WOLF CREEK
NUCLEAR OPERATING CORPORATION

Cleveland Reasoner
Site Vice President

December 23, 2014
WO 14-0095

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

Reference:
1) Letter dated March 12, 2012, from E. J. Leeds and M. R. Johnson, USNRC, to M. W. Sunseri, WCNOC, "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 (NTTF) Review of Insights from the Fukushima Dai-ichi Accident"

2) Letter dated April 9, 2013, from A. R. Pietrangelo, NEI, to D. L. Skeen, USNRC, "Proposed Path Forward for NTTF Recommendation 2.1: Seismic Reevaluations"

3) Letter dated May 7, 2013, from E. J. Leeds, USNRC, to J. E. Pollock, NEI, "EPRI Final Draft Report XXXXXX, "Seismic Evaluation Guidance: Augmented Approach for the Resolution of Near-Term Task Force Recommendation 2.1: Seismic," as an Acceptable Alternative to the March 12, 2012, Information Request for Seismic Reevaluations"

Subject: Docket No. 50-482: 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

Gentlemen:

On March 12, 2012, the Nuclear Regulatory Commission (NRC) issued a 50.54(f) letter to all power reactor licensees and holders of construction permits in active or deferred status. Enclosure 1 of Reference 1 requested each addressee located in the Central and Eastern United States (CEUS) to submit a Seismic Hazard Evaluation and Screening Report within 1.5 years from the date of Reference 1.

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In Reference 2, the Nuclear Energy Institute (NEI) requested NRC agreement to delay submittal of the final CEUS Seismic Hazard Evaluation and Screening Reports so that an update to the Electric Power Research Institute (EPRI) ground motion attenuation model could be completed and used to develop that information. NEI proposed that descriptions of subsurface materials and properties and base case velocity profiles be submitted to the NRC by September 12, 2013, with the remaining seismic hazard and screening information submitted by March 31, 2014. NRC agreed with that proposed path forward in Reference 3.

Reference 1 requested that licensees provide interim evaluations and actions taken or planned to address the higher seismic hazard relative to the design basis, as appropriate, prior to completion of the risk evaluation. In accordance with the NRC endorsed guidance in Reference 3, the attached Expedited Seismic Evaluation Process Report for Wolf Creek Nuclear Operating Corporation (WCNOC) provides the information described in Section 7 of Reference 3 in accordance with the schedule identified in Reference 2.

This letter contains no commitments. If you have any questions concerning this matter, please contact me at (620) 364-4156, or Mr. Steven R. Koenig at (620) 364-4041.

Sincerely,

Cleveland Reasoner

COR/rlt

Enclosure: Wolf Creek Generating Station Expedited Seismic Evaluation Process (ESEP) Report

cc: M. L. Dapas (NRC), w/e
C. F. Lyon (NRC), w/e
N. F. O'Keefe (NRC), w/e
Senior Resident Inspector (NRC), w/e

STATE OF KANSAS)
) SS
COUNTY OF COFFEY)

Cleveland Reasoner, of lawful age, being first duly sworn upon oath says that he is Site Vice President of Wolf Creek Nuclear Operating Corporation; that he has read the foregoing document and knows the contents thereof; that he has executed the same for and on behalf of said Corporation with full power and authority to do so; and that the facts therein stated are true and correct to the best of his knowledge, information and belief.

By Cleveland Reasoner
Cleveland Reasoner
Site Vice President

SUBSCRIBED and sworn to before me this 23rd day of December, 2014.

STATE OF KANSAS NOTARY PUBLIC
RHONDA L. TIEMEYER
My Appointment Expires
January 11, 2018

Rhonda L. Tiemeyer
Notary Public

Expiration Date January 11, 2018

WOLF CREEK NUCLEAR OPERATING CORPORATION
WOLF CREEK GENERATING STATION
EXPEDITED SEISMIC EVALUATION PROCESS (ESEP) REPORT

December 31, 2014

Prepared by: Wolf Creek Nuclear Operating Corporation
Westinghouse Electric Company LLC
Stevenson & Associates

EXPEDITED SEISMIC EVALUATION PROCESS REPORT

Table of Contents

1.0 Purpose and Objective

Following the accident at the Fukushima Dai-ichi nuclear power plant resulting from the March 11, 2011, Great Tohoku Earthquake and subsequent tsunami, the Nuclear Regulatory Commission (NRC) established a Near-Term Task Force (NTTF) to conduct a systematic review of NRC processes and regulations and to determine if the agency should make additional improvements to its regulatory system. The NTTF developed a set of recommendations intended to clarify and strengthen the regulatory framework for protection against natural phenomena. Subsequently, the NRC issued a 50.54(f) letter on March 12, 2012 [1], requesting information to assure that these recommendations are addressed by all U.S. nuclear power plants. The 50.54(f) letter requests that licensees and holders of construction permits under 10 CFR Part 50 reevaluate the seismic hazards at their sites against present-day NRC requirements and guidance. Depending on the comparison between the reevaluated seismic hazard and the current design basis, further risk assessment may be required. Assessment approaches acceptable to the staff include a seismic probabilistic risk assessment (SPRA), or a seismic margin assessment (SMA). Based upon the assessment results, the NRC staff will determine whether additional regulatory actions are necessary.

This report describes the Expedited Seismic Evaluation Process (ESEP) undertaken for the Wolf Creek Generating Station (WCGS). The intent of the ESEP is to perform an interim action in response to the NRC's 50.54(f) letter [1] to demonstrate seismic margin through a review of a subset of the plant equipment that can be relied upon to protect the reactor core following beyond design basis seismic events.

The ESEP is implemented using the methodologies in the NRC endorsed guidance in EPRI 3002000704, *Seismic Evaluation Guidance: Augmented Approach for the Resolution of Fukushima Near-Term Task Force Recommendation 2.1: Seismic* [2]. The guidance discusses the use of the ongoing FLEX process [3] as a starting point for consideration. This report examines the FLEX equipment and strategy (Section 2) to develop the initial Expedited Seismic Equipment List (ESEL) and uses an iterative process to develop the final ESEL (Section 3).

The ESEL is later used to evaluate the listed equipment against the review level ground motion (RLGM) data (Section 5) with respect to the equipment's seismic capacity based on characterization of the high confidence of a low probability of failure (HCLPF). Equipment which has seismic capacity larger than the RLGM data can be screened from further evaluation. For equipment that has a seismic capacity below the RLGM modifications need to be performed following the NRC endorsed guidance in EPRI 3002000704.

The objective of this report is to provide summary information describing the ESEP evaluations and results. The level of detail provided in this report is intended to enable

NRC to understand the inputs used, the evaluations performed, and the decisions made as a result of the interim evaluations.

2.0 Brief Summary of the FLEX Seismic Implementation Strategies

The Wolf Creek FLEX strategies for Reactor Core Cooling and Heat Removal, Reactor Inventory Control/Long-term Subcriticality, and Containment Function are summarized below. This summary is derived from the Wolf Creek Overall Integrated Plan (OIP) in Response to the March 12, 2012, Commission Order EA-12-049 [3].

Reactor core cooling and heat removal is achieved via steam release from the Steam Generators (SGs) with SG make-up from the Turbine Driven Auxiliary Feedwater Pump (TDAFP) during FLEX Phase 1 with suction from the Condensate Storage Tank (CST).

The Phase 2 strategy includes SG cooling water make-up via a FLEX portable pump with suction from the CST, additional CST inventory will be pumped from the Ultimate Heat Sink (UHS). The TDAFP flow control valves and Main Steam Atmospheric Relief Valves (ARVs) are also required to provide reactor core heat-removal capability. Phase 2 reactor core heat removal is achieved via the new FLEX mechanical connections. The only permanent plant equipment manipulated for the Phase 2 is manual valves.

Reactor Inventory Control/Long-term Subcriticality strategy consists of reactor coolant system borated make-up via the FLEX primary make-up connections.

Reactor coolant system (RCS) inventory reduction is a result of water volume reduction due to cooldown, reactor coolant pump seal leakage, and letdown via head-vents and/or pressurizer PORVs. The reactor coolant pump seal leak-off containment isolation valve is manually isolated to conserve inventory and keep leak-off flow within the Reactor Building. To avoid adverse effects on the RCS natural circulation flow, the accumulator isolation valves are electrically closed during the cooldown to prevent nitrogen injection into the reactor coolant system.

There are no Phase 1 or Phase 2 FLEX actions required to maintain containment integrity. In fact, containment function is not expected to be challenged during all three phases.

Necessary electrical components are outlined in the Wolf Creek FLEX OIP submittal [3], and primarily entail the installation of a 480V generator (FLEX) to provide power to vital batteries, equipment installed to support FLEX electrical connections, and monitoring instrumentation required for core cooling, reactor coolant inventory, and containment integrity.

3.0 Equipment Selection Process and ESEL

The selection of equipment for the Expedited Seismic Equipment List (ESEL) followed the guidelines of EPRI 3002000704 [2]. The ESEL for WCGS [4] is presented in Attachment A.

3.1 Equipment Selection Process and ESEL

The selection of equipment to be included on the ESEL was based on installed plant equipment credited in the FLEX strategies during Phase 1, 2 and 3 mitigation of a Beyond Design Basis External Event (BDBEE), as outlined in the Wolf Creek Overall Integrated Plan (OIP) in Response to the March 12, 2012, Commission Order EA-12-049 [3]. The OIP provides the Wolf Creek FLEX mitigation strategy and serves as the basis for equipment selected for the ESEP.

The scope of "installed plant equipment" includes equipment relied upon for the FLEX strategies to sustain the critical functions of core cooling and containment integrity consistent with the Wolf Creek OIP [3]. FLEX recovery actions are excluded from the ESEP scope per EPRI 3002000704 [2]. The overall list of planned FLEX modifications and the scope for consideration herein is limited to those required to support core cooling, reactor coolant inventory and subcriticality, and containment integrity functions. Portable and pre-staged FLEX equipment (not permanently installed) are excluded from the ESEL per EPRI 3002000704 [2].

The ESEL component selection followed the EPRI guidance outlined in Section 3.2 of EPRI 3002000704.

1. The scope of components is limited to that required to accomplish the core cooling and containment safety functions identified in Table 3-2 of EPRI 3002000704. The instrumentation monitoring requirements for core cooling/containment safety functions are limited to those outlined in the EPRI 3002000704 guidance, and are a subset of those outlined in the Wolf Creek OIP [3].
2. The scope of components is limited to installed plant equipment and the FLEX connections necessary to implement the Wolf Creek OIP [3] as described in Section 2.
3. The scope of components assumes the credited FLEX connection modifications are implemented, and are limited to those required to support a single FLEX success path (i.e., either "Primary" or "Back-up/Alternate").
4. The "Primary" FLEX success path is to be specified. Selection of the "Back-up/Alternate" FLEX success path must be justified.
5. Phase 3 coping strategies are included in the ESEP scope, whereas recovery strategies are excluded.
6. Structures, systems, and components excluded per the EPRI 3002000704 [2] guidance are:
    - Structures (e.g., containment, reactor building, control building, auxiliary building, etc.)
    - Piping, cabling, conduit, HVAC, and their supports.

- Manual valves and rupture disks.
- Power-operated valves not required to change state as part of the FLEX mitigation strategies.
- Nuclear steam supply system components (e.g. reactor pressure vessel and internals, reactor coolant pumps and seals, etc.)

7. For cases in which neither train was specified as a primary or back-up strategy, then only one train component (generally 'A' train) is included in the ESEL.

3.1.1 ESEL Development

The ESEL [4] was developed by reviewing the Wolf Creek OIP [3] to determine the major equipment involved in the FLEX strategies. Further reviews of plant drawings (e.g., Process and Instrumentation Diagrams (P&IDs) and Electrical One Line Diagrams) were performed to identify the boundaries of the flowpaths to be used in the FLEX strategies and to identify specific components in the flowpaths needed to support implementation of the FLEX strategies.

Boundaries were established at an electrical or mechanical isolation device (e.g., isolation amplifier, valve, etc.) in branch circuits / branch lines off the defined strategy electrical or fluid flowpath. P&IDs were the primary reference documents used to identify mechanical components and instrumentation. The flow paths used for FLEX strategies were selected and specific components were identified using detailed equipment and instrument drawings, piping isometrics, electrical schematics and one-line drawings, system descriptions, design basis documents, etc., as necessary. The P&IDs are also used to determine the normal position of system valves and the valve positioning required in order to align the system in support of the FLEX functions.

The electrical equipment required to support the mechanical components used in the FLEX strategies evaluated for the ESEL was also evaluated for its inclusion on the ESEL using electrical drawings and guidance [2].

3.1.2 Power Operated Valves

Page 3-3 of EPRI 3002000704 [2] notes that power operated valves not required to change state are excluded from the ESEL. Page 3-2 also notes that "functional failure modes of electrical and mechanical portions of the installed Phase 1 equipment should be considered (e.g., RCIC/AFW trips)." To address this concern, the following guidance is applied in the Wolf Creek ESEL for functional failure modes associated with power operated valves:

- Power operated valves that remain energized during the Extended Loss of all AC Power (ELAP) events (such as DC powered valves), were included on the ESEL.

- Power operated valves not required to change state as part of the FLEX mitigation strategies were not included on the ESEL. The seismic event also causes the ELAP event; therefore, the valves are incapable of spurious operation as they would be de-energized.
- Power operated valves not required to change state as part of the FLEX mitigation strategies during Phase 1, and are re-energized and operated during subsequent Phase 2 and 3 strategies, were not evaluated for spurious valve operation as the seismic event that caused the ELAP has passed before the valves are re-powered.

3.1.3 Pull Boxes

Pull boxes were deemed unnecessary to add to the ESELs as these components provide completely passive locations for pulling or installing cables. No breaks or connections in the cabling are included in pull boxes. Pull boxes were considered part of conduit and cabling, which are excluded in accordance with EPRI 3002000704 [2].

3.1.4 Termination Cabinets

Termination cabinets, including cabinets necessary for FLEX Phase 2 and Phase 3 connections, provide consolidated locations for permanently connecting multiple cables. The termination cabinets and the internal connections provide a completely passive function; however, the cabinets are included in the ESEL to ensure industry knowledge on panel/anchorage failure vulnerabilities is addressed.

3.1.5 Critical Instrumentation Indicators

Critical indicators and recorders are typically physically located on panels/cabinets and are included as separate components; however, seismic evaluation of the instrument indication may be included in the panel/cabinet seismic evaluation (rule-of-the-box).

