede FLEX capabilities for mitigation of seismic events in permanently installed Phase 2 SSCs that have the capability to begin operation without operator manual actions.*

The selection process for each of these categories is described in detail in Stevenson & Associates Report 16C4429-RPT-003 (Reference 2). The analysis described in this report functionally screened out all devices in these categories, and thus there were no devices selected for further evaluation.

## References

1. NEI 12-06, Revision 4, "Diverse and Flexible Coping Strategies (FLEX) Implementation Guide," December 12 2016. ADAMS Accession No. ML16354B421.
2. Stevenson and Associates, Report No. 16C4429-RPT-003, Revision 0, "Selection of Relays and Switches for NEI 12-06 Appendix H High Frequency Seismic Evaluation at Wolf Creek Generating Station."