Tennessee Valley Authority, 1101 Market Street, Chattanooga, Tennessee 37402

CNL-14-210

December 22, 2014

10 CFR 50.4
10 CFR 50.54(f)

Attn: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

Browns Ferry Nuclear Plant, Units 1, 2, and 3
Renewed Facility Operating License Nos. DPR-33, DPR-52, and DPR-68
NRC Docket Nos. 50-259, 50-260, and 50-296

Subject: **Tennessee Valley Authority's Browns Ferry Nuclear Plant Expedited Seismic Evaluation Process Report (CEUS Sites) Response to NRC Request for Information Pursuant to 10 CFR 50.54(f) Regarding Recommendation 2.1 of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident**

References: NRC Letter, "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," dated March 12, 2012 (ML12056A046)

On March 12, 2012, the U.S. Nuclear Regulatory Commission (NRC) issued the referenced letter to all power reactor licensees and holders of construction permits in active or deferred status. Enclosure 1 of the referenced letter requested each addressee located in the Central and Eastern United States (CEUS) to submit a Seismic Hazard Evaluation that includes "an interim evaluation 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 referenced letter above, TVA is enclosing the Expedited Seismic Evaluation Process (ESEP) Report for Browns Ferry Nuclear Plant.

There are no new regulatory commitments resulting from this submittal. Should you have questions concerning the content of this letter, please contact Mr. Kevin Casey at (423) 751-8523.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 22nd day of December 2014.

Respectfully,

J. W. Shea
Vice President, Nuclear Licensing

Enclosure: Expedited Seismic Evaluation Process (ESEP) Report for Browns Ferry Nuclear Plant

cc (Enclosure):

NRR Director- NRC Headquarters
NRO Director - NRC Headquarters
NRR JLD Director- NRC Headquarters
NRC Regional Administrator- Region II
NRR Project Manager - Browns Ferry Nuclear Plant
NRR JLD Project Manager- Browns Ferry Nuclear Plant
NRC Senior Resident Inspector - Browns Ferry Nuclear Plant

ENCLOSURE

EXPEDITED SEISMIC EVALUATION PROCESS (ESEP) REPORT FOR BROWNS FERRY NUCLEAR PLANT

EXPEDITED SEISMIC EVALUATION PROCESS (ESEP) REPORT FOR BROWNS FERRY NUCLEAR PLANT

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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 Tennessee Valley Authority (TVA) Browns Ferry Nuclear Plant Units 1, 2, and 3. The intent of the ESEP is to perform an interim action in response to the NRC's 50.54(f) letter 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 Electric Power Research Institute (EPRI) 3002000704, Seismic Evaluation Guidance: Augmented Approach for the Resolution of Fukushima Near-Term Task Force Recommendation 2.1: Seismic [2].

The objective of this report is to provide summary information describing the ESEP evaluations and results. The level of detail provided in the report is intended to enable the 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 Browns Ferry Nuclear Plant FLEX strategies for Reactor Core Cooling and Heat Removal, Reactor Inventory Control, and Containment Function are summarized below. This summary is derived from the Browns Ferry Nuclear Plant Overall Integrated Plan (OIP) in Response to the March 12, 2012, Commission Order EA-12-049 submitted in February 2013 [3] and is consistent with the third six month status report issued to the NRC in August 2014 [4].

The OIP provides an in-depth sequence of events that describes the response of the plant to the Extended Loss of all AC Power (ELAP) and loss of Ultimate Heat Sink (UHS) and the operator actions to be taken. The major milestones of the response are described for each phase of the response to the Beyond Design Basis External Event (BDBEE).

Core Cooling and Heat Removal

During Phase 1 (approximately the first eight (8) hours) reactor core cooling will be maintained by using the Reactor Core Isolation Cooling (RCIC) system aligned to take suction from the torus. Pressure control will be maintained by utilizing the Safety Relief Valves (SRVs). A controlled Reactor Pressure Vessel (RPV) depressurization will begin approximately thirty (30) minutes after reactor shutdown

using the RCIC system and manually cycling the SRVs to reduce the RPV to a pressure of 150 psig. The RPV will be maintained between 150 psig and 200 psig until the beginning of Phase 2.

During Phase 1, fire protection personnel are dispatched to deploy the portable FLEX pumping systems and commence laying hose as required for transition to Phase 2.

At approximately eight (8) hours into the event (beginning of Phase 2), the operators will lower RPV pressure by using SRVs to reduce pressure, allowing for transition from RCIC to injecting river water utilizing the portable FLEX pumping systems taking advantage of the Residual Heat Removal (RHR) service water/RHR cross-tie.

Containment Integrity

During Phase 1, containment integrity is maintained by controlling reactor parameters to not challenge containment limits within the first eight (8) hours of the event.

During Phase 2 containment cooling is accomplished by containment venting, utilizing the existing hardened wetwell vent system, as the primary strategy for containment cooling. This will utilize a new severe accident capable venting system, as described in NRC Order EA-13-109 [5]. Containment spray can still be accomplished with portable FLEX pumping systems utilizing the service water to RHR cross-tie feature to augment containment venting.

Support Systems

The 250 VDC system, supplied by batteries in Phase 1 and batteries and battery chargers in Phases 2 and 3, supports the operation of the RCIC system Automatic Depressurization System (ADS) valves Phase 1 Instrumentation and Control (I&C) components, as well as the control power for the 480 VAC shutdown boards associated with the ESEL loads in Phases 2 and 3.

Battery boards 1, 2, and 3 supply loads in all three units, so all three battery boards, their associated 250 VDC batteries and battery chargers, and all 250 VDC Reactor Motor Operated Valve (RMOV) boards have been added to the ESEL. Also on the ESEL are 250 VDC panels SB-A, SB-B, SB-C, SB-D, and SB-EB and their associated batteries and battery chargers.

Two portable 480V FLEX Generators will be available. A single generator has the capacity to supply all safety related 250V DC battery chargers via a load control center. These will be available before Phase 2. A 480V FLEX generator can be connected to a distribution panel and provide power for the 250V DC Unit Battery Charger #1, 250V DC Unit Battery Charger #2A, and 250V DC Unit Battery Charger #3.

Two portable 1.1 MWe, 4kv FLEX Support Generators will be deployed and connected to the 4.6 KV shutdown boards to power MOVs with the ability to supply additional loads such:

- 120 VAC instrumentation
- Ventilation
- Pump motors

Figures 1a, 1b, and 2a of [4] provide the FLEX flow paths for BFN.

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 Browns Ferry Nuclear Plant Units 1, 2, and 3 is presented in Attachment A. Information presented in Attachment A is drawn from Reference [6].

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 BDBEE, as outlined in the Browns Ferry Nuclear Plant OIP in Response to the March 12, 2012, Commission Order EA-12-049 [3] and is consistent with the third six month status report issued to the NRC in August 2014 [4]. The OIP provides the Browns Ferry Nuclear Plant 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 Browns Ferry Nuclear Plant OIP. 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.

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 Browns Ferry Nuclear Plant OIP.
2. The scope of components is limited to installed plant equipment, and FLEX connections necessary to implement the Browns Ferry Nuclear Plant OIP 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 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. RPV and internals, reactor coolant pumps and seals, etc.)
7. For cases in which neither division was specified as a primary or back-up strategy, then only one division component (generally Division I) is included in the ESEL

3.1.1 ESEL Development

The ESEL was developed by reviewing the Browns Ferry Nuclear Plant OIP [3] [4] to determine the major equipment involved in the FLEX strategies. Further reviews of plant drawings (e.g., Piping and Instrumentation Diagrams (P&IDs) and Electrical One Line Diagrams) were performed to identify the boundaries of the flow paths to be used in the FLEX strategies and to identify specific components in the flow paths 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 flow path. 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. Host components were identified for sub-assemblies.

Cabinets and equipment controls containing relays, contactors, switches, potentiometers, circuit breakers and other electrical and instrumentation that could be affected by high-frequency earthquake motions and that impact the operation of equipment in the ESEL are required to be on the ESEL. These cabinets and components were identified in the ESEL. For the ESEL, the relays identified were in the RCIC and Automatic Depressurization System (ADS), and malfunction of these relays during a seismic event could lead to the failure of the reactor core cooling safety function.

For Phase 1, RCIC is the preferred path for inventory control and core cooling. Therefore, the RCIC system was used as the basis for the Phase 1 ESEL. For Phase 2 and Phase 3, inventory control and core cooling is maintained by portable FLEX pumps injecting to the RHR service water and to the RHR system via the RHR service water to RHR cross-tie. Relays that could malfunction during a seismic event and prevent successful RCIC operation were included in the ESEL.

For each parameter monitored during the FLEX implementation, a single indication was selected for inclusion in the ESEL. For each parameter indication, the components along the flow path from measurement to indication were included, since any failure along the path would lead to failure of that indication. Components such as flow elements were considered as part of the piping and were not included in the ESEL.

3.1.2 Power Operated Valves

Page 3-3 of EPRI 3002000704 [2] notes that power operated valves not required to change state as part of the FLEX mitigation strategies 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).” To address this concern, the following guidance is applied in the Browns Ferry Nuclear Plant ESEL for functional failure modes associated with power operated valves:

- Power operated valves that remain energized during the 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 be added to the ESELs as these components provide completely passive locations for pulling or installing cables. No breaks or connections in the cabling were included in pull boxes. Pull boxes were considered part of conduit and cabling, which were 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 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 Browns Ferry Nuclear Plant 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 3.1 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.

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

The Browns Ferry Nuclear Plant ESEL is based on the primary means of implementing the FLEX strategy. Therefore, no additional justification is required.

4.0 GROUND MOTION RESPONSE SPECTRUM (GMRS)

4.1 Plot of GMRS Submitted by the Licensee

The Design Basis Earthquake (DBE) control point elevation is defined at the base of the Reactor Building, which corresponds to a depth of 52 ft. (El. 519) and is the deepest structure foundation elevation control point. Hereafter DBE is referred to as Safe Shutdown Earthquake (SSE). Table 4-1 shows the GMRS accelerations for a range of frequencies. The GMRS at the control point elevation is shown in Figure 4-1 [7].

Table 4-1: GMRS for Browns Ferry Nuclear Plant

Frequency (Hz)	GMRS (g)
100	2.71E-01
90	2.74E-01
80	2.79E-01
70	2.93E-01
60	3.28E-01
50	4.04E-01
40	4.90E-01
35	5.20E-01
30	5.57E-01
25	5.80E-01
20	5.68E-01
15	5.27E-01
12.5	4.99E-01
10	4.73E-01
9	4.56E-01
8	4.25E-01
7	4.05E-01
6	3.96E-01
5	3.52E-01
4	3.19E-01
3.5	3.02E-01
3	2.80E-01
2.5	2.47E-01
2	2.31E-01
1.5	1.98E-01
1.25	1.77E-01
1	1.46E-01
0.9	1.37E-01
0.8	1.30E-01
0.7	1.21E-01
0.6	1.08E-01
0.5	9.54E-02
0.4	7.63E-02
0.35	6.68E-02
0.3	5.72E-02
0.25	4.77E-02
0.2	3.82E-02
0.15	2.86E-02
0.125	2.39E-02
0.1	1.91E-02

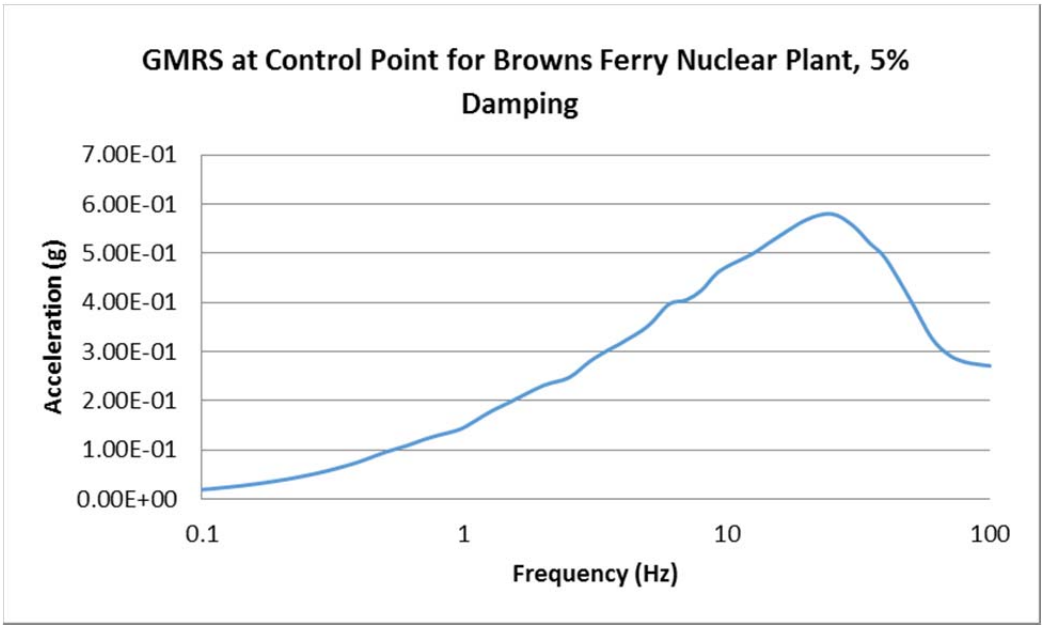

Figure 4-1: GMRS at Control Point for Browns Ferry Nuclear Plant

4.2 Comparison to SSE

The SSE was developed consistent with 10 CFR Part 100, Appendix A through an evaluation of the maximum earthquake potential for the region surrounding the site. Considering the historic seismicity of the site region, Browns Ferry Nuclear Plant was designed using a conservative assumption that a seismic event at an unstated location could cause a response with an intensity VII on the Modified Mercalli Intensity Scale of 1931 at the plant site.

The SSE is defined in terms of a Peak Ground Acceleration (PGA) and a design response spectrum. Considering a site intensity of VII, a PGA of 0.20g was estimated. Table 4-2 shows the spectral acceleration values as a function of frequency for the 5%-damped horizontal SSE [7].

Table 4-2: SSE for Browns Ferry Nuclear Plant

Frequency (Hz)	Spectral Acceleration (g)
100	0.2
25	0.2
10	0.22
5	0.3
2.5	0.28
1	0.16
0.5	0.12

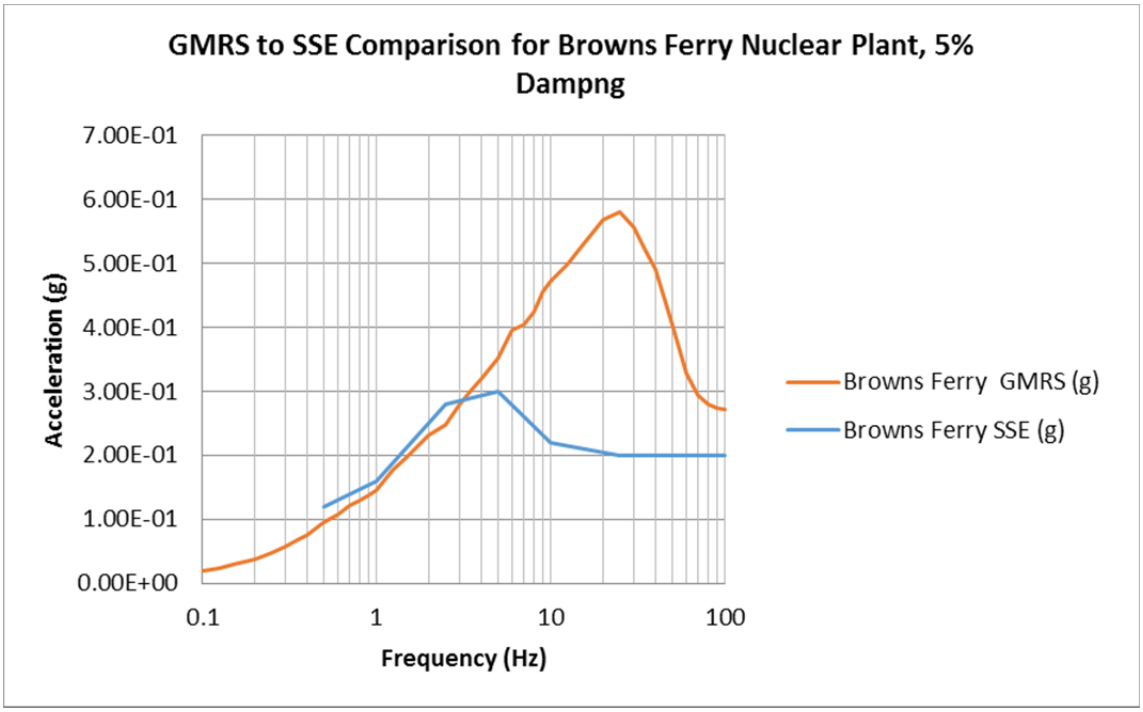

Figure 4-2: GMRS to SSE Comparison for Browns Ferry Nuclear Plant

The SSE envelops the GMRS for lower frequency range up to 3Hz. The GMRS exceeds the SSE beyond that point. As the GMRS exceeds the SSE in the 1 to 10Hz range, the plant does not screen out of the ESEP according to Section 2.2 of EPRI 3002000704 [2]. The two special screening considerations as described in Section 2.2.1 of EPRI 3002000704, namely a) Low Seismic Hazard Site and b) Narrow Band Exceedances in the 1 to 10Hz range do not apply for Browns Ferry Nuclear Plant and hence High Confidence of a Low Probability of Failure (HCLPF) evaluations are required.

5.0 REVIEW LEVEL GROUND MOTION (RLGM)

5.1 Description of RLGM Selected

Section 4 of Reference [2] presents two approaches for developing the Review Level Ground Motion (RLGM) to be used in the ESEP:

1. The RLGM may be derived by linearly scaling the SSE by the maximum ratio of the GMRS/SSE between the 1 and 10 Hz range (not to exceed 2x SSE). In-structure RLGM seismic motions would be derived using existing SSE based in-structure response spectra (ISRS) with the same scale factor.
2. Alternately, licensees who have developed appropriate structural/soil-structure interaction (SSI) models capable of calculating ISRS based on site GMRS /uniform hazard response spectrum (UHRS) input may opt to use these ISRS in lieu of scaled SSE ISRS.

Based on a review of tabulated data in Tables 4-1 and the SSE values of Table 4-2, in the range between 1 and 10 Hz the maximum ratio of GMRS to the SSE is calculated to be:

$$SFmax = SAGMRS(10\ HZ)/SA\ SSE\ 10Hz) = 0.473g/0.22g = 2.15$$

Since the computed scale factor is greater than 2.0, the RLGM would be set a level of 2x SSE. This is shown in Table 5-1 and Figure 5-1.

Table 5-1: 2x SSE for Browns Ferry Nuclear Plant

Frequency (Hz)	Spectral Acceleration (g)
100	0.4
25	0.4
10	0.44
5	0.6
2.5	0.56
1.0	0.32
0.5	0.24

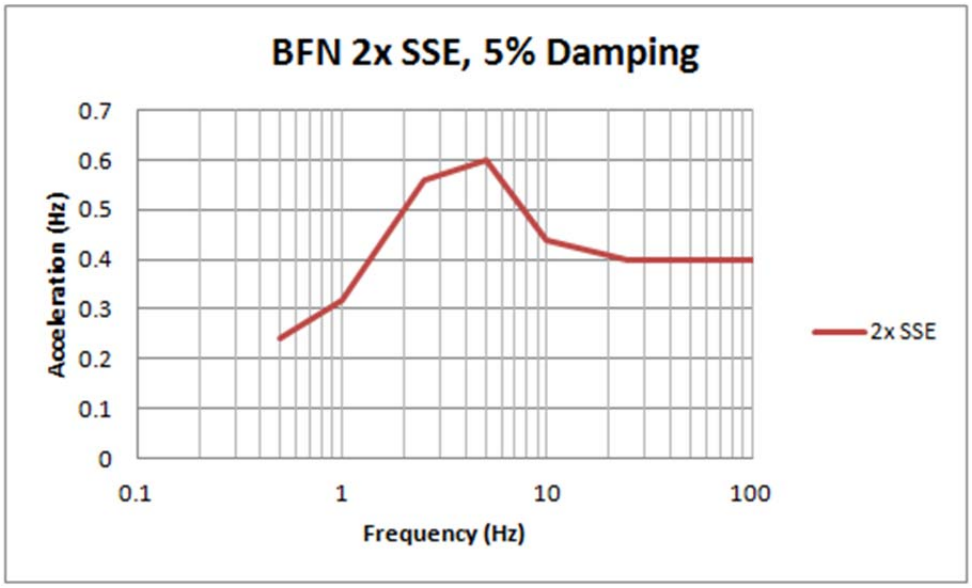

Figure 5-1: 2x SSE for Browns Ferry Nuclear Plant

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

The RLGM ISRS for Browns Ferry Nuclear Plant are generated by scaling the design basis SSE up to 0.3g RLE as determined in the Seismic IPEEE. Additional information is provided in Section 6.1.

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 PGA for which there is a 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-SL, 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].

6.1 Summary of Methodologies Used

Browns Ferry Nuclear Plant performed a SMA for Units 2 and 3 in 1996 and Unit 1 in 2004. The SMA is documented in References [10] and [11] and consisted of screening walkdowns and HCLPF anchorage calculations. The screening walkdowns used the screening tables from Chapter 2 of EPRI NP-6041-SL [8]. The walkdowns were conducted by engineers trained in EPRI NP-6041-SL (the engineers attended the EPRI SMA Add-On course in addition to the SQUG Walkdown Screening and Seismic Evaluation Training Course), and were documented on Screening Evaluation Work Sheets (SEWS) from EPRI NP-6041-SL. Anchorage capacity calculations used the CDFM criteria from EPRI NP-6041-SL. Seismic demand was the Individual Plant Examination of External Events (IPEEE) Review Level Earthquake (RLE) for SMA (mean NUREG/CR-0098 [12] ground response spectrum anchored to 0.3g PGA).

Figure 6-1 shows the mean NUREG/CR-0098 ground response spectrum used as the IPEEE RLE for the SMA, compared to the ESEP RLGM response spectrum. The figure shows that IPEEE RLE envelopes the ESEP RLGM at all frequencies between 1 and 10 Hz.

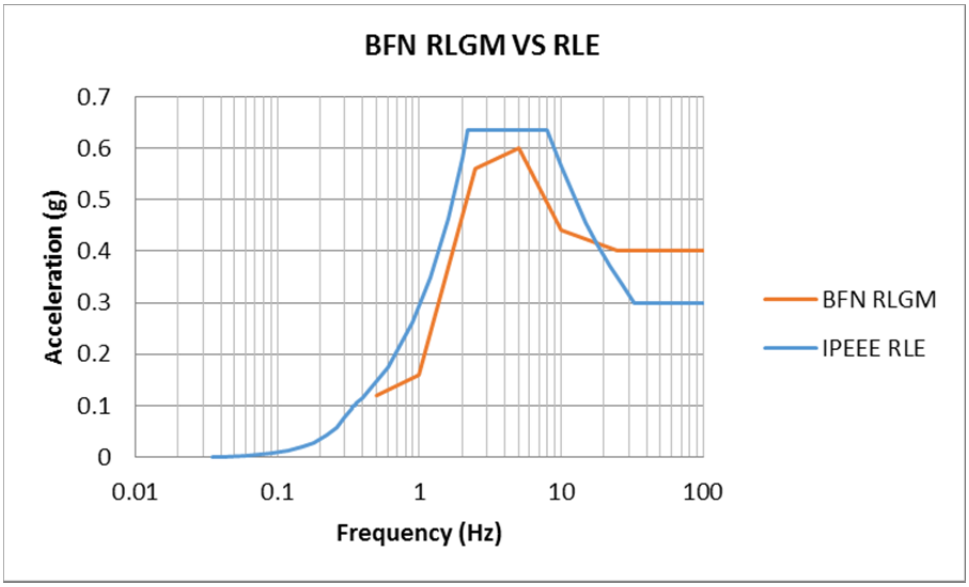

Figure 6-1: Comparison of Browns Ferry Nuclear Plant RLGM and IPEEE RLE

6.2 HCLPF Screening Process

The SMA was based on the IPEEE RLE, which was anchored to 0.3g peak ground acceleration. Browns Ferry Nuclear Plant Units 2 and 3 identified a minimum HCLPF of 0.26g and Unit 1 identified a minimum HCLPF of at least 0.3g. The limiting configurations were re-evaluated [13] and determined to also have a HCLPF capacity of at least 0.3g. Note these components have been replaced. The RLE is greater than the RLGM at frequencies between 1Hz to 10 Hz. Therefore, any components whose SMA-based HCLPF capacity exceeds the RLE can be screened out from HCLPF calculations. The screening tables in EPRI NP-6041-SL [8] are based on ground peak spectral accelerations of 0.8g and 1.2g. These

both exceed the RLGM peak spectral acceleration. The anchorage capacity calculations were based on SSE floor response spectra scaled to the RLE. Equipment for which the screening caveats were met and for which the anchorage capacity exceeded the RLE seismic demand can be screened out from ESEP seismic capacity determination because the HCLPF capacity exceeds the RLGM.

The Browns Ferry Nuclear Plant Units 1, 2 and 3 ESEL contains a total of 549 items. Of these, 135 are valves, both power-operated and relief. In accordance with Table 2-4 of EPRI NP-6041-SL [8] active valves may be assigned a functional capacity of 0.8g peak spectral acceleration without any review other than looking for valves with large extended operators on small diameter piping, and anchorage is not a failure mode. Therefore, valves on the ESEL may be screened out from ESEP seismic capacity determination, subject to the caveat regarding large extended operators on small diameter piping.

The non-valve components in the ESEL are generally screened based on the SMA results. If the SMA showed that the component met the EPRI NP-6041-SL screening caveats and the CDFM capacity exceeded the RLE demand, the component can be screened out from the ESEP capacity determination.

6.3 Seismic Walkdown Approach

6.3.1 Walkdown Approach

Walkdowns were performed in accordance with the criteria provided in Section 5 of EPRI 3002000704 [2], which refers to EPRI NP-6041-SL [8] for the Seismic Margin Assessment process. Pages 2-26 through 2-30 of EPRI NP-6041-SL describe the seismic walkdown criteria, including the following key criteria.

> *"The SRT [Seismic Review Team] should "walk by" 100% of all components which are reasonably accessible and in non-radioactive or low radioactive environments. Seismic capability assessment of components which are inaccessible, in high-radioactive environments, or possibly within contaminated containment, will have to rely more on alternate means such as photographic inspection, more reliance on seismic reanalysis, and possibly, smaller inspection teams and more hurried inspections. A 100% "walk by" does not mean complete inspection of each component, nor does it mean requiring an electrician or other technician to de-energize and open cabinets or panels for detailed inspection of all components. This walkdown is not intended to be a QA or QC review or a review of the adequacy of the component at the SSE level.*
>
> *If the SRT has a reasonable basis for assuming that the group of components are similar and are similarly anchored, then it is only necessary to inspect one component out of this group. The "similarity-basis" should be developed before the walkdown during the seismic capability preparatory work (Step 3) by reference to drawings, calculations or specifications. The one component or each type which is selected should be thoroughly inspected which probably does mean de-energizing and opening cabinets or panels for this very limited sample. Generally, a spare representative component can be found so as to enable the inspection to be performed while the plant is in operation. At least for the one component of each type which is selected, anchorage should be thoroughly inspected.*
>
> *The walkdown procedure should be performed in an ad hoc manner. For each class of components the SRT should look closely at the first items and compare the field configurations with the construction drawings and/or specifications. If a one-to-one correspondence is found, then subsequent items do not have to be inspected in as great a detail. Ultimately the walkdown becomes a "walk by" of the component class as the SRT becomes confident that the*

construction pattern is typical. This procedure for inspection should be repeated for each component class; although, during the actual walkdown the SRT may be inspecting several classes of components in parallel. If serious exceptions to the drawings or questionable construction practices are found then the system or component class must be inspected in closer detail until the systematic deficiency is defined.

The 100% "walk by" is to look for outliers, lack of similarity, anchorage which is different from that shown on drawings or prescribed in criteria for that component, potential SI [Seismic Interaction] problems, situations that are at odds with the team members' past experience, and any other areas of serious seismic concern. If any such concerns surface, then the limited sample size of one component of each type for thorough inspection will have to be increased. The increase in sample size which should be inspected will depend upon the number of outliers and different anchorages, etc., which are observed. It is up to the SRT to ultimately select the sample size since they are the ones who are responsible for the seismic adequacy of all elements which they screen from the margin review. Appendix D gives guidance for sampling selection."

6.3.2 Application of Previous Walkdown Information

Several ESEL items were previously walked down during the Browns Ferry Nuclear Plant Units 1, 2 and 3, Seismic IPEEE program. Those walkdown results were reviewed and the following steps were taken to confirm that the previous walkdown conclusions remained valid.

- A walk by was performed to confirm that the equipment material condition and configuration is consistent with the walkdown conclusions and that no new significant interactions related to block walls or piping attached to tanks exist.
- If the ESEL item was screened out based on the previous walkdown, that screening evaluation was reviewed and reconfirmed for the ESEP.

In all cases it was determined that the HCLPF capacities established for these items under the seismic IPEEE program remained valid. Thus, all ESEL components that were part of the IPEEE program have a HCLPF capacity of 0.3g or greater and are thus adequate for ESEP [7].

6.3.3 Significant Walkdown Findings

Consistent with the guidance from EPRI NP-6041-SL [8], no significant outliers or anchorage concerns were identified during the Browns Ferry Nuclear Plant Units 1, 2 and 3 seismic walkdowns. Based on walkdown results, HCLPF capacity evaluations were recommended for the following twelve (12) components:

- RCIC Turbine Driven Pump
- Terry Turbine Control Box
- Vacuum Tank
- RCIC Back-Up Control Panel
- Main Control Room Benchboard
- LPNL Instrument Rack
- Motor Operated Valve

- Air Operated Valve
- Piping and Tubing
- Electrical Raceways
- Block Walls
- Relay Evaluations

6.4 HCLPF Calculation Process

ESEL items not included in the previous IPEEE evaluations at Browns Ferry Nuclear Plant were evaluated using the criteria in EPRI NP-6041-SL [8]. Those evaluations included the following steps:

- Performing seismic capability walkdowns for equipment not included in previous seismic walkdowns (SQUG, IPEEE, or NTTF 2.3) to evaluate the equipment installed plant conditions
- Performing screening evaluations using the screening tables in EPRI NP-6041-SL as described in Section 6.2
- Performing HCLPF calculations considering various failure modes that include both structural failure modes (e.g. anchorage, load path etc.) and functional failure modes

All HCLPF calculations were performed using the CDFM methodology and are documented in TVA Calculation: CDQ999 2014 000268 "BFN Expedited Seismic Evaluation Process (ESEP) HCLPF Capacity Calculation" [13].

6.5 Functional Evaluations of Relays

The ESEL identifies essential relays for ESEP. All of these relays are associated with the RCIC system. The relays are the same configuration and type for Browns Ferry Nuclear Plant Units 1, 2, and 3. All of the relays are in the normally open state, except for four (4) that can be excluded from this evaluation because chatter is acceptable. The relay types addressed in this evaluation include the following:

- GE 12HFA51A41
- GE 12HFA151A1F
- GE 12HGA11A51F
- AMERACE 7012SB (formerly Agastat)

The relays were evaluated using the guidance provided in EPRI NP-6041-SL [8] for equipment qualified by testing (relay GERS). Subject relays were determined to have higher HCLPF values than the plant RLGM as well as the RLE, with a minimum HCLPF of 0.37g.

The ESEP relay functional evaluations are documented in a TVA calculation [13].

6.6 Tabulated ESEL HCLPF Values (Including Key Failure Modes)

Tabulated ESEL HCLPF values are provided in Attachment B. The following notes apply to the information in the tables.

- Items previously included in the USI A-46 and seismic IPEEE programs are not listed. Walk-by verifications re-confirmed the HCLPF capacities from the IPEEE, and the IPEEE 0.3g RLE HCLPF capacity exceeds the RLGM.

- HCLPF capacity evaluations were performed for the non-IPEEE items on the ESEL, addressing both structural/anchorage and functional failure modes. The HCLPF capacity of each item is listed in the tables, with associated governing failure mode.
- New permanently installed FLEX items are not listed. TVA design criteria BFN-5-7360 [14] requires that new FLEX items have HCLPF capacity exceeding the RLGM.

All ESEP components have a HCLPF capacity greater than the RLGM for the frequency range of 1 to 10Hz.

7.0 INACCESSIBLE ITEMS

7.1 Identification of ESEL Item Inaccessible for Walkdowns

Inside Drywell was not accessible during the walk by verifications. The components inside the Drywell consist of the seismically rugged Main Steam Safety Relief Valves (MSRVs) and associated accumulators and solenoid valves. The MSRVs are located in an upper elevation region of the Drywell, and by design are remote from other plant features. The Browns Ferry Nuclear Plant operations group maintains current photographs of the MSRVs and these photographs were made available to the SRT for review for ESEP. Based on close review of all of the photographs, it was confirmed that the MSRVs and associated subcomponents are intact, well maintained, and remote from any nearby item and thus free of seismic interaction concerns. It was noted that the chain falls from the overhead monorail crane (used for MSRV replacement service) was appropriately secured well away from the MSRVs. Based on these observations, it is concluded that no further investigation is required for these rugged items.

7.2 Planned Walkdown / Evaluation Schedule / Close Out

There are no components that require follow up seismic walkdowns.

8.0 ESEP CONCLUSIONS AND RESULTS

8.1 Supporting Information

Browns Ferry Nuclear Plant Units 1, 2, and 3 have 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 Browns Ferry Nuclear Plant Units 1, 2, and 3 response to the NRC's 50.54(f) letter. On March 12, 2014, NEI submitted to the NRC results of a study [16] 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 "fleet wide seismic risk estimates are consistent with the approach and results used in the Gl-199 safety/risk assessment." The letter also stated that "As a result, the staff has confirmed that the conclusions reached in Gl-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 Browns Ferry Nuclear Plant Units 1, 2, and 3 was included in the fleet risk evaluation submitted in the March 12, 2014 NEI letter [16] therefore, the conclusions in the NRC's May 9 letter also apply to Browns Ferry Nuclear Plant Units 1, 2, and 3.

In addition, the March 12, 2014 NEI letter provided an attached "Perspectives on the Seismic Capacity of Operating Plants," which (1) assessed a number of qualitative reasons why the design of Structures, Systems and Components (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 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
- 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 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. 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, risk-based SMA, or other justification) can be performed. Browns Ferry Nuclear

Plant Units 1, 2, and 3 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 [18].

8.2 Identification of Planned Modifications

There are no additional plant modifications required for Browns Ferry Nuclear Plant Units 1, 2 and 3.

8.3 Modification Implementation Schedule

There are no additional plant modifications required for Browns Ferry Nuclear Plant Units 1, 2 and 3.

8.4 Summary of Regulatory Commitments

There are no additional actions to be performed as a result of the ESEP.

9.0 REFERENCES

1. NRC (E Leeds and M Johnson) Letter to All Power Reactor Licensees et al., "Request for Information Pursuant to Title 10 of the Code of Federal Regulations 50.54(f) Regarding Recommendations 2.1, 2.3 and 9.3 of the Near-Term Task Force Review of Insights from the Fukushima Dai-Ichi Accident," March 12, 2012.
2. EPRI 3002000704, "Seismic Evaluation Guidance, Augmented Approach for the Resolution of Fukushima Near-Term Task Force Recommendation 2.1: Seismic," May 2013.
3. TVA Letter to U.S. NRC, "Tennessee Valley Authority – 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.
4. TVA Letter to U.S. NRC, "Third Six-Month Status Report and Revised 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) for Browns Ferry Nuclear Plant (TAC Nos. MF0902, MF0903, and MF0904)," August 28, 2014.
5. NRC Order EA-13-109, "Issuance of Order to Modify Licenses with Regard to Reliable Hardened Containment Vents Capable of Operating Under Severe Accident Conditions," June 6, 2013.
6. AREVA NP Document 51-9217417-003,"ESEP Expedited Seismic Equipment List (ESEL) – Browns Ferry Nuclear Plant Units 1, 2, and 3."
7. TVA Letter to U.S. NRC, "Tennessee Valley Authority's Seismic Hazard and Screening Report (CEUS Sites), response to NRC Request for Information Pursuant to 10 CFR 50.54(f) regarding Recommendation 2.1 of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident", March 31, 2014.
8. EPRI-NP-6041-SL, "Methodology for Assessment of Nuclear Power Plant Seismic Margin," Revision 1, August 1991.
9. EPRI TR-103959, "Methodology for Developing Seismic Fragilities," July 1994.
10. "Seismic IPEEE Report, Browns Ferry Nuclear Plant" Prepared by EQE Inc, June 1996.
11. "Browns Ferry Nuclear Plant Unit 1 Seismic IPEEE Report," prepared by Facility Risk Consultants, October 2004.
12. U.S. NRC NUREG/CR-0098, "Development of Criteria for Seismic Review of Selected Nuclear Power Plants," May 1978.
13. TVA Calculation CDQ 000999 2014 000268 "BFN Expedited Seismic Evaluation Process (ESEP) HCLPF Capacity Calculation", October 2014.
14. TVA Design Criteria BFN-5-7360, Revision 2, "FLEX Mitigation System."
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.

16. Nuclear Energy Institute (NEI), A. Pietrangelo, Letter to D. Skeen of the USNRC, "Seismic Core Damage Risk Estimates Using the Updated Seismic Hazards for the Operating Nuclear Plants in the Central and Eastern United States," March 12, 2014.

17. Nuclear Energy Institute (NEI), A. Pietrangelo, Letter to D. Skeen of the USNRC, "Proposed Path Forward for NTTF Recommendation 2.1: Seismic Reevaluations," April 9, 2013. NRC Adams Accession No. ML13101A379.

18. NRC (E Leeds) Letter to NEI (J Pollock), "Electric Power Research Institute Final Draft Report xxxxx, "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.

ATTACHMENT A – EXPEDITED SEISMIC EQIPMENT LIST (ESEL) FOR BROWNS FERRY NUCLEAR PLANT

Table A-1: Expedited Seismic Equipment List (ESEL) for Browns Ferry Nuclear Plant

ESEL Item Number	Equipment		Operating State		Notes/Comments
	ID	Description	Normal State	Desired State	
1	1-FCV 71-19	RCIC Pump Condensate Storage Tank Suction Valve	Open	Closed	Must close to swap RCIC suction to the suppression pool Power: 250V Reactor Motor Operated Valve (RMOV) Board 1C breaker 1-BKR-071-0019
2	1-FCV-71-17	RCIC Suction from Torus	Closed	Open	Normally closed, must open to supply RCIC suction from torus Power: From 250V RMOV Board 1C breaker 1-BKR-071-0017
3	1-FCV-71-18	RCIC Suction from Torus	Closed	Open	Normally closed, must open to supply RCIC suction from torus Power: From 250V RMOV Board 1C breaker 1-BKR-071-0018
4	1-PMP-71-19	RCIC Pump	Standby	Operating	Provides RPV makeup in Phase 1
5	1-FCV 71-39	RCIC Discharge Isolation Valve	Closed	Open	Normally closed, must open to supply RCIC injection flow Power: From 250V RMOV Board 1C breaker 1-BKR-071-0039
6	1-PCV 71-22	RCIC Lube Oil Cooling Water Pressure Control Valve	Open	-	Controls cooling water flow to RCIC lube oil cooler
7	1-FCV 71-25	RCIC Turbine Lube Oil Inlet Valve	Closed	Open	Normally closed, opens to allow cooling water flow to RCIC turbine lube oil cooler Power: 250V RMOV Board 1C breaker 1-BKR-071-0025
8	1-TNK-71-27	RCIC Vacuum Tank	Standby	Operating	Collects and condenses RCIC gland seal leakage
9	1-CND-71-27	RCIC Barometric Condenser	Standby	Operating	Collects and condenses RCIC gland seal leakage
10	1-CLR-71-25	RCIC Lube Oil Cooler	Standby	Operating	Cools RCIC lube oil

Table A-1: Expedited Seismic Equipment List (ESEL) for Browns Ferry Nuclear Plant (Continued)

ESEL Item Number	Equipment		Operating State		Notes/Comments
	ID	Description	Normal State	Desired State	
11	1-PMP-71-29	RCIC Vacuum Tank Condensate Pump	Standby	Operating	Pumps condensate from vacuum tank to pump suction Power: From 250V RMOV Board 1C breaker 1-BKR-071-0029
12	1-PMP-71-31	RCIC Vacuum Pump	Standby	Operating	Maintains vacuum on barometric condenser Power: From 250V RMOV Board 1C breaker 1-BKR-071-0031
13	1-FCV-71-8	RCIC Turbine Steam Inlet Valve	Closed	Open	Opens on RCIC start to admit steam to RCIC turbine Power: From 250V RMOV Board 1C breaker 1-BKR-071-0008
14	1-FCV-71-9	RCIC Turbine Steam Throttle Valve	Open	Open/ Close as needed	Trips closed on RCIC protective function Power: From 250V RMOV Board 1C breaker 1-BKR-071-009A
15	1-FCV-71-10	RCIC Turbine Governor Valve	Open	Open/ Close as needed	Modulates steam flow to RCIC turbine
16	1-TRB-71-9	RCIC Turbine	Standby	Operating	Supplies motive force to RCIC pump
17	1-FT-71-36	RCIC Pump Flow Transmitter for Turbine Control	On	On	Transmits RCIC flow to flow control circuit
18	1-FIC-71-36A	RCIC Flow Indicating Controller	Auto - Set at 620 gpm	Auto - Set at 620 gpm	Controls RCIC flow
19	1-PX-71-36A	Power Supply for RCIC flow Controller	Energized	Energized	Supplies AC power to RCIC flow control circuitry
20	1-LPNL-925-672	RCIC Local Controls	Energized	Energized	Local control of RCIC turbine

Table A-1: Expedited Seismic Equipment List (ESEL) for Browns Ferry Nuclear Plant (Continued)

ESEL Item Number	Equipment		Operating State		Notes/Comments
	ID	Description	Normal State	Desired State	
21	1-SC-71-10	Electronic Governor Module	Operating	Operating	
22	1-13A-K15	RCIC Auto Isolation Seal-In Relay	Energized	Energized	
23	1-13A-K10	RCIC High Space Temperature Relay	Operable	Operable	
24	1-13A-K11	RCIC High Space Temperature Relay	Operable	Operable	
25	1-13A-K13	RCIC Low Steam Supply Pressure Relay	Operable	Operable	
26	1-2-71-K12	RCIC Steam Line High Differential Pressure Relay	Operable	Operable	
27	1-13A-K44	RCIC High Rupture Disc Pressure Relay	Operable	Operable	
28	1-13A-K45	RCIC High Rupture Disc Pressure Relay	Operable	Operable	
29	1-13A-K12	RCIC Auto Isolation Seal-In Relay	Operable	Operable	
30	1-13A-K14	RCIC Auto Isolation Seal-In Relay	Operable	Operable	
31	1-13A-K16	RCIC Auto Isolation Seal-In Relay	Operable	Operable	
32	1-13A-K38	RCIC Manual Steam Isolation relay	Operable	Operable	
33	1-13A-K17	RCIC Auto Discharge Circuit Reset relay	Operable	Operable	

Table A-1: Expedited Seismic Equipment List (ESEL) for Browns Ferry Nuclear Plant (Continued)

ESEL Item Number	Equipment		Operating State		Notes/Comments
	ID	Description	Normal State	Desired State	
34	1-13A-K18	RCIC Auto Discharge Circuit Reset relay	Operable	Operable	
35	1-13A-K37	RCIC Vessel Low Water Level relay	Operable	Operable	
36	1-13A-K30	RCIC Steam Line Space Excess Temperature Isolation relay	Operable	Operable	
37	1-13A-K31	RCIC Steam Line Space Excess Temperature Isolation relay	Operable	Operable	
38	1-71-K32	RCIC Steam Line Space Excess Temperature Isolation relay	Operable	Operable	
39	1-13A-K32	RCIC Steam Line Space Excess Temperature Isolation relay	Operable	Operable	
40	1-13A-K33	RCIC Auto Isolation Signal relay	Operable	Operable	
RCIC – Unit 2					
41	2-FCV 71-19	RCIC Pump Condensate Storage Tank Suction Valve	Open	Closed	Must close to swap RCIC suction to the suppression pool Power: From 250V RMOV Board 2C breaker 2-BKR-071-0019
42	2-FCV-71-17	RCIC Suction from Torus	Closed	Open	Normally closed, must open to supply RCIC suction from torus Power: From 250V RMOV Board 2C breaker 2-BKR-071-0017

Table A-1: Expedited Seismic Equipment List (ESEL) for Browns Ferry Nuclear Plant (Continued)

ESEL Item Number	Equipment		Operating State		Notes/Comments
	ID	Description	Normal State	Desired State	
43	2-FCV-71-18	RCIC Suction from Torus	Closed	Open	Normally closed, must open to supply RCIC suction from torus Power: From 250V RMOV Board 2C breaker 2-BKR-071-0018
44	2-PMP-71-19	RCIC Pump	Standby	Operating	Provides RPV makeup in Phase 1
45	2-FCV 71-39	RCIC Discharge Isolation Valve	Closed	Open	Normally closed, must open to supply RCIC injection flow Power: From 250V RMOV Board 2C breaker 2-BKR-071-0039
46	2-PCV 71-22	RCIC Lube Oil Cooling Water Pressure Control Valve	Open	Open/ Close as needed	Controls cooling water flow to RCIC lube oil cooler
47	2-FCV 71-25	RCIC Turbine Lube Oil Inlet Valve	Closed	Open	Normally closed, opens to allow cooling water flow to RCIC turbine lube oil cooler Power: From 250V RMOV Board 2C breaker 2-BKR-071-0025
48	2-TNK-71-27	RCIC Vacuum Tank	Standby	Operating	Collects and condenses RCIC gland seal leakage
49	2-CND-71-27	RCIC Barometric Condenser	Standby	Operating	Collects and condenses RCIC gland seal leakage
50	2-CLR-71-25	RCIC Lube Oil Cooler	Standby	Operating	Cools RCIC lube oil
51	2-PMP-71-29	RCIC Vacuum Tank Condensate Pump	Standby	Operating	Pumps condensate from vacuum tank to pump suction Power: From250V RMOV Board 2C breaker 2-BKR-071-0029
52	2-PMP-71-31	RCIC Vacuum Pump	Standby	Operating	Maintains vacuum on barometric condenser Power: From 250V RMOV Board 2C breaker 2-BKR-071-0031

Table A-1: Expedited Seismic Equipment List (ESEL) for Browns Ferry Nuclear Plant (Continued)

ESEL Item Number	Equipment		Operating State		Notes/Comments
	ID	Description	Normal State	Desired State	
53	2-FCV-71-8	RCIC Turbine Steam Inlet Valve	Closed	Open	Opens on RCIC start to admit steam to RCIC turbine Power: From 250V RMOV Board 2C breaker 2-BKR-071-0008
54	2-FCV-71-9	RCIC Turbine Steam Throttle Valve	Open	Open/ Close as needed	Trips closed on RCIC protective function Power: From 250V RMOV Board 2C breaker 2-BKR-071-009A
55	2-FCV-71-10	RCIC Turbine Governor Valve	Open	Open/ Close as needed	Modulates steam flow to RCIC turbine
56	2-TRB-71-9	RCIC Turbine	Standby	Operating	Supplies motive force to RCIC pump
57	2-FT-71-36	RCIC Pump Flow Transmitter for Turbine Control	On	On	Transmits RCIC flow to flow control circuit
58	2-FIC-71-36A	RCIC Flow Indicating Controller	Auto - Set at 620 gpm	Auto - Set at 620 gpm	Controls RCIC flow
59	2-PX-71-36A	Power Supply for RCIC Flow Controller	Energized	Energized	Supplies AC power to RCIC flow control circuitry
60	2-LPNL-925-672	RCIC Local Controls	Energized	Energized	Local control of RCIC turbine
61	2-SC-71-10	Electronic Governor Module	Operating	Operating	
62	2-13A-K15	RCIC Auto Isolation Seal-In Relay	Operable	Operable	
63	2-13A-K10	RCIC High Space Temperature Relay	Operable	Operable	
64	2-13A-K11	RCIC High Space Temperature Relay	Operable	Operable	

Table A-1: Expedited Seismic Equipment List (ESEL) for Browns Ferry Nuclear Plant (Continued)

ESEL Item Number	Equipment		Operating State		Notes/Comments
	ID	Description	Normal State	Desired State	
65	2-13A-K13	RCIC Low Steam Supply Pressure Relay	Operable	Operable	
66	2-2-71-K12	RCIC Steam Line High Differential Pressure Relay	Operable	Operable	
67	2-13A-K44	RCIC High Rupture Disc Pres. Relay	Operable	Operable	
68	2-13A-K45	RCIC High Rupture Disc Pressure Relay	Operable	Operable	
69	2-13A-K12	RCIC Auto Isolation Seal-In Relay	Operable	Operable	
70	2-13A-K14	RCIC Auto Isolation Seal-In Relay	Operable	Operable	
71	2-13A-K16	RCIC Auto Isolation Seal-In Relay	Operable	Operable	
72	2-13A-K38	RCIC Manual Steam Isolation relay	Operable	Operable	
73	2-13A-K17	RCIC Auto Discharge Circuit Reset relay	Operable	Operable	
74	2-13A-K18	RCIC Auto Discharge Circuit Reset relay	Operable	Operable	
75	2-13A-K37	RCIC Vessel Low Water Level relay	Operable	Operable	
76	2-13A-K30	RCIC Steam Line Space Excess Temperature Isolation relay	Operable	Operable	
77	2-13A-K31	RCIC Steam Line Space Excess Temperature Isolation relay	Operable	Operable	

Table A-1: Expedited Seismic Equipment List (ESEL) for Browns Ferry Nuclear Plant (Continued)

ESEL Item Number	Equipment		Operating State		Notes/Comments
	ID	Description	Normal State	Desired State	
78	2-71-K32	RCIC Steam Line Space Excess Temperature Isolation relay	Operable	Operable	
79	2-13A-K32	RCIC Steam Line Space Excess Temperature Isolation relay	Operable	Operable	
80	2-13A-K33	RCIC Auto Isolation Signal relay	Operable	Operable	
RCIC – Unit 3					
81	3-FCV 71-19	RCIC Pump Condensate Storage Tank Suction Valve	Open	Closed	Must close to swap RCIC suction to the suppression pool Power: From 250V RMOV Board 3C breaker 3-BKR-071-0019
82	3-FCV-71-17	RCIC Suction from Torus	Closed	Open	Normally closed, must open to supply RCIC suction from torus Power: From 250V RMOV Board 3C breaker 3-BKR-071-0017
83	3-FCV-71-18	RCIC Suction from Torus	Closed	Open	Normally closed, must open to supply RCIC suction from torus Power: From 250V RMOV Board 3C breaker 3-BKR-071-0018
84	3-PMP-71-19	RCIC Pump	Standby	Operating	Provides RPV makeup in Phase 1
85	3-FCV 71-39	RCIC Discharge Isolation Valve	Closed	Open	Normally closed, must open to supply RCIC injection flow Power: From 250V RMOV Board 3C breaker 3-BKR-071-0039
86	3-PCV 71-22	RCIC Lube Oil Cooling Water Pressure Control Valve	Open	Open/ Close as needed	Controls cooling water flow to RCIC lube oil cooler

Table A-1: Expedited Seismic Equipment List (ESEL) for Browns Ferry Nuclear Plant (Continued)

ESEL Item Number	Equipment		Operating State		Notes/Comments
	ID	Description	Normal State	Desired State	
87	3-FCV 71-25	RCIC Turbine Lube Oil Inlet Valve	Closed	Open	Normally closed, opens to allow cooling water flow to RCIC turbine lube oil cooler Power: From 250V RMOV Board 3C breaker 3-BKR-071-0025
88	3-TNK-71-27	RCIC Vacuum Tank	Standby	Operating	Collects and condenses RCIC gland seal leakage
89	3-CND-71-27	RCIC Barometric Condenser	Standby	Operating	Collects and condenses RCIC gland seal leakage
90	3-CLR-71-25	RCIC Lube Oil Cooler	Standby	Operating	Cools RCIC lube oil
91	3-PMP-71-29	RCIC Vacuum Tank Condensate Pump	Standby	Operating	Pumps condensate from vacuum tank to pump suction Power: From 250V RMOV Board 3C breaker 3-BKR-071-0029
92	3-PMP-71-31	RCIC Vacuum Pump	Standby	Operating	Maintains vacuum on barometric condenser Power: From 250V RMOV Board 3C breaker 3-BKR-071-0031
93	3-FCV-71-8	RCIC Turbine Steam Inlet Valve	Closed	Open	Opens on RCIC start to admit steam to RCIC turbine Power: From 250V RMOV Board 3C breaker 3-BKR-071-0008
94	3-FCV-71-9	RCIC Turbine Steam Throttle Valve	Open	Open/ Close as needed	Trips closed on RCIC protective function Power: From 250V RMOV Board 3C breaker 3-BKR-071-009A
95	3-FCV-71-10	RCIC Turbine Governor Valve	Open	Open/ Close as needed	Modulates steam flow to RCIC turbine
96	3-TRB-71-9	RCIC Turbine	Standby	Operating	Supplies motive force to RCIC pump

Table A-1: Expedited Seismic Equipment List (ESEL) for Browns Ferry Nuclear Plant (Continued)

ESEL Item Number	Equipment		Operating State		Notes/Comments
	ID	Description	Normal State	Desired State	
97	3-FT-71-36	RCIC Pump Flow Transmitter for Turbine Control	On	On	Transmits RCIC flow to flow control circuit
98	3-FIC-71-36A	RCIC Flow Indicating Controller	Auto - Set at 620 gpm	Auto - Set at 620 gpm	Controls RCIC flow
99	3-PX-71-36A	Power Supply for RCIC flow Controller	Energized	Energized	Supplies AC power to RCIC flow control circuitry
100	3-LPNL-925-672	RCIC Local Controls	Energized	Energized	Local control of RCIC turbine
101	3-SC-71-36A	Electronic Governor Module	Operating	Operating	
102	3-13A-K15	RCIC Auto Isolation Seal-In Relay	Operable	Operable	
103	3-13A-K10	RCIC High Space Temperature Relay	Operable	Operable	
104	3-13A-K11	RCIC High Space Temperature Relay	Operable	Operable	

Table A-1: Expedited Seismic Equipment List (ESEL) for Browns Ferry Nuclear Plant (Continued)

ESEL Item Number	Equipment		Operating State		Notes/Comments
	ID	Description	Normal State	Desired State	
105	3-13A-K13	RCIC Low Steam Supply Pressure Relay	Operable	Operable	
106	3-71-K12	RCIC Steam Line High Differential Pressure Relay	Operable	Operable	
107	3-13A-K44	RCIC High Rupture Disc Pressure Relay	Operable	Operable	
108	3-13A-K45	RCIC High Rupture Disc Pressure Relay	Operable	Operable	
109	3-71-K12	RCIC Manual Steam Isolation Relay	Operable	Operable	
110	3-13A-K14	RCIC Auto Isolation Seal-In Relay	Operable	Operable	
111	3-13A-K16	RCIC Auto Isolation Seal-In Relay	Operable	Operable	
112	3-13A-K38	RCIC Manual Steam Isolation relay	Operable	Operable	
113	3-13A-K17	RCIC Auto Discharge Circuit Reset relay	Operable	Operable	
114	3-13A-K18	RCIC Auto Discharge Circuit Reset relay	Operable	Operable	
115	3-13A-K37	RCIC Vessel Low Water Level relay	Operable	Operable	

Table A-1: Expedited Seismic Equipment List (ESEL) for Browns Ferry Nuclear Plant (Continued)

ESEL Item Number	Equipment		Operating State		Notes/Comments
	ID	Description	Normal State	Desired State	
116	3-13A-K30	RCIC Steam Line Space Excess Temperature Isolation relay	Operable	Operable	
117	3-13A-K31	RCIC Steam Line Space Excess Temperature Isolation relay	Operable	Operable	
118	3-71-K32	RCIC Steam Line Space Excess Temperature Isolation relay	Operable	Operable	
119	3-13A-K32	RCIC Steam Line Space Excess Temperature Isolation relay	Operable	Operable	
120	3-13A-K33	RCIC Auto Isolation Signal relay	Operable	Operable	
ADS – Unit 1					
121	TBD	FLEX Nitrogen Bottle Rack for MSRV Operation	Operable	Operable	UNID to be established in DCN 71387
122	1-PCV-1-4	MS/Main Steam Safety Relief Valve	Shut	Open	Used for pressure control and cooldown
123	1-PSV-1-4	MS/Solenoid Valve for PCV-1-4	Deenergized	Energized	Pilot valve for associated SRV Power: From 250V DC RMOV Board 1A
124	1-PCV-1-5	MS/Main Steam Safety Relief Valve	Shut	Open	Used for pressure control and cooldown
125	1-PSV-1-5	MS/Solenoid Valve for PCV-1-5	Deenergized	Energized	Pilot valve for associated SRV Power: From 250VDC RMOV Board 1C
126	1-ACC-32-6106	CA/Accumulator for PSV-1-5	Operable	Operable	Holds operating nitrogen for SRV
127	1-PCV-1-18	MS/Main Steam Safety Relief Valve	Shut	Open	Used for pressure control and cooldown

Table A-1: Expedited Seismic Equipment List (ESEL) for Browns Ferry Nuclear Plant (Continued)

ESEL Item Number	Equipment		Operating State		Notes/Comments
	ID	Description	Normal State	Desired State	
128	1-PSV-1-18	MS/Solenoid Valve for PCV-1-18	Deenergized	Energized	Pilot valve for associated SRV Power: From 250VDC RMOV Board 1B
129	1-PCV-1-19	MS/Main Steam Safety Relief Valve	Shut	Open	Used for pressure control and cooldown
130	1-PSV-1-19	MS/Solenoid Valve for PCV-1-19	Deenergized	Energized	Pilot Valve for associated SRV Power: From 250VDC RMOV Board 1B
131	1-ACC-32-6105	CA/Accumulator for PSV-1-19	Operable	Operable	Holds operating nitrogen for SRV
132	1-PCV-1-22	MS/Main Steam Safety Relief Valve	Shut	Open	Used for pressure control and cooldown
133	1-PSV-1-22	MS/Solenoid Valve for PCV-1-22	Deenergized	Energized	Pilot valve for associated SRV Power: From 250VDC RMOV Board 1B
134	1-ACC-32-6107	CA/Accumulator for PSV-1-22	Operable	Operable	Holds operating nitrogen for SRV
135	1-PCV-1-23	MS/Main Steam Safety Relief Valve	Shut	Open	Used for pressure control and cooldown
136	1-PSV-1-23	MS/Solenoid Valve for PCV-1-23	Deenergized	Energized	Pilot valve for associated SRV Power: From 250 VDC RMOV Board 1C
137	1-PCV-1-30	MS/Main Steam Safety Relief Valve	Shut	Open	Used for pressure control and cooldown
138	1-PSV-1-30	MS/Solenoid Valve for PCV-1-30	Deenergized	Energized	Pilot Valve for associated SRV Power: From 250VDC RMOV Board 1B
139	1-ACC-32-6108	CA/Accumulator for PSV-1-30	Operable	Operable	Holds operating nitrogen for SRV

Table A-1: Expedited Seismic Equipment List (ESEL) for Browns Ferry Nuclear Plant (Continued)

ESEL Item Number	Equipment		Operating State		Notes/Comments
	ID	Description	Normal State	Desired State	
140	1-PCV-1-31	MS/Main Steam Safety Relief Valve	Shut	Open	Used for pressure control and cooldown
141	1-PSV-1-31	MS/Solenoid Valve for PCV-1-31	Deenergized	Energized	Pilot valve for associated SRV Power: From 250VDC RMOV Board 1B
142	1-ACC-32-6111	CA/Accumulator for PSV-1-31	Operable	Operable	Holds operating nitrogen for SRV
143	1-PCV-1-34	MS/Main Steam Safety Relief Valve	Shut	Open	Used for pressure control and cooldown
144	1-PSV-1-34	MS/Solenoid Valve for PCV-1-34	Deenergized	Energized	Pilot valve for associated SRV Power: From 250VDC RMOV Board 1C
145	1-ACC-32-6109	CA/Accumulator for PSV-1-34	Operable	Operable	Holds operating nitrogen for SRV
146	1-PCV-1-41	MS/Main Steam Safety Relief Valve	Shut	Open	Used for pressure control and cooldown
147	1-PSV-1-41	MS/Solenoid Valve for PCV-1-41	Deenergized	Energized	Pilot valve for associated SRV Power: From 250VDC RMOV Board 1A
148	1-PCV-1-42	MS/Main Steam Safety Relief Valve	Shut	Open	Used for pressure control and cooldown
149	1-PSV-1-42	MS/Solenoid Valve for PCV-1-42	Deenergized	Energized	Pilot valve for associated SRV Power: From 250VDC RMOV Board 1B
150	1-PCV-1-179	MS/Main Steam Safety Relief Valve	Shut	Open	Used for pressure control and cooldown
151	1-PSV-1-179	MS/Solenoid Valve for PCV-1-179	Deenergized	Energized	Pilot valve for associated SRV Power: From 250VDC RMOV Board 1B

Table A-1: Expedited Seismic Equipment List (ESEL) for Browns Ferry Nuclear Plant (Continued)

ESEL Item Number	Equipment		Operating State		Notes/Comments
	ID	Description	Normal State	Desired State	
152	1-PCV-1-180	MS/Main Steam Safety Relief Valve	Shut	Open	Used for pressure control and cooldown
153	1-PSV-1-180	MS/Solenoid Valve for PCV-1-180	Deenergized	Energized	Pilot valve for associated SRV Power: From 250VDC RMOV Board 1C
154	1-HS-1-4	1-PCV 1-4 Control Room Hand Switch	Auto	Open	Open SRV for cooldown Power: From 250VDC RMOV Board 1A
155	2-XS-1-4	Transfer Switch for 2-PCV-1-4	Closed	Closed	
156	1-HS-1-5A	1-PCV 1-5 Control Room Hand Switch	Auto	Open	Open SRV for cooldown Power: From 250VDC RMOV Board 1C
157	1-XS-1-5	Transfer Switch for 1-PCV-1-5	Closed	Closed	
158	1-HS-1-18	1-PCV 1-18 Control Room Hand Switch	Auto	Open	Open SRV for cooldown Power: From 250VDC RMOV Board 1B
159	1-XS-1-18	Transfer Switch for 1-PCV-1-18	Closed	Closed	
160	1-HS-1-19A	1-PCV 1-19 Control Room Hand Switch	Auto	Open	Open SRV for cooldown Power: From 250VDC RMOV Board 1B
161	1-XS-1-19	Transfer Switch for 1-PCV-1-19A	Closed	Closed	
162	1-HS-1-22A	1-PCV 1-22 Control Room Hand Switch	Auto	Open	Open SRV for cooldown Power: From 250VDC RMOV Board 1B
163	1-XS-1-22	Transfer Switch for 2-PCV-1-22A	Closed	Closed	
164	1-HS-1-23A	1-PCV 1-23 Control Room Hand Switch	Auto	Open	Open SRV for cooldown Power: From 250VDC RMOV Board 1C

Table A-1: Expedited Seismic Equipment List (ESEL) for Browns Ferry Nuclear Plant (Continued)

ESEL Item Number	Equipment		Operating State		Notes/Comments
	ID	Description	Normal State	Desired State	
165	1-XS-1-23	Transfer Switch for 2-PCV-1-23A	Closed	Closed	
166	1-HS-1-30A	1-PCV 1-30 Control Room Hand Switch	Auto	Open	Open SRV for cooldown Power: From 250VDC RMOV Board 1B
167	1-XS-1-30	Transfer Switch for 1-PCV-1-30A	Closed	Closed	
168	1-HS-1-31A	1-PCV 1-31 Control Room Hand Switch	Auto	Open	Open SRV for cooldown Power: From 250VDC RMOV Board 1B
169	1-XS-1-31	Transfer Switch for 1-PCV-1-30A	Closed	Closed	
170	1-HS-1-34A	1-PCV 1-34 Control Room Hand Switch	Auto	Open	Open SRV for cooldown Power: From 250VDC RMOV Board 1C
171	1-XS-1-34	Transfer Switch for 1-PCV-1-34	Closed	Closed	
172	1-HS-1-41	1-PCV 1-41 Control Room Hand Switch	Auto	Open	Open SRV for cooldown Power: From 250VDC RMOV Board 1A
173	1-XS-1-41	Transfer Switch for 1-PCV-1-41	Closed	Closed	
174	1-HS-1-42	1-PCV 1-42 Control Room Hand Switch	Auto	Open	Open SRV for cooldown Power: From 250VDC RMOV Board 1B
175	1-XS-1-42	Transfer Switch for 1-PCV-1-42	Closed	Closed	
176	1-HS-1-179A	1-PCV 1-179 Control Room Hand Switch	Auto	Open	Open SRV for cooldown Power: From 250VDC RMOV Board 1B
177	1-XS-1-179	Transfer Switch for 1-PCV-1-179	Closed	Closed	

Table A-1: Expedited Seismic Equipment List (ESEL) for Browns Ferry Nuclear Plant (Continued)

ESEL Item Number	Equipment		Operating State		Notes/Comments
	ID	Description	Normal State	Desired State	
178	1-HS-1-180A	1-PCV 1-180 Control Room Hand Switch	Auto	Open	Open SRV for cooldown Power: From 250VDC RMOV Board 1C
179	1-XS-1-180	Transfer Switch for 1-PCV-1-180	Closed	Closed	
180	1-XS-1-159A	ADS Inhibit Switch	Normal	Inhibit	Used to inhibit automatic initiation of ADS Power: From 250VDC RMOV Board 1B
181	1-XS-1-161A	ADS Inhibit Switch	Normal	Inhibit	Used to inhibit automatic initiation of ADS Power: From 250VDC RMOV Board 1B
182	1-LPNL-925-0032	Local Panel 25-32: Backup Control	Operable	Operable	Failure of panel or components can prevent opening SRVs
ADS – Unit 2					
183	TBD	FLEX Nitrogen Bottle Rack For MSRV Operation	Operable	Operable	UNID to be established in DCN 70810
184	2-PCV-1-4	MS/Main Steam Safety Relief Valve	Shut	Open	Used for pressure control and cooldown Power: From 250 VDC RMOV Board 2A
185	2-PSV-1-4	MS/Solenoid Valve for PCV-1-4	Deenergized	Energized	Pilot valve for associated SRV
186	2-PCV-1-5	MS/Main Steam Safety Relief Valve	Shut	Open	Used for pressure control and cooldown
187	2-PSV-1-5	MS/Solenoid Valve for PCV-1-5	Deenergized	Energized	Pilot valve for associated SRV Power: From 250 VDC RMOV Board 2C
188	2-ACC-32-6106	CA/Accumulator for PSV-1-5	Operable	Operable	Holds operating nitrogen for SRV
189	2-PCV-1-18	MS/Main Steam Safety Relief Valve	Shut	Open	Used for pressure control and cooldown

Table A-1: Expedited Seismic Equipment List (ESEL) for Browns Ferry Nuclear Plant (Continued)

ESEL Item Number	Equipment		Operating State		Notes/Comments
	ID	Description	Normal State	Desired State	
190	2-PSV-1-18	MS/Solenoid Valve for PCV-1-18	Deenergized	Energized	Pilot valve for associated SRV Power: From 250 VDC RMOV Board 2B
191	2-PCV-1-19	MS/Main Steam Safety Relief Valve	Shut	Open	Used for pressure control and cooldown
192	2-PSV-1-19	MS/Solenoid Valve for PCV-1-19	Deenergized	Energized	Pilot valve for associated SRV Power: From 250 VDC RMOV Board 2B
193	2-ACC-32-6105	CA/Accumulator for PSV-1-19	Operable	Operable	Holds operating nitrogen for SRV
194	2-PCV-1-22	MS/Main Steam Safety Relief Valve	Shut	Open	Used for pressure control and cooldown
195	2-PSV-1-22	MS/Solenoid Valve for PCV-1-22	Deenergized	Energized	Pilot valve for associated SRV Power: From 250 VDC RMOV Board 2B
196	2-ACC-32-6107	CA/Accumulator For PSV-1-22	Operable	Operable	Holds operating nitrogen for SRV
197	2-PCV-1-23	MS/Main Steam Safety Relief Valve	Shut	Open	Used for pressure control and cooldown
198	2-PSV-1-23	MS/Solenoid Valve for PCV-1-23	Deenergized	Energized	Pilot valve for associated SRV Power: From 250 VDC RMOV Board 2C
199	2-PCV-1-30	MS/Main Steam Safety Relief Valve	Shut	Open	Used for pressure control and cooldown
200	2-PSV-1-30	MS/Solenoid Valve for PCV-1-30	Deenergized	Energized	Pilot valve for associated SRV Power: From 250 VDC RMOV Board 2A
201	2-ACC-32-6111	CA/Accumulator for PSV-1-30	Operable	Operable	Holds operating nitrogen for SRV

Table A-1: Expedited Seismic Equipment List (ESEL) for Browns Ferry Nuclear Plant (Continued)

ESEL Item Number	Equipment		Operating State		Notes/Comments
	ID	Description	Normal State	Desired State	
202	2-PCV-1-31	MS/Main Steam Safety Relief Valve	Shut	Open	Used for pressure control and cooldown
203	2-PSV-1-31	MS/Solenoid Valve for PCV-1-31	Deenergized	Energized	Pilot valve for associated SRV Power: From 250 VDC RMOV Board 2B
204	2-ACC-32-6108	CA/Accumulator for PSV-1-31	Operable	Operable	Holds operating nitrogen for SRV
205	2-PCV-1-34	MS/Main Steam Safety Relief Valve	Shut	Open	Used for pressure control and cooldown
206	2-PSV-1-34	MS/Solenoid Valve for PCV-1-34	Deenergized	Energized	Pilot Valve for associated SRV Power: From 250 VDC RMOV Board 2C
207	2-ACC-32-6109	CA/Accumulator for PSV-1-34	Operable	Operable	Holds operating nitrogen for SRV
208	2-PCV-1-41	MS/Main Steam Safety Relief Valve	Shut	Open	Used for pressure control and cooldown
209	2-PSV-1-41	MS/Solenoid Valve for PCV-1-41	Deenergized	Energized	Pilot valve for associated SRV Power: From 250 VDC RMOV Board 2A
210	2-PCV-1-42	MS/Main Steam Safety Relief Valve	Shut	Open	Used for pressure control and cooldown
211	2-PSV-1-42	MS/Solenoid Valve for PCV-1-42	Deenergized	Energized	Pilot valve for associated SRV Power: From 250 VDC RMOV Board 2B
212	2-PCV-1-179	MS/Main Steam Safety Relief Valve	Shut	Open	Used for pressure control and cooldown
213	2-PSV-1-179	MS/Solenoid Valve for PCV-1-179	Deenergized	Energized	Pilot valve for associated SRV Power: From 250 VDC RMOV Board 2B

Table A-1: Expedited Seismic Equipment List (ESEL) for Browns Ferry Nuclear Plant (Continued)

ESEL Item Number	Equipment		Operating State		Notes/Comments
	ID	Description	Normal State	Desired State	
214	2-PCV-1-180	MS/Main Steam Safety Relief Valve	Shut	Open	Used for pressure control and cooldown
215	2-PSV-1-180	MS/Solenoid Valve for PCV-1-30	Deenergized	Energized	Pilot valve for associated SRV Power: From 250 VDC RMOV Board 2C
216	2-HS-1-4	2-PCV 1-4 Control Room Hand Switch	Auto	Open	Open SRV for cooldown Power: From 250 VDC RMOV Board 2A
217	2-XS-1-4	Transfer Switch for 2-PCV-1-4	Closed	Closed	
218	2-HS-1-5A	2-PCV 1-5 Control Room Hand Switch	Auto	Open	Open SRV for cooldown Power: From 250 VDC RMOV Board 2C
219	2-XS-1-5	Transfer Switch for 2-PCV-1-5	Closed	Closed	
220	2-HS-1-18	2-PCV 1-18 Control Room Hand Switch	Auto	Open	Open SRV for cooldown Power: From 250 VDC RMOV Board 2B
221	2-XS-1-18	Transfer Switch for 2-PCV-1-18	Closed	Closed	
222	2-HS-1-19A	2-PCV 1-19 Control Room Hand Switch	Auto	Open	Open SRV for cooldown Power: From 250 VDC RMOV Board 2B
223	2-XS-1-19A	Transfer Switch for 2-PCV-1-19	Closed	Closed	
224	2-HS-1-22A	2-PCV 1-22 Control Room Hand Switch	Auto	Open	Open SRV for cooldown Power: From 250 VDC RMOV Board 2B
225	2-XS-1-22A	Transfer Switch for 2-PCV-1-22A	Closed	Closed	
226	2-HS-1-23	2-PCV 1-23 Control Room Hand Switch	Auto	Open	Open SRV for cooldown Power: From 250 VDC RMOV Board 2C

Table A-1: Expedited Seismic Equipment List (ESEL) for Browns Ferry Nuclear Plant (Continued)

ESEL Item Number	Equipment		Operating State		Notes/Comments
	ID	Description	Normal State	Desired State	
227	2-XS-1-23	Transfer Switch for 2-PCV-1-23	Closed	Closed	
228	2-HS-1-30A	2-PCV 1-30 Control Room Hand Switch	Auto	Open	Open SRV for cooldown Power: From 250 VDC RMOV Board 2A
229	2-XS-1-30	Transfer Switch for 2-PCV-1-30	Closed	Closed	
230	2-HS-1-31A	2-PCV 1-31 Control Room Hand Switch	Auto	Open	Open SRV for cooldown Power: From 250 VDC RMOV Board 2B
231	2-XS-1-31	Transfer Switch for 2-PCV-1-30	Closed	Closed	
232	2-HS-1-34A	2-PCV 1-34 Control Room Hand Switch	Auto	Open	Open SRV for cooldown Power: From 250 VDC RMOV Board 2C
233	2-XS-1-34	Transfer Switch for 2-PCV-1-34	Closed	Closed	
234	2-HS-1-41	2-PCV 1-41 Control Room Hand Switch	Auto	Open	Open SRV for cooldown Power: From 250 VDC RMOV Board 2A
235	2-XS-1-41	Transfer Switch for 2-PCV-1-41	Closed	Closed	
236	2-HS-42	2-PCV 1-42 Control Room Hand Switch	Auto	Open	Open SRV for cooldown Power: From 250 VDC RMOV Board 2B
237	2-XS-1-42	Transfer Switch for 2-PCV-1-42	Closed	Closed	
238	2-HS-1-179A	2-PCV 1-179 Control Room Hand Switch	Auto	Open	Open SRV for cooldown Power: From 250 VDC RMOV Board 2B
239	2-XS-1-179	Transfer Switch for 2-PCV-1-179	Closed	Closed	

Table A-1: Expedited Seismic Equipment List (ESEL) for Browns Ferry Nuclear Plant (Continued)

ESEL Item Number	Equipment		Operating State		Notes/Comments
	ID	Description	Normal State	Desired State	
240	2-HS-1-180A	2-PCV 1-180 Control Room Hand Switch	Auto	Open	Open SRV for cooldown Power: From 250 VDC RMOV Board 2C
241	2-XS-1-180	Transfer Switch for 2-PCV-1-180	Closed	Closed	
242	2-XS-1-159A	ADS Inhibit Switch	Normal	Inhibit	Used to inhibit automatic initiation of ADS Power: From 250 VDC RMOV Board 2B
243	2-XS-1-161A	ADS Inhibit Switch	Normal	Inhibit	Used to inhibit automatic initiation of ADS Power: From 250 VDC RMOV Board 2B
244	2-LPNL-25-32	Local Panel 25-32: Backup Control	Operable	Operable	Failure of panel or components can prevent opening SRVs
ADS – Unit 3					
245	TBD	FLEX Nitrogen Bottle Rack for MSRV Operation	Operable	Operable	UNID to be established in DCN 71386
246	3-PCV-1-4	MS/Main Steam Safety Relief Valve	Shut	Open	Used for pressure control and cooldown
247	3-PSV-1-4	MS/Solenoid Valve for PCV-1-4	Deenergized	Energized	Pilot valve for associated SRV Power: From 250 VDC RMOV Board 3A
248	3-PCV-1-5	MS/Main Steam Safety Relief Valve	Shut	Open	Used for pressure control and cooldown
249	3-PSV-1-5	MS/Solenoid Valve for PCV-1-5	Deenergized	Energized	Pilot valve for associated SRV Power: From 250 VDC RMOV Board 3C
250	3-ACC-32-6106	CA/Accumulator for PSV-1-5	Operable	Operable	Holds operating nitrogen for SRV

Table A-1: Expedited Seismic Equipment List (ESEL) for Browns Ferry Nuclear Plant (Continued)

ESEL Item Number	Equipment		Operating State		Notes/Comments
	ID	Description	Normal State	Desired State	
251	3-PCV-1-18	MS/Main Steam Safety Relief Valve	Shut	Open	Used for pressure control and cooldown
252	3-PSV-1-18	MS/Solenoid Valve for PCV-1-18	Deenergized	Energized	Pilot valve for associated SRV Power: From 250 VDC RMOV Board 3B
253	3-ACC-32-6104	CA/Accumulator for Psv-1-18	Operable	Operable	Holds operating nitrogen for SRV
254	3-PCV-1-19	MS/Main Steam Safety Relief Valve	Shut	Open	Used for pressure control and cooldown
255	3-PSV-1-19	MS/Solenoid Valve for PCV-1-19	Deenergized	Energized	Pilot valve for associated SRV Power: From 250 VDC RMOV Board 3B
256	3-ACC-32-6105	CA/Accumulator for PSV-1-19	Operable	Operable	Holds operating nitrogen for SRV
257	3-PCV-1-22	MS/Main Steam Safety Relief Valve	Shut	Open	Used for pressure control and cooldown
258	3-PSV-1-22	MS/Solenoid Valve for PCV-1-22	Deenergized	Energized	Pilot valve for associated SRV Power: From 250 VDC RMOV Board 3B
259	3-ACC-32-6107	CA/Accumulator for PSV-1-22	Operable	Operable	Holds operating nitrogen for SRV
260	3-PCV-1-23	MS/Main Steam Safety Relief Valve	Shut	Open	Used for pressure control and cooldown
261	3-PSV-1-23	MS/Solenoid Valve for PCV-1-23	Deenergized	Energized	Pilot valve for associated SRV Power: From 250 VDC RMOV Board 3C
262	3-PCV-1-30	MS/Main Steam Safety Relief Valve	Shut	Open	Used for pressure control and cooldown

Table A-1: Expedited Seismic Equipment List (ESEL) for Browns Ferry Nuclear Plant (Continued)

ESEL Item Number	Equipment		Operating State		Notes/Comments
	ID	Description	Normal State	Desired State	
263	3-PSV-1-30	MS/Solenoid Valve for PCV-1-30	Deenergized	Energized	Pilot valve for associated SRV Power: From 250 VDC RMOV Board 3A
264	3-ACC-32-6111	CA/Accumulator for PSV-1-30	Operable	Operable	Holds operating nitrogen for SRV
265	3-PCV-1-31	MS/Main Steam Safety Relief Valve	Shut	Open	Used for pressure control and cooldown
266	3-PSV-1-31	MS/Solenoid Valve for PCV-1-31	Deenergized	Energized	Pilot valve for associated SRV Power: From 250 VDC RMOV Board 3B
267	3-ACC-32-6108	CA/Accumulator for PSV-1-31	Operable	Operable	Holds operating nitrogen for SRV
268	3-PCV-1-34	MS/Main Steam Safety Relief Valve	Shut	Open	Used for pressure control and cooldown
269	3-PSV-1-34	MS/Solenoid Valve for PCV-1-34	Deenergized	Energized	Pilot valve for associated SRV Power: From 250 VDC RMOV Board 3C
270	3-ACC-32-6109	CA/Accumulator for PSV-1-34	Operable	Operable	Holds operating nitrogen for SRV
271	3-PCV-1-41	MS/Main Steam Safety Relief Valve	Shut	Open	Used for pressure control and cooldown
272	3-PSV-1-41	MS/Solenoid Valve for PCV-1-41	Deenergized	Energized	Pilot valve for associated SRV Power: From 250 VDC RMOV Board 3C
273	3-ACC-32-6110	CA/Accumulator for PSV-1-41	Operable	Operable	Holds operating nitrogen for SRV
274	3-PCV-1-42	MS/Main Steam Safety Relief Valve	Shut	Open	Used for pressure control and cooldown

Table A-1: Expedited Seismic Equipment List (ESEL) for Browns Ferry Nuclear Plant (Continued)

ESEL Item Number	Equipment		Operating State		Notes/Comments
	ID	Description	Normal State	Desired State	
275	3-PSV-1-42	MS/Solenoid Valve for PCV-1-42	Deenergized	Energized	Pilot valve for associated SRV Power: From 250 VDC RMOV Board 3B
276	3-PCV-1-179	MS/Main Steam Safety Relief Valve	Shut	Open	Used for pressure control and cooldown
277	3-PSV-1-179	MS/Solenoid Valve for PCV-1-179	Deenergized	Energized	Pilot valve for associated SRV Power: From 250 VDC RMOV Board 3B
278	3-PCV-1-180	MS/Main Steam Safety Relief Valve	Shut	Open	Used for pressure control and cooldown
279	3-PSV-1-180	MS/Solenoid Valve for PCV-1-180	Deenergized	Energized	Pilot valve for associated SRV Power: From 250 VDC RMOV Board 3A
280	3-HS-1-4	3-PCV 1-4 Control Room Hand Switch	Auto	Open	Open SRV for cooldown Power: From 250 VDC RMOV Board 3A
281	3-XS-1-4	Transfer Switch for 3-PCV-1-4	Closed	Closed	
281	3-HS-1-5A	3-PCV 1-5 Control Room Hand Switch	Auto	Open	Open SRV for cooldown Power: From 250 VDC RMOV Board 3C
282	3-XS-1-5	Transfer Switch for 3-PCV-1-5	Closed	Closed	
283	3-HS-1-18	3-PCV 1-19 Control Room Hand Switch	Auto	Open	Open SRV for cooldown Power: From 250 VDC RMOV Board 3B
284	3-XS-1-18	Transfer Switch for 2-PCV-1-18	Closed	Closed	
285	3-HS-1-19A	3-PCV 1-19 Control Room Hand Switch	Auto	Open	Open SRV for cooldown Power: From 250 VDC RMOV Board 3B

Table A-1: Expedited Seismic Equipment List (ESEL) for Browns Ferry Nuclear Plant (Continued)

ESEL Item Number	Equipment		Operating State		Notes/Comments
	ID	Description	Normal State	Desired State	
286	3-XS-1-19	Transfer Switch for 3-PCV-1-19	Closed	Closed	
287	3-HS-1-22A	3-PCV 1-22 Control Room Hand Switch	Auto	Open	Open SRV for cooldown Power: From 250 VDC RMOV Board 3B
288	3-XS-1-22	Transfer Switch for 3-PCV-1-22	Closed	Closed	
289	3-HS-1-23	3-PCV 1-23 Control Room Hand Switch	Closed	Closed	Open SRV for cooldown Power: From 250 VDC RMOV Board 3C
290	3-XS-1-23	Transfer Switch for 3-PCV-1-23	Closed	Closed	
291	3-HS-1-30A	3-PCV 1-30 Control Room Hand Switch	Auto	Open	Open SRV for cooldown Power: From 250 VDC RMOV Board 3A
292	3-XS-1-30	Transfer Switch for 3-PCV-1-30	Closed	Closed	
293	3-HS-1-31A	3-PCV 1-31 Control Room Hand Switch	Auto	Open	Open SRV for cooldown Power: From 250 VDC RMOV Board 3B
294	3-XS-1-31	Transfer Switch for 3-PCV-1-31	Closed	Closed	
295	3-HS-1-34A	3-PCV 1-34 Control Room Hand Switch	Auto	Open	Open SRV for cooldown Power: From 250 VDC RMOV Board 3C
296	3-XS-1-34	Transfer Switch for 3-PCV-1-34	Closed	Closed	
297	3-HS-1-41	3-PCV 1-41 Control Room Hand Switch	Auto	Open	Open SRV for cooldown Power: From 250 VDC RMOV Board 3C
298	3-XS-1-41	Transfer Switch for 3-PCV-1-41	Closed	Closed	

Table A-1: Expedited Seismic Equipment List (ESEL) for Browns Ferry Nuclear Plant (Continued)

ESEL Item Number	Equipment		Operating State		Notes/Comments
	ID	Description	Normal State	Desired State	
299	3-HS-1-42	3-PCV 1-42 Control Room Hand Switch	Auto	Open	Open SRV for cooldown Power: From 250 VDC RMOV Board 3B
300	3-XS-1-42	Transfer Switch for 3-PCV-1-42	Closed	Closed	
301	3-HS-1-179A	3-PCV 1-179 Control Room Hand Switch	Auto	Open	Open SRV for cooldown Power: From 250 VDC RMOV Board 3B
302	3-XS-1-179	Transfer Switch for 3-PCV-1-179	Closed	Closed	
303	3-HS-1-180A	3-PCV 1-180 Control Room Hand Switch	Auto	Open	Open SRV for cooldown Power: From 250 VDC RMOV Board 3A
304	3-XS-1-180	Transfer Switch for 3-PCV-1-180	Closed	Closed	
305	3-XS-1-159A	ADS Inhibit Switch	Normal	Inhibit	Used to inhibit automatic initiation of ADS Power: From 250 VDC RMOV Board 3B
306					Number not used. Duplicate UNID removed.
307	3-XS-1-161A	ADS Inhibit Switch	Normal	Inhibit	Used to inhibit automatic initiation of ADS Power: From 250 VDC RMOV Board 3B
308	3-LPNL-25-32	Local Panel 25-32: Backup Control	Operable	Operable	Failure of panel or components can prevent opening SRVs
Instrumentation – Unit 1					
309	1-LI-3-58B	RPV Level Instrument	Operating	Operating	Gives indication of RPV level Power: From Division II 250 VDC
310	1-LIS-3-58B	RPV Level Indication Switch	Operating	Operating	Gives indication of RPV level Power: From Division II 250 VDC

Table A-1: Expedited Seismic Equipment List (ESEL) for Browns Ferry Nuclear Plant (Continued)

ESEL Item Number	Equipment		Operating State		Notes/Comments
	ID	Description	Normal State	Desired State	
311	1-LT-3-58B	RPV Level Transmitter	Operating	Operating	Gives indication of RPV level Power: From Division II 250 VDC
312	1-LS-3-58B	RPV Level Switch	Operating	Operating	Gives indication of RPV level Power: From Division II 250 VDC
313	1-LI-3-55	RPV Shutdown Floodup Range	Operating	Operating	
314	1-LT-3-55	RPV Shutdown Floodup Range	Operating	Operating	
315	1-PI-3-74B	RPV Pressure Indicator	Operating	Operating	Gives indication of RPV pressure Power: From Division II 250 VDC
316	1-PIS-3-74B	RPV Pressure Indication / Switch	Operating	Operating	Gives indication of RPV pressure Power: From Division II 250 VDC
317	1-PT-3-74B	RPV Pressure Transmitter	Operating	Operating	Gives indication of RPV pressure Power: From Division II 250 VDC
318	1-TIS-64-52AA	Drywell Temperature Indicator Switch	Operating	Operating	
319	1-TI-64-52AB	Drywell Temperature Indicator	Operating	Operating	
320	1-PI-064-67B	Drywell Pressure Indicator	Operating	Operating	Gives indication of drywell pressure
321	1-PT-064-67	Drywell Pressure Transmitter	Operating	Operating	Gives indication of drywell pressure
322	1-LI-064-159A	Suppression Pool Level Indicator (Division II)	Operating	Operating	Gives indication of suppression pool level Power: From Division II 250 VDC Power

Table A-1: Expedited Seismic Equipment List (ESEL) for Browns Ferry Nuclear Plant (Continued)

ESEL Item Number	Equipment		Operating State		Notes/Comments
	ID	Description	Normal State	Desired State	
323	1-LT-064-159A	Suppression Pool Level Transmitter (Division II)	Operating	Operating	Gives indication of suppression pool level Power: From Division II 250 VDC Power
324	1-TI-064-161	Torus Bulk Water Temperature (Division I)	Operating	Operating	Gives indication of bulk torus water temperature
325	1-TM-64-161A	Torus Temperature Module A	Operating	Operating	Feeds the indication of bulk torus water temperature
326	1-TE-64-161A	Torus Temperature Element A	Operating	Operating	Feeds the indication of bulk torus water temperature
327	1-TM-64-161B	Torus Temperature Module B	Operating	Operating	Feeds the indication of bulk torus water temperature
328	1-TE-64-161B	Torus Temperature Element B	Operating	Operating	Feeds the indication of bulk torus water temperature
329	1-TM-64-161C	Torus Temperature Module C	Operating	Operating	Feeds the indication of bulk torus water temperature
330	1-TE-64-161C	Torus Temperature Element C	Operating	Operating	Feeds the indication of bulk torus water temperature
331	1-TM-64-161D	Torus Temperature Module D	Operating	Operating	Feeds the indication of bulk torus water temperature
332	1-TE-64-161D	Torus Temperature Element D	Operating	Operating	Feeds the indication of bulk torus water temperature
333	1-TM-64-161E	Torus Temperature Module E	Operating	Operating	Feeds the indication of bulk torus water temperature
334	1-TE-64-161E	Torus Temperature Element E	Operating	Operating	Feeds the indication of bulk torus water temperature
335	1-TM-64-161F	Torus Temperature Module F	Operating	Operating	Feeds the indication of bulk torus water temperature

Table A-1: Expedited Seismic Equipment List (ESEL) for Browns Ferry Nuclear Plant (Continued)

ESEL Item Number	Equipment		Operating State		Notes/Comments
	ID	Description	Normal State	Desired State	
336	1-TE-64-161F	Torus Temperature Element F	Operating	Operating	Feeds the indication of bulk torus water temperature
337	1-TM-64-161G	Torus Temperature Module G	Operating	Operating	Feeds the indication of bulk torus water temperature
338	1-TE-64-161G	Torus Temperature Element G	Operating	Operating	Feeds the indication of bulk torus water temperature
339	1-TM-64-161H	Torus Temperature Module H	Operating	Operating	Feeds the indication of bulk torus water temperature
340	1-TE-64-161H	Torus Temperature Element H	Operating	Operating	Feeds the indication of bulk torus water temperature
341	1-TM-64-161J	Torus Temperature Module J	Operating	Operating	Feeds the indication of bulk torus water temperature
342	1-TM-64-161K	Torus Temperature Module K	Operating	Operating	Feeds the indication of bulk torus water temperature
343	1-TM-64-161L	Torus Temperature Module L	Operating	Operating	Feeds the indication of bulk torus water temperature
344	1-PNLA-009-0003A	Reactor Shutdown & Containment Cooling Panel	Operable	Operable	Indications and controls
345	1-PNLA-009-0003B	Reactor Shutdown & Containment Cooling Panel	Operable	Operable	Indications and controls
346	1-PNLA-009-009	I&C Bus 1A and 1B (Cabinet 2 and 3 of Panel 1-9-9)	Operable	Operable	Power for I&C Buses 1A and 1B
347	1-PNLA-009-0032	RHR, CS, HPCI (Channel A), RCIC, ADS Panel	Operable	Operable	Logic for RHR, core spray, High Pressure Core Injection (HPCI), RCIC, ADS
348	1-PNLA-009-0033	RHR, CS, HPCI (Channel B), RCIC, ADS Logic Panel	Operable	Operable	Logic for Emergency Core Cooling System (ECCS)

Table A-1: Expedited Seismic Equipment List (ESEL) for Browns Ferry Nuclear Plant (Continued)

ESEL Item Number	Equipment		Operating State		Notes/Comments
	ID	Description	Normal State	Desired State	
349	1-PNLA-009-0081	Division I ECCS ATU Cabinet	Operable	Operable	Analog Trip Unit (ATU) for RPV and containment instrument signals
350	1-PNLA-009-0082	Division II ECCS ATU Cabinet	Operable	Operable	ATU for RPV and containment instrument signals
351	1-PNLA-009-0087	Division I Torus Temperature Monitoring	Operable	Operable	Provides indication of torus water temperature
352	1-LPNL-925-005A	Local Panel 25-5A	Operable	Operable	Local instrumentation rack/panel
353	1-LPNL-925-005B	Local Panel 25-5B	Operable	Operable	Local instrumentation rack/panel
354	1-LPNL-925-0058	RCIC Instrumentation Panel	Operable	Operable	RCIC local instrumentation panel
355	1-LPNL-925-006B	Instrumentation Rack 25-6B	Operable	Operable	Local instrumentation rack/panel (drywell pressure)
356	1-PNLA-925-0031	Local Panel 25-31	Operable	Operable	RCIC local isolation instrumentation
357	1-LPNL-925-672	RCIC Local Controls	Operable	Operable	Can fail and block control room operation
Instrumentation – Unit 2					
358	2-LI-3-58B	RPV Level Instrument	Operating	Operating	Gives indication of RPV level Power: From Division II 250 VDC
359	2-LIS-3-58B	RPV Level Indication / Switch	Operating	Operating	Gives indication of RPV level Power: From Division II 250 VDC
360	2-LT-3-58B	RPV Level Transmitter	Operating	Operating	Gives indication of RPV level Power: From Division II 250 VDC

Table A-1: Expedited Seismic Equipment List (ESEL) for Browns Ferry Nuclear Plant (Continued)

ESEL Item Number	Equipment		Operating State		Notes/Comments
	ID	Description	Normal State	Desired State	
361	2-LS-3-58B	RPV Level Switch	Operating	Operating	Gives indication of RPV level Power: From Division II 250 VDC
362	2-LI-3-55	RPV Shutdown Floodup Range	Operating	Operating	
363	2-LT-3-55	RPV Shutdown Floodup Range	Operating	Operating	
364	2-PI-3-74B	RPV Pressure Indicator	Operating	Operating	Power: From Division II 250 VDC
365	2-PIS-3-74B	RPV Pressure Indication / Switch	Operating	Operating	Gives indication of RPV pressure
366	2-PT-3-74B	RPV Pressure Transmitter	Operating	Operating	Gives indication of RPV pressure
367	2-TIS-64-52AA	Drywell Temperature Indicator Switch	Operating	Operating	
368	2-TI-64-52AB	Drywell Temperature Indicator	Operating	Operating	
369	2-PI-064-67B	Drywell Pressure Indicator	Operating	Operating	Gives indication of drywell pressure
370	2-PT-064-67B	Drywell Pressure Transmitter	Operating	Operating	Gives indication of drywell pressure
371	2-LI-064-159A	Suppression Pool Level Indicator (Division II)	Operating	Operating	Gives indication of suppression pool level Power: From Division II 250 VDC Power
372	2-LT-064-159A	Suppression Pool Level Transmitter (Division II)	Operating	Operating	Gives indication of suppression pool level Power: From Division II 250 VDC Power
373	2-TI-064-161	Torus Bulk Water Temperature (Division I)	Operating	Operating	Gives indication of bulk torus water temperature

Table A-1: Expedited Seismic Equipment List (ESEL) for Browns Ferry Nuclear Plant (Continued)

ESEL Item Number	Equipment		Operating State		Notes/Comments
	ID	Description	Normal State	Desired State	
374	2-TM-64-161A	Torus Temperature Module A	Operating	Operating	Feeds the indication of bulk torus water temperature
375	2-TE-64-161A	Torus Temperature Element A	Operating	Operating	Feeds the indication of bulk torus water temperature
376	2-TM-64-161B	Torus Temperature Module B	Operating	Operating	Feeds the indication of bulk torus water temperature
377	2-TE-64-161B	Torus Temperature Element B	Operating	Operating	Feeds the indication of bulk torus water temperature
378	2-TM-64-161C	Torus Temperature Module C	Operating	Operating	Feeds the indication of bulk torus water temperature
379	2-TE-64-161C	Torus Temperature Element C	Operating	Operating	Feeds the indication of bulk torus water temperature
380	2-TM-64-161D	Torus Temperature Module D	Operating	Operating	Feeds the indication of bulk torus water temperature
381	2-TE-64-161D	Torus Temperature Element D	Operating	Operating	Feeds the indication of bulk torus water temperature
382	2-TM-64-161E	Torus Temperature Module E	Operating	Operating	Feeds the indication of bulk torus water temperature
383	2-TE-64-161E	Torus Temperature Element E	Operating	Operating	Feeds the indication of bulk torus water temperature
384	2-TM-64-161F	Torus Temperature Module F	Operating	Operating	Feeds the indication of bulk torus water temperature
385	2-TE-64-161F	Torus Temperature Element F	Operating	Operating	Feeds the indication of bulk torus water temperature
386	2-TM-64-161G	Torus Temperature Module G	Operating	Operating	Feeds the indication of bulk torus water temperature

Table A-1: Expedited Seismic Equipment List (ESEL) for Browns Ferry Nuclear Plant (Continued)

ESEL Item Number	Equipment		Operating State		Notes/Comments
	ID	Description	Normal State	Desired State	
387	2-TE-64-161G	Torus Temperature Element G	Operating	Operating	Feeds the indication of bulk torus water temperature
388	2-TM-64-161H	Torus Temperature Module H	Operating	Operating	Feeds the indication of bulk torus water temperature
389	2-TE-64-161H	Torus Temperature Element H	Operating	Operating	Feeds the indication of bulk torus water temperature
390	2-TM-64-161J	Torus Temperature Module J	Operating	Operating	Feeds the indication of bulk torus water temperature
391	2-TM-64-161K	Torus Temperature Module K	Operating	Operating	Feeds the indication of bulk torus water temperature
392	2-TM-64-161L	Torus Temperature Module L	Operating	Operating	Feeds the indication of bulk torus water temperature
393	2-PNLA-009-0003A	Reactor Shutdown & Containment Cooling Panel	Operable	Operable	Indications and controls
394	2-PNLA-009-0003B	Reactor Shutdown & Containment Cooling Panel	Operable	Operable	Indications and controls
395	2-PNLA-009-009	I&C Bus 1A and 1B (Cabinet 2 and 3 of panel 1-9-9)	Operable	Operable	Power for I&C Buses 1A and 1B
396	2-PNLA-009-0032	RHR, CS, HPCI (Channel A), RCIC, ADS Panel	Operable	Operable	Logic for ECCS systems
397	2-PNLA-009-0033	RHR, CS, HPCI (Channel B), RCIC, ADS Logic Panel	Operable	Operable	Logic for ECCS systems
398	2-PNLA-009-0081	Division I ECCS ATU Cabinet	Operable	Operable	ATU for RPV and containment instrument signals
399	2-PNLA-009-0082	Division II ECCS ATU Cabinet	Operable	Operable	ATU for RPV and containment instrument signals

Table A-1: Expedited Seismic Equipment List (ESEL) for Browns Ferry Nuclear Plant (Continued)

ESEL Item Number	Equipment		Operating State		Notes/Comments
	ID	Description	Normal State	Desired State	
400	2-PNLA-009-0087	Division I Torus Temperature Monitoring	Operable	Operable	Provides indication of torus water temperature
401	2-LPNL-925-005A	Local Panel 25-5A	Operable	Operable	Local instrumentation rack/panel
402	2-LPNL-925-005B	Local Panel 25-5B	Operable	Operable	Local instrumentation rack/panel
403	2-LPNL-925-0058	RCIC Instrumentation Panel	Operable	Operable	RCIC local instrumentation panel
404	2-LPNL-925-006A	Instrumentation Rack 25-6A	Operable	Operable	Local instrumentation rack/panel (RPV level)
406	2-PNLA-925-0031	Local Panel 25-31	Operable	Operable	RCIC local isolation instrumentation
406	2-LPNL-925-672	RCIC Local Controls	Operable	Operable	Can fail and block control room operation
Instrumentation – Unit 3					
407	3-LI-3-58B	RPV Level Instrument	Operating	Operating	Gives indication of RPV level Power: From Division II 250 VDC
408	3-LIS-3-58B	RPV Level Indication	Operating	Operating	Gives indication of RPV level Power: From Division II 250 VDC
409	3-LT-3-58B	RPV Level Transmitter	Operating	Operating	Gives indication of RPV level Power: From Division II 250 VDC
410	3-LS-3-58B	RPV Level Switch	Operating	Operating	Gives indication of RPV level Power: From Division II 250 VDC
411	3-LI-3-55	RPV Shutdown Floodup Range	Operating	Operating	

Table A-1: Expedited Seismic Equipment List (ESEL) for Browns Ferry Nuclear Plant (Continued)

ESEL Item Number	Equipment		Operating State		Notes/Comments
	ID	Description	Normal State	Desired State	
412	3-LT-3-55	RPV Shutdown Floodup Range	Operating	Operating	
413	3-PI-3-74B	RPV Pressure Indicator	Operating	Operating	Power: From Division II 250 VDC
414	3-PIS-3-74B	RPV Pressure Indication / Switch	Operating	Operating	Gives indication of RPV pressure
415	3-PT-3-74B	RPV Pressure Transmitter	Operating	Operating	Gives indication of RPV pressure
416	3-TIS-64-52AA	Drywell Temperature Indicator Switch	Operating	Operating	
417	3-TI-64-52AB	Drywell Temperature Indicator	Operating	Operating	
418	3-PI-064-67B	Drywell Pressure Indicator	Operating	Operating	Gives indication of drywell pressure
419	3-PT-064-67	Drywell Pressure Transmitter	Operating	Operating	Gives indication of drywell pressure
420	3-LI-064-159A	Suppression Pool Level Indicator (Division II)	Operating	Operating	Gives indication of suppression pool level Power: From Division II 250 VDC Power
421	3-LT-064-159A	Suppression Pool Level Transmitter (Division II)	Operating	Operating	Gives indication of suppression pool level Power: From Division II 250 VDC Power
422	3-TI-064-161	Torus Bulk Water Temperature (Division I)	Operating	Operating	Gives indication of bulk torus water temperature
423	3-TM-64-161A	Torus temperature module A	Operating	Operating	Feeds the indication of bulk torus water temperature
424	3-TE-64-161A	Torus Temperature Element A	Operating	Operating	Feeds the indication of bulk torus water temperature

Table A-1: Expedited Seismic Equipment List (ESEL) for Browns Ferry Nuclear Plant (Continued)

ESEL Item Number	Equipment		Operating State		Notes/Comments
	ID	Description	Normal State	Desired State	
425	3-TM-64-161B	Torus Temperature Module B	Operating	Operating	Feeds the indication of bulk torus water temperature
426	3-TE-64-161B	Torus Temperature Element B	Operating	Operating	Feeds the indication of bulk torus water temperature
427	3-TM-64-161C	Torus Temperature Module C	Operating	Operating	Feeds the indication of bulk torus water temperature
428	3-TE-64-161C	Torus Temperature Element C	Operating	Operating	Feeds the indication of bulk torus water temperature
429	3-TM-64-161D	Torus Temperature Module D	Operating	Operating	Feeds the indication of bulk torus water temperature
430	3-TE-64-161D	Torus Temperature Element D	Operating	Operating	Feeds the indication of bulk torus water temperature
431	3-TM-64-161E	Torus Temperature Module E	Operating	Operating	Feeds the indication of bulk torus water temperature
432	3-TE-64-161E	Torus Temperature Element E	Operating	Operating	Feeds the indication of bulk torus water temperature
433	3-TM-64-161F	Torus Temperature Module F	Operating	Operating	Feeds the indication of bulk torus water temperature
434	3-TE-64-161F	Torus Temperature Element F	Operating	Operating	Feeds the indication of bulk torus water temperature
435	3-TM-64-161G	Torus Temperature Module G	Operating	Operating	Feeds the indication of bulk torus water temperature
436	3-TE-64-161G	Torus Temperature Element G	Operating	Operating	Feeds the indication of bulk torus water temperature
437	3-TM-64-161H	Torus Temperature Module H	Operating	Operating	Feeds the indication of bulk torus water temperature

Table A-1: Expedited Seismic Equipment List (ESEL) for Browns Ferry Nuclear Plant (Continued)

ESEL Item Number	Equipment		Operating State		Notes/Comments
	ID	Description	Normal State	Desired State	
438	3-TE-64-161H	Torus Temperature Element H	Operating	Operating	Feeds the indication of bulk torus water temperature
439	3-TM-64-161J	Torus Temperature Module J	Operating	Operating	Feeds the indication of bulk torus water temperature
440	3-TM-64-161K	Torus Temperature Module K	Operating	Operating	Feeds the indication of bulk torus water temperature
441	3-TM-64-161L	Torus Temperature Module L	Operating	Operating	Feeds the indication of bulk torus water temperature
442	3-PNLA-009-0003A	Reactor Shutdown & Containment Cooling Panel	Operable	Operable	Indications and controls
443	3-PNLA-009-0003B	Reactor Shutdown & Containment Cooling Panel	Operable	Operable	Indications and controls
444	3-PNLA-009-009	I&C Bus 1A and 1B (Cabinet 2 and 3 of Panel 1-9-9)	Operable	Operable	Power for I&C Buses 1A and 1B
445	3-PNLA-009-0032	RHR, CS, HPCI (Channel A), RCIC, ADS Panel	Operable	Operable	Logic for ECCS systems
446	3-PNLA-009-0033	RHR, CS, HPCI (Channel B), RCIC, ADS Logic Panel	Operable	Operable	Logic for ECCS systems
447	3-PNLA-009-0081	Division I ECCS ATU Cabinet	Operable	Operable	ATU for RPV and containment instrument signals
448	3-PNLA-009-0082	Division II ECCS ATU Cabinet	Operable	Operable	ATU for RPV and containment instrument signals
449	3-PNLA-009-0087	Division I Torus Temp Monitoring	Operable	Operable	Provides indication of torus water temperature
450	3-LPNL-925-005A	Local Panel 25-5A	Operable	Operable	Local instrumentation rack/panel

Table A-1: Expedited Seismic Equipment List (ESEL) for Browns Ferry Nuclear Plant (Continued)

ESEL Item Number	Equipment		Operating State		Notes/Comments
	ID	Description	Normal State	Desired State	
451	3-LPNL-925-005B	Local Panel 25-5B	Operable	Operable	Local instrumentation rack/panel
452	3-LPNL-925-0058	RCIC Instrumentation Panel	Operable	Operable	RCIC local instrumentation panel
453	3-LPNL-925-006B	Instrumentation Rack 25-6B	Operable	Operable	Local instrumentation rack/panel (drywell pressure)
454	3-PNLA-925-0031	Local Panel 25-31	Operable	Operable	RCIC local isolation instrumentation
455	3-LPNL-925-672	RCIC Local Controls	Operable	Operable	Can fail and block control room operation
Electric Power – All Three Units					
456	1-BDBB-281-0001A	250V RMOV Board 1A	Energized	Energized	Power: For RCIC and ADS
457	1-BDBB-281-0001B	250V RMOV Board 1B	Energized	Energized	Power: For RCIC and ADS
458	1-BDBB-281-0001C	250V RMOV Board 1C	Energized	Energized	Power: For RCIC and ADS
459	2-BDBB-281-0002A	250V RMOV Board 2A	Energized	Energized	Power: For RCIC and ADS
460	2-BDBB-281-0002B	250V RMOV Board 2B	Energized	Energized	Power: For RCIC and ADS
461	2-BDBB-281-0002C	250V RMOV Board 2C	Energized	Energized	Power: For RCIC and ADS
462	3-BDBB-281-0003A	250V RMOV Board 3A	Energized	Energized	Power: For RCIC and ADS

Table A-1: Expedited Seismic Equipment List (ESEL) for Browns Ferry Nuclear Plant (Continued)

ESEL Item Number	Equipment		Operating State		Notes/Comments
	ID	Description	Normal State	Desired State	
463	3-BDBB-281-0003B	250V RMOV Board 3B	Energized	Energized	Power: For RCIC and ADS
464	3-BDBB-281-0003C	250V RMOV Board 3C	Energized	Energized	Power: For RCIC and ADS
465	0-BDDD-280-0001	250V Battery Board 1	Energized	Energized	250 VDC power for 250 VDC buses and AC control power
466	0-BATA-248-0001	250V Main Battery 1	Energized	Energized	250 VDC power for 250 VDC buses and AC control power
467	0-CHGA-248-0001	Unit Battery Charger 1	Energized	Energized	250 VDC power for 250 VDC buses and AC control power
468	0-BDDD-280-0002	250V Battery Board 2	Energized	Energized	250 VDC power for 250 VDC buses and AC control power
469	0-BATA-248-0002	250V Main Battery 2	Energized	Energized	250 VDC power for 250 VDC buses and AC control power
470	0-CHGA-248-0002A	Unit Battery Charger 2A	Energized	Energized	250 VDC power for 250 VDC buses and AC control power
471	0-BDDD-280-0003	250V Battery Board 3	Energized	Energized	250 VDC power for 250 VDC buses and AC control power
472	0-BATA-248-0003	250V Main Battery 3	Energized	Energized	250 VDC power for 250 VDC buses and AC control power
473	0-CHGA-248-0003	Unit Battery Charger 3	Energized	Energized	250 VDC power for 250 VDC buses and AC control power
474	0-PNLA-248-0000A	250V Distribution Panel SB-A	Energized	Energized	250 VDC power for 250 VDC buses and AC control power
475	0-BATA-248-0000A	250V Battery SB-A	Energized	Energized	250 VDC power for 250 VDC buses and AC control power

Table A-1: Expedited Seismic Equipment List (ESEL) for Browns Ferry Nuclear Plant (Continued)

ESEL Item Number	Equipment		Operating State		Notes/Comments
	ID	Description	Normal State	Desired State	
476	0-CHGA-248-0000A	250V Battery Charger SB-A	Energized	Energized	250 VDC power for 250 VDC buses and AC control power
477	0-PNLA-248-B	250V Distribution Panel SB-B	Energized	Energized	250 VDC power for 250 VDC buses and AC control power
478	0-BATA-248-0000B	250V Battery SB-B	Energized	Energized	250 VDC power for 250 VDC buses and AC control power
479	0-CHGA-248-0000B	250V Battery Charger SB-B	Energized	Energized	250 VDC power for 250 VDC buses and AC control power
480	0-BATA-248-0000C	250V Battery SB-C	Energized	Energized	250 VDC power for 250 VDC buses and AC control power
481	0-PNLA-248-0000C	250V Distribution Panel SB-C	Energized	Energized	250 VDC power for 250 VDC buses and AC control power
482	0-CHGA-248-0000C	250V Battery Charger SB-C	Energized	Energized	250 VDC power for 250 VDC buses and AC control power
483	0-BATA-248-0000D	250V Battery SB-D	Energized	Energized	250 VDC power for 250 VDC buses and AC control power
484	0-PNLA-248-0000D	250V Distribution Panel SB-D	Energized	Energized	250 VDC power for 250 VDC buses and AC control power
485	0-CHGA-248-0000D	250V Battery Charger SB-D	Energized	Energized	250 VDC power for 250 VDC buses and AC control power
486	1-BDBB-231-0001A	480 V Shutdown Board 1A	Energized	Energized	Acts as the connection point for the Unit 1 480V FLEX diesel generator and provides 480 VAC for FLEX loads
487	1-BDBB-231-0001B	480 V Shutdown Board 1B	Energized	Energized	Provides 480 VAC for FLEX loads
488	2-BDBB-231-0002A	480 V Shutdown Board 2A	Energized	Energized	Acts as the connection point for the Unit 2 480V FLEX diesel generator and provides 480 VAC for FLEX loads

Table A-1: Expedited Seismic Equipment List (ESEL) for Browns Ferry Nuclear Plant (Continued)

ESEL Item Number	Equipment		Operating State		Notes/Comments
	ID	Description	Normal State	Desired State	
489	2-BDBB-231-0002B	480 V Shutdown Board 2B	Energized	Energized	Provides 480 VAC for FLEX loads
490	3-BDBB-231-0003A	480 V Shutdown Board 3A	Energized	Energized	Provides 480 VAC for FLEX loads
491	3-BDBB-231-0003B	480 V Shutdown Board 3B	Energized	Energized	Provides 480 VAC for FLEX loads
492	1-BDBB-268-0001A	480 V RMOV Board 1A	Energized	Energized	Provides 480 VAC for FLEX loads
493	1-BDBB-268-0001B	480 V RMOV Board 1B	Energized	Energized	Provides 480 VAC for FLEX loads
494	2-BDBB-268-0002A	480 V RMOV Board 2A	Energized	Energized	Provides 480 VAC for FLEX loads
495	2-BDBB-268-0002B	480 V RMOV Board 2B	Energized	Energized	Provides 480 VAC for FLEX loads
496	3-BDBB-268-0003A	480 V RMOV Board 3A	Energized	Energized	Provides 480 VAC for FLEX loads
497	3-BDBB-268-0003B	480 V RMOV Board 3B	Energized	Energized	Provides 480 VAC for FLEX loads
498	0-BDAA-211-0000A	4 kV Shutdown Board A	Operable	Operable	
499	0-BDAA-211-0000B	4 kV Shutdown Board B	Operable	Operable	
500	0-BDAA-211-0000C	4 kV Shutdown Board C	Operable	Operable	
501	0-BDAA-211-0000D	4 kV Shutdown Board D	Operable	Operable	

Table A-1: Expedited Seismic Equipment List (ESEL) for Browns Ferry Nuclear Plant (Continued)

ESEL Item Number	Equipment		Operating State		Notes/Comments
	ID	Description	Normal State	Desired State	
502	0-BDAA-211-0000EA	4 kV Shutdown Board 3EA	Operable	Operable	
503	0-BDAA-211-0000EC	4 kV Shutdown Board 3EC	Operable	Operable	
504	1-XFA-231-TS1A	4KV/480 Transformer TS1A	Operable	Operable	
505	1-XFA-231-TS1B	4KV/480 Transformer TS1A	Operable	Operable	
506	2-XFA-231-TS2A	4KV/480 Transformer TS1A	Operable	Operable	
507	2-XFA-231-TS2B	4KV/480 Transformer TS1A	Operable	Operable	
508	3-XFA-231-TS2A	4KV/480 Transformer TS1A	Operable	Operable	
509	3-XFA-231-TS2B	4KV/480 Transformer TS1A	Operable	Operable	
510	3-XFA-231-TS1E	4KV/480 Transformer TS1E	Operable	Operable	
511	TBD	FLEX 480V Diesel Generator Battery Charging Distribution Panel	Operable	Operable	UNID to be established in DCN 71470
RHR – Unit 1					
512	1-FCV-74-71	RHR/Loop II Torus Containment Cooling/Spray Valve	Shut	Open	Open to provide containment heat removal Power: From 480V RMOV Board 1B

Table A-1: Expedited Seismic Equipment List (ESEL) for Browns Ferry Nuclear Plant (Continued)

ESEL Item Number	Equipment		Operating State		Notes/Comments
	ID	Description	Normal State	Desired State	
513	1-FCV-74-72	RHR/Loop II Suppression Pool Spray Valve	Shut	Open	Open to provide containment heat removal Power: From 480V RMOV Board 1B
514	1-FCV-74-73	RHR/Loop II Recirculation Pump Test Valve	Shut	Open	Power: From 480V RMOV Board 1B
515	1-FCV-74-74	RHR/Loop II Outboard Drywell Spray Valve	Shut	Open	Open to provide containment heat removal Power: From 480V RMOV Board 1B
516	1-FCV-74-75	RHR/Loop II Inboard Drywell Spray Valve	Shut	Open	Open to provide containment heat removal Power: From 480V RMOV Board 1B
517	1-FCV-74-67	Unit 1 RHR Outboard Injection Valve to Recirculation Loop A for Shutdown Cooling	Shut	Open	Open to provide shutdown cooling in Phases 2 and 3 Power: From 480V RMOV Board 1B
519	1-FCV-74-101	Cross-tie to Unit 2 RHR Heat Exchanger	Shut	Open	Open to provide shutdown cooling in Phases 2 and 3 Power: From 480V RMOV Board 1B
519	1-HEX-900B	B RHR Heat Exchanger	Operable	Operable	Failure could result in flow diversion
520	1-HEX-900D	B RHR Heat Exchanger	Operable	Operable	Failure could result in flow diversion
RHR – Unit 2					
521	2-FCV-74-71	RHR/Loop II Torus Containment Cooling/Spray Valve	Shut	Open	Open to provide containment heat removal Power: From 480V RMOV Board 2B
522	2-FCV-74-72	RHR/Loop II Suppression Pool Spray Valve	Shut	Open	Open to provide containment heat removal Power: From 480V RMOV Board 2B
523	2-FCV-74-73	RHR/Loop II Recirculation Pump Test Valve	Shut	Open	Power: From 480V RMOV Board 2B

Table A-1: Expedited Seismic Equipment List (ESEL) for Browns Ferry Nuclear Plant (Continued)

ESEL Item Number	Equipment		Operating State		Notes/Comments
	ID	Description	Normal State	Desired State	
524	2-FCV-74-74	RHR/Loop II Outboard Drywell Spray Valve	Shut	Open	Open to provide containment heat removal Power: From 480V RMOV Board 2B
525	2-FCV-74-75	RHR/Loop II Inboard Drywell Spray Valve	Shut	Open	Open to provide containment heat removal Power: From 480V RMOV Board 2B
526	2-FCV 74-67	Unit 2 RHR Outboard Injection Valve To Recirculation Loop A For Shutdown Cooling	Shut	Open	Open to provide shutdown cooling in phases 2 and 3 Power: From 480V RMOV Board 2E
527	2-FCV-74-100	Cross-tie to Unit 1 RHR Heat Exchanger	Shut	Open	Opened to provide flow path for RHR service water to RHR injection. Power: From 480V RMOV Board 1B
528	2-FCV-74-101	Cross-tie to Unit 3 RHR Heat Exchanger	Shut	Open	Opened to provide flow path for RHR service water to RHR injection. Power: From 480V RMOV Board 3B
529	2-HEX-900A	A RHR Heat Exchanger	Operable	Operable	Failure could result in flow diversion
530	2-HEX-900C	C RHR Heat Exchanger	Operable	Operable	Failure could result in flow diversion
531	2-HEX-900B	B RHR Heat Exchanger	Operable	Operable	Failure could result in flow diversion
532	2-HEX-900D	D RHR Heat Exchanger	Operable	Operable	Failure could result in flow diversion
RHR – Unit 3					
533	2-FCV-74-57	RHR/Loop II Torus Containment Cooling/Spray Valve	Shut	Open	Open to provide containment heat removal Power: From 480V RMOV Board 3A

Table A-1: Expedited Seismic Equipment List (ESEL) for Browns Ferry Nuclear Plant (Continued)

ESEL Item Number	Equipment		Operating State		Notes/Comments
	ID	Description	Normal State	Desired State	
534	3-FCV-74-58	RHR/Loop II Suppression Pool Spray Valve	Shut	Open	Open to provide containment heat removal Power: From 480V RMOV Board 3A
535	3-FCV-74-59	RHR/Loop I Recirculation Pump Test Valve	Shut	Open	Power: From 480V RMOV Board 3A
536	3-FCV-74-60	RHR/Loop II Outboard Drywell Spray Valve	Shut	Open	Open to provide containment heat removal Power: From 480V RMOV Board 3A
537	3-FCV-74-61	RHR/Loop II Inboard Drywell Spray Valve	Shut	Open	Open to provide containment heat removal Power: From 480V RMOV Board 3A
538	3-FCV 74-53	Unit 3 RHR Outboard Injection Valve to Recirculation Loop A for Shutdown Cooling	Closed	Open	Open to provide shutdown cooling in Phases 2 and 3 Power: From 480V RMOV Board 3D
539	3-FCV-74-100	Cross-tie to Unit 3 RHR Heat Exchanger	Closed	Open	Open to provide shutdown cooling in Phases 2 and 3 Power: From 480V RMOV Board 3B
540	3-HEX-900A	A RHR Heat Exchanger	Operable	Operable	Failure could result in flow diversion
541	3-HEX-900C	C RHR Heat Exchanger	Operable	Operable	Failure could result in flow diversion
RHR Service Water – Unit 1					
542	1-FCV-23-57	RHR/RHR Service Water Cross Connect Valve	Closed	Open	480 RMOV Board 1B
RHR Service Water – Unit 2					
543	2-FCV-23-57	RHR/RHR Service Water Cross Connect Valve	Closed	Open	480 RMOV Board 3B

Table A-1: Expedited Seismic Equipment List (ESEL) for Browns Ferry Nuclear Plant (Continued)

ESEL Item Number	Equipment		Operating State		Notes/Comments
	ID	Description	Normal State	Desired State	
Containment Vent – Unit 1					
544	1-FCV-64-221	Containment Hardened Vent Valve	Closed	Open	To be operated manually- walk-by only
545	1-FCV-64-222	Containment Hardened Vent Valve	Closed	Open	To be operated manually- walk-by only
Containment Vent – Unit 2					
546	2-FCV-64-221	Containment Hardened Vent Valve	Closed	Open	To be operated manually- walk-by only
547	2-FCV-64-222	Containment Hardened Vent Valve	Closed	Open	To be operated manually- walk-by only
Containment Vent – Unit 3					
548	3-FCV-64-221	Containment Hardened Vent Valve	Closed	Open	To be operated manually- walk-by only
549	3-FCV-64-222	Containment Hardened Vent Valve	Closed	Open	To be operated manually- walk-by only

ATTACHMENT B – ESEP HCLPF VALUES AND FAILURE MODES TABULATION FOR BROWNS FERRY NUCLEAR PLANT

Table B-1: ESEP HCLPF Values and Failure Modes for Browns Ferry Nuclear Plant

Equipment ID	Equipment Description	Equipment Class	Building	Floor Elevation	Failure Mode	HCLPF Capacity (g)
1-FCV-71-19	RCIC Pump Condensate Storage Tank Suction Valve	8A	U1 RB	528	Functional	0.69g
2-FCV-71-19			U2 RB			
3-FCV-71-19			U3 RB			
1-FCV-71-17	RCIC Suction from Torus	8A	U1 RB	528	Functional	0.69g
2-FCV-71-17			U2 RB			
3-FCV-71-17			U3 RB			
1-FCV-71-18	RCIC Suction from Torus	8A	U1 RB	528	Functional	0.69g
2-FCV-71-18			U2 RB			
3-FCV-71-18			U3 RB			
1-PMP-71-19	RCIC Pump	5	U1 RB	519	Functional	0.85g
2-PMP-71-19			U2 RB			
3-PMP-71-19			U3 RB			
1-FCV-71-39	RCIC Discharge Isolation Valve	8A	U1 RB	541	Functional	0.69g
2-FCV-71-39			U2 RB			
3-FCV-71-39			U3 RB			
1-PCV-71-22	RCIC Lube Oil Cooling Water Pressure Control Valve	7	U1 RB	519	Functional	0.67g
2-PCV-71-22			U2 RB			
3-PCV-71-22			U3 RB			

Table B-1: ESEP HCLPF Values and Failure Modes for Browns Ferry Nuclear Plant (Continued)

Equipment ID	Equipment Description	Equipment Class	Building	Floor Elevation	Failure Mode	HCLPF Capacity (g)
1-FCV-71-25	RCIC Turbine Lube Oil Inlet Valve	8A	U1 RB	528	Functional	0.69g
2-FCV-71-25			U2 RB			
3-FCV-71-25			U3 RB			
1-TNK-71-27	RCIC Barometric Condenser and Vacuum Tank	21	U1 RB	519	Functional	1.38g
2-TNK-71-27			U2 RB			
3-TNK-71-27			U3 RB			
1-CLR-71-25	RCIC Lube Oil Cooler	21	U1 RB	519	Anchorage	1.35g
2-CLR-71-25			U2 RB			
3-CLR-71-25			U3 RB			
1-PMP-71-29	RCIC Vacuum Tank Condenser Pump	6	U1 RB	519	Functional	1.38g
2-PMP-71-29			U2 RB			
3-PMP-71-29			U3 RB			
1-PMP-71-31	RCIC Vacuum Pump	5	U1 RB	519	Functional	1.38g
2-PMP-71-31			U2 RB			
3-PMP-71-31			U3 RB			
1-FCV-71-8	RCIC Turbine Steam Inlet Valve	8A	U1 RB	528	Functional	0.69g
2-FCV-71-8			U2 RB			
3-FCV-71-8			U3 RB			
1-FCV-71-9	RCIC Turbine Steam Throttle Valve	8A	U1 RB	528	Functional	0.69g
2-FCV-71-9			U2 RB			

Table B-1: ESEP HCLPF Values and Failure Modes for Browns Ferry Nuclear Plant (Continued)

Equipment ID	Equipment Description	Equipment Class	Building	Floor Elevation	Failure Mode	HCLPF Capacity (g)
3-FCV-71-9			U3 RB			
1-FCV-71-10	RCIC Turbine Governor Valve	7	U1 RB	519	Functional	0.85g
2-FCV-71-10			U2 RB			
3-FCV-71-10			U3 RB			
1-TRB-71-9	RCIC Turbine	5	U1 RB	519	Functional	0.85g
2-TRB-71-9			U2 RB			
2-TRB-71-9			U3 RB			
1-FT-71-36	RCIC Pump Flow Transmitter for Turbine Control	18	U1 RB	519	Anchorage	0.74g
2-FT-71-36			U2 RB			
3-FT-71-36			U3 RB			
1-FIC-71-36A	RCIC Flow Indicating Controller	20	U1 RB	617	Functional	0.62g
2-FIC-71-36A			U2 RB			
3-FIC-71-36A			U3 RB			
1-PX-71-36A	Power Supply for RCIC Flow Controller	20	U1 RB	621	Functional	0.62g
2-PX-71-36A			U2 RB			
3-PX-71-36A			U3 RB			
1-LPNL-925-672	RCIC Local Controls	20	U1 RB	519	Anchorage	0.74g
2-LPNL-925-672			U2 RB			
3-LPNL-925-672			U3 RB			
1-LPNL-25-658	Transfer Switches for System 1 PCVs	20	U1 RB	593	Functional	0.62g

Table B-1: ESEP HCLPF Values and Failure Modes for Browns Ferry Nuclear Plant (Continued)

Equipment ID	Equipment Description	Equipment Class	Building	Floor Elevation	Failure Mode	HCLPF Capacity (g)
2-LPNL-25-658			U2 RB			
3-LPNL-25-658			U3 RB			
2-FCV-74-100	Cross-tie to U1 RHR Heat Exchanger	8A	U1 RB	565	Functional	0.71g
2-FCV-74-101	Cross-tie to U3 RHR Heat Exchanger	8A	U2 RB	565	Functional	0.71g
3-FCV-74-101	Cross-tie to U3 RHR Heat Exchanger	8A	U2 RB	565	Functional	0.71g
1-LPNL-925-0058	RCIC Instrumentation Panel	20	U1 RB	519	Anchorage	0.74g
2-LPNL-925-0058			U2 RB			
3-LPNL-925-0058			U3 RB			