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10 CFR 50.54(f)

December 17, 2014
Serial: MNS-14-097

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

Duke Energy Carolinas, LLC (Duke Energy)
McGuire Nuclear Station (MNS), Units 1 and 2
Docket Nos. 50-369 and 50-370
Renewed License Nos. NPF-9 and NPF-17

Subject: Expedited Seismic Evaluation Process (ESEP) Report (CEUS Sites), Response to NRC Request for Information Pursuant to Title 10 of the Code of Federal Regulations 50.54(f) Regarding Recommendations 2.1 of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident

References:

1. 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, ADAMS Accession No. ML12053A340.
2. NEI Letter, Proposed Path Forward for NTTF Recommendation 2.1: Seismic Reevaluations, dated April 9, 2013, ADAMS Accession No. ML13101A379.
3. NRC Letter, Electric Power Research Institute Final Draft Report XXXXXX, Seismic Evaluation Guidance: Augmented Approach for the Resolution of Near-Term Task Force Recommendation 2.1: Seismic, as an Acceptable Alternative to the March 12, 2012, Information Request for Seismic Reevaluations, dated May 7, 2013, ADAMS Accession No. ML13106A331.
4. Duke Letter, Seismic Hazard and Screening Report (CEUS Sites), Response to NRC 10 CFR 50.54(f) 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 20, 2014, ADAMS Accession No. ML14098A421.

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NRR

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

The Nuclear Energy Institute (NEI) submitted Reference 2 requesting NRC agreement to delay submittal of the CEUS Seismic Hazard Evaluation and Screening Report so that an update to the Electric Power Research Institute (EPRI) ground motion attenuation model could be completed and used to develop that information. NEI proposed that descriptions of subsurface materials and properties and base case velocity profiles be submitted to the NRC by September 12, 2013, with the remaining seismic hazard and screening information submitted by March 31, 2014. The industry guidance was endorsed by the NRC in a letter dated February 15, 2013 (Reference 3).

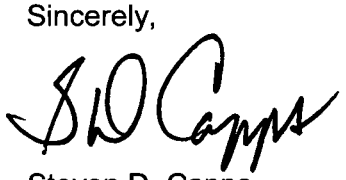
Reference 1 requested that licensees provide interim evaluations and actions taken or planned to address the higher seismic hazard relative to the design basis, as appropriate, prior to completion of the risk evaluation. In accordance with the NRC endorsed guidance in Reference 3, the attached ESEP Report for MNS Units 1 and 2 provides the information described in Section 7 of Reference 3 in accordance with the schedule identified in Reference 2.

There are no new regulatory commitments associated with this letter.

Should you have any questions regarding this submittal, please contact George Murphy at 980-875-5715.

I declare under penalty of perjury that the foregoing is true and correct. Executed on December 17, 2014.

Sincerely,



Steven D. Capps

Enclosure:
MNS Expedited Seismic Evaluation Process (ESEP) Report

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Enclosure

MNS Expedited Seismic Evaluation Process (ESEP) Report

EXPEDITED SEISMIC EVALUATION PROCESS (ESEP) REPORT

December 03, 2014

Revision 0

Duke Energy
McGuire Nuclear Station

EXPEDITED SEISMIC EVALUATION PROCESS REPORT

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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 McGuire Nuclear Station (MNS). The intent of the ESEP is to perform an interim action in response to the NRC's 50.54(f) letter [1] to demonstrate seismic margin through a review of a subset of the plant equipment that can be relied upon to protect the reactor core following beyond design basis seismic events.

The ESEP is implemented using the methodologies in the NRC endorsed guidance in 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 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 MNS FLEX strategies for Reactor Core Cooling and Heat Removal, Reactor Inventory Control/Long-Term Subcriticality, and Containment Function are summarized below. This summary is derived from the MNS Overall Integrated Plan (OIP) in Response to the March 12, 2012, Commission Order EA-12-049 [3] (as supplemented by subsequent six-month updates [20], [21], and [22]), and Duke Energy MNS Calculation MCC-1612.00-00-0012, *Augmented Approach for Resolution of Fukushima Near-Term Task Force Recommendation 2.1: Seismic – Determine Expedited Seismic Equipment List (ESEL)* [18].

Simplified flow diagrams which depict the FLEX strategy flow paths are included in Appendix C.

Steam Generator (SG) heat removal is achieved during Phase 1 and 2 via the Turbine-Driven Auxiliary Feedwater Pumps (TDAFWP) with suction from buried Condenser Circulating Water (RC) system cross-over header (refer to Appendix C, Figure C-1). Later stages of Phase 2 and 3 strategy entails SG cooling water make-up via a portable diesel powered pump with suction from the Standby Nuclear Service Water Pond (SNSWP) and discharge aligned to new SG FLEX supply connections. Refer to Appendix C, Figures C-2, C-4, C-5, and C-6 for FLEX connection locations. The TDAFWP flow control valves and Main Steam (SM) Power-Operated Relief Valves (PORVs) are also required to provide SG heat-removal capability (refer to Appendix C, Figure C-3). The Phase 2 SG heat removal is achieved via the credited B.5.b connection (primary) or via the new FLEX mechanical connections located in the Auxiliary Building (AB) doghouses (refer to Appendix C, Figure C-6). The FLEX strategy with steam generators unavailable (i.e., refueling outage) relies on reactor coolant system feed and bleed for Phase 1and 2. The ESEL was populated with the components credited for Phase 1, 2 and 3 mitigation.

Reactor coolant system borated make-up during normal operation and outage conditions includes the following primary make-up connections:

- High pressure primary make-up via the Safety Injection System (NI) mechanical connection near 1/2NI-152B (refer to Appendix C, Figure C-4).
- Low pressure primary make-up via the Residual Heat Removal (ND) system mechanical connection upstream of 1/2ND-35 (refer to Appendix C, Figure C-5).
- Borated water suction source FW system mechanical connection (refer to Appendix C, Figure C-2).

Reactor coolant system inventory control relies upon FLEX pump make-up as accommodated by reactor coolant system shrink, passive reactor coolant pump seal leakage, and additional letdown capability via reactor vessel head-vents. The reactor coolant pump seal return outboard containment isolation valve is manually isolated to conserve inventory and maintain leak-off flow within the Reactor Building. To ensure SG continued heat removal capability, the cold-leg accumulator (CLA) block isolation valves are electrically closed during the cooldown to prevent Nitrogen injection into the reactor coolant system.

There are no required Phase 1 FLEX actions to maintain containment integrity. The primary Phase 2 FLEX strategy for containment integrity entails repowering one train of Hydrogen igniters. Phase 2 and/or 3 entails repowering of select compartment fans inside of containment.

Later in the Extended Loss of all AC Power (ELAP) event, the Residual Heat Removal (ND) system must be aligned to maintain containment temperature. This action is accomplished by powering a train of ND and Component Cooling (KC) pumps with a portable generator from the Regional Response Center (RRC). For ND and KC system heat removal, a portable diesel powered FLEX pump is interfaced with the Nuclear Service Water (RN) system to provide a heat sink from the Standby Nuclear Service

Water Pond (SNSWP). The portable pump is connected via the bonnet of an RN pump discharge check valve. Cross-train KC and RN isolation valves are credited with manual closure, in order to minimize components exposed to the credited FLEX flow path pressure boundary. Similarly, manual isolation of RN heat-exchangers not required for the FLEX strategy is credited where possible (e.g., Diesel Generator Engine Cooling Water (KD) heat-exchangers, Emergency Diesel Generator (EDG) starting air compressor, Motor Driven Auxiliary Feedwater Pump (MDAFWP) motor coolers, etc.).

Necessary attendant electrical components are outlined in the MNS FLEX OIP submittal [3], as supplemented by subsequent six-month regulatory updates [20], [21], and [22], and primarily entail 600 VAC essential motor control centers, vital batteries, equipment installed to support FLEX electrical connections, and monitoring instrumentation required for core cooling, reactor coolant inventory, and containment integrity. During the latter stages of Phase 3, the 4.16 kV switchgear is energized to support residual heat removal (RHR) operation.

3.0 Equipment Selection Process and ESEL

The complete ESELs for Unit 1 and Unit 2 are presented in Appendices A and B, respectively.

The selection of equipment for the ESEL followed the guidelines of EPRI 3002000704 [2].

3.1 Equipment Selection Process and ESEL

The selection of equipment to be included on the ESEL was based on installed plant equipment credited in the FLEX strategies during Phase 1, 2 and 3 mitigation of a Beyond Design Basis External Event (BDBEE), as outlined in the MNS OIP in Response to the March 12, 2012, Commission Order EA-12-049 [3], as supplemented by subsequent six-month updates [20], [21], and [22]. The OIP and subsequent updates provides the MNS 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 MNS OIP [3] and subsequent updates [20], [21], and [22]. FLEX recovery actions are excluded from the ESEP scope per EPRI 3002000704 [2]. The overall list of planned FLEX modifications and the scope for consideration herein is limited to those required to support core cooling, reactor coolant inventory and subcriticality, and containment integrity functions. Portable and pre-staged FLEX equipment (not permanently installed) are excluded from the ESEL per EPRI 3002000704 [2].

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

1. The scope of components is limited to that required to accomplish the core cooling and containment safety functions identified in Table 3-2 of EPRI 3002000704. The instrumentation monitoring requirements for core

cooling/containment safety functions are limited to those outlined in the EPRI 3002000704 guidance, and are a subset of those outlined in the MNS OIP [3] and subsequent updates [20], [21], and [22].

2. The scope of components is limited to installed plant equipment and FLEX connections necessary to implement the MNS OIP [3] and subsequent updates [20], [21], and [22] 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 (SSCs) excluded per the EPRI 3002000704 [2] guidance are:
   - Structures (e.g., containment, Rx Building, Control Building, AB, etc.)
   - Piping, cabling, conduit, HVAC, and their supports.
   - Manual valves and rupture disks.
   - Power-operated valves not required to change state as part of the FLEX mitigation strategies.
   - Nuclear steam supply system components (e.g., reactor pressure vessel and internals, reactor coolant pumps and seals, etc.)
7. For cases in which neither train was specified as a primary or back-up strategy, then only one train component (generally 'A' train) is included in the ESEL.

3.1.1 ESEL Development

The ESEL was developed by reviewing the MNS OIP [3] and subsequent updates [20], [21], and [22] to determine the major equipment involved in the FLEX strategies. Further reviews of plant drawings (e.g., Process and Instrumentation Diagrams (P&IDs) and Electrical One Line Diagrams) were performed to identify the boundaries of the 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.

3.1.2 Power-Operated Valves

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

- Powered-operated valves that remain energized during the ELAP events (such as DC-powered valves) were included on the ESEL, with the exception of various air-operated valves which fail to the required position as a result of the ELAP event.
- 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 re-energized and operated during subsequent Phase 2 and 3 strategies, were not evaluated for spurious valve operation as the seismic event that caused the ELAP has passed before the valves are re-powered.

3.1.3 Pull Boxes

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

3.1.4 Termination Cabinets

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

3.1.5 Critical Instrumentation Indicators

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

3.1.6 Phase 2 and Phase 3 Piping Connections

Item 2 in Section 3.1 above notes that the scope of equipment in the ESEL includes "... FLEX connections necessary to implement the MNS OIP [3] and subsequent updates [20], [21], and [22] as described in Section 2." Item 3 in Section 3.1 also notes that "The scope of components assumes the credited FLEX connection modifications are implemented, and are limited to those required to support a single FLEX success path (i.e., either 'Primary' or 'Back-up/Alternate')."

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

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

3.2 Justification for Use of Equipment that is not the Primary Means for FLEX Implementation

The ESEL only uses equipment that is the primary means of implementing FLEX strategy.

4.0 Ground Motion Response Spectrum (GMRS)

4.1 Plot of GMRS Submitted by the Licensee

The MNS GMRS used to select the ESEP Review Level Ground Motion (RLGM) was included in the MNS Seismic Hazard and Screening Report [4]. Digitized GMRS frequency and acceleration values from the MNS Seismic Hazard and Screening Report [4] are shown in Figure 4-1, which is Table 2.4-1 from [4]. The MNS GMRS is plotted in Figure 4-2.

Table 2.4-1 UHRS and GMRS at control point for McGuire (5% of critical damping response spectra)

Freq (Hz)	1E-4 UHRS (g)	1E-5 UHRS (g)	GMRS (g)
100	1.92E-01	6.48E-01	3.05E-01
90	1.95E-01	6.60E-01	3.10E-01
80	2.01E-01	6.86E-01	3.22E-01
70	2.16E-01	7.50E-01	3.51E-01
60	2.56E-01	9.10E-01	4.24E-01
50	3.37E-01	1.22E+00	5.65E-01
40	4.03E-01	1.44E+00	6.70E-01
35	4.11E-01	1.45E+00	6.76E-01
30	4.06E-01	1.41E+00	6.60E-01
25	3.93E-01	1.34E+00	6.29E-01
20	3.84E-01	1.28E+00	6.03E-01
15	3.65E-01	1.18E+00	5.59E-01
12.5	3.49E-01	1.11E+00	5.28E-01
10	3.26E-01	1.02E+00	4.86E-01
9	3.09E-01	9.50E-01	4.55E-01
8	2.90E-01	8.75E-01	4.21E-01
7	2.68E-01	7.96E-01	3.84E-01
6	2.45E-01	7.11E-01	3.44E-01
5	2.17E-01	6.16E-01	3.00E-01
4	1.80E-01	4.91E-01	2.41E-01
3.5	1.59E-01	4.24E-01	2.09E-01
3	1.37E-01	3.58E-01	1.77E-01
2.5	1.14E-01	2.88E-01	1.43E-01
2	1.05E-01	2.58E-01	1.29E-01
1.5	8.66E-02	2.06E-01	1.04E-01
1.25	7.49E-02	1.75E-01	8.86E-02
1	6.47E-02	1.47E-01	7.49E-02
0.9	6.25E-02	1.42E-01	7.24E-02
0.8	6.05E-02	1.38E-01	7.00E-02
0.7	5.77E-02	1.31E-01	6.69E-02
0.6	5.35E-02	1.22E-01	6.20E-02
0.5	4.70E-02	1.07E-01	5.44E-02
0.4	3.76E-02	8.55E-02	4.35E-02
0.35	3.29E-02	7.48E-02	3.81E-02
0.3	2.82E-02	6.41E-02	3.26E-02
0.25	2.35E-02	5.35E-02	2.72E-02
0.2	1.88E-02	4.28E-02	2.18E-02
0.15	1.41E-02	3.21E-02	1.63E-02
0.125	1.17E-02	2.67E-02	1.36E-02
0.1	9.39E-03	2.14E-02	1.09E-02

Figure 4-1. MNS GMRS (5% Damping) – Tabular Format [4].

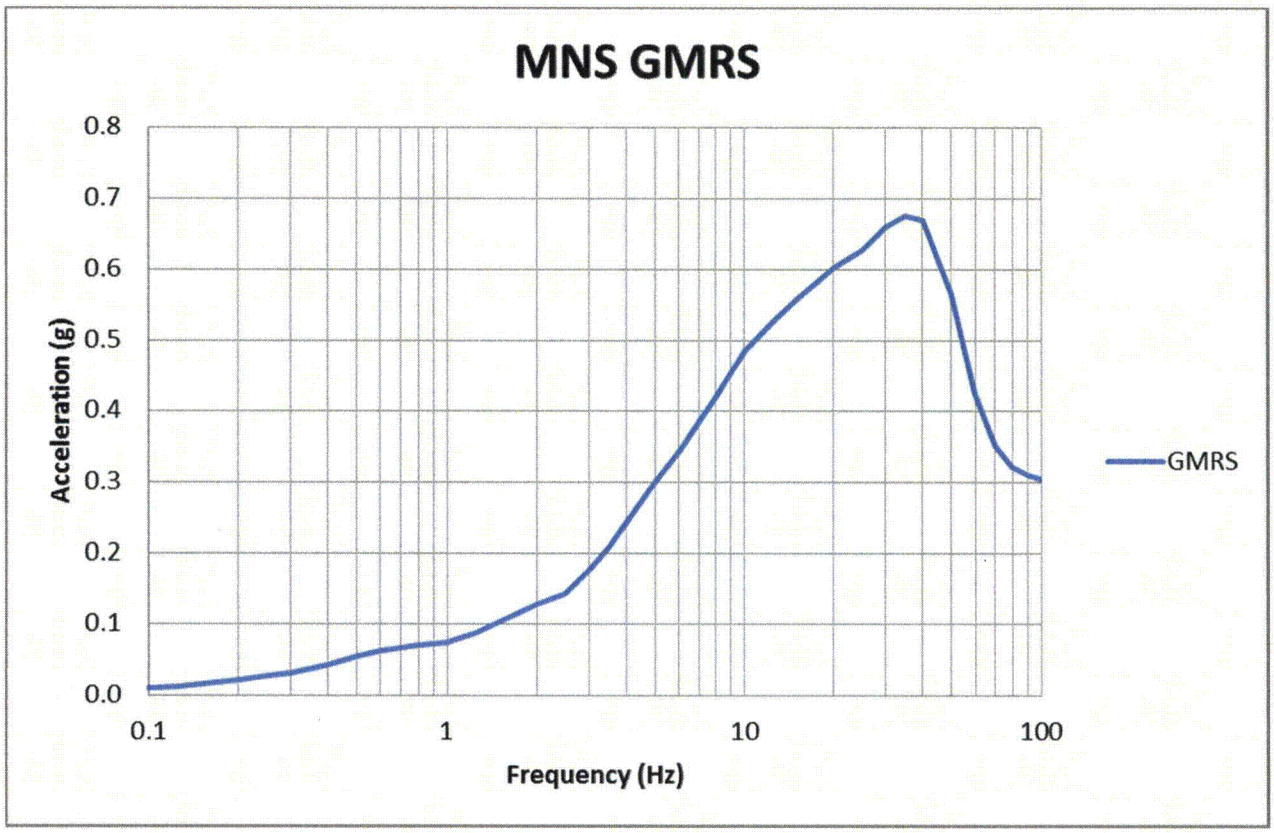

Figure 4-2. MNS GMRS (5% Damping) – Graphical Format [4].

The MNS Control Point is located at Elevation 716'-6", which is at the base of the mat foundation of the Reactor Buildings.

4.2 Comparison to Safe Shutdown Earthquake (SSE)

A description of the MNS horizontal SSE and spectral shape is included in Section 3.1 of the MNS Seismic Hazard and Screening Report [4]. The SSE is tabulated as a function of frequency in Table 4-1 and plotted in Figure 4-3.

A comparison of the MNS GMRS plotted against the SSE is shown in Figure 4-4.

Table 4-1. MNS SSE (5% Damping) – Tabular Format [4].

Frequency (Hz)	Spectral Acceleration (g)
0.33	0.06
2	0.36
6	0.36
35/PGA	0.15

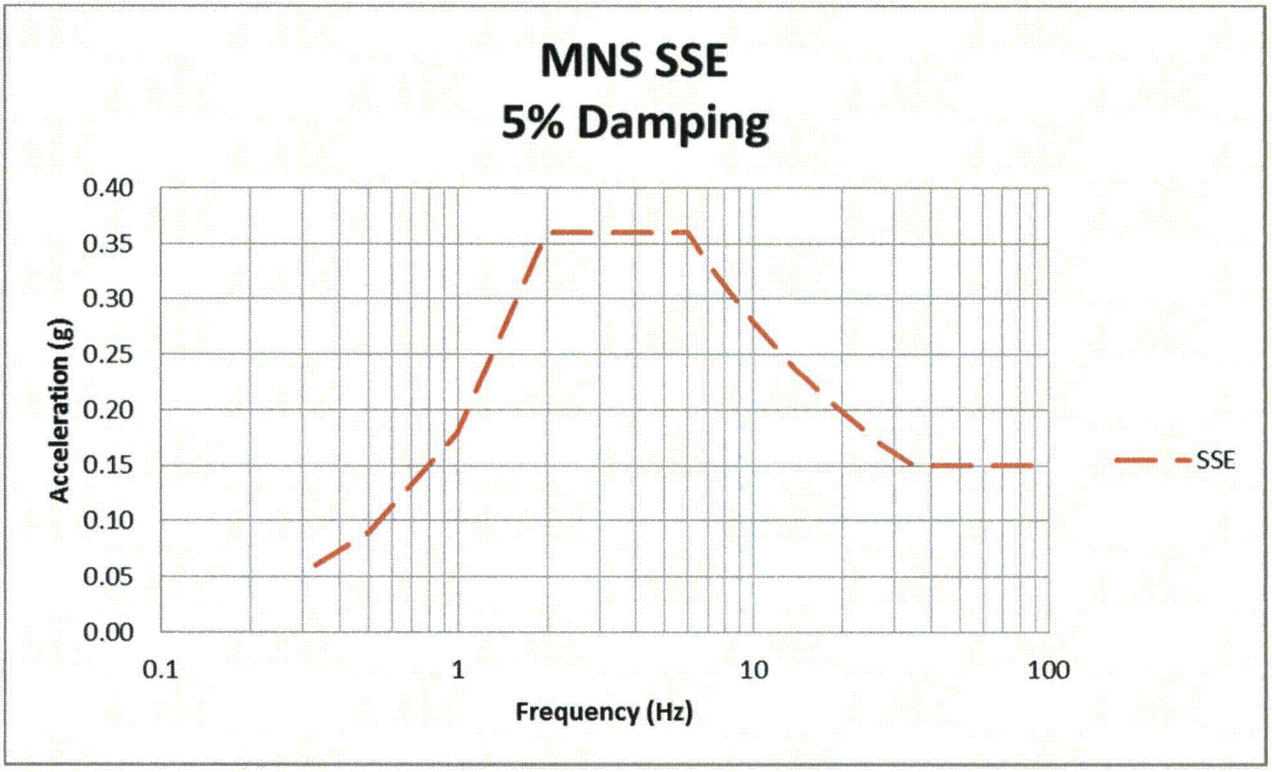

Figure 4-3. MNS SSE (5% Damping) – Graphical Format.

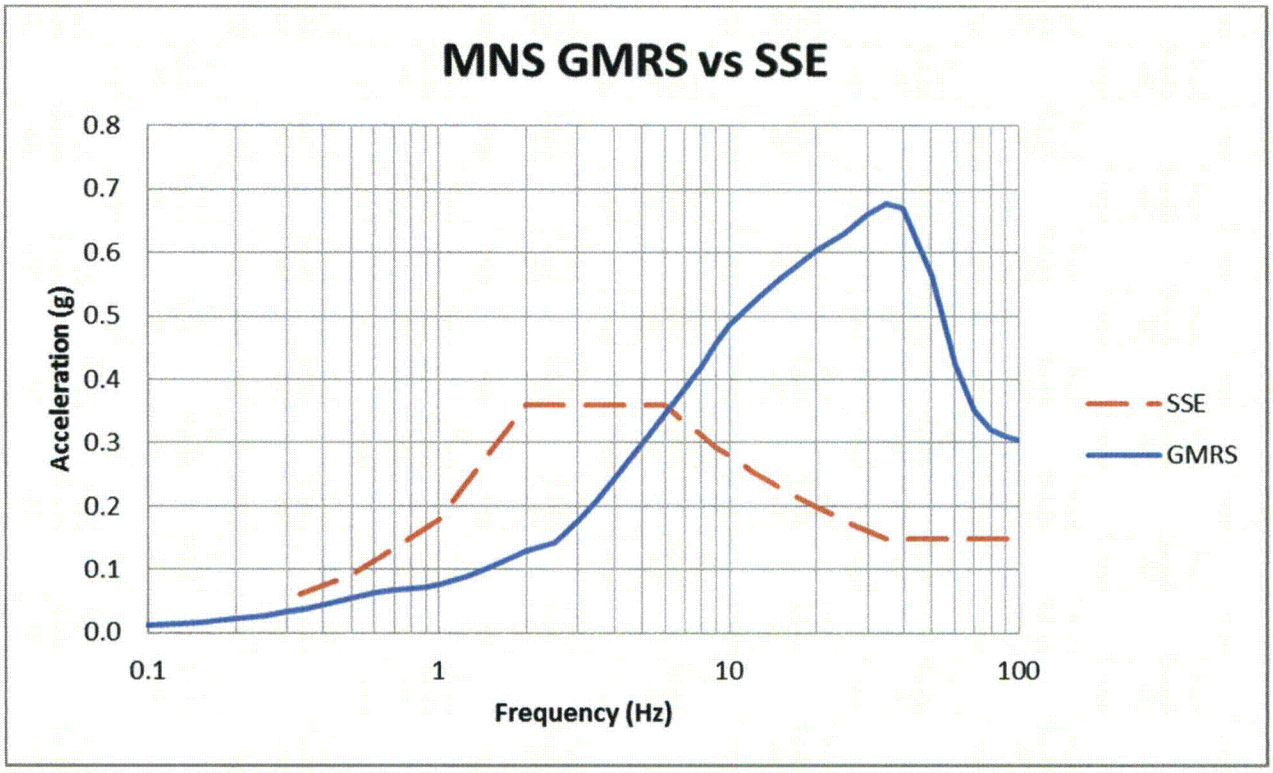

Figure 4-4. Comparison of MNS GMRS and SSE (5% Damping).

5.0 Review Level Ground Motion (RLGM)

5.1 Description of RLGM Selected

The procedure for determining the RLGM for the ESEP is described in Section 4 of EPRI 3002000704 [2]. The RLGM is determined by multiplying the spectral acceleration values for the 5%-damped SSE horizontal ground response spectrum by a scale factor. The scale factor is the largest ratio of spectral accelerations between the 5%-damped GMRS and the 5%-damped SSE ground response spectrum at frequencies from 1 Hz to 10 Hz, but not to exceed 2.0.

The ratio of the GMRS to the SSE over the 1 to 10 Hz frequency range is shown in Table 5-1. The largest ratio of the GMRS to the SSE in the 1 to 10 Hz range is at 10 Hz. The ratio of the spectral accelerations is 1.74. The RLGM is determined by multiplying the SSE ground response spectrum by 1.74. Digitized RLGM frequency and acceleration values are shown in Table 5-2. The MNS RLGM is plotted in Figure 5-1.

Table 5-1. Ratio of the GMRS to the SSE (1 to 10 Hz Range, 5% Damping)

Frequency (Hz)	SSE (g)	GMRS (g)	Ratio GMRS/SSE
1	0.180	0.075	0.416
2	0.360	0.129	0.358
3	0.360	0.177	0.492
4	0.360	0.241	0.669
5	0.360	0.300	0.833
6	0.360	0.344	0.956
7	0.333	0.384	1.151
8	0.312	0.421	1.349
9	0.294	0.455	1.546
10	0.279	0.486	1.740

Table 5-2. MNS RLGM (5% Damping)

Frequency (Hz)	Acceleration (g)
0.333	0.104
0.5	0.157
1	0.313
2	0.626
3	0.626
4	0.626
5	0.626
6	0.626
7	0.580
8	0.543
9	0.512
10	0.486
11	0.464
12	0.444
13	0.427
14	0.411
15	0.397
17.5	0.368
20	0.345
22.5	0.325
25	0.308
27.5	0.294
30	0.282
35	0.261
100	0.261

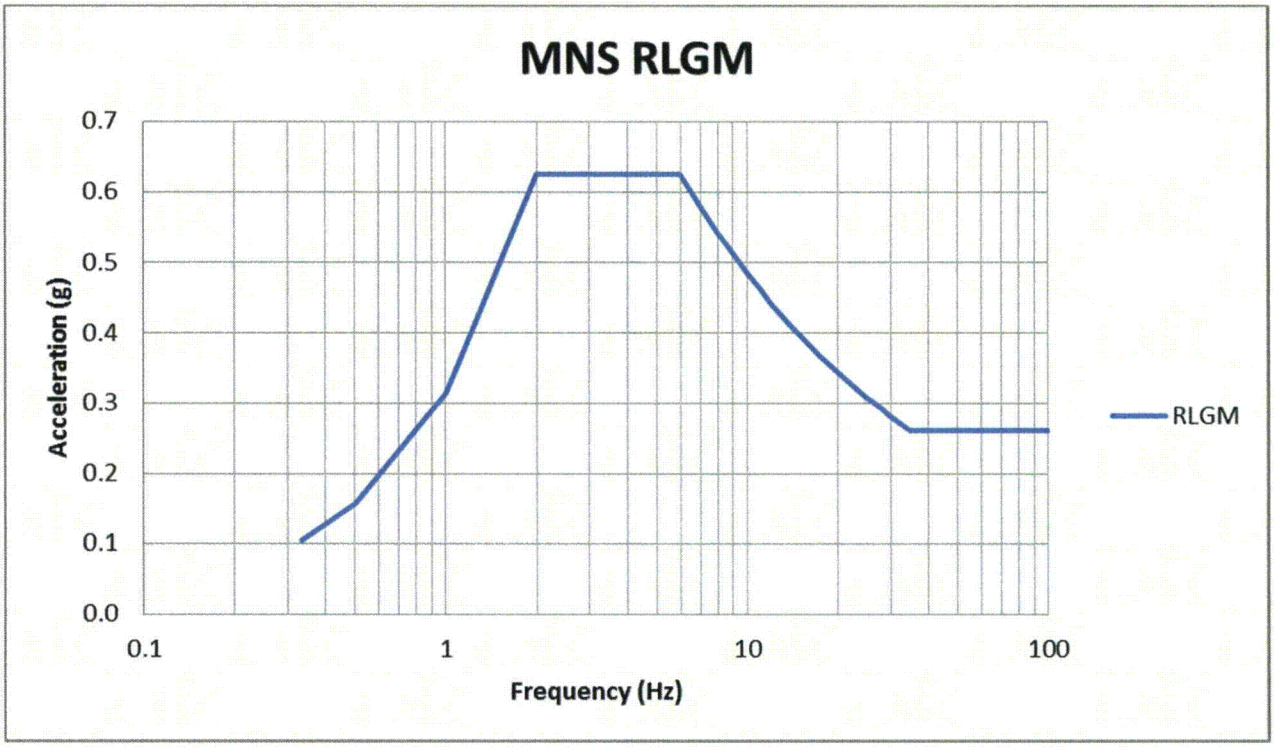

Figure 5-1. MNS RLGM (5% Damping).

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

ISRS for the ESEP were estimated by scaling the MNS design-basis SSE ISRS by the RLGM scale factor of 1.74.

6.0 Seismic Margin Evaluation Approach

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

There are two basic approaches for developing HCLPF capacities:

1. Deterministic approach using the conservative deterministic failure margin (CDFM) methodology of EPRI NP-6041-SL, *A Methodology for Assessment of Nuclear Power Plant Seismic Margin* (Revision 1) [7].
2. Probabilistic approach using the fragility analysis methodology of EPRI TR-103959, *Methodology for Developing Seismic Fragilities* [8].

6.1 Summary of Methodologies Used

Seismic capacity screening was done using information from the MNS Individual Plant Examination of External Events (IPEEE) submittal [9] and supporting documentation (MCC 1535.00-00-0004, *Seismic PRA/IPEEE Backup Calculations* [19]).

MNS used a seismic probabilistic risk assessment (SPRA) to address the IPEEE. The SPRA is described in the IPEEE submittal.

Prior to the IPEEE, Duke Energy had performed a SPRA for MNS. The SPRA utilized fragilities calculated in 1981-1983 using the separation of variables methodology, which is one of the methods in EPRI TR-103959 [8]. The calculated fragilities were based on the MNS SSE spectral shape. The IPEEE submittal states that these fragilities were updated where needed based on plant walkdowns and used in the IPEEE SPRA. The fragility calculations are documented in Volumes 4 and 5 of MCC 1535.00-00-0004. Table 3-1 of the IPEEE submittal gives the fragilities used in the IPEEE SPRA. Equipment items listed in the IPEEE Equipment List, contained in Attachment 24 of MCC 1535.00-00-0004, that were not included as fragilities in the SPRA had been screened out on the basis of the median capacity being greater than 2.0g.

The equipment fragilities were based on plant design information, including equipment qualification test and analysis reports. Failure modes considered were functional failures, including relay chatter, and anchorage failure. The original anchorage capacities were updated as needed based on the SMA walkdowns described below. Seismic interactions were addressed by the SMA walkdowns.

Duke Energy also performed a SMA in 1993. The SMA is documented in Volumes 1 and 2 of MCC 1535.00-00-0004 [19]. The SMA consisted of screening walkdowns and anchorage calculations. The screening walkdowns used the screening tables from Chapter 2 of EPRI NP-6041-SL [7]. 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 Seismic Qualification Users Group Walkdown Screening and Seismic Evaluation Training Course), and were documented on Screening Evaluation Work Sheets from EPRI NP-6041-SL. Anchorage capacity calculations utilized the CDFM criteria from EPRI NP-6041-SL. Seismic demand was the IPEEE Review Level Earthquake (RLE) for SMA (mean NUREG/CR-0098 [11] ground response spectrum anchored to 0.3g PGA). A relay review, beyond searching for low-ruggedness relays, was not included in the SMA.

Figure 6-1 shows the mean NUREG/CR-0098 ground response spectrum used as the RLE for the SMA, compared to the RLGM response spectrum. It is seen that the RLE envelopes the RLGM at all frequencies greater than about 2.0 Hz. The RLE is slightly less than the RLGM at frequencies below about 2.0 Hz. This may be disregarded as there are no MNS SSCs in this frequency range.

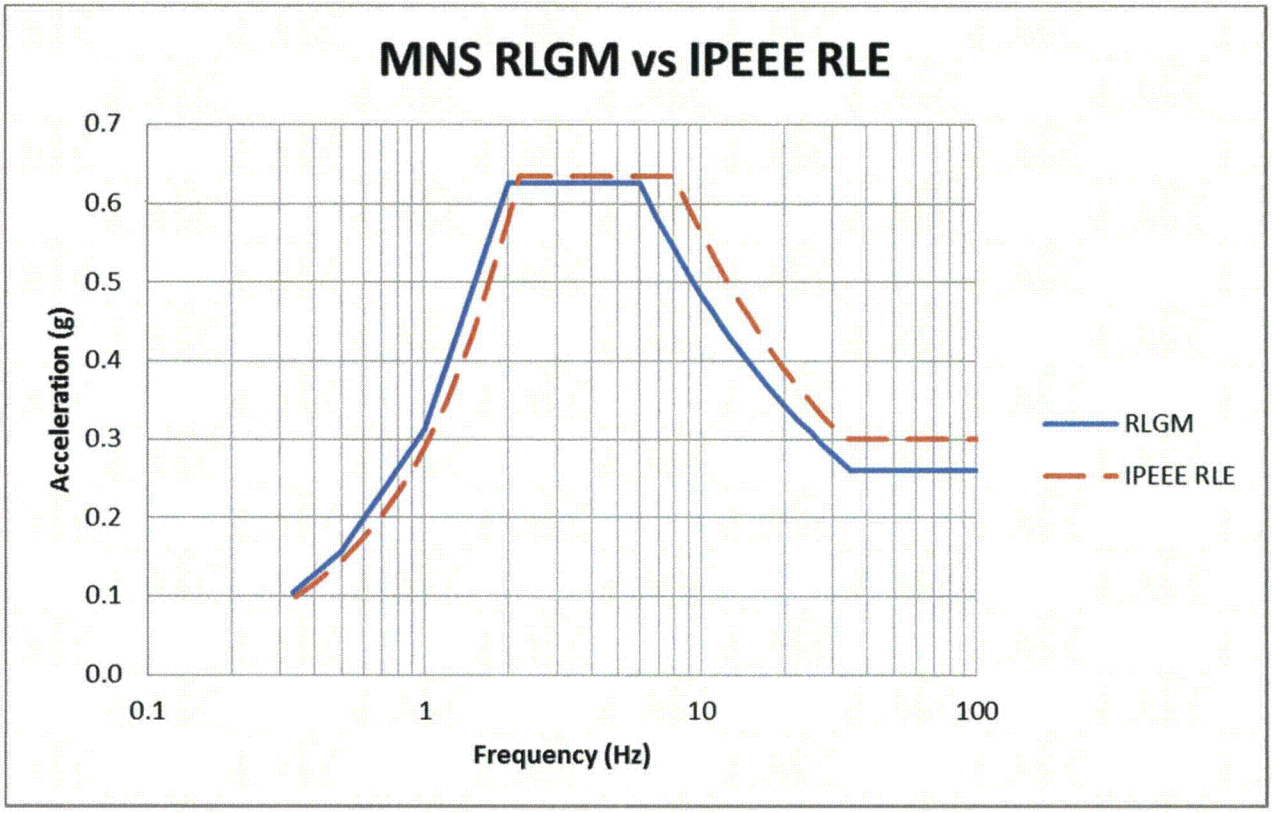

Figure 6-1. Comparison of MNS RLGM vs. IPEEE RLE.

6.2 HCLPF Screening Process

The SMA was based on the RLE, which was anchored to 0.3g PGA. The RLE is equal to the RLGM at frequencies from about 2.0 Hz to about 6.0 Hz, and greater than the RLGM at frequencies above about 6.0 Hz. Therefore, any components whose SMA-based HCLPF exceeds the RLE can be screened out from HCLPF calculations. The screening tables in EPRI NP-6041-SL 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, except for equipment in the AB for which new floor response spectra were generated for the RLE [11]. Therefore ESEL components which were evaluated in the IPEEE SMA, met the screening caveats, and had anchorage capacity exceeding the RLE can be screened out from ESEP seismic capacity determination because the HCLPF capacity exceeds the RLGM.

Most of the non-valve components in the ESEL were screened out based on the SMA results. A few components that did not have CDFM anchorage calculations were screened out on the basis of the HCLPF calculated from the SPRA fragility. In the SMA, valves were documented as a group rather than as individual components with individual documentation. The screening for valves proceeded differently.

The Unit 1 and Unit 2 ESEL contain approximately 220 valves in total, both power-operated (MOV and AOV) as well as relief valves. Per Table 2-4 of EPRI NP-6041-SL, 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 which are listed in the IPEEE Mechanical Equipment List may be screened out from ESEP seismic capacity determination. Power-operated valves were addressed both in the IPEEE fragility calculations and in the SMA. In the fragility calculations, all of the valves on the IPEEE Mechanical Equipment List were screened out on the basis of median capacity exceeding 2.0g. In the SMA, the valves were found to meet EPRI NP-6041-SL, Figures F-25 and F-26 (thus meeting the 1.2g peak spectral acceleration screening criteria) or to exceed the RLE floor response spectra on the basis of vendor seismic qualification reports. The IPEEE SMA covered approximately 360 valves in Unit 1. The walkdowns focused on MOVs on small diameter piping and valves at high elevations in the plant. Comparison with Unit 2 showed that the conclusions of the Unit 1 review applied to the corresponding Unit 2 valves. Relief valves were not explicitly included in the IPEEE review except for PORVs, both steam (SV) and reactor coolant (NC), which met the criteria. Spring-operated relief valves are considered to meet the EPRI NP-6041-SL 0.8g peak spectral acceleration screening criteria without explicit review. On the basis of the above, most of the ESEL valves were screened out from ESEP seismic capacity determination.

The results of the IPEEE capacity screening are noted in Appendix A for the Unit 1 ESEL and in Appendix B for the Unit 2 ESEL. For the components that were not screened out, HCLPF capacities were determined using the deterministic EPRI NP-6041-SL CDFM methodology and RLGM spectral shape and/or anchorage evaluations.

6.3 HCLPF Capacity Determination

HCLPF capacities were determined by evaluating the function, anchorage, and seismic interaction failure modes. HCLPF functional capacities were determined using the screening tables in EPRI NP-6041-SL. HCLPF anchorage capacities were determined using the CDFM methodology in EPRI NP-6041-SL. HCLPF seismic interaction capacities were determined by walkdown screening.

6.4 Functional Capacity Screening Using EPRI NP-6041-SL

The components were screened against EPRI NP-6041-SL, Table 2 4. For components not located on the basemat of the Auxiliary or Reactor Buildings, the ISRS were used for the screening; therefore, the screening levels of EPRI NP-6041-SL were increased by a factor of 1.5 per EPRI 1019200, *Seismic Fragility Applications Guide Update* [17]. Thus, the accelerations for the screening levels were 1.2g and 1.8g instead of 0.8g and 1.2g.

The SSE ISRS were amplified by a factor of 1.74 throughout the frequency range and were then clipped (per EPRI 1019200), using the methodology in EPRI NP-6041-SL, Appendix Q, and the North-South and East-West clipped peaks were averaged.

6.5 Seismic Walkdown Approach

6.5.1 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 [7] for the SMA process. Pages 2-26 through 2-30 of EPRI NP-6041-SL [7] 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 for 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[1]] 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."

6.5.2 Walkdowns and Walk-Bys

Many of the components were walked down previously during IPEEE evaluations and have documented Screening Evaluation Work Sheets (SEWS) recording the results. Credit is given to these walkdowns since they were performed by qualified Seismic Review Teams. A walk-by of these components was performed and documented. The primary objective of a walk-by is to verify that the component and/or anchorage has not degraded since the original walkdown and to verify that the component is free of interaction issues that may have developed since the original walkdown.

Walkdowns were performed on all ESEL components which were not previously walked down during the IPEEE and for some ESEL items which did not have a specific SEWS in the IPEEE documentation.

Masonry walls in the AB were evaluated as part of IPEEE and shown to meet the RLE demand; therefore, they also meet the RLGM demand. Proximity of masonry walls to ESEL components were noted on the SEWS forms. Masonry walls in proximity to ESEL equipment were verified to have been included in the IPEEE evaluation and determined to not be a credible failure mode for the ESEP.

[1] EPRI 3002000704 [2] page 5-4 limits the ESEP seismic interaction reviews to "nearby block walls" and "piping attached to tanks" which are reviewed "to address the possibility of failures due to differential displacements." Other potential seismic interaction evaluations are "deferred to the full seismic risk evaluations performed in accordance with EPRI 1025287 [15]."

6.5.3 Significant Walkdown Findings

All of the ESEL components were determined to have an existing capacity greater than the RLGM, with the exception of the components listed in Tables 6-1 and 6-2. These components require modification in order to have a capacity greater than the RLGM.

6.6 HCLPF Calculation Process

ESEL items not included in the previous MNS IPEEE evaluations were evaluated using the criteria in EPRI NP-6041-SL [7]. The evaluations included the following steps:

- Performing seismic capability walkdowns for equipment not included in previous seismic walkdowns 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; and
- 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 MCM-1612.00-0059.001 [10]. HCLPF results and key failure modes for ESEL items not included in the previous MNS IPEEE evaluations are included in the ESEL tables in Appendices A and B.

6.7 Functional Evaluations of Relays

There are no relays on the ESEL that provide seal-in/lock-out capability for Phase 1 equipment; therefore, no functional evaluation of relays was required.

Table 6-1. Unit 1 Components that Require Modifications.

Unit	ESEL ID	Equipment #	Bldg	Problem Description	Modification/Recommendation
1	23	EHM-HR-TB27 EHM-HR-TB29	RB	Flex Conduit running between igniter boxes not supported for approximately 15 ft.	Required Modification: Add metal ties to band cable to overhead cable tray. Modification has been COMPLETED.
1	23	EHM-HR-TB29	RB	Flex conduit from TB29 not tied into cable tray.	Required Modification: Add metal ties to band cable to horizontal and vertical potions of this wall-mounted tray near 90° bends. Modification has been COMPLETED.
1	24	EHM-TB-0589	AB	Secure load path: Cabinet mounting tabs do not span Unistrut.	Required modification: Install Unistrut washers under mounting tabs. Modification has been COMPLETED.
1	48	1SV-VA-00019AB	AB	Interaction issue: A test or vent off port at top of subject valve has been rubbing on side of support structure.	Required modification: Modify to achieve adequate clearance.
1	63	1EOA-PN-MC11	AB	Secure load path: Pressure indicator PI-937 on MC11 is missing hold down clip.	Required modification: Install hold down clip on instrument.
1	67	EQB-PN-DGLSA	AB	Potential interaction: Unistrut between DGLSA and ATC7 results in negligible clearance.	Required modification: Remove Unistrut.

AB = Auxiliary Building DH = DogHouse RB = Reactor Building

Table 6-2. Unit 2 Components that Require Modifications.

Unit	ESEL ID	EDB ID	Bldg	Problem Description	Modification/Recommendation
2	18	NI-VA-0065B	RB	Potential interaction: Conduit and connecter to motor are in contact with adjacent structural support.	Required modification: Modify to achieve adequate clearance.
2	51	SV-CV-0001AB	DH	Soft target: Position indicator cable is tight and rubbing against floor grating.	Required Modification: Trim grating away from cable.
2	78	NC-RD-5870	RB	Cable support: Loop of signal cable supported by resistance temperature detector (RTD). Subject RTD tubing is bent due to weight of cable.	Required modification: Move coil back and support from structural member or cable tray to remove load on RTD.

AB = Auxiliary Building DH = DogHouse RB = Reactor Building

6.8 Tabulated ESEL HCLPF Values (Including Key Failure Modes)

Tabulated ESEL HCLPF values are provided in Appendix A for Unit 1 and Appendix B for Unit 2. The following notes apply to the information in the tables:

- For items screened out using the IPEEE evaluations, the HCLPF value is provided as >RLGM and the failure mode is listed as "Screened per IPEEE."
- For items screened out using EPRI NP-6041-SL [7] screening tables, the HCLPF value is provided as >RLGM and the failure mode is listed as "Screened per EPRI NP-6041."
- For items where interaction with masonry walls controls, the HCLPF value is provided as >RLGM and the failure mode is noted as "Interaction – Block Walls."
- For items where component function controls the HCLPF value, the HCLPF value is listed in the table and the failure mode is noted as "Functional."
- For items where anchorage controls the HCLPF value, the HCLPF value is listed in the table and the failure mode is noted as "Anchorage."

7.0 Inaccessible Items, Additional Items Associated with FLEX Strategy Changes and New Component Installation

7.1 Identification of ESEL Items Inaccessible for Walkdowns

All ESEL items were accessible for walkdowns except the Units 1 and 2 diesel generator fuel oil storage tanks. These tanks are not accessible for visual inspection since they are buried below grade. Walk-bys of the yard areas above the tanks were performed to check for visible outliers or potential seismic interaction hazards.

7.2 Identification of Additional ESEL Items Associated with FLEX Strategy Changes and New FLEX Component Installations

Seismic capability walkdowns and screening evaluations remain outstanding for components which were added to the ESEL as a result of subsequent changes to the FLEX mitigation strategy, and associated with new FLEX component installations. These outstanding walkdowns and evaluations are denoted as "to be done" (TBD) in Appendices A and B.

7.3 Planned Walkdown / Evaluation Schedule / Close Out

The remaining ESEL component walkdowns and screening evaluations will be completed within the schedule outlined in Section 8.3.

The outstanding modifications listed in Tables 6-1 and 6-2 will be completed and closed-out in accordance with the schedule outlined in Section 8.3.

8.0 ESEP Conclusions and Results

8.1 Supporting Information

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

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

The ESEP is part of the overall MNS response to the NRC's 50.54(f) letter [1]. On March 12, 2014, Nuclear Energy Institute (NEI) submitted to the NRC results of a study [12] 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 [14] concluded that the "fleetwide seismic risk estimates are consistent with the approach and results used in the GI-199 safety/risk assessment." The letter also stated that "As a result, the staff has confirmed that the conclusions reached in GI-199 safety/risk assessment remain valid and that the plants can continue to operate while additional evaluations are conducted."

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

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

The fleet of currently operating nuclear power plants was designed using conservative practices, such that the plants have significant margin to withstand large ground motions safely. This has been borne out for those plants that have actually experienced significant earthquakes. The seismic design process has inherent (and intentional) conservatisms which result in significant seismic margins within 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 ISRS calculations;
- Broadening criteria for ISRS;
- Response spectra enveloping criteria typically used in SSC analysis and testing applications;
- Response spectra based frequency domain analysis rather than explicit time history based time domain analysis;
- Bounding requirements in codes and standards;
- Use of minimum strength requirements of structural components (concrete and steel);
- Bounding testing requirements; and
- Ductile behavior of the primary materials (that is, not crediting the additional capacity of materials such as steel and reinforced concrete beyond the essentially elastic range, etc.).

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

8.2 Identification of Planned Modifications

Tables 6-1 and 6-2 identify the remaining modifications to be made in accordance with EPRI 3002000704 [2] to enhance the seismic capacity of the plant.

8.3 Schedule for Completion of Required Modifications and Remaining ESEL Component Walkdowns/Evaluations

Plant modifications will be completed in accordance with the schedule identified in NEI letter dated April 9, 2013 [13], which states that plant modifications not requiring a planned refueling outage will be completed by December 31, 2016 and modifications requiring a refueling outage will be completed within two planned refueling outages after December 31, 2014.

Completion of the remaining ESEL component walkdowns and evaluations will be completed within the same timeframe outlined for modification completion.

8.4 Summary of Planned Actions

The actions Listed in Table 8-1 will be performed as a result of the ESEP.

Table 8-1. Summary of Planned Follow-up Actions.

Action #	Action Description	Completion Date
1	Complete remaining modifications (Table 6-1), and ESEL walkdowns/evaluations (Appendix A) for Unit 1 components.	Follow-up actions will be completed as follows: • December 31, 2016 (if action completion does not require a refueling outage) • The end of the second planned refueling outage after December 31, 2014 (if action completion requires outage)
2	Complete remaining modifications (Table 6-2), and ESEL walkdowns/evaluations (Appendix B) for Unit 2 components.	
3	Submit a letter to NRC confirming implementation of modifications associated with items 1 and 2.	Within 60 days following completion of ESEP activities for items 1 and 2.

9.0 References

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

2) *Seismic Evaluation Guidance: Augmented Approach for the Resolution of Fukushima Near-Term Task Force Recommendation 2.1 – Seismic,* Electric Power Research Institute, Palo Alto, CA: May 2013, EPRI 3002000704.

3) Letter from Steven D. Capps to U.S. Nuclear Regulatory Commission, "Duke Energy Carolinas, LLC (Duke Energy); McGuire Nuclear Station (MNS), Units 1 and 2, Docket Nos. 50-369 and 50-370, Renewed License Nos. NPF-9 and NPF-17; Response to March 12, 2012, Commission Order to Modify Licenses With Regard To Requirements for Mitigation Strategies for Beyond Design Basis External Events (Order EA-12-049)," dated February 28, 2013, Duke Energy, Huntersville, NC.

4) Letter from Steven D. Capps to U.S. Nuclear Regulatory Commission, "Duke Energy Carolinas, LLC (Duke Energy); McGuire Nuclear Station (MNS), Units 1 and 2, Docket Nos. 50-369 and 50-370, Renewed License Nos. NPF-9 and NPF-17; Seismic Hazard and Screening Report (CEUS Sites), Response to NRC 10 CFR 50.54(f) 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 20, 2014, Duke Energy, Huntersville, NC.

5) *Procedural and Submittal Guidance for the Individual Plant Examination of External Events (IPEEE) for Severe Accident Vulnerabilities*, June 1991, U.S. Nuclear Regulatory Commission, NUREG-1407.

6) USNRC Generic Letter 88-20, Supplement 4, "Individual Plant Examination of External Events (IPEEE) for Severe Accident Vulnerabilities- 10 CFR 50.54(f)," June 28, 1991, U.S. Nuclear Regulatory Commission, Washington, D.C.

7) *A Methodology for Assessment of Nuclear Power Plant Seismic Margin*, Rev. 1, August 1991, Electric Power Research Institute, Palo Alto, CA, EPRI NP-6041-SL.

8) *Methodology for Developing Seismic Fragilities*, Electric Power Research Institute, Palo Alto, CA, July 1, 1994, EPRI TR-103959.

9) Letter from T. C. McMeekin to U. S. Nuclear Regulatory Commission, "McGuire Nuclear Station, Units 1 and 2; Docket Nos.: 50-369 and 50-370; Individual Plant Examination of External Events (IPEEE) Submittal," dated June 1, 1994, Duke Power, Huntersville, NC.

10) *Expedited Seismic Evaluation Process for Implementation of Seismic Risk Evaluations at McGuire Nuclear Station*, Appendix D, "HCLPF Calculations," dated October 2014, Rev. 1, ARES Corporation Report No. 030319.13.02.11-001, Duke Energy Document No. MCM-1612.00-0059.001.

11) *Development of Criteria for Seismic Review of Selected Nuclear Power Plants*, published May 1978, Nuclear Regulatory Commission, NUREG/CR-0098.

12) Letter from A. Pietrangelo, NEI to D. Skeen, 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.

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

14) Letter from E. Leeds, NRC 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.

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

16) Letter from E. Leeds, NRC to J. Pollock, NEI, "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.

17) *Seismic Fragility Applications Guide Update*, December 2009, Electric Power Research Institute, Palo Alto, CA, EPRI 1019200.

18) *Augmented Approach for Resolution of Fukushima Near-Term Task Force Recommendation 2.1: Seismic – Determine Expedited Seismic Equipment List (ESEL)*, Revision 2, Duke Energy, Huntersville, NC, Calculation MCC-1612.00-00-0012.

19) *Seismic PRA/IPEEE Backup Calculations*, 1994, Duke Energy, Huntersville, NC, 1994, Calculation No. MCC-1535.00-00-0004.

20) Letter from Steven Capps to U.S. Nuclear Regulatory Commission, "Duke Energy Carolinas, LLC (Duke Energy); McGuire Nuclear Station (MNS), Units 1 and 2, Docket Nos. 50-369 and 50-370, Renewed License Nos. NPF-9 and NPF-17; First Six-Month Status Report 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)," dated August 28, 2013, Duke Energy, Huntersville, NC.

21) Letter from Steven D. Capps to U.S. Nuclear Regulatory Commission, "Duke Energy Carolinas, LLC (Duke Energy); McGuire Nuclear Station (MNS), Units 1 and 2, Docket Nos. 50-369 and 50-370, Renewed License Nos. NPF-9 and NPF-17; Second Six-Month Status Report 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)," dated February 27, 2014, Duke Energy, Huntersville, NC.

22) Letter from Steven D. Capps to U.S. Nuclear Regulatory Commission, "Duke Energy Carolinas, LLC (Duke Energy); McGuire Nuclear Station (MNS), Units 1 and 2, Docket Nos. 50-369, 50-370, Renewed License Nos. NPF-9 and NPF-17; Third Six-Month Status Report 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)," dated August 27, 2014, Duke Energy, Huntersville, NC.

Appendix A

MNS Unit 1 ESEL and HCLPF Results

MNS Unit 1 ESEL and HCLPF Results

ESEL ID	EQUIPMENT EDB	EQUIPMENT Description	Bldg	EL	Location	OPERATING STATE Normal State	OPERATING STATE Desired State	Walkdown or Walk-By	SEWS*	Screening Notes	HCLPF**	Key Failure Mode***
1	1FW-VA-0032B	Refueling Water Recirc Pump Suction Isolation	AUX	750	Rm 815 JJ/51	Open/Closed	Open/Closed	Walk-By	p 772	Included in IPEEE, p 772	>RLGM	Screened per IPEEE
2	1FW-VA-0033A	Refueling Water Recirc Pump Suction Isolation	AUX	750	Rm 811 KK/53	Open/Closed	Closed	Walk-By	p 772	Included in IPEEE, p 772	>RLGM	Screened per IPEEE
3	1FW-VA-0001A	Refueling Water Recirc Pump Suction Isolation	AUX	750	Rm 815 JJ/51	Open/Closed	Closed	Walk-By	p 772	Included in IPEEE, p 772	>RLGM	Screened per IPEEE
4	1ND-VA-0056	ND Relief- 'A' Coldlegs	AUX	733	Rm 730 GG/52	Closed	Closed	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	>RLGM	Screened per EPRI NP-6041
5	1ND-VA-0061	ND Relief - Hotlegs	AUX	733	EE/52	Closed	Closed	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	>RLGM	Screened per EPRI NP-6041
6	1ND-VA-0064	ND Relief - 'B' Coldlegs	AUX	733	Rm 730 HH/52	Closed	Closed	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	>RLGM	Screened per EPRI NP-6041
7	1NI-VA-0119	NI Relief - 'A' Train Hotleg	AUX	733	Rm 602 GG/52	Closed	Closed	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	>RLGM	Screened per EPRI NP-6041
8	1NI-VA-0151	NI Relief - 'B' Train Hotleg	AUX	750	Rm 817 HH/52	Closed	Closed	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	>RLGM	Screened per EPRI NP-6041
9	1NI-VA-0161	NI Relief - Coldleg	AUX	733	Rm 730 JJ/51	Closed	Closed	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	>RLGM	Screened per EPRI NP-6041
10	0RN-VA-0007A	SNSWP Supply to Units 1 & 2	AUX	716	Rm 601 AA/63	Closed	Open/Closed	Walk-By	p 776	Included in IPEEE, p 776	>RLGM	Screened per IPEEE
11	1NV-VA-0095B	NC Pumps Seal Water Return Cont	AUX	733	Rm 602 EE/52	Open	Closed	Walk-By	p 775	Included in IPEEE, p 775	>RLGM	Screened per IPEEE
12	1NC-VA-0272AC	Reactor Vessel Head-Vent Solenoid Isolation Valve	RX	774	Rx Cavity Window B-C Side 275° 17R	Closed	Open and Closed	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	>RLGM	Screened per EPRI NP-6041
13	1NC-VA-0273AC	Reactor Vessel Head-Vent Solenoid Isolation Valve	RX	774	Rx Cavity Window B-C Side 273° 17R	Closed	Open and Closed	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	>RLGM	Screened per IPEEE
14	1NC-VA-0034A	NC System Pressurizer PORV Solenoids and Pneumatic Controls	RX	808	Pressurizer Cavity 102° 35R	Closed	Open and Closed	Walk-By	p 773	Included in IPEEE, p 773	>RLGM	Screened per EPRI NP-6041
15	1NI-VA-0430A	1NC-34A Assured Nitrogen Supply from 1A CLA (MOV)	RX	758	1A CLA Rm 46° 48R	Closed	Open and Closed	Walk-By	p 775	Included in IPEEE, p 775	>RLGM	Screened per IPEEE
16	1FW-TK-0001	Refueling Water Storage Tank	Yard	>760	N/A	n/a	n/a	Walkdown	Reference 10, Appendix C	Included in IPEEE (p 772). Evaluated by Structural Mechanics Associates (p 1461).	Meets RLGM	Screened per IPEEE
17	1NI-VA-0054A	1A CLA Block Valve (MOV)	RX	733	Pipe Chase 42° 47R	Open M-14	Closed	Walk-By	p 774	Included in IPEEE, p 774	>RLGM	Screened per IPEEE
18	1NI-VA-0065B	1B CLA Block Valve (MOV)	RX	733	Pipe Chase 136° 50R	Open M-14	Closed	Walk-By	p 774	Included n IPEEE, p 774	>RLGM	Screened per IPEEE
19	1NI-VA-0076A	1C CLA Block Valve (MOV)	RX	733	Pipe Chase 224° 48R	Open M-14	Closed	Walk-By	p 774	Included in IPEEE, p 774	>RLGM	Screened per IPEEE
20	1NI-VA-0088B	1D CLA Block Valve (MOV)	RX	733	Pipe Chase 315° 48R	Open M-14	Closed	Walk-By	p 774	Included in IPEEE, p 774	>RLGM	Screened per IPEEE
21	1EHM-TF-HMTA	H2 Igniter Transformer	AUX	750	CC/46	Off	Functional	Walk-By	p 74	New equipment - updated IPEEE SEWS evaluation. "Reference 10, Appendix B1, pg. B1-10"	>RLGM	Screened per IPEEE
22	1EHM-PN-HMPPA	H2 Igniter Power Panel	AUX	750	CC/46	Standby	Functional	Walkdown	Reference 10, Appendix C	Bounded by evaluation of 1EHM-TB-589.	>RLGM	Screened per EPRI NP-6041
23	1EHM-HR-TB03 thru TB71 (Odd Numbers only)	A' Train H2 Igniters (35 Igniters per Train)	RX	Various	Various	De-energized	Functional	Walkdown	Reference 10, Appendix C	Not in experience data base. Tested to SQURTS TRS.	>RLGM	Undetermined
23 a	1EHM-SX-HMBPA	Voltage Reg Bypass Switch	AUX	750	TBD	De-energized	Functional	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	>RLGM	Screened per EPRI NP-6041

MNS Unit 1 ESEL and HCLPF Results

ESEL ID	EQUIPMENT EDB	EQUIPMENT Description	Bldg	EL	Location	OPERATING STATE Normal State	OPERATING STATE Desired State	Walkdown or Walk-By	SEWS*	Screening Notes	HCLPF**	Key Failure Mode***
23 b	1EHM-VR-HRMA	Voltage Regulator	AUX	750	TBD	De-energized	Functional	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4, HCLPF based on Unit 2 value on save elevation.	0.29	Functional
24	1EHM-TB-589	Local Terminal Box	AUX	750	CC/46	n/a	Functional	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	0.90	Functional
25	Deleted											
26	1CA-HX-0003	TDCAP Bearing Oil Cooler	AUX	716	BB/51	Idle	Functional	Walk-By	p 542		>RLGM	Screened per IPEEE
27	1CA-PU-0003	TDCAP (Auxiliary Feedwater Turbine Driven Pump)	AUX	716	BB/51	Idle	Functional	Walk-By	p 242		>RLGM	Screened per IPEEE
27 a	1SA-TR-0003	TDCAP Turbine	AUX	716	BB/51	Idle	Functional	Walk-By		Rule-of-the-box with 1CA-PU-0003, which has an IPEEE SEWS	>RLGM	Screened per IPEEE
27 b	1SA-VA-0004	TDCAP Steam Control Valve	AUX	716	BB/51	Idle	Functional	Walk-By		Rule-of-the-box with 1CA-PU-0003, which has an IPEEE SEWS	>RLGM	Screened per IPEEE
27 c	1SA-GV-0003	TDCAP Governor Valve	AUX	716	BB/51	Idle	Functional	Walk-By		Rule-of-the-box with 1CA-PU-0003, which has an IPEEE SEWS	>RLGM	Screened per IPEEE
27 d	1SA-GX-0003	Gear Reducer	AUX	716	BB/51	Idle	Functional	Walk-By		Rule-of-the-box with 1CA-PU-0003, which has an IPEEE SEWS	>RLGM	Screened per IPEEE
28	1CA-PN-AFTP	TDCAP Control Panel	AUX	716	BB/52	n/a	Available	Walk-By	p 187		>RLGM	Screened per IPEEE
29	1SA-VA-0048ABC	TDCAP Steam Supply Isolation (AOV)	Inner Doghouse (DH2)	767	FF/53	Closed	Open	Walk-By	p 777	Included in IPEEE, p 777	>RLGM	Screened per IPEEE
29 a	1SA-SV-0480	Air Supply Solenoid Dump Valve	Inner Doghouse (DH2)	767	FF/53	Energized	De-energized	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	>RLGM	Screened per EPRI NP-6041
29 b	1SA-SV-0481	Air Supply Solenoid Dump Valve	Inner Doghouse (DH2)	767	FF/53	Energized	De-energized	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	>RLGM	Screened per EPRI NP-6041
30	1SA-VA-0003	TDCAP Trip-Throttle Valve	AUX	716	Rm 600 AA/52	Open	Open	Walk-By	p 773	Included in IPEEE, p 771	>RLGM	Screened per IPEEE
31	Deleted											
32	Deleted											
33	Deleted											
34	1VI-VA-0032	1A VI Essential Hdr Supply from VG Inlet Relief (115 psig)	AUX	733	Rm 719 FF/53	Closed	Closed	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	>RLGM	Interaction - Block Wall
35	1VI-VA-0034	1B VI Essential Hdr Supply from VG Inlet Relief (115 psig)	AUX	733	GG/54	Closed	Closed	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	>RLGM	Interaction - Block Wall
36	1VI-VA-0112	1A VI Aux Bldg Instrument Air Tank Relief (115 psig)	AUX	733	Rm 719 FF/53	Closed	Closed	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	>RLGM	Screened per EPRI NP-6041
37	1VI-VA-0134	1A VI Aux Bldg Instrument Air Tank Relief (115 psig)	AUX	733	Rm 719 FF/53	Closed	Closed	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	>RLGM	Screened per EPRI NP-6041
38	1VI-VA-0155	1B VI Aux Bldg Instrument Air Tank Relief (115 psig)	AUX	733	GG/55	Closed	Closed	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	>RLGM	Screened per EPRI NP-6041
39	1VI-VA-0156	1B VI Aux Bldg Instrument Air Tank Relief (115 psig)	AUX	733	GG/55	Closed	Closed	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	>RLGM	Screened per EPRI NP-6041
40	1VI-VA-2009	1SM-1AB VI Accumulator Relief (120 psig)	Outer Doghouse (DH1)	790	DD/44	Closed	Closed	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	>RLGM	Screened per EPRI NP-6041

MNS Unit 1 ESEL and HCLPF Results

ESEL ID	EQUIPMENT EDB	EQUIPMENT Description	Bldg	EL	Location	OPERATING STATE Normal State	OPERATING STATE Desired State	Walkdown or Walk-By	SEWS*	Screening Notes	HCLPF**	Key Failure Mode***
41	1VI-VA-2019	1SM-7AB VI Accumulator Relief (120 psig)	Outer Doghouse (DH1)	790	DD/43	Closed	Closed	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	>RLGM	Screened per EPRI NP-6041
42	1VI-VA-2029	1SM-3ABC VI Accumulator Relief (120 psig)	Inner Doghouse (DH2)	790	DD/52	Closed	Closed	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	>RLGM	Screened per EPRI NP-6041
43	1VI-VA-2039	1SM-5AB VI Accumulator Relief (120 psig)	Inner Doghouse (DH2)	790	DD/53	Closed	Closed	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	>RLGM	Screened per EPRI NP-6041
44	1CA-VA-0064AB	TDCA Flow control to 1A SG and Associated Pneumatic Controls	AUX	716	Rm 600 BB/50	Open	Open/Throttled/ Closed	Walk-By	p 771	Included in IPEEE, p 771	>RLGM	Screened per IPEEE
44 a	1CA-ML-0640	Manual Loader	AUX	767	Control Rm 925	Functional	Functional	Walk-By		Rule-of-the-box with 1MC10	>RLGM	Screened per IPEEE
44 b	1CA-SS-0640	Selector Switch	AUX	716	Rm 600 BB/50	Functional	Functional	Walk-By		Rule-of-the-box with 1CA-64AB	>RLGM	Screened per IPEEE
44 c	1CA-MT-0640	Misc Transmitter	AUX	716	Rm 600 BB/50	Functional	Functional	Walk-By		Rule-of-the-box with 1CA-64AB	>RLGM	Screened per IPEEE
44 d	1CA-VP-0640	Valve Positioner	AUX	716	Rm 600 BB/50	Functional	Functional	Walk-By		Rule-of-the-box with 1CA-64AB	>RLGM	Screened per IPEEE
44 e	1CA-SV-0640	Solenoid Valve	AUX	716	Rm 600 BB/50	Energized	Energized	Walk-By		Rule-of-the-box with 1CA-64AB	>RLGM	Screened per IPEEE
44 f	1CA-SV-0641	Solenoid Valve	AUX	716	Rm 600 BB/50	Energized	Energized	Walk-By		Rule-of-the-box with 1CA-64AB	>RLGM	Screened per IPEEE
45	1CA-VA-0052AB	TDCA Flow Control to 1B SG and Associated Pneumatic Controls	AUX	716	Rm 600 BB/51	Open	Open/Throttled/ Closed	Walk-By	p 771	Included in IPEEE, p 771	>RLGM	Screened per IPEEE
45 a	1CA-ML-0520	Manual Loader	AUX	767	Control Rm 925	Functional	Functional	Walk-By		Rule-of-the-box with 1MC10	>RLGM	Screened per IPEEE
45 b	1CA-SS-0520	Selector Switch	AUX	716	Rm 600 BB/51	Functional	Functional	Walk-By		Rule-of-the-box with 1CA-52AB	>RLGM	Screened per IPEEE
45 c	1CA-MT-0520	Misc Transmitter	AUX	716	Rm 600 BB/51	Functional	Functional	Walk-By		Rule-of-the-box with 1CA-52AB	>RLGM	Screened per IPEEE
45 d	1CA-VP-0520	Valve Positioner	AUX	716	Rm 600 BB/51	Functional	Functional	Walk-By		Rule-of-the-box with 1CA-52AB	>RLGM	Screened per IPEEE
45 e	1CA-SV-0520	Solenoid Valve	AUX	716	Rm 600 BB/51	Energized	Energized	Walk-By		Rule-of-the-box with 1CA-52AB	>RLGM	Screened per IPEEE
45 f	1CA-SV-0521	Solenoid Valve	AUX	716	Rm 600 BB/51	Energized	Energized	Walk-By		Rule-of-the-box with 1CA-52AB	>RLGM	Screened per IPEEE
46	1CA-VA-0048AB	TDCA Flow Control to 1C SG and Associated Pneumatic Controls	AUX	716	Rm 600 BB/51	Open	Open/Throttled/ Closed	Walk-By	p 771	Included in IPEEE, p 771	>RLGM	Screened per IPEEE
46 a	1CA-ML-0480	Manual Loader	AUX	767	Control Rm 925	Functional	Functional	Walk-By		Rule-of-the-box with 1MC10	>RLGM	Screened per IPEEE
46 b	1CA-SS-0480	Selector Switch	AUX	716	Rm 600 BB/51	Functional	Functional	Walk-By		Rule-of-the-box with 1CA-48AB	>RLGM	Screened per IPEEE
46 c	1CA-MT-0480	Misc Transmitter	AUX	716	Rm 600 BB/51	Functional	Functional	Walk-By		Rule-of-the-box with 2CA-48AB	>RLGM	Screened per IPEEE
46 d	1CA-VP-0480	Valve Positioner	AUX	716	Rm 600 BB/51	Functional	Functional	Walk-By		Rule-of-the-box with 2CA-48AB	>RLGM	Screened per IPEEE
46 e	1CA-SV-0480	Solenoid Valve	AUX	716	Rm 600 BB/51	Energized	Energized	Walk-By		Rule-of-the-box with 2CA-48AB	>RLGM	Screened per IPEEE
46 f	1CA-SV-0481	Solenoid Valve	AUX	716	Rm 600 BB/51	Energized	Energized	Walk-By		Rule-of-the-box with 2CA-48AB	>RLGM	Screened per IPEEE
47	1CA-VA-0036AB	TDCA Flow Control to 1D SG and Associated Pneumatic Controls	AUX	716	Rm 600 AA/43	Open	Open/Throttled/ Closed	Walk-By	p 771	Included in IPEEE, p 771	>RLGM	Screened per IPEEE

MNS Unit 1 ESEL and HCLPF Results

ESEL ID	EQUIPMENT EDB	EQUIPMENT Description	Bldg	EL	Location	OPERATING STATE Normal State	OPERATING STATE Desired State	Walkdown or Walk-By	SEWS*	Screening Notes	HCLPF**	Key Failure Mode***
47 a	1CA-ML-0360	Manual Loader	AUX	767	Control Rm 925	Functional	Functional	Walk-By		Rule-of-the-box with 1MC10	>RLGM	Screened per IPEEE
47 b	1CA-SS-0360	Selector Switch	AUX	716	Rm 600 AA/43	Functional	Functional	Walk-By		Rule-of-the-box with 1CA-36AB	>RLGM	Screened per IPEEE
47 c	1CA-MT-0360	Misc Transmitter	AUX	716	Rm 600 AA/43	Functional	Functional	Walk-By		Rule-of-the-box with 1CA-36AB	>RLGM	Screened per IPEEE
47 d	1CA-VP-0360	Valve Positioner	AUX	716	Rm 600 AA/43	Functional	Functional	Walk-By		Rule-of-the-box with 1CA-36AB	>RLGM	Screened per IPEEE
47 e	1CA-SV-0360	Solenoid Valve	AUX	716	Rm 600	Energized	Energized	Walkdown	Reference 10, Appendix C		>RLGM	Screened per EPRI NP-6041
47 f	1CA-SV-0361	Solenoid Valve	AUX	716	Rm 600	Energized	Energized	Walkdown	Reference 10, Appendix C		>RLGM	Screened per EPRI NP-6041
48	1SV-VA-0019AB	1A SG Main Steam PORV and Associated Pneumatic Controls	Outer Doghouse (DH1)	809	GG/44	Closed	Open/Throttled/ Closed	Walk-By	p 294		>RLGM	Screened per IPEEE
49	1SV-VA-0013AB	1B SG Main Steam PORV and Associated Pneumatic Controls	Inner Doghouse (DH2)	809	FF/53	Closed	Open/Throttled/ Closed	Walk-By	p 294		>RLGM	Screened per IPEEE
50	1SV-VA-007ABC	1C SG Main Steam PORV and Associated Pneumatic Controls	Inner Doghouse (DH2)	809	FF/52	Closed	Open/Throttled/ Closed	Walk-By	p 294		>RLGM	Screened per IPEEE
51	1SV-VA-001AB	1D SG Main Steam PORV and Associated Pneumatic Controls	Outer Doghouse (DH1)	809	GG/44	Closed	Open/Throttled/ Closed	Walk-By	p 294		>RLGM	Screened per IPEEE
52	1EPL-PN-EVDA	Vital Battery 125 VDC Distribution Panel	AUX	733	DD/54	Functional	Functional	Walk-By	p 212		>RLGM	Screened per IPEEE
52 a	1EPL-PN-EVDD	Vital Battery 125 VDC Distribution Panel	AUX	733	BB/57	Functional	Functional	Walk-By	p 212		>RLGM	Screened per IPEEE
53	0EPL-BA-EVCA	Vital Battery	AUX	733	Rm 707 CC/54	Functional	Functional	Walkdown	Reference 10, Appendix C		>RLGM****	Interaction - Block Wall
54	0EPL-BC-EVCS	Vital Battery Charger and Charger Connection Box ECB5	AUX	733	Rm 701 BB/54	Functional	Functional	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	0.45	Functional
55	1EPE-MX-EMXA2	600 VAC Essential Power	AUX	750	BB/46	Functional	Functional	Walk-By	p 32		>RLGM	Screened per IPEEE
56	1EPE-MX-EMXA4	600 VAC Essential Power	AUX	750	BB/47	Functional	Functional	Walk-By	p 32		>RLGM	Screened per IPEEE
57	1EPE-MX-EMXH	600 VAC Essential Power	AUX	750	FF/56	Functional	Functional	Walk-By	p 32		>RLGM	Screened per IPEEE
58	1EPE-MX-EMXB4	600 VAC Essential Power	AUX	733	Rm 705 BB/46	Functional	Functional	Walk-By	p 32		>RLGM	Screened per IPEEE
59	1ETP-CA-0008 (1ATC 8)	Pzr PORV Relay/Indication	AUX	750	CC/53	Standby	Functional	Walk-By	p 216		>RLGM	Screened per IPEEE
60	1EOA-PN-MC5	Main Control Board Cabinet for Head-Vent Operation, Hotleg Temperature Indication	AUX	767	Control Rm 925	Standby	Functional	Walk-By	p 86		>RLGM	Screened per IPEEE
61	1EOA-PN-MC7	H2 Igniter Control Switch	AUX	767	Control Rm 925	Standby	Functional	Walk-By	p 86		>RLGM	Screened per IPEEE
62	1EOA-PN-MC10	Main Control Board Cabinet for CA / NC Systems	AUX	767	Control Rm 925	Standby	Functional	Walk-By	p 86		>RLGM	Screened per IPEEE
63	1EOA-PN-MC11	Main Control Board Cabinet for NI System, Containment Pressure Indication	AUX	767	Control Rm 925	Standby	Functional	Walk-By	p 86		>RLGM	Screened per IPEEE

MNS Unit 1 ESEL and HCLPF Results

	EQUIPMENT					OPERATING STATE		Walkdown or				
ESEL ID	EDB	Description	Bldg	EL	Location	Normal State	Desired State	Walk-By	SEWS*	Screening Notes	HCLPF**	Key Failure Mode***
64	1EOA-PN-MC2	Main Control Board Cabinet for SM System (PORV Control, CF/SM Indication)	AUX	767	Control Rm 925	Standby	Functional	Walk-By	p 86		>RLGM	Screened per IPEEE
ICCM a	1EOA-PN-MC1	Main Control Board Cabinet for ICCM Remote Display	AUX	767	Control Rm 925	Standby	Functional	Walk-By	p 86		>RLGM	Screened per IPEEE
ICCM b	1EIA-CA-9211	Train A Remote Display Processor behind 2MC2	AUX	767	Control Rm 925	Standby	Functional	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	>RLGM	Screened per EPRI NP-6041
ICCM c	1EIA-CA-9221	Train B Remote Display Processor behind 2MC2	AUX	767	Control Rm 925	Standby	Functional	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	>RLGM	Screened per EPRI NP-6041
ICCM d	1EIA-P-9210	Train A Remote Display	AUX	767	Control Rm 925	Standby	Functional	Walk-By		Rule-of-the-box with 1MC1, which has an IPEEE SEWS	Screened	
ICCM e	1EIA-P-9220	Train B Remote Display	AUX	767	Control Rm 925	Standby	Functional	Walk-By		Rule-of-the-box with 1MC1, which has an IPEEE SEWS	Screened	
ICCM f	1EIA-CA-9210	Train A ICCM-86 Cabinet	AUX	750	CC/55	Standby	Functional	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	0.29	Functional
ICCM g	1EIA-CA-9220	Train B ICCM-86 Cabinet	AUX	750	CC/55	Standby	Functional	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	0.29	Functional
65	1IPE-CA-9010	SSPS Cabinet 'A' (CLA Block Valves Closure Permissive)	AUX	767	Control Rm 925 CC/54	Standby	Functional	Walk-By	p 11		>RLGM	Screened per IPEEE
66	1IPE-CA-9020	SSPS Cabinet 'B' (CLA Block Valves Closure Permissive)	AUX	767	Control Rm 925 CC/54	Standby	Functional	Walk-By	p 11		>RLGM	Screened per IPEEE