3.1.6 Phase 2 and Phase 3 Piping Connections

Item 2 in Section 3.1 above notes that the scope of equipment in the ESEL includes "... FLEX connections necessary to implement the Wolf Creek OIP [3] as described in Section 2." Item 3 in Section 3.1 also notes that "The scope of components assumes the credited FLEX connection modifications are implemented, and are limited to those required to support a single FLEX success path (i.e., either "Primary" or "Back-up/Alternate")."

Item 6 in Section 3 above goes on to explain that "Piping, cabling, conduit, HVAC, and their supports" are excluded from the ESEL scope in accordance with EPRI 3002000704 [2].

Therefore, piping and pipe supports associated with FLEX Phase 2 and Phase 3 connections are excluded from the scope of the ESEP evaluation. However, any active valves in FLEX Phase 2 and Phase 3 connection flow path are included in the ESEL.

3.1.7 Relays

Relays essential to the FLEX strategy were explicitly addressed [5]. Relays were screened and where relay chatter was found to result in an undesirable alignment the relay, and its parent cabinet, were added to the ESEL.

3.2 Justification for Use of Equipment That Is Not the Primary Means for FLEX Implementation

No equipment outside of the primary FLEX strategy is credited in the Wolf Creek ESEP [4].

The complete ESEL for Wolf Creek [4] is presented in Attachment A.

4.0 Ground Motion Response Spectrum (GMRS)

4.1 Plot of GMRS Submitted by the Licensee

The SSE control point elevation is defined at 1099.5 ft NGVD [6]. At WCGS, this elevation denotes free field at finished grade.

The 1E-4 and 1E-5 Uniform Hazard Response Spectra (UHRS), along with a design factor (DF), are used to compute the GMRS at the control point as shown in the seismic hazard and GMRS submittal to the NRC [7]. Table 4-1 shows the UHRS and GMRS spectral accelerations.

Table 4-1: UHRS for 10-4 and 10-5 and GMRS at control point for Wolf Creek

Freq. (Hz)	10^{-4} UHRS (g)	10^{-5} UHRS (g)	GMRS (g)
100	1.95E-01	6.00E-01	2.88E-01
90	1.96E-01	6.07E-01	2.90E-01
80	1.97E-01	6.16E-01	2.94E-01
70	2.00E-01	6.30E-01	3.01E-01
60	2.06E-01	6.59E-01	3.13E-01
50	2.20E-01	7.20E-01	3.41E-01
40	2.43E-01	8.14E-01	3.83E-01
35	2.62E-01	8.88E-01	4.17E-01
30	2.93E-01	9.75E-01	4.60E-01
25	3.39E-01	1.11E+00	5.26E-01
20	3.89E-01	1.24E+00	5.89E-01
15	4.80E-01	1.41E+00	6.83E-01
12.5	5.09E-01	1.50E+00	7.27E-01
10	4.87E-01	1.47E+00	7.06E-01
9	4.70E-01	1.40E+00	6.74E-01
8	4.48E-01	1.29E+00	6.28E-01
7	4.25E-01	1.18E+00	5.79E-01
6	3.75E-01	1.03E+00	5.05E-01
5	3.26E-01	8.93E-01	4.38E-01
4	2.50E-01	6.67E-01	3.29E-01

Freq. (Hz)	10^{-4} UHRS (g)	10^{-5} UHRS (g)	GMRS (g)
3.5	2.03E-01	5.37E-01	2.65E-01
3	1.68E-01	4.31E-01	2.14E-01
2.5	1.37E-01	3.41E-01	1.71E-01
2	1.31E-01	3.18E-01	1.60E-01
1.5	1.12E-01	2.66E-01	1.34E-01
1.25	1.01E-01	2.35E-01	1.19E-01
1	8.46E-02	1.86E-01	9.54E-02
0.9	7.72E-02	1.71E-01	8.74E-02
0.8	7.13E-02	1.58E-01	8.10E-02
0.7	6.58E-02	1.47E-01	7.52E-02
0.6	6.04E-02	1.36E-01	6.94E-02
0.5	5.56E-02	1.26E-01	6.43E-02
0.4	4.45E-02	1.01E-01	5.15E-02
0.35	3.89E-02	8.84E-02	4.50E-02
0.3	3.34E-02	7.58E-02	3.86E-02
0.25	2.78E-02	6.32E-02	3.22E-02
0.2	2.22E-02	5.05E-02	2.57E-02
0.15	1.67E-02	3.79E-02	1.93E-02
0.125	1.39E-02	3.16E-02	1.61E-02
0.1	1.11E-02	2.53E-02	1.29E-02

Figure 4-1 shows the control point UHRS and GMRS.

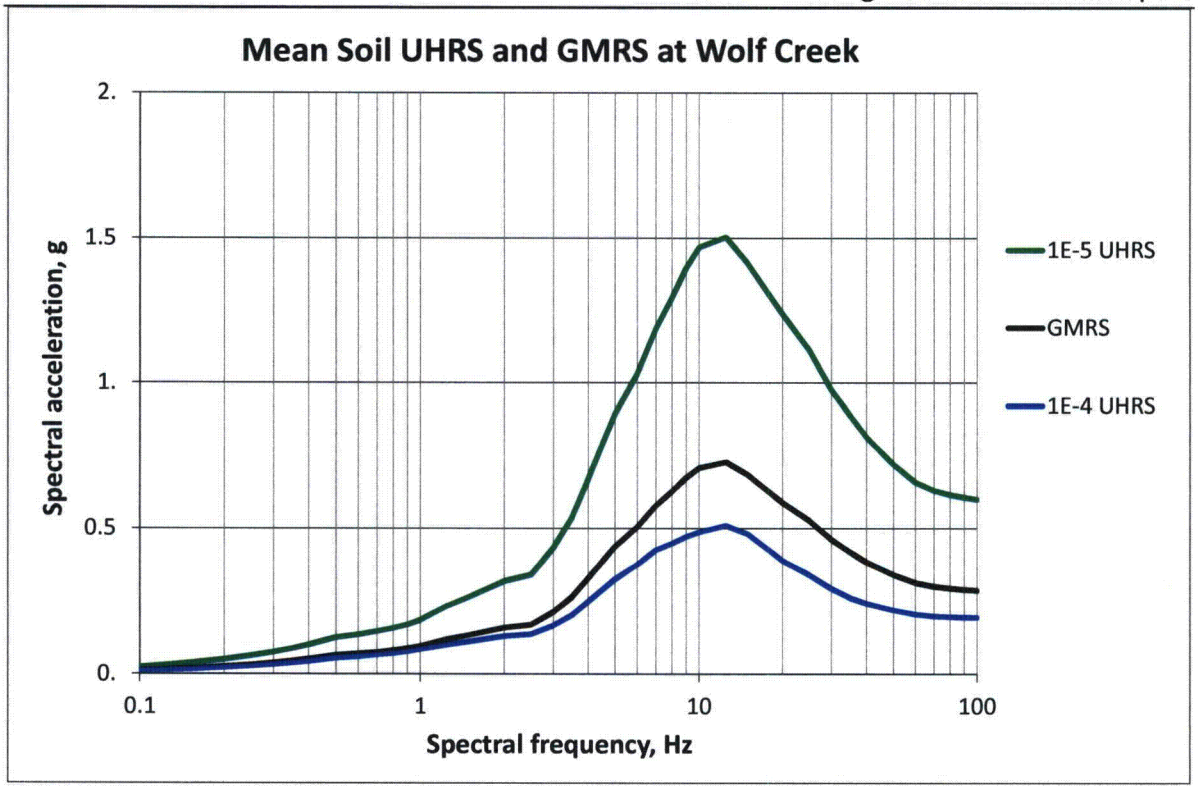

Figure 4-1: Plots of 1E-4 and 1E-5 UHRS and GMRS at control point for Wolf Creek (5%-damped response spectra)

4.2 Comparison to SSE

The definition of the SSE for Wolf Creek is discussed in Section 2.5.2, 3.7(B), 3.7(S) and Appendix 3C of the USAR [6]. Wolf Creek happens to use a dual SSE approach, one for the power block and one for the non-power block. All ESEL equipment is located within the WCGS power block and therefore only the power block SSE is presented in Table 4-2.

Table 4-2: SSE for Wolf Creek

Freq (Hz)	Power Block SA (g)
0.25	0.09
2.50	0.63
9.00	0.52
33.00	0.20
100.00	0.20

As shown in Figure 4-2 the GMRS begins to exceed the power block SSE at around 6.5 Hz.

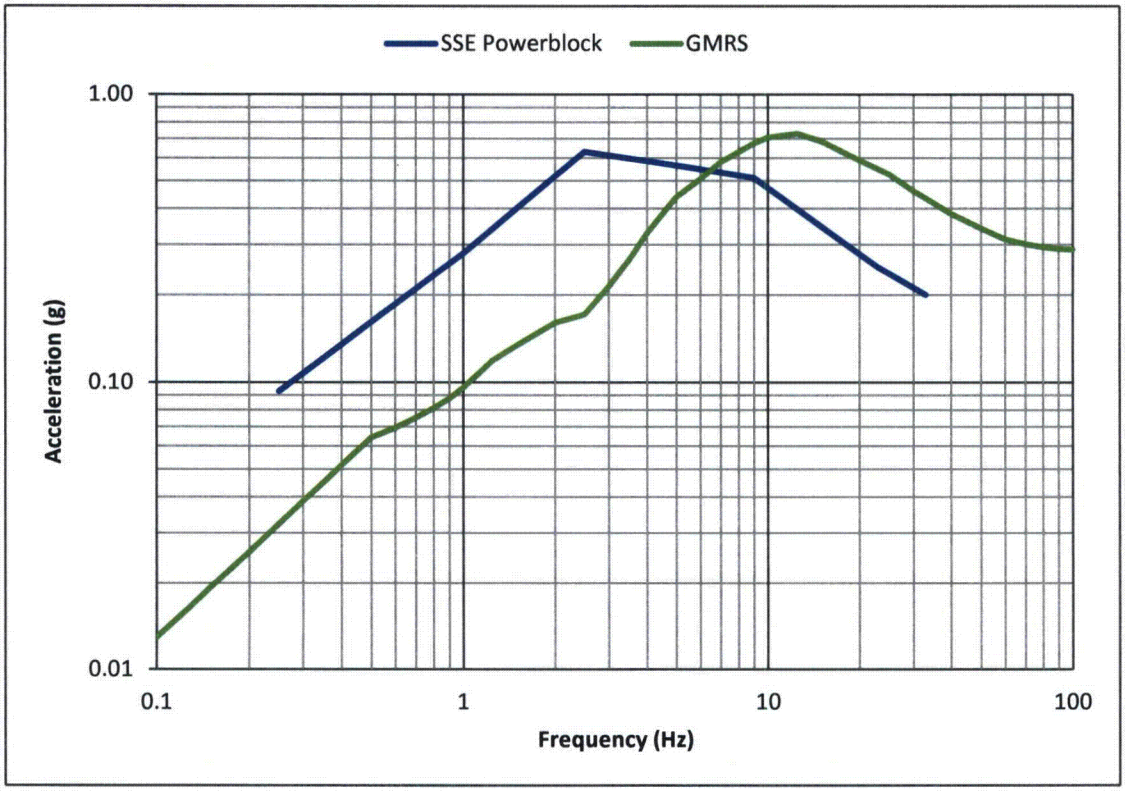

Figure 4-2: Wolf Creek SSE – GMRS Comparison

5.0 Review Level Ground Motion (RLGM)

5.1 Description of RLGM Selected

The Review Level Ground Motion is derived by linearly scaling the current design basis SSE by the maximum ratio of the GMRS to the SSE between the 1 and 10 Hz range (not to exceed two times the SSE) [2]. The maximum GMRS/SSE ratio occurs at 10 Hz as seen in Figure 4-2. The In-Structure Response Spectra document provides logarithmic interpolation at 10 Hz to determine that the SSE spectral acceleration is 0.48 g [10a]. Examination of Table 4-1 shows that the GMRS spectral acceleration is 0.706 g. The result is a maximum GMRS/SSE ratio between 1 – 10 Hz of 1.47 (witness 0.706 g / 0.48 g = 1.47). The resulting RLGM is shown in Table 5-1 and Figure 5-1.

Table 5-1: RLGM for Wolf Creek (Power Block)

Freq. (Hz)	33	23	9	5	2.5	1	0.25
RLGM (g)	0.29	0.37	0.75	0.83	0.93	0.41	0.14

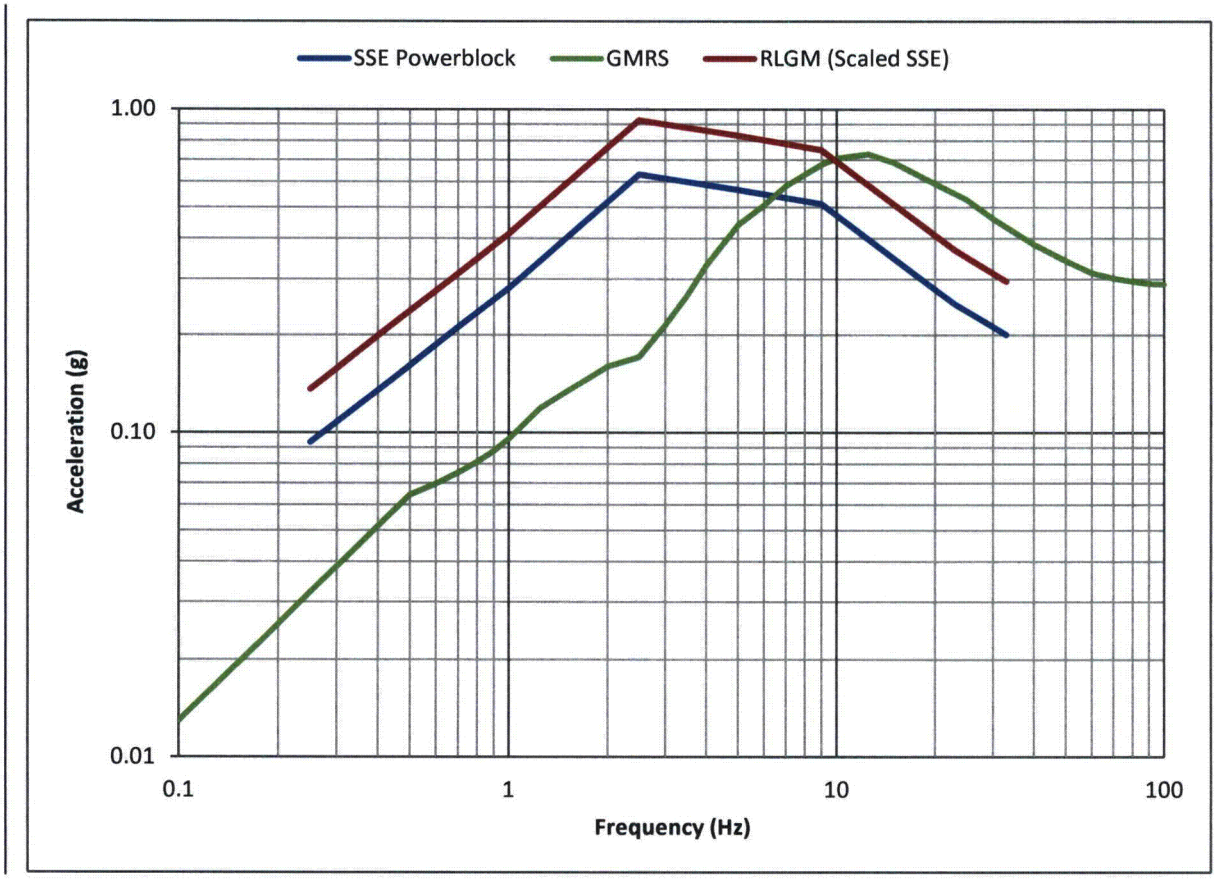

Figure 5-1: Wolf Creek RLGM vs GMRS

5.2 Method to Estimate In-Structure Response Spectra (ISRS)

The ISRS for Wolf Creek [10a] uses the scaled approach to estimate the ISRS. As mentioned in Section 5.1, the RLGM is scaled by a factor of 1.47 which is also applied to the existing ISRS curves.

6.0 Seismic Margin Evaluation Approach

It is necessary to demonstrate that ESEL items have sufficient seismic capacity to meet or exceed the demand characterized by the RLGM. The seismic capacity is characterized as the peak ground acceleration (PGA) for which there is a high confidence of a low probability of failure (HCLPF). The PGA is associated with a specific spectral shape, in this case the 5%-damped RLGM spectral shape. The HCLPF capacity must be equal to or greater than the RLGM PGA. The criteria for seismic capacity determination are given in Section 5 of EPRI 3002000704 [2].

There are two basic approaches for developing HCLPF capacities:

1. Deterministic approach using the conservative deterministic failure margin (CDFM) methodology of EPRI NP-6041, A Methodology for Assessment of Nuclear Power Plant Seismic Margin (Revision 1) [8].
2. Probabilistic approach using the fragility analysis methodology of EPRI TR-103959, Methodology for Developing Seismic Fragilities [9].

Wolf Creek has elected to use the deterministic approach by applying the EPRI NP-6041 screening process [8].

6.1 Summary of Methodologies Used

The seismic margins methodology of EPRI report NP-6041-SL was applied for this effort. Use of this methodology conforms to Section 5 of EPRI 3002000704. The primary tasks performed were:

- Generic seismic screening per NP-6041, Table 2-4.
- Performance of seismic walkdowns.
- Item-specific screening via walkdown, review of design data and performance of screening calculations.
- Performance of HCLPF calculations for screened-in equipment.

6.2 HCLPF Screening Process

6.2.1 Overview

The seismic margins screening methodology of NP-6041-SL was applied. This conforms to Section 5 of EPRI 3002000704. The primary steps for this screening process are:

1. Apply NP-6041-SL, Table 2-4 to determine which equipment items and failure modes may be screened-out on a generic basis.

2. For each equipment item, perform a seismic walkdown to verify generic screening may be applied and to verify the item does not have any specific seismic vulnerabilities.
3. Verify anchorage capacity.

The generic screening criteria of Table 2-4 are dependent on the applied screening level and are applicable to equipment located within 40 feet of plant grade. For the WCGS ESEP project:

- The peak 5% spectral acceleration of the RLGM is 0.93g. This level is in the 2nd screening column (0.8 – 1.2g) of NP-6041-SL, Table 2-4. Therefore, the 1.2g screening criteria of Table 2-4 were applied (2nd screening lane).
- A number of components in the Auxiliary/Control Building and one in the RB were located above 40' from grade; all other equipment was located within 40' of plant grade. Per Appendix A of NP-6041-SL, components that are above 40' from grade *and* have corresponding ISRS at the base of component in exceedance of 1.5 times the bounding spectrum (equivalent to a 1.8g peak spectral acceleration) may not be screened to the 2nd screening column and require HCLPF analysis.

Table 6-1 below summarizes application of Table 2-4 screening for the ESEP.

Applied plant grade was Elevation 2000'. Per the USAR, this grade elevation is constant through-out the power block area.

After completion of the screening process an item is either screened-out or screened-in. The presumptive seismic capacity of a screened-out item exceeds the applied screening level and no further evaluation is needed. An item that is screened-in requires a HCLPF analysis to address the failure mode cited by the seismic review team (SRT). The HCLPF capacity may or may not be above the screening level.

6.2.2 Generic Screening Results

Table 6-1 summarizes the generic screening results for the ESEL. Only the relevant equipment types are listed. Based on the generic screening:

- HCLPF analyses are required for atmospheric storage tanks
- Relay chatter requires evaluation

Other generic screening requirements were addressed by walkdown, design review and anchorage verification. These assessments are documented in the screening evaluation work sheets (SEWS) [10f].

Table 6-1: Summary of generic screening per NP-6041-SL, Table 2-4, 1.2g Screening Level

Equipment Type	Generic Screening Criteria	Screening Result
Active valves	Note (f) applies.	There are no extremely large extended motor operators on 2-inch or smaller piping.
Passive valves	No evaluation required.	
Atmospheric storage tanks	Evaluation required.	HCLPF analyses required for the atmospheric storage tanks.
Pressure vessels	Notes (h), (i) apply	For the pressurized tanks on the ESEL, anchorage and load path were verified by bounding calculations using qualification reports during screening. Potential failure modes of the vessel bodies were address by walkdown and design review.
Batteries and racks	Note (k) applies.	Batteries are in plastic shell frames braced for overturning by steel rods and are designed for seismic loads. HCLPF analyses are required for the battery rack structure and anchorage.
Horizontal pumps	No evaluation required.	Although no evaluation is required for the component per se, a HCLPF evaluation for the auxiliary feedwater turbine-driven pump is required.
Active electrical power distribution panels	Notes (s) and (t) apply.	Note (s) was addressed by walkdown and design review. Where bounding analysis of anchorage configurations for the RLGM could not be provided, HCLPF analyses are required. Relays are evaluated separately per Reference 5.
Passive electrical power distribution panels	Note (s) applies.	Note (s) was addressed by walkdown and design review. Where bounding analysis of anchorage configurations for the RLGM could not be provided, HCLPF analyses are required.
Transformers	Notes (u) and (v) apply.	The ESEL includes dry-type transformers. A design review verified coil restraint. HCLPF analysis of anchorage is required.
Battery chargers & inverters	Note (w) applies.	Per walkdown and design review, the items on the ESEL are solid state units. Where bounding analysis of anchorage configurations for the RLGM could not be provided, HCLPF analyses are required.

Instrumentation and control panels and racks	Notes (s) and (t) apply.	Note (s) was addressed by walkdown and design review. Where bounding analysis of anchorage configurations for the RLGM could not be provided, HCLPF analyses are required. Relays are evaluated separately per Reference 5.
Temperature sensors; pressure and level sensors.	Note (x) applies.	Note (x) was addressed by walkdown and design review. Sensors in the scope were typically mounted in-line on piping.

Relevant notes from NP-6041-SL Table 2-4

f. Evaluation recommended for MOVs in piping lines of 2 inches diameter or less.
h. Margin evaluation only needs to consider anchorage and supports.
i. For vessels designed by dynamic analysis or equivalent static analysis enveloping vessel inertial and piping loading, only the anchorage and supports require evaluation. For vessel not meeting these criteria, all potential failure modes require evaluation.
k. Batteries mounted in braced racks designed for seismic loads or qualified by dynamic testing do not require evaluation. Rigid spacers between batteries and end restraints are required. Batteries should be tightly supported by side rails.
s. Walkdown should be conducted to verify that the instruments are properly attached to the cabinets.
t. Relays, contactors, switches, and breakers must be evaluated for chatter and trip if functionality during strong shaking is required.
u. Anchorage evaluation required.
v. Liquid-filled transformers require evaluation of overpressure safety switches. The transformer coils should be restrained within the cabinet for dry transformers.
w. Solid state units require anchorage checks. Others require evaluation.
x. Insufficient data are available for screening guidelines. Emphasis should be on attachments.

6.3 Seismic Walkdown Approach

6.3.1 Walkdown Approach

Walkdowns were performed by two-person seismic review teams (SRTs) consisting of engineers with seismic experience. Walkdowns followed the

guidance of Section 5 of EPRI 3002000704 and Section 2 of NP-6041-SL. The SRT used NP-6041-SL, Appendix F to evaluate item-specific equipment caveats. The SRT also recorded notes and took photographs of the items under review.

Three walkdown sessions have been performed as indicated below.

Walkdown Date	SRT	Plant Support
Week of March 24, 2014	Hunter Young (S&A) Timothy Nealon (S&A)	Tim Solberg (WCNOC) Bud Freeman (WCNOC)
Week of July 20, 2014	Hunter Young (S&A) Samer El-Bahey (S&A)	Tim Solberg (WCNOC)
Week of November 3, 2014	Hunter Young (S&A) Apostolos Karavoussianis (S&A)	Tim Solberg (WCNOC)

The walkdown findings for each item are documented in screening evaluation work sheets (SEWS). The SEWS notes also identify evaluations and reviews performed to support screening. The SEWS are included in Appendix C of Reference 10f. Also, Appendix A [10f] provides a concise summary of screening results in tabular format

6.3.2 Application of Previous Walkdown Information

New seismic walkdowns were performed for ESEL equipment. The results of the previous seismic margin evaluation, performed for the Seismic IPEEE program [11], were reviewed and used for background purposes only.

6.3.3 Significant Walkdown Findings

The walkdown and screening results are summarized in Table 6-2.

Table 6-2: Items Selected for HCLPF Analysis

No.	ID	Description	Bldg	Elev	Basis for Selection
1.	NB001	4.16KV SWGR NB001 (Class 1E, Train A)	CB	2000 -00	Cabinet Anchorage could not be readily screened out for RLGM. Perform HCLPF analysis for anchorage.
2.	NG001	480 V LOAD CENTER NG01	CB	2000 -00	Cabinet Anchorage could not be readily screened out for RLGM. Perform HCLPF analysis for anchorage. Apply results to similar items NG002 and NG003.
3.	NK001	125 VDC BUS SWITCHBOARD NK001	CB	2016 -00	Cabinet Anchorage could not be readily screened out for RLGM. Perform HCLPF analysis for anchorage. Apply results to similar items NK003, NK004, NK041 and NK043.
4.	NK011	125 V BATTERY NK011	CB	2016 -00	Battery rack is not comprised of steel bracing. Perform HCLPF analysis for plastic frame. Apply results to similar items NK013 and NK014.
5.	NK011	125 V BATTERY NK011	CB	2016 -00	Rack Anchorage could not be readily screened. Perform HCLPF analysis for anchorage. Apply results to similar items NK013 and NK014.
6.	NK021	125 V BATTERY CHARGER NK021	CB	2016 -00	Cabinet Anchorage could not be readily screened out for RLGM. Perform HCLPF analysis for anchorage. Apply results to similar items NK023, NK024, and NK025.

No.	ID	Description	Bldg	Elev	Basis for Selection
7.	NN011	7.5KVA INVERTER (FED FROM BATT CHARGER NK021)	CB	2016 -00	Cabinet Anchorage could not be readily screened out for RLGM. Perform HCLPF analysis for anchorage. Apply results to similar items NN013 and NN014.
8.	PAL02	TDAFW Pump	AB	2000 -00	Pump Anchorage could not be readily screened out for RLGM. Perform HCLPF analysis for anchorage.
9.	RL021	REACTOR AUX CNTRL PANEL	CB	2047 -06	Console embedded plate could not be readily screened out for RLGM. Perform HCLPF analysis for embedded plate. Apply results to similar items RL002, RL005, RL006, RL018, RL022.
10.	RP053DB	BOP INSTR RACK RP053DB	CB	2047 -06	Cabinet Anchorage could not be readily screened out for RLGM. Perform HCLPF analysis for anchorage. Apply results to similar items RP053AC, RP053BC, and RP053DA.
11.	RP081A	T/C SUBCOOLING MONITOR CABINET	CB	2047 -06	Door cutout sizes exceed threshold of experience database in NP-6041-SL. Evaluate component structure (including anchorage) and functionality via HCLPF analysis. Apply results to similar item RP081B.
12.	SE054A	W NUC INSTM NIS 1	CB	2047 -06	Cabinet Anchorage could not be readily screened out for RLGM. Perform HCLPF analysis for anchorage.

No.	ID	Description	Bldg	Elev	Basis for Selection
13.	TAP01	Condensate Storage Tank	YARD	2000 -00	Per NP-6041-SL Table 2-4 seismic capacity cannot be screened and HCLPF analysis is required for overall seismic capacity. In addition, HCLPF evaluation required for block wall doghouse adjacent to tank.
14.	TBN01	REFUELING WATER STORAGE TANK	YARD	2000 -00	Per NP-6041-SL Table 2-4 seismic capacity cannot be screened and HCLPF analysis is required for overall seismic capacity.
15.	XNG01	4.16-KV/480 V LOAD CENTER TRANSFORMER XNG01 FOR LC NG001	CB	2000 -00	Transformer Anchorage could not be readily screened out for RLGM. Perform HCLPF analysis for anchorage. Apply results to similar item XNG03.
16.	Generic	BLOCK WALLS	AB/ CB	Var.	Per NP-6041-SL Table 2-4 seismic capacity cannot be screened and HCLPF analysis is required for block wall seismic capacity. Affected components include NB001, NG003, TAP01, NK043, NN003, NN013, NK041, NN001, NK021, NN011, NK051, NK001, NK023, NK071, NK073, NK011, NK013, AB007, NK003, RP209, NG001A, NG002, RP334, RP147A/B, NK004, NK074, NN004, NN014, NK024, and NK014.
17.	Generic	Cabinets containing essential relays	AB/CB	Var.	Per 14C4257-RPT-003 [Ref. 5], the following components contain essential relays that do not screen and require HCLPF evaluation: NG001A, NG002B, NG003C, NG004, and FC0219.

6.4 HCLPF Calculation Process

All HCLPF values were calculated using the conservative, deterministic failure margin (CDFM) criteria of NP-6041-SL [8]. CDFM analysis criteria are summarized in NP-6041-SL, Table 2-5.

For structural failure modes, the HCLPF capacity is equal to the earthquake magnitude at which the strength limit is reached. For equipment functionality, experience data or available test response spectra (TRS) are typically used to define the HCLPF capacity. The methods of NP-6041-SL, Appendix Q were applied for functionality evaluations.

6.5 Functional Evaluations of Relays

Verification of the functional capacity for equipment mounted within 40' of grade was addressed by the application NP-6041-SL, Table 2-4 generic screening criteria as described above. For equipment mounted higher than 40' above grade and for in-scope relays, the methods of NP-6041-SL, Appendix Q were applied for functionality evaluations. In those cases the seismic capacity was based upon one of the following:

- Test response spectra (TRS) from plant-specific seismic qualification reports.
- Generic equipment ruggedness spectra (GERS) from EPRI report NP-5223-SL [12].
- Experience based seismic capacity per the guidelines of EPRI TR-1019200 [13].

Screening of relays within the scope of the ESEP (in accordance with EPRI 3002000704) is conducted within 14C4257-RPT-003 [5]. Cabinets requiring a HCLPF evaluation for relay functionality are noted in Table 7-2 [5] under Item 17.

6.6 Tabulated ESEL HCLPF Values (Including Key Failure Modes)

Table 6-3 lists HCLPF analysis results. The failure modes analyzed are identified. Supporting calculation documents [10e] containing the detailed HCLPF calculations are also identified.

Note that for the CST (TAP01) and RWST (TBN01) the applied ground motion and HCLPF are based on the GMRS [7]. The GMRS is acceptable as an alternative RLGM per EPRI 3002000704, Section 4, Option 2. The CST and RWST are founded on a slab-on-grade in the yard. The GMRS has a horizontal PGA of 0.29.

Tabulated HCLPF Values

All HCLPF values for screened-out items equals or exceeds the RLGM

HCLPF ≥ 0.29g HCLPF for screened-out items and failure modes

Unless justified by calculations, the above HCLPF is applicable for screened-out items and covers all relevant failure modes.

The HCLPF values for all ESEL items are tabulated in Appendix B.

Table 6-3: HCLPF Analysis Results

No.	ID	Description	Bldg	Elev	HCLPF[1] (g, PGA)	Failure Mode Analyzed	Basis	Related Components
1.	NB001	4.16KV SWGR NB001 (Class 1E, Train A)	CB	2000-00	0.37	Equipment capacity and anchorage	14C4257-CAL-005	n/a
2.	NG001	480 V LOAD CENTER NG01	CB	2000-00	0.29	Equipment capacity and anchorage	14C4257-CAL-005	NG002, NG003
3.	NK001	125 VDC BUS SWITCHBOARD NK001	CB	2016-00	0.32	Equipment capacity and anchorage	14C4257-CAL-005	NK003, NK004, NK041, NK043, NN003
4.	NK011	125 V BATTERY NK011	CB	2016-00	0.45	Anchorage	14C4257-CAL-004	NK013, NK014
5.	NK011	125 V BATTERY NK011	CB	2016-00	0.69	Equipment capacity	14C4257-CAL-005	NK013, NK014
6.	NK021	125 V BATTERY CHARGER NK021	CB	2016-00	2.24	Anchorage	14C4257-CAL-004	NK023, NK024, NK025
7.	NN011	7.5KVA INVERTER (FED FROM BATT CHARGER NK021)	CB	2016-00	0.68	Anchorage	14C4257-CAL-004	NN013, NN014
8.	PAL02	TDAFW Pump	AB	2000-00	1.70	Anchorage	14C4257-CAL-004	n/a
9.	RL021	REACTOR AUX CNTRL PANEL	CB	2047-06	0.32	Anchorage	14C4257-CAL-004	RL002, RL005, RL006, RL018, RL022

[1] HCLPFs based upon RLGM (PGA=0.29g) as the seismic margins earthquake with the exception of TAP01, TBN01, and the CST pipe house block walls, which are based upon the GMRS (PGA=0.29g).

No.	ID	Description	Bldg	Elev	HCLPF[1] (g, PGA)	Failure Mode Analyzed	Basis	Related Components
10.	RP053DB	BOP INSTR RACK RP053DB	CB	2047-06	0.56	Anchorage	14C4257-CAL-004	RP053AC, RP053BC, RP053DA
11.	RP081A	T/C SUBCOOLING MONITOR CABINET	CB	2047-06	0.61	Equipment capacity and anchorage	14C4257-CAL-005	RP081B
12.	SE054A	W NUC INSTM NIS 1	CB	2047-06	0.86	Anchorage	14C4257-CAL-004	n/a
13.	TAP01	Condensate Storage Tank	YARD	2000-00	0.30	Equipment capacity and anchorage	14C4257-CAL-002	n/a
14.	TBN01	REFUELING WATER STORAGE TANK	YARD	2000-00	0.32	Equipment capacity and anchorage	14C4257-CAL-002	n/a
15.	XNG01	4.16-KV/480 V LOAD CENTER TRANSFORMER XNG01 FOR LC NG001	CB	2000-00	0.47	Anchorage	14C4257-CAL-004	XNG03
16.	Generic	BLOCK WALLS	AB/ CB	Var.				
	CTRL 2000'	All block walls on CTRL 2000' elev	CB	2000-00	2.66	Seismic interaction	14C4257-CAL-003	NB001, NG003, NG001A, NG002, RP334, RP147A/B,
	CTRL 2016'	All block walls no CTRL 2016' elev	CB	2016-00	1.85	Seismic interaction	14C4257-CAL-003	NK043, NN003, NN013, NK041, NN001, NK021, NN011, NK051, NK001, NK023, NK071, NK073, NK011, NK013, AB007, NK003, NK004, NK074, NN004, NN014, NK024, NK014
	AUX 2000'	2000' elev wall on column line AF north of Stair A-2	AUX	2000-00	1.15	Seismic interaction	14C4257-CAL-003	RP209
	CST House	CST Pipe house masonry walls	YARD	2000-00	0.37	Seismic interaction	14C4257-CAL-003	TAP01

No.	ID	Description	Bldg	Elev	HCLPF[1] (g, PGA)	Failure Mode Analyzed	Basis	Related Components
17.	Generic	Cabinets containing essential relays	AB/CB	Var.				
	NG003C	MCC NG03C BUS	CB	2047-06	0.44	Functional capacity and host component capacity	14C4257-CAL-005	NG001A, NG002B, NG004C
	FC0219	LOCAL CONTROL PANEL FOR TD AFW PUMP	AB	2000-00	0.61	Functional capacity and host component capacity	14C4257-CAL-005	n/a

7.0 Inaccessible Items

7.1 Identification of ESEL items inaccessible for walkdowns

Sufficient access was provided for all ESEL items and no additional walkdowns are planned.

8.0 ESEP Conclusions and Results

8.1 Supporting Information

Wolf Creek has performed the ESEP as an interim action in response to the NRC's 50.54(f) letter [1]. It was performed using the methodologies in the NRC endorsed guidance in EPRI 3002000704 [2].

The ESEP provides an important demonstration of seismic margin and expedites plant safety enhancements through evaluations and potential near-term modifications of plant equipment that can be relied upon to protect the reactor core following beyond design basis seismic events.

The ESEP is part of the overall Wolf Creek response to the NRC's 50.54(f) letter [1]. On March 12, 2014, NEI submitted to the NRC results of a study [14] of seismic core damage risk estimates based on updated seismic hazard information as it applies to operating nuclear reactors in the Central and Eastern United States (CEUS). The study concluded that "site-specific seismic hazards show that there [...] has not been an overall increase in seismic risk for the fleet of U.S. plants" based on the re-evaluated seismic hazards. As such, the "current seismic design of operating reactors continues to provide a safety margin to withstand potential earthquakes exceeding the seismic design basis."

The NRC's May 9, 2014 NTTF 2.1 Screening and Prioritization letter [15] concluded that the "fleetwide seismic risk estimates are consistent with the approach and results used in the GI-199 safety/risk assessment." The letter also stated that, "As a result, the staff has confirmed that the conclusions reached in GI-199 safety/risk assessment remain valid and that the plants can continue to operate while additional evaluations are conducted."

An assessment of the change in seismic risk for Wolf Creek was included in the fleet risk evaluation submitted in the March 12, 2014 NEI letter [14] therefore, the conclusions in the NRC's May 9 letter [15] also apply to Wolf Creek.

In addition, the March 12, 2014 NEI letter [14] provided an attached "Perspectives on the Seismic Capacity of Operating Plants," which: (1) assessed a number of qualitative reasons why the design of SSCs inherently contain margin beyond their design level, (2) discussed industrial seismic experience databases of performance of industry facility components similar to nuclear SSCs, and (3) discussed earthquake experience at operating plants.

The fleet of currently operating nuclear power plants was designed using conservative practices, such that the plants have significant margin to withstand large ground motions safely. This has been borne out for those plants that have actually experienced significant earthquakes. The seismic design process has inherent (and intentional) conservatisms which result in significant seismic margins within structures, systems and components (SSCs). These conservatisms are reflected in several key aspects of the seismic design process, including:

- Safety factors applied in design calculations
- Damping values used in dynamic analysis of SSCs
- Bounding synthetic time histories for in-structure response spectra calculations
- Broadening criteria for in-structure response spectra
- Response spectra enveloping criteria typically used in SSC analysis and testing applications
- Response spectra based frequency domain analysis rather than explicit time history based time domain analysis
- Bounding requirements in codes and standards
- Use of minimum strength requirements of structural components (concrete and steel)
- Bounding testing requirements, and
- Ductile behavior of the primary materials (that is, not crediting the additional capacity of materials such as steel and reinforced concrete beyond the essentially elastic range, etc.).

These design practices combine to result in margins such that the SSCs will continue to fulfill their functions at ground motions well above the SSE.

The intent of the ESEP is to perform an interim action in response to the NRC's 50.54(f) letter [1] to demonstrate seismic margin through a review of a subset of the plant equipment that can be relied upon to protect the reactor core following beyond design basis seismic events. In order to complete the ESEP in an expedited amount of time, the RLGM used for the ESEP evaluation is a scaled version of the plant's SSE rather than the actual GMRS (except for the CST and RWST, as explained previously in Section 6.6 of this report). To more fully characterize the risk impacts of the seismic ground motion represented by the GMRS on a plant specific basis, a more detailed seismic risk assessment (SPRA or risk-based SMA) is to be performed in accordance with EPRI 1025287 [16]. As identified in the Wolf Creek Seismic Hazard and GMRS submittal [7], Wolf Creek screens in for a risk evaluation. The complete risk evaluation will more completely characterize the probabilistic seismic ground motion input into the plant, the plant response to that probabilistic seismic ground motion input, and the resulting plant risk characterization. Wolf Creek will complete that evaluation in accordance with the schedule identified in NEI's letter dated April 9, 2013 [17] and endorsed by the NRC in their May 7, 2013 letter [2].

8.2 Identification of Planned Modifications

This report presents the seismic evaluation results for the ESEP as applied to WCGS. A primary goal of the ESEP is to demonstrate that the HCLPF seismic capacities of ESEL items bound the RLGM seismic demand. No ESEL items had HCLPF seismic capacities below the RLGM, and, as such, no modifications are planned.

8.3 Modification Implementation Schedule

Wolf Creek did not have any equipment with HCLPF seismic capacities below the RLGM and, as such, is not planning any modifications.

8.4 Summary of Regulatory Commitments

Per Section 8.3, Wolf Creek does not have any planned modifications and, as such, does not have any regulatory commitments as the result of the ESEP.

9.0 References

1. Letter from E. J. Leeds and M. R. Johnson, USNRC, to M. W. Sunseri, WCNOC, "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," March 12, 2012. ADAMS Accession No. ML12053A340.

2. Letter from E. J. Leeds, USNRC, to J. E. Pollock, NEI, "Electric Power Research Institute Final Draft Report XXXXXX, "Seismic Evaluation Guidance: Augmented Approach for the Resolution of Fukushima Near-Term Task Force Recommendation 2.1: Seismic," as an Acceptable Alternative to the March 12, 2012, Information Request for Seismic Reevaluations," May 7, 2013. 3002000704; ADAMS Accession No. ML13106A331.

3. WCNOC Overall Integrated Plan (OIP) in Response to the March 12, 2012, Commission Order EA-12-049

    a. WCNOC Letter WO 13-0014, "Wolf Creek Nuclear Operating Corporation Overall Integrated Plan in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Order Number EA-12-049)," February 28, 2013. ADAMS Accession No. ML13070A026.

    b. WCNOC Letter ET 13-0027, "Wolf Creek Nuclear Operating Corporation's First Six-Month Status 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," August 28, 2013. ADAMS Accession No. ML13247A277.

    c. WCNOC Letter ET 14-0011, "Wolf Creek Nuclear Operating Corporation's Second Six-Month Status 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," February 26, 2014. ADAMS Accession No. ML14064A190.

    d. WCNOC Letter ET 14-0024, "Wolf Creek Nuclear Operating Corporation's Third Six-Month Status 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," August 28, 2014. ADAMS Accession No. ML14246A191.

4. SAP-14-126 "Transmittal of Revision 4 of the Wolf Creek ESEL for ESEP Submittal Report", December 2014.

5. S&A Report 14C4257-RPT-003 Rev. 0, "Wolf Creek ESEL Relay Assessment," December 2014.

6. WCNOC USAR, "Wolf Creek Updated Safety Analysis Report (USAR)," Revision 27, March 2014.

7. 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.

8. Electric Power Research Institute Report, NP-6041-SLR1, Revision 1, "A Methodology for Assessment of Nuclear Power Plant Seismic Margin," 1991.

9. Electric Power Research Institute Report, TR-103959, "Methodology for Developing Seismic Fragilities," 1994.

10. S&A Documents:

    a. 14C4257-CAL-001, Revision. 2, "Generation of Scaled In-Structure Response Spectra for WCGS," December 2014.

    b. 14C4257-CAL-002, Revision 0, "Seismic Capacity of CST (TAP01) and RWST (TBN01)," December 2014.

    c. 14C4257-CAL-003, Revision 0, "HCLPF Analyses for Block Walls," December 2014.

    d. 14C4257-CAL-004, Revision 0, "HCLPF Seismic Capacity Evaluations of Anchorage for Selected Equipment," December 2014.

    e. 14C4257-CAL-005, Revision 0, "HCLPF Analysis of Components Based on Seismic Test Data," December 2014.

    f. 14C4257-RPT-002, Revision 1, "Seismic Evaluation of Equipment at WCGS for the Expedited Seismic Evaluation Process," December 2014.

11. Wolf Creek Generating Station Individual Plant Examination of External Events (IPEEE), June 1995.

12. Electric Power Research Institute Report, NP-5223-SL, Revision 1, "Generic Seismic Ruggedness of Power Plant Equipment," 1991.

13. Electric Power Research Institute Technical Report, TR-1019200, "Seismic Fragility Applications Guide Update," 2009.

14. Letter from A. R. Pietrangelo, NEI, to E. J. Leeds, USNRC, "Seismic Risk Evaluations for Plants in the Central and Eastern United States," March 12, 2014. ADAMS Accession No. ML14083A584.

15. NRC (E Leeds) Letter to All Power Reactor Licensees et al., "Screening and Prioritization Results Regarding Information Pursuant to Title 10 of the Code of Federal Regulations 50.54(F) Regarding Seismic Hazard Re-Evaluations for Recommendation 2.1 of the Near-Term Task Force Review of Insights From the

Fukushima Dai-Ichi Accident," May 9, 2014. ADAMS Accession No. ML14111A147.

16. Seismic Evaluation Guidance: Screening, Prioritization and Implementation Details (SPID) for the Resolution of Fukushima Near-Term Task Force Recommendation 2.1: Seismic. EPRI, Palo Alto, CA: February 2013. 1025287.

17. Letter from A. R. Pietrangelo, NEI, to D. L. Skeen, USNRC, "Proposed Path Forward for NTTF Recommendation 2.1: Seismic Reevaluations," April 9, 2013. ADAMS Accession No. ML13107B386.

Attachment A. Wolf Creek Generating Station ESEL

ESEL Item Num	Equipment		Operating State		Notes/Comments[1]
	ID	Description	Normal State	Desired State	
Mechanical ESEL Items					
1	TAP01	Condensate Storage Tank	Operable	Operable	SG Makeup with SGs Available - Phase 1, Phase 2, Phase 3
2	PAL02	TDAFW Pump	Not Operating	Operating	SG Makeup with SGs Available - Phase 1
3	ALHV0034	MOV	Open	Closed	SG Makeup with SGs Available - Phase 1
4	ALHV0035	MOV	Open	Closed	SG Makeup with SGs Available - Phase 1
5	ALFE0049	Flow Element			SG Makeup with SGs Available - Phase 1
6	ALHV0012	Air Operated Valve	Open	Open	SG Makeup with SGs Available - Phase 1, Phase 2, Phase 3
7	ALFE0004	Flow Element			SG Makeup with SGs Available - Phase 1, Phase 2, Phase 3
8	ALFT0004	Flow Transmitter			SG Makeup with SGs Available - Phase 1, Phase 2, Phase 3
9	ALFT0011	Flow Transmitter			SG Makeup with SGs Available - Phase 1, Phase 2, Phase 3
10	ALHV0010	Air Operated Valve	Open	Open	SG Makeup with SGs Available - Phase 1, Phase 2, Phase 3
11	ALFE0003	Flow Element			SG Makeup with SGs Available - Phase 1, Phase 2, Phase 3
12	ALFT0003	Flow Transmitter			SG Makeup with SGs Available - Phase 1, Phase 2, Phase 3
13	ALFT0009	Flow Transmitter			SG Makeup with SGs Available - Phase 1, Phase 2, Phase 3
14	ALHV0008	Air Operated Valve	Open	Open	SG Makeup with SGs Available - Phase 1, Phase 2, Phase 3
15	ALFE0002	Flow Element			SG Makeup with SGs Available - Phase 1, Phase 2, Phase 3
16	ALFT0002	Flow Transmitter			SG Makeup with SGs Available - Phase 1, Phase 2, Phase 3
17	ALFT0007	Flow Transmitter			SG Makeup with SGs Available - Phase 1, Phase 2, Phase 3
18	ALHV0006	Air Operated Valve	Open	Open	SG Makeup with SGs Available - Phase 1, Phase 2, Phase 3
19	ALFE0001	Flow Element			SG Makeup with SGs Available - Phase 1, Phase 2, Phase 3
20	ALFT0001	Flow Transmitter			SG Makeup with SGs Available - Phase 1, Phase 2, Phase 3
21	ABHV0005	Air Operated Valve	Closed	Fail Open	SG Makeup with SGs Available - Phase 1
22	ABHV0048	Air Operated Valve	Open	Fail Closed	SG Makeup with SGs Available - Phase 1
23	ABHV0006	Air Operated Valve	Closed	Fail Open	SG Makeup with SGs Available - Phase 1
24	ABHV0049	Air Operated Valve	Open	Fail Closed	SG Makeup with SGs Available - Phase 1

ESEL Item Num	Equipment		Operating State		Notes/Comments[1]
	ID	Description	Normal State	Desired State	
25	FCFV0310	Level Control Valve	Open	Closed	SG Makeup with SGs Available - Phase 1
26	FCLT0010	Level Indicator			SG Makeup with SGs Available - Phase 1
27	FCHV0312	Trip and Throttle Valve	Closed	Operating	SG Makeup with SGs Available - Phase 1
28	Speed Governor	Speed Governor	Standby	Operating	SG Makeup with SGs Available - Phase 1
29	FCFV0313	Speed Governor Valve	Open	Operating	SG Makeup with SGs Available - Phase 1
30	KFC02	AFW Pump Turbine	Not Operating	Operating	SG Makeup with SGs Available - Phase 1
31	TEM01	Boron Injection Tank			RCS Makeup with SGs not Available - Phase 2, Phase 3
32	EMPT0947	BIT Outlet Pressure Transmitter			RCS Makeup with SGs not Available - Phase 2, Phase 3
33	EMPI0947	BIT Outlet Pressure Indicator			RCS Makeup with SGs not Available - Phase 2, Phase 3
34	EMHV8801B	MOTOR-OPERATED VALVE EMHV8801B	Closed	Open	RCS Makeup with SGs not Available - Phase 2, Phase 3
35	EMFE0924	ECCS FLOW TO RCS COLD-LEG 1			RCS Makeup with SGs not Available - Phase 2, Phase 3
36	EMFE0925	ECCS FLOW TO RCS COLD-LEG 2			RCS Makeup with SGs not Available - Phase 2, Phase 3
37	EMFE0926	ECCS FLOW TO RCS COLD-LEG 3			RCS Makeup with SGs not Available - Phase 2, Phase 3
38	EMFE0927	ECCS FLOW TO RCS COLD-LEG 4			RCS Makeup with SGs not Available - Phase 2, Phase 3
39	TBN01	RWST			RCS Makeup with SGs not Available - Phase 1
40	BNLT0930	RWST Level Transmitter			RCS Makeup with SGs not Available - Phase 1
41	EJFCV0610	RHR PUMP A MINIFLOW VALVE	Open	Closed	RCS Makeup with SGs not Available - Phase 1
42	TBG03A	Boric Acid Tank			RCS Makeup with SGs Available - Phase 2, Phase 3
43	BGLT0102	BORIC ACID TANK A LEV			RCS Makeup with SGs Available - Phase 2, Phase 3
44	BGLI0102	BORIC ACID TANK A LEV			RCS Makeup with SGs Available - Phase 2, Phase 3
45	BBPV8702A	RHR TO RCS	Closed	Open	RCS Makeup with SGs not Available - Phase 1
Electrical ESEL Items					
46	NB001	4.16KV SWGR NB001 (Class 1E, Train A)	N/A	N/A	This component is powered by the FLEX DG in Phase 3 as stated in Sec. 8 of the WC Integrated FLEX Plan
47	NB00101	4.16 kV FDR BKR FOR RHRP-A DPEJ01A (Residual Heat Removal Pump A)	N/A	N/A	This component is powered by the FLEX DG in Phase 3 as stated in Sec. 8 of the WC Integrated FLEX Plan

ESEL Item Num	Equipment		Operating State		Notes/Comments[1]
	ID	Description	Normal State	Desired State	
48	NB00107	4.16 kV FDR BKR FOR CCWP-A DPEG01A (Component Cooling Water Pump A)	N/A	N/A	This component is powered by the FLEX DG in Phase 3 as stated in Sec. 8 of the WC Integrated FLEX Plan
49	NB00110	4.16 kV FDR BKR FOR XFMR XNG03 (4160 V to 480 V for LC NG003)	N/A	N/A	Although this component is not part of the current FLEX Phase 3 plan, WCNOC has decided to add this to the ESEL in order to independently power NG03
50	NB00113	4.16 kV FDR BKR FOR XFMR XNG01 (4160 V to 480 V for LC NG001)	N/A	N/A	This component is powered by the FLEX DG in Phase 3 as stated in Sec. 8 of the WC Integrated FLEX Plan
51	NB00109	4.16 kV FLEX GEN TIE-IN POINT (BKR) FOR TRAIN A	N/A	N/A	This component is powered by the FLEX DG in Phase 3 as stated in Sec. 8 of the WC Integrated FLEX Plan
52	XNG01	4.16-KV/480 V LOAD CENTER TRANSFORMER XNG01 FOR LC NG001	N/A	N/A	This component is powered by the FLEX DG in Phase 3 as stated in Sec. 8 of the WC Integrated FLEX Plan
53	NG001	480 V LOAD CENTER NG01	N/A	N/A	This component is powered by the FLEX DG, first Phase 2, then in Phase 3, as stated in Sec. 8 of the WC Integrated FLEX Plan
54	NG00101	MAIN BKR FOR LC NG01	N/A	N/A	This component is powered by the FLEX DG in Phase 3 as stated in Sec. 8 of the WC Integrated FLEX Plan
55	NG00103	FDR BKR FOR 125 V VITAL BATTERY CHARGER NK021	N/A	N/A	This component is powered by the FLEX DG, first Phase 2, then in Phase 3, as stated in Sec. 8 of the WC Integrated FLEX Plan
56	NG00112	FLEX 500 kW TIE IN BRK (Phase 2 connection point)	N/A	N/A	This component is powered by the FLEX DG in Phase 2 as stated in Sec. 8 of the WC Integrated FLEX Plan
57	NG00116	TIE BKR (CONNECTS NG01 AND NG03)	N/A	N/A	This component is powered by the FLEX DG in Phase 2 as stated in Sec. 8 of the WC Integrated FLEX Plan
58	XNG03	4.16-KV/480 V LOAD CENTER TRANSFORMER XNG03 FOR LC NG003	N/A	N/A	Although this component is not part of the current FLEX Phase 3 plan, WCNOC has decided to add this to the ESEL in order to independently power NG03
59	NG003	480 V LOAD CENTER NG03	N/A	N/A	This component is powered by the FLEX DG, first Phase 2, then in Phase 3, as stated in Sec. 8 of the WC Integrated FLEX Plan
60	NG00301	MAIN BKR FOR LC NG03	N/A	N/A	Although this component is not part of the current FLEX Phase 3 plan, WCNOC has decided to add this to the ESEL in order to independently power NG03

ESEL Item Num	Equipment		Operating State		Notes/Comments[1]
	ID	Description	Normal State	Desired State	
61	NG00303	FDR BKR FOR 125 V VITAL BATTERY CHARGER NK023	N/A	N/A	This component is powered by the FLEX DG, first Phase 2, then in Phase 3, as stated in Sec. 8 of the WC Integrated FLEX Plan
62	NK021	125 V BATTERY CHARGER NK021	N/A	N/A	This component is powered by the FLEX DG, first Phase 2, then in Phase 3, as stated in Sec. 8 of the WC Integrated FLEX Plan
63	NK071	TRANSFER SWITCH BUS NK01 BATTERY CHARGER NK21/NK25	N/A	N/A	This component is powered by the FLEX DG, first Phase 2, then in Phase 3, as stated in Sec. 8 of the WC Integrated FLEX Plan
64	NK001	125 VDC BUS SWITCHBOARD NK001	N/A	N/A	This component is powered during ALL phases of the FLEX strategy as stated in Sec. 8 of the WC Integrated FLEX Plan
65	NK00102	FDR BKR FROM BATT CHGR NK021 TO NK001	N/A	N/A	This component is powered by the FLEX DG, first Phase 2, then in Phase 3, as stated in Sec. 8 of the WC Integrated FLEX Plan
66	NK00104	MAIN BREAKER FOR CNTRL AND DIST PNL NK041 (PART OF SWBD NK001)	N/A	N/A	This component is powered during ALL phases of the FLEX strategy as stated in Sec. 8 of the WC Integrated FLEX Plan
67	NK00105	MAIN BREAKER FOR CNTRL AND DIST PNL NK051 (PART OF SWBD NK001)	N/A	N/A	This component is powered during ALL phases of the FLEX strategy as stated in Sec. 8 of the WC Integrated FLEX Plan
68	NK011	125 V BATTERY NK011	N/A	N/A	This component is powered during ALL phases of the FLEX strategy as stated in Sec. 8 of the WC Integrated FLEX Plan
69	NK00101	ISOLATION BKR FOR BATTERY NK011	N/A	N/A	This component is powered during ALL phases of the FLEX strategy as stated in Sec. 8 of the WC Integrated FLEX Plan
70	NK00111	FDR BKR FOR INVERTER NN011 (PART OF SWBD NK001)	N/A	N/A	This component is powered during ALL phases of the FLEX strategy as stated in Sec. 8 of the WC Integrated FLEX Plan
71	NN011	7.5KVA INVERTER (FED FROM BATT CHARGER NK021)	N/A	N/A	This component is powered during ALL phases of the FLEX strategy as stated in Sec. 8 of the WC Integrated FLEX Plan
72	NN001	Class 1E AC DIST SWBD NN01 (SEP GRP 1)	N/A	N/A	This component is powered during ALL phases of the FLEX strategy as stated in Sec. 8 of the WC Integrated FLEX Plan

ESEL Item Num	Equipment		Operating State		Notes/Comments[1]
	ID	Description	Normal State	Desired State	
73	SA036A	ESFAS CH1 TERM	N/A	N/A	This component is powered during ALL phases of the FLEX strategy as stated in Sec. 8 of the WC Integrated FLEX Plan
74	SENY0060A	NEUTRON FLUX MONITORING SYSTEM DETECTOR AMPLIFIER SENY 60A	N/A	N/A	This component is powered during ALL phases of the FLEX strategy as stated in Sec. 8 of the WC Integrated FLEX Plan
75	SENY0060B	NEUTRON FLUX MONITORING SYSTEM DETECTOR AMPLIFIER SENY 60B	N/A	N/A	This component is powered during ALL phases of the FLEX strategy as stated in Sec. 8 of the WC Integrated FLEX Plan
76	SB032A	W SS PROT SYS INPUT TRN B	N/A	N/A	This component is powered during ALL phases of the FLEX strategy as stated in Sec. 8 of the WC Integrated FLEX Plan
77	SB029A	W SS PROT SYS INPUT TRN A	N/A	N/A	This component is powered during ALL phases of the FLEX strategy as stated in Sec. 8 of the WC Integrated FLEX Plan
78	SB038	W PROCESS ANALOG PROTECTION SET CAB-01	N/A	N/A	This component is powered during ALL phases of the FLEX strategy as stated in Sec. 8 of the WC Integrated FLEX Plan
79	SB029D	W SS PROT SYS OUT 2 TRN A	N/A	N/A	This component is powered during ALL phases of the FLEX strategy as stated in Sec. 8 of the WC Integrated FLEX Plan
80	SE054A	W NUC INSTM NIS 1	N/A	N/A	This component is powered during ALL phases of the FLEX strategy as stated in Sec. 8 of the WC Integrated FLEX Plan
81	SB030A	SSPS TRN A #1 TEST	N/A	N/A	This component is powered during ALL phases of the FLEX strategy as stated in Sec. 8 of the WC Integrated FLEX Plan
82	RP053AC	BOP INSTRUMENTATION RACK (TERMINATION AREA)	N/A	N/A	This component is powered during ALL phases of the FLEX strategy as stated in Sec. 8 of the WC Integrated FLEX Plan
83	SB078	RPV LEVEL INSTR SYS (RVLIS) PROC PROT SYS CABINET	N/A	N/A	This component is powered during ALL phases of the FLEX strategy as stated in Sec. 8 of the WC Integrated FLEX Plan
84	RP081A	T/C SUBCOOLING MONITOR CABINET	N/A	N/A	This component is powered during ALL phases of the FLEX strategy as stated in Sec. 8 of the WC Integrated FLEX Plan

ESEL Item Num	Equipment		Operating State		Notes/Comments[1]
	ID	Description	Normal State	Desired State	
85	NK041	CNTRL & INSTR DIST SWBD NK041 (CLASS 1E 125 VDC)	N/A	N/A	This component is powered during ALL phases of the FLEX strategy as stated in Sec. 8 of the WC Integrated FLEX Plan
86	RL005	TURBINE GENERATOR AND FW CONSOLE	N/A	N/A	This component is powered during ALL phases of the FLEX strategy as stated in Sec. 8 of the WC Integrated FLEX Plan
87	RL006	TURBINE GENERATOR AND FW CONSOLE	N/A	N/A	This component is powered during ALL phases of the FLEX strategy as stated in Sec. 8 of the WC Integrated FLEX Plan
88	RP139	B AUXILIARY RELAY RACK RP139	N/A	N/A	This component is powered during ALL phases of the FLEX strategy as stated in Sec. 8 of the WC Integrated FLEX Plan
89	NK051	CNTRL & INSTR DIST SWBD NK051 (CLASS 1E 125 VDC)	N/A	N/A	This component is powered during ALL phases of the FLEX strategy as stated in Sec. 8 of the WC Integrated FLEX Plan
90	BBPCV0455A	BBPCV0455A PORV SOLENOID FAILS TO OPEN ON DEMAND	N/A	N/A	This component is powered during ALL phases of the FLEX strategy as stated in Sec. 8 of the WC Integrated FLEX Plan
91	RL021	REACTOR AUX CNTRL PANEL	N/A	N/A	This component is powered during ALL phases of the FLEX strategy as stated in Sec. 8 of the WC Integrated FLEX Plan
92	RL022	REACTOR AUX CNTRL PANEL	N/A	N/A	This component is powered during ALL phases of the FLEX strategy as stated in Sec. 8 of the WC Integrated FLEX Plan
93	RP209	B AUXILIARY RELAY RACK	N/A	N/A	This component is powered during ALL phases of the FLEX strategy as stated in Sec. 8 of the WC Integrated FLEX Plan
94	RP289	DC DIST PNL RP289	N/A	N/A	This component is powered during ALL phases of the FLEX strategy as stated in Sec. 8 of the WC Integrated FLEX Plan
95	RP330	AUX RELAY RACK RP330	N/A	N/A	This component is powered during ALL phases of the FLEX strategy as stated in Sec. 8 of the WC Integrated FLEX Plan
96	RP332	B AUXILIARY RELAY RACK	N/A	N/A	This component is powered during ALL phases of the FLEX strategy as stated in Sec. 8 of the WC Integrated FLEX Plan

ESEL Item Num	Equipment		Operating State		Notes/Comments[1]
	ID	Description	Normal State	Desired State	
97	NK051A	EM'CY LIGHTING DIST SWBD NK051A (SUBPNL OF NK051)	N/A	N/A	This component is powered during ALL phases of the FLEX strategy as stated in Sec. 8 of the WC Integrated FLEX Plan
98	NK023	125 V BATTERY CHARGER NK023	N/A	N/A	This component is powered by the FLEX DG, first Phase 2, then in Phase 3, as stated in Sec. 8 of the WC Integrated FLEX Plan
99	NK073	TRANSFER SWITCH BUS NK03 BATTERY CHARGER NK23/NK25	N/A	N/A	This component is powered by the FLEX DG, first Phase 2, then in Phase 3, as stated in Sec. 8 of the WC Integrated FLEX Plan
100	NK003	125 VDC BUS SWITCHBOARD NK003	N/A	N/A	This component is powered during ALL phases of the FLEX strategy as stated in Sec. 8 of the WC Integrated FLEX Plan
101	NK00302	FDR BKR FROM BATT CHGR NK023 TO NK003	N/A	N/A	This component is powered by the FLEX DG, first Phase 2, then in Phase 3, as stated in Sec. 8 of the WC Integrated FLEX Plan
102	NK00304	MAIN BREAKER FOR CNTRL AND DIST PNL NK043 (PART OF SWBD NK003)	N/A	N/A	This component is powered during ALL phases of the FLEX strategy as stated in Sec. 8 of the WC Integrated FLEX Plan
103	NK013	125 V BATTERY NK013	N/A	N/A	This component is powered during ALL phases of the FLEX strategy as stated in Sec. 8 of the WC Integrated FLEX Plan
104	NK00301	ISOLATION BKR FOR BATTERY NK013	N/A	N/A	This component is powered during ALL phases of the FLEX strategy as stated in Sec. 8 of the WC Integrated FLEX Plan
105	NK00311	FDR BKR FOR INVERTER NN013 (PART OF SWBD NK003)	N/A	N/A	This component is powered during ALL phases of the FLEX strategy as stated in Sec. 8 of the WC Integrated FLEX Plan
106	NN013	7.5KVA INVERTER (FED FROM BATT CHARGER NK023)	N/A	N/A	This component is powered during ALL phases of the FLEX strategy as stated in Sec. 8 of the WC Integrated FLEX Plan
107	NN003	Class 1E AC DIST SWBD NN03 (SEP GRP 3)	N/A	N/A	This component is powered during ALL phases of the FLEX strategy as stated in Sec. 8 of the WC Integrated FLEX Plan
108	RP053DB	BOP INSTR RACK RP053DB	N/A	N/A	This component is powered during ALL phases of the FLEX strategy as stated in Sec. 8 of the WC Integrated FLEX Plan

ESEL Item Num	Equipment ID	Equipment Description	Operating State Normal State	Operating State Desired State	Notes/Comments[1]
109	SB037	W PROCESS ANALOG PROTECTION SET CAB-03	N/A	N/A	This component is powered during ALL phases of the FLEX strategy as stated in Sec. 8 of the WC Integrated FLEX Plan
110	NK043	CNTRL & INSTR DIST SWBD NK043 (CLASS 1E 125 VDC)	N/A	N/A	This component is powered during ALL phases of the FLEX strategy as stated in Sec. 8 of the WC Integrated FLEX Plan
111	AB007	Aux Relay Rack	N/A	N/A	This component is powered during ALL phases of the FLEX strategy as stated in Sec. 8 of the WC Integrated FLEX Plan
112	NG00109	FDR BKR FOR 125 V SWING BATTERY CHARGER NK025	N/A	N/A	This component provides power to NK025 and, in turn, Separation Group 1.
113	NK025	125 V BATTERY CHARGER NK025 (Swing Battery Charger)	N/A	N/A	The A-Train swing charger will be used to power Separation Group 1.
114	NG002	480 V LOAD CENTER NG02	N/A	N/A	This component is powered by the FLEX DG, first Phase 2, then in Phase 3, as stated in Sec. 8 of the WC Integrated FLEX Plan
115	NG00212	FLEX 500 kW TIE IN BKR from FD201 (Phase 2 connection point)	N/A	N/A	This component is powered by the FLEX DG, first Phase 2, then in Phase 3, as stated in Sec. 8 of the WC Integrated FLEX Plan
116	NG00203	FDR BKR FOR 125 V VITAL BATTERY CHARGER NK024	N/A	N/A	This component is powered by the FLEX DG, first Phase 2, then in Phase 3, as stated in Sec. 8 of the WC Integrated FLEX Plan
117	NK024	125 V BATTERY CHARGER NK024	N/A	N/A	This component is powered by the FLEX DG, first Phase 2, then in Phase 3, as stated in Sec. 8 of the WC Integrated FLEX Plan
118	NK074	TRANSFER SWITCH BUS NK04 BATTERY CHARGER NK24/NK26	N/A	N/A	This component is powered by the FLEX DG, first Phase 2, then in Phase 3, as stated in Sec. 8 of the WC Integrated FLEX Plan
119	NK004	125 VDC BUS SWITCHBOARD NK004	N/A	N/A	This component is powered during ALL phases of the FLEX strategy as stated in Sec. 8 of the WC Integrated FLEX Plan
120	NK00402	FDR BKR FROM BATT CHGR NK024 TO NK004	N/A	N/A	This component is powered by the FLEX DG, first Phase 2, then in Phase 3, as stated in Sec. 8 of the WC Integrated FLEX Plan
121	NK014	125 V BATTERY NK014	N/A	N/A	This component is powered during ALL phases of the FLEX strategy as stated in Sec. 8 of the WC Integrated FLEX Plan

ESEL Item Num	Equipment		Operating State		Notes/Comments[1]
	ID	Description	Normal State	Desired State	
122	NK00401	ISOLATION BKR FOR BATTERY NK014	N/A	N/A	This component is powered during ALL phases of the FLEX strategy as stated in Sec. 8 of the WC Integrated FLEX Plan
123	NK00411	FDR BKR FOR INVERTER NN011 (PART OF SWBD NK004)	N/A	N/A	This component is powered during ALL phases of the FLEX strategy as stated in Sec. 8 of the WC Integrated FLEX Plan
124	NN014	7.5KVA INVERTER (FED FROM BATT CHARGER NK024)	N/A	N/A	This component is powered during ALL phases of the FLEX strategy as stated in Sec. 8 of the WC Integrated FLEX Plan
125	NN004	Class 1E AC DIST SWBD NN04 (SEP GRP 4)	N/A	N/A	This component is powered during ALL phases of the FLEX strategy as stated in Sec. 8 of the WC Integrated FLEX Plan
126	SA036B	ESFAS CH4 TERM	N/A	N/A	This component is powered during ALL phases of the FLEX strategy as stated in Sec. 8 of the WC Integrated FLEX Plan
127	RP147B	BOP Instrumentation Rack RP147B	N/A	N/A	This component is powered during ALL phases of the FLEX strategy as stated in Sec. 8 of the WC Integrated FLEX Plan
128	SENY0061A	NEUTRON FLUX MONITORING SYSTEM DETECTOR AMPLIFIER SENY 61A	N/A	N/A	This component is powered during ALL phases of the FLEX strategy as stated in Sec. 8 of the WC Integrated FLEX Plan
129	SENY0061B	NEUTRON FLUX MONITORING SYSTEM DETECTOR AMPLIFIER SENY 61B	N/A	N/A	This component is powered during ALL phases of the FLEX strategy as stated in Sec. 8 of the WC Integrated FLEX Plan
130	SB032D	W SSPS Train B #2 Output	N/A	N/A	This component is powered during ALL phases of the FLEX strategy as stated in Sec. 8 of the WC Integrated FLEX Plan
131	SB033A	SSPS Train B #1 Test	N/A	N/A	This component is powered during ALL phases of the FLEX strategy as stated in Sec. 8 of the WC Integrated FLEX Plan
132	SB041	W PROCESS ANALOG PROTECTION SET CAB-04	N/A	N/A	This component is powered during ALL phases of the FLEX strategy as stated in Sec. 8 of the WC Integrated FLEX Plan
133	RP053BC	BOP Instrumentation Rack RP053BC	N/A	N/A	This component is powered during ALL phases of the FLEX strategy as stated in Sec. 8 of the WC Integrated FLEX Plan

ESEL Item Num	Equipment		Operating State		Notes/Comments[1]
	ID	Description	Normal State	Desired State	
134	SB079	RVLIS Process Cabinet SB079	N/A	N/A	This component is powered during ALL phases of the FLEX strategy as stated in Sec. 8 of the WC Integrated FLEX Plan
135	RP081B	Subcooling Monitor Cabinet	N/A	N/A	This component is powered during ALL phases of the FLEX strategy as stated in Sec. 8 of the WC Integrated FLEX Plan
136	SB148B	W PROCESS PROTECTION (Fire Isolation)	N/A	N/A	This component is powered during ALL phases of the FLEX strategy as stated in Sec. 8 of the WC Integrated FLEX Plan

Attachment B. ESEP HCLPF Values and Failure Modes Tabulation

HCLPF values are listed in Table B-1. These notes are applicable:

1. The listed HCLPF value is for comparison to the horizontal PGA at the surface.
2. Items covered by the NP-6041-SL "rule of the box" (ROB) are identified in Table A-2 [9]. In each case, the HCLPF value for the parent item applies.
3. Where an anchorage HCLPF is performed but the component per se is screened, the equipment capacity is assigned based upon the 1.2g peak spectral acceleration coinciding with the 2nd screening lane of NP-6041-SL, Table 2-4. Since the WCGS RLGM has a peak spectral acceleration of 0.93g and PGA of 0.29g [Reference 10e], the 1.2g peak spectral acceleration corresponds with a PGA of 0.38g (witness 1.2g/0.93g*0.29g=0.38g). For equipment located above 40', the equipment capacity is conservatively assigned at the RLGM level of 0.29g.
4. For the CST and RWST only (TAP01 and TBN01, respectively), the applied ground motion was based on the GMRS (PGA = 0.29).
5. As a result of the relay chatter evaluation, additional items were added to the ESEL list for evaluation.

Table B-1: HCLPF Values

ESEL Item Number	ID	Description	Bldg	Elev	HCLPF (g, PGA)	Failure Mode	Basis
1	TAP01	Condensate Storage Tank	YARD	2000-00	0.3	Equipment Capacity	Tank and anchorage capacity evaluated in 14C4257-CAL-002.Anchorage evaluated per 14C4257-CAL-004. Block wall evaluated per 14C4257-CAL-003.
2	PAL02	TDAFW Pump	AUX	2000-00	0.38	Equipment Capacity	Component per se screened. Anchorage evaluated per 14C4257-CAL-004.
3	ALHV0034	MOV	AUX	1988-00	>RLGM	Screened	SRT disposition
4	ALHV0035	MOV	AUX	1988-00	>RLGM	Screened	SRT disposition
5	ALFE0049	Flow Element	AUX	2000-00	>RLGM	Screened	SRT disposition
6	ALHV0012	Air Operated Valve	AUX	2004-07	>RLGM	Screened	SRT disposition
7	ALFE0004	Flow Element	AUX	2000-00	>RLGM	Screened	SRT disposition
8	ALFT0004	Flow Transmitter	AUX	2016-01	>RLGM	Screened	SRT disposition
9	ALFT0011	Flow Transmitter	AUX	2000-00	>RLGM	Screened	SRT disposition
10	ALHV0010	Air Operated Valve	AUX	2002-09	>RLGM	Screened	SRT disposition
11	ALFE0003	Flow Element	AUX	2000-00	>RLGM	Screened	SRT disposition
12	ALFT0003	Flow Transmitter	AUX	2016-00	>RLGM	Screened	SRT disposition
13	ALFT0009	Flow Transmitter	AUX	2000-00	>RLGM	Screened	SRT disposition
14	ALHV0008	Air Operated Valve	AUX	2004-00	>RLGM	Screened	SRT disposition
15	ALFE0002	Flow Element	AUX	2000-00	>RLGM	Screened	SRT disposition
16	ALFT0002	Flow Transmitter	AUX	2016-00	>RLGM	Screened	SRT disposition
17	ALFT0007	Flow Transmitter	AUX	2000-00	>RLGM	Screened	SRT disposition
18	ALHV0006	Air Operated Valve	AUX	2001-06	>RLGM	Screened	SRT disposition
19	ALFE0001	Flow Element	AUX	2000-00	>RLGM	Screened	SRT disposition
20	ALFT0001	Flow Transmitter	AUX	2015-00	>RLGM	Screened	SRT disposition
21	ABHV0005	Air Operated Valve	AUX	2027-10	>RLGM	Screened	SRT disposition
22	ABHV0048	Air Operated Valve	AUX	2026-00	>RLGM	Screened	SRT disposition
23	ABHV0006	Air Operated Valve	AUX	2027-10	>RLGM	Screened	SRT disposition
24	ABHV0049	Air Operated Valve	AUX	2026-00	>RLGM	Screened	SRT disposition
25	FCFV0310	Level Control Valve			>RLGM	Screened	SRT disposition
26	FCLT0010	Level Indicator			>RLGM	Screened	SRT disposition
27	FCHV0312	Trip and Throttle Valve	AUX	2000-00	>RLGM	Screened	SRT disposition

ESEL Item Number	ID	Description	Bldg	Elev	HCLPF (g, PGA)	Failure Mode	Basis
28	Speed Governor	Speed Governor	AUX	2000-00	0.38	Equipment Capacity	Item is ROB to PAL02. Component per se screened. Anchorage evaluated per 14C4257-CAL-004.
29	FCFV0313	Speed Governor Valve	AUX	2000-00	0.38	Equipment Capacity	Item is ROB to PAL02. Component per se screened. Anchorage evaluated per 14C4257-CAL-004.
30	KFC02	AFW Pump Turbine	AUX	2000-00	0.38	Equipment Capacity	Item is ROB to PAL02. Component per se screened. Anchorage evaluated per 14C4257-CAL-004.
31	TEM01	Boron Injection Tank	AUX	1974-00	>RLGM	Screened	SRT disposition
32	EMPT0947	BIT Outlet Pressure Transmitter	AUX	1974-00	>RLGM	Screened	SRT disposition
33	EMPI0947	BIT Outlet Pressure Indicator	CB	2047-06	0.29	Equipment Capacity	Item is ROB to RL018. Component per se screened. Anchorage evaluated per 14C4257-CAL-004.
34	EMHV8801B	MOTOR-OPERATED VALVE EMHV8801B	AUX	2002-00	>RLGM	Screened	SRT disposition
35	EMFE0924	ECCS FLOW TO RCS COLD-LEG 1	RB	1998-06	>RLGM	Screened	SRT disposition
36	EMFE0925	ECCS FLOW TO RCS COLD-LEG 2	RB	1998-06	>RLGM	Screened	SRT disposition
37	EMFE0926	ECCS FLOW TO RCS COLD-LEG 3	RB	1998-06	>RLGM	Screened	SRT disposition
38	EMFE0927	ECCS FLOW TO RCS COLD-LEG 4	RB	1998-06	>RLGM	Screened	SRT disposition
39	TBN01	RWST	YRD	2000-00	0.32	Equipment Capacity	Tank and anchorage capacity evaluated in 14C4257-CAL-002.Anchorage evaluated per 14C4257-CAL-004.
40	BNLT0930	RWST Level Transmitter	YRD	1993-00	>RLGM	Screened	SRT disposition
41	EJFCV0610	RHR PUMP A MINIFLOW VALVE	AUX	1968-01	>RLGM	Screened	SRT disposition
42	TBG03A	Boric Acid Tank	AUX	1974-00	>RLGM	Screened	SRT disposition
43	BGLT0102	BORIC ACID TANK A LEV	CB	2047-06	>RLGM	Screened	SRT disposition
44	BGLI0102	BORIC ACID TANK A LEV	CB	2047-06	0.29	Equipment Capacity	Item is ROB to RL002. Component per se screened. Anchorage evaluated per 14C4257-CAL-004.
45	BBPV8702A	RHR TO RCS	RB	2007-09	>RLGM	Screened	SRT disposition
46	NB001	4.16KV SWGR NB001 (Class 1E, Train A)	CB	2000-00	0.36	Equipment Capacity	Equipment capacity evaluated in 14C4257-CAL-005. Anchorage evaluated per 14C4257-CAL-005. Block wall evaluated per 14C4257-CAL-003.
47	NB00101	4.16 kV FDR BKR FOR RHRP-A DPEJ01A (Residual Heat Removal Pump A)	CB	2000-00	0.36	Equipment Capacity	Item is ROB to NB001. Equipment capacity evaluated in 14C4257-CAL-005. Anchorage evaluated per 14C4257-CAL-005. Block wall evaluated per 14C4257-CAL-003.
48	NB00107	4.16 kV FDR BKR FOR CCWP-A DPEG01A (Component Cooling Water Pump A)	CB	2000-00	0.36	Equipment Capacity	Item is ROB to NB001. Equipment capacity evaluated in 14C4257-CAL-005. Anchorage evaluated per 14C4257-CAL-005. Block wall evaluated per 14C4257-CAL-003.

ESEL Item Number	ID	Description	Bldg	Elev	HCLPF (g, PGA)	Failure Mode	Basis
49	NB00110	4.16 kV FDR BKR FOR XFMR XNG03 (4160 V to 480 V for LC NG003)	CB	2000-00	0.36	Equipment Capacity	Item is ROB to NB001. Equipment capacity evaluated in 14C4257-CAL-005. Anchorage evaluated per 14C4257-CAL-005. Block wall evaluated per 14C4257-CAL-003.
50	NB00113	4.16 kV FDR BKR FOR XFMR XNG01 (4160 V to 480 V for LC NG001)	CB	2000-00	0.36	Equipment Capacity	Item is ROB to NB001. Equipment capacity evaluated in 14C4257-CAL-005. Anchorage evaluated per 14C4257-CAL-005. Block wall evaluated per 14C4257-CAL-003.
51	NB00109	4.16 kV FLEX GEN TIE-IN POINT (BKR) FOR TRAIN A	CB	2000-00	0.36	Equipment Capacity	Item is ROB to NB001. Equipment capacity evaluated in 14C4257-CAL-005. Anchorage evaluated per 14C4257-CAL-005. Block wall evaluated per 14C4257-CAL-003.
52	XNG01	4.16-KV/480 V LOAD CENTER TRANSFORMER XNG01 FOR LC NG001	CB/CC	2000-00	0.38	Equipment Capacity	Component per se screened. Anchorage evaluated per 14C4257-CAL-004.
53	NG001	480 V LOAD CENTER NG01	CB/CC	2000-00	0.29	Equipment Capacity	Equipment capacity evaluated in 14C4257-CAL-005. Anchorage evaluated per 14C4257-CAL-005.
54	NG00101	MAIN BKR FOR LC NG01	CB	2000-00	0.29	Equipment Capacity	Item is ROB to NG001. Equipment capacity evaluated in 14C4257-CAL-005. Anchorage evaluated per 14C4257-CAL-005.
55	NG00103	FDR BKR FOR 125 V VITAL BATTERY CHARGER NK021	CB	2000-00	0.29	Equipment Capacity	Item is ROB to NG001. Equipment capacity evaluated in 14C4257-CAL-005. Anchorage evaluated per 14C4257-CAL-005.
56	NG00112	FLEX 350 kW TIE IN BRK	CB	2000-00	0.29	Equipment Capacity	Item is ROB to NG001. Equipment capacity evaluated in 14C4257-CAL-005. Anchorage evaluated per 14C4257-CAL-005.
57	NG00116	TIE BKR (CONNECTS NG01 AND NG03)	CB	2000-00	0.29	Equipment Capacity	Item is ROB to NG001. Equipment capacity evaluated in 14C4257-CAL-005. Anchorage evaluated per 14C4257-CAL-005.
58	XNG03	4.16-KV/480 V LOAD CENTER TRANSFORMER XNG03 FOR LC NG003	CB/CC	2000-00	0.38	Equipment Capacity	Component per se screened. Anchorage evaluated per 14C4257-CAL-004.
59	NG003	480 V LOAD CENTER NG03	CB/CC	2000-00	0.29	Equipment Capacity	Equipment capacity evaluated in 14C4257-CAL-005. Anchorage evaluated per 14C4257-CAL-005. Block wall evaluated per 14C4257-CAL-003.
60	NG00301	MAIN BKR FOR LC NG03	CB	2000-00	0.29	Equipment Capacity	Item is ROB to NG003. Equipment capacity evaluated in 14C4257-CAL-005. Anchorage evaluated per 14C4257-CAL-005. Block wall evaluated per 14C4257-CAL-003.
61	NG00303	FDR BKR FOR 125 V VITAL BATTERY CHARGER NK023	CB	2000-00	0.29	Equipment Capacity	Item is ROB to NG003. Equipment capacity evaluated in 14C4257-CAL-005. Anchorage evaluated per 14C4257-CAL-005. Block wall evaluated per 14C4257-CAL-003.
62	NK021	125 V BATTERY CHARGER NK021	CB/CC	2016-00	0.38	Equipment Capacity	Component per se screened. Anchorage evaluated per 14C4257-CAL-004. Block wall evaluated per 14C4257-CAL-003.
63	NK071	TRANSFER SWITCH BUS NK01 BATTERY CHARGER NK21/NK25	CB/CC	2016-00	>RLGM	Screened	SRT disposition
64	NK001	125 VDC BUS SWITCHBOARD NK001	CB/CC	2016-00	0.32	Equipment Capacity	Equipment capacity evaluated in 14C4257-CAL-005. Anchorage evaluated per 14C4257-CAL-005. Block wall evaluated per 14C4257-CAL-003.

ESEL Item Number	ID	Description	Bldg	Elev	HCLPF (g, PGA)	Failure Mode	Basis
65	NK00102	FDR BKR FROM BATT CHGR NK021 TO NK001	CB/CC	2016-00	0.32	Equipment Capacity	Item is ROB to NK001. Equipment capacity evaluated in 14C4257-CAL-005. Anchorage evaluated per 14C4257-CAL-005. Block wall evaluated per 14C4257-CAL-003.
66	NK00104	MAIN BREAKER FOR CNTRL AND DIST PNL NK041 (PART OF SWBD NK001)	CB/CC	2016-00	0.32	Equipment Capacity	Item is ROB to NK001. Equipment capacity evaluated in 14C4257-CAL-005. Anchorage evaluated per 14C4257-CAL-005. Block wall evaluated per 14C4257-CAL-003.
67	NK00105	MAIN BREAKER FOR CNTRL AND DIST PNL NK051 (PART OF SWBD NK001)	CB/CC	2016-00	0.32	Equipment Capacity	Item is ROB to NK001. Equipment capacity evaluated in 14C4257-CAL-005. Anchorage evaluated per 14C4257-CAL-005. Block wall evaluated per 14C4257-CAL-003.
68	NK011	125 V BATTERY NK011	CB/CC	2016-00	0.44	Anchorage	Equipment capacity evaluated in 14C4257-CAL-005. Anchorage evaluated per 14C4257-CAL-004. Block wall evaluated per 14C4257-CAL-003.
69	NK00101	ISOLATION BKR FOR BATTERY NK011	CB/CC	2016-00	0.32	Equipment Capacity	Item is ROB to NK001. Equipment capacity evaluated in 14C4257-CAL-005. Anchorage evaluated per 14C4257-CAL-005. Block wall evaluated per 14C4257-CAL-003.
70	NK00111	FDR BKR FOR INVERTER NN011 (PART OF SWBD NK001)	CB/CC	2016-00	0.32	Equipment Capacity	Item is ROB to NK001. Equipment capacity evaluated in 14C4257-CAL-005. Anchorage evaluated per 14C4257-CAL-005. Block wall evaluated per 14C4257-CAL-003.
71	NN011	7.5KVA INVERTER (FED FROM BATT CHARGER NK021)	CB/CC	2016-00	0.38	Equipment Capacity	Component per se screened. Anchorage evaluated per 14C4257-CAL-004. Block wall evaluated per 14C4257-CAL-003.
72	NN001	Class 1E AC DIST SWBD NN01 (SEP GRP 1)	CB/CC	2016-00	>RLGM	Screened	SRT disposition
73	SA036A	ESFAS CH1 TERM	CB/CC	2047-00	>RLGM	Screened	SRT disposition
74	SENY0060A	NEUTRON FLUX MONITORING SYSTEM DETECTOR AMPLIFIER SENY 60A	AUX	2026-00	>RLGM	Screened	SRT disposition
75	SENY0060B	NEUTRON FLUX MONITORING SYSTEM DETECTOR AMPLIFIER SENY 60B	AUX	2026-00	>RLGM	Screened	SRT disposition
76	SB032A	W SS PROT SYS INPUT TRN B	CB/CC	2047-00	>RLGM	Screened	SRT disposition
77	SB029A	W SS PROT SYS INPUT TRN A	CB/CC	2047-06	>RLGM	Screened	SRT disposition
78	SB038	W PROCESS ANALOG PROTECTION SET CAB-01	CB/CC	2047-06	>RLGM	Screened	SRT disposition
79	SB029D	W SS PROT SYS OUT 2 TRN A	CB/CC	2047-06	>RLGM	Screened	SRT disposition
80	SE054A	W NUC INSTM NIS 1	CB/CC	2047-06	0.29	Equipment Capacity	Component per se screened. Anchorage evaluated per 14C4257-CAL-004.
81	SB030A	SSPS TRN A #1 TEST	CB	2047-06	>RLGM	Screened	SRT disposition

ESEL Item Number	ID	Description	Bldg	Elev	HCLPF (g, PGA)	Failure Mode	Basis
82	RP053AC	BOP INSTRUMENTATION RACK (TERMINATION AREA)	CB	2047-06	0.29	Equipment Capacity	Component per se screened. Anchorage evaluated per 14C4257-CAL-004.
83	SB078	RPV LEVEL INSTR SYS (RVLIS) PROC PROT SYS CABINET	CB	2047-06	>RLGM	Screened	SRT disposition
84	RP081A	T/C SUBCOOLING MONITOR CABINET	CB	2047-06	>RLGM	Screened	SRT disposition
85	NK041	CNTRL & INSTR DIST SWBD NK041 (CLASS 1E 125 VDC)	CB/CC	2016-00	0.32	Equipment Capacity	Equipment capacity evaluated in 14C4257-CAL-005. Anchorage evaluated per 14C4257-CAL-005. Block wall evaluated per 14C4257-CAL-003.
86	RL005	TURBINE GENERATOR AND FW CONSOLE	CB	2047-06	0.29	Equipment Capacity	Component per se screened. Anchorage evaluated per 14C4257-CAL-004.
87	RL006	TURBINE GENERATOR AND FW CONSOLE	CB	2047-06	0.29	Equipment Capacity	Component per se screened. Anchorage evaluated per 14C4257-CAL-004.
88	RP139	B AUXILIARY RELAY RACK RP139	CB	2000-00	>RLGM	Screened	SRT disposition
89	NK051	CNTRL & INSTR DIST SWBD NK051 (CLASS 1E 125 VDC)	CB/CC	2016-00	>RLGM	Screened	SRT disposition
90	BBPCV0455A	BBPCV0455A PORV SOLENOID FAILS TO OPEN ON DEMAND	RB	2070-00	>RLGM	Screened	SRT disposition
91	RL021	REACTOR AUX CNTRL PANEL	CB	2047-06	0.29	Equipment Capacity	Component per se screened. Anchorage evaluated per 14C4257-CAL-004.
92	RL022	REACTOR AUX CNTRL PANEL	CB	2047-06	0.29	Equipment Capacity	Component per se screened. Anchorage evaluated per 14C4257-CAL-004.
93	RP209	B AUXILIARY RELAY RACK	AUX	2000-00	>RLGM	Screened	SRT disposition
94	RP289	DC DIST PNL RP289	AUX	2047-06	>RLGM	Screened	SRT disposition
95	RP330	AUX RELAY RACK RP330	AUX	2000-00	>RLGM	Screened	SRT disposition
96	RP332	B AUXILIARY RELAY RACK	AUX	2000-00	>RLGM	Screened	SRT disposition
97	NK051A	EM'CY LIGHTING DIST SWBD NK051A (SUBPNL OF NK051)	CB/CC	2016-00	>RLGM	Screened	SRT disposition
98	NK023	125 V BATTERY CHARGER NK023	CB/CC	2016-00	0.38	Equipment Capacity	Component per se screened. Anchorage evaluated per 14C4257-CAL-004. Block wall evaluated per 14C4257-CAL-003.
99	NK073	TRANSFER SWITCH BUS NK03 BATTERY CHARGER NK23/NK25	CB/CC	2016-00	>RLGM	Screened	SRT disposition
100	NK003	125 VDC BUS SWITCHBOARD NK003	CB/CC	2016-00	0.32	Equipment Capacity	Equipment capacity evaluated in 14C4257-CAL-005. Anchorage evaluated per 14C4257-CAL-005. Block wall evaluated per 14C4257-CAL-003.
101	NK00302	FDR BKR FROM BATT CHGR NK023 TO NK003	CB/CC	2016-00	0.32	Equipment Capacity	Item is ROB to NK003. Equipment capacity evaluated in 14C4257-CAL-005. Anchorage evaluated per 14C4257-CAL-005. Block wall evaluated per 14C4257-CAL-003.

ESEL Item Number	ID	Description	Bldg	Elev	HCLPF (g, PGA)	Failure Mode	Basis
102	NK00304	MAIN BREAKER FOR CNTRL AND DIST PNL NK043 (PART OF SWBD NK003)	CB/CC	2016-00	0.32	Equipment Capacity	Item is ROB to NK003. Equipment capacity evaluated in 14C4257-CAL-005. Anchorage evaluated per 14C4257-CAL-005. Block wall evaluated per 14C4257-CAL-003.
103	NK013	125 V BATTERY NK013	CB/CC	2016-00	0.44	Anchorage	Equipment capacity evaluated in 14C4257-CAL-005. Anchorage evaluated per 14C4257-CAL-004. Block wall evaluated per 14C4257-CAL-003.
104	NK00301	ISOLATION BKR FOR BATTERY NK013	CB/CC	2016-00	0.32	Equipment Capacity	Item is ROB to NK003. Equipment capacity evaluated in 14C4257-CAL-005. Anchorage evaluated per 14C4257-CAL-005. Block wall evaluated per 14C4257-CAL-003.
105	NK00311	FDR BKR FOR INVERTER NN013 (PART OF SWBD NK003)	CB/CC	2016-00	0.32	Equipment Capacity	Item is ROB to NK003. Equipment capacity evaluated in 14C4257-CAL-005. Anchorage evaluated per 14C4257-CAL-005. Block wall evaluated per 14C4257-CAL-003.
106	NN013	7.5KVA INVERTER (FED FROM BATT CHARGER NK023)	CB/CC	2016-00	0.38	Equipment Capacity	Component per se screened. Anchorage evaluated per 14C4257-CAL-004. Block wall evaluated per 14C4257-CAL-003.
107	NN003	Class 1E AC DIST SWBD NN03 (SEP GRP 3)	CB/CC	2016-00	>RLGM	Screened	SRT disposition
108	RP053DB	BOP INSTR RACK RP053DB	CB	2047-06	0.29	Equipment Capacity	Component per se screened. Anchorage evaluated per 14C4257-CAL-004.
109	SB037	W PROCESS ANALOG PROTECTION SET CAB-03	CB/CC	2047-06	>RLGM	Screened	SRT disposition
110	NK043	CNTRL & INSTR DIST SWBD NK043 (CLASS 1E 125 VDC)	CB/CC	2016-00	0.32	Equipment Capacity	Equipment capacity evaluated in 14C4257-CAL-005. Anchorage evaluated per 14C4257-CAL-005. Block wall evaluated per 14C4257-CAL-003.
111	AB007	Aux Relay Rack	CB	2026-00	>RLGM	Screened	SRT disposition
112	NG00109	FDR BKR FOR 125 V SWING BATTERY CHARGER NK025	CB	2000-00	0.29	Equipment Capacity	Item is ROB to NG001. Equipment capacity evaluated in 14C4257-CAL-005. Anchorage evaluated per 14C4257-CAL-005.
113	NK025	125 V BATTERY CHARGER NK025 (Swing Battery Charger)	CB/CC	2000-00	0.38	Equipment Capacity	Component per se screened. Anchorage evaluated per 14C4257-CAL-004.
114	NG002	480 V LOAD CENTER NG02	CB	2000-00	0.29	Equipment Capacity	Equipment capacity evaluated in 14C4257-CAL-005. Anchorage evaluated per 14C4257-CAL-005. Block wall evaluated per 14C4257-CAL-003.
115	NG00212	FLEX 500 kW TIE IN BKR from FD201 (Phase 2 connection point)	CB	2000-00	0.29	Equipment Capacity	Item is ROB to NG002. Equipment capacity evaluated in 14C4257-CAL-005. Anchorage evaluated per 14C4257-CAL-005. Block wall evaluated per 14C4257-CAL-003.
116	NG00203	FDR BKR FOR 125 V VITAL BATTERY CHARGER NK024	CB	2000-00	0.29	Equipment Capacity	Item is ROB to NG002. Equipment capacity evaluated in 14C4257-CAL-005. Anchorage evaluated per 14C4257-CAL-005. Block wall evaluated per 14C4257-CAL-003.
117	NK024	125 V BATTERY CHARGER NK024	CB	2016-00	0.38	Equipment Capacity	Component per se screened. Anchorage evaluated per 14C4257-CAL-004. Block wall evaluated per 14C4257-CAL-003.

ESEL Item Number	ID	Description	Bldg	Elev	HCLPF (g, PGA)	Failure Mode	Basis
118	NK074	TRANSFER SWITCH BUS NK04 BATTERY CHARGER NK24/NK26	CB	2016-00	>RLGM	Screened	SRT disposition
119	NK004	125 VDC BUS SWITCHBOARD NK004	CB	2016-00	0.32	Equipment Capacity	Equipment capacity evaluated in 14C4257-CAL-005. Anchorage evaluated per 14C4257-CAL-005. Block wall evaluated per 14C4257-CAL-003.
120	NK00402	FDR BKR FROM BATT CHGR NK024 TO NK004	CB	2016-00	0.32	Equipment Capacity	Item is ROB to NK004. Equipment capacity evaluated in 14C4257-CAL-005. Anchorage evaluated per 14C4257-CAL-005. Block wall evaluated per 14C4257-CAL-003.
121	NK014	125 V BATTERY NK014	CB	2016-00	0.44	Anchorage	Equipment capacity evaluated in 14C4257-CAL-005. Anchorage evaluated per 14C4257-CAL-004. Block wall evaluated per 14C4257-CAL-003.
122	NK00401	ISOLATION BKR FOR BATTERY NK014	CB	2016-00	0.32	Equipment Capacity	Item is ROB to NK004. Equipment capacity evaluated in 14C4257-CAL-005. Anchorage evaluated per 14C4257-CAL-005. Block wall evaluated per 14C4257-CAL-003.
123	NK00411	FDR BKR FOR INVERTER NN011 (PART OF SWBD NK004)	CB	2016-00	0.32	Equipment Capacity	Item is ROB to NK004. Equipment capacity evaluated in 14C4257-CAL-005. Anchorage evaluated per 14C4257-CAL-005. Block wall evaluated per 14C4257-CAL-003.
124	NN014	7.5KVA INVERTER (FED FROM BATT CHARGER NK024)	CB	2016-00	0.38	Equipment Capacity	Component per se screened. Anchorage evaluated per 14C4257-CAL-004.
125	NN004	Class 1E AC DIST SWBD NN04 (SEP GRP 4)	CB	2016-00	>RLGM	Screened	SRT disposition
126	SA036B	ESFAS CH4 TERM	CB	2047-06	>RLGM	Screened	SRT disposition
127	RP147B	BOP Instrumentation Rack RP147B	CB	2000-00	>RLGM	Screened	SRT disposition
128	SENY0061A	NEUTRON FLUX MONITORING SYSTEM DETECTOR AMPLIFIER SENY 61A	AUX	2047-00	>RLGM	Screened	SRT disposition
129	SENY0061B	NEUTRON FLUX MONITORING SYSTEM DETECTOR AMPLIFIER SENY 61B	AUX	2047-00	>RLGM	Screened	SRT disposition
130	SB032D	W SSPS Train B #2 Output	CB	2047-06	>RLGM	Screened	SRT disposition
131	SB033A	SSPS Train B #1 Test	CB	2047-06	>RLGM	Screened	SRT disposition
132	SB041	W PROCESS ANALOG PROTECTION SET CAB-04	CB	2047-06	>RLGM	Screened	SRT disposition
133	RP053BC	BOP Instrumentation Rack RP053BC	CB	2047-06	0.29	Equipment Capacity	Component per se screened. Anchorage evaluated per 14C4257-CAL-004.
134	SB079	RVLIS Process Cabinet SB079	CB	2047-06	>RLGM	Screened	SRT disposition
135	RP081B	Subcooling Monitor Cabinet	CB	2047-06	>RLGM	Screened	SRT disposition

ESEL Item Number	ID	Description	Bldg	Elev	HCLPF (g, PGA)	Failure Mode	Basis
136	SB148B	W PROCESS PROTECTION (Fire Isolation)	CB	2000-00	>RLGM	Screened	SRT disposition
See Note 5	SA066B	STATUS INDICATING SYS	CB	2047-06	>RLGM	Screened	SRT disposition
See Note 5	EJFIS0610	RHR PMP PEJ01A Miniflow Control Discharge	AUX	2002-00	>RLGM	Screened	SRT disposition
See Note 5	FC0219	LOCAL CONTROL PANEL FOR TD AFW PUMP	AUX	2002-00	0.61	Anchorage	Equipment capacity evaluated in 14C4257-CAL-005. Anchorage evaluated per 14C4257-CAL-005. Relay functionality evaluated per 14C4257-CAL-005.
See Note 5	NG001A	MCC NG01A BUS	CB	2000-00	0.44	Relay Functionality	Equipment capacity evaluated in 14C4257-CAL-005. Anchorage evaluated per 14C4257-CAL-005. Block wall evaluated per 14C4257-CAL-003. Relay functionality evaluated per 14C4257-CAL-005.
See Note 5	NG002B	MCC NG02B BUS	AUX	2026-00	0.44	Relay Functionality	Equipment capacity evaluated in 14C4257-CAL-005. Anchorage evaluated per 14C4257-CAL-005. Relay functionality evaluated per 14C4257-CAL-005.
See Note 5	NG003C	MCC NG03C BUS	AUX	2047-00	0.44	Relay Functionality	Equipment capacity evaluated in 14C4257-CAL-005. Anchorage evaluated per 14C4257-CAL-005. Relay functionality evaluated per 14C4257-CAL-005.
See Note 5	NG004C	MCC NG04C BUS	AUX	2047-00	0.44	Relay Functionality	Equipment capacity evaluated in 14C4257-CAL-005. Anchorage evaluated per 14C4257-CAL-005. Relay functionality evaluated per 14C4257-CAL-005.
See Note 5	RP334	LOCKOUT RELAY RACK	CB	2000-00	>RLGM	Screened	SRT disposition
See Note 5	SA036C	ESFAS CH2 LOGIC/TERM CABINET	CB	2047-06	>RLGM	Screened	SRT disposition
See Note 5	SB029C	W SS PROT SYS OUT 1 TRN	CB	2047-06	>RLGM	Screened	SRT disposition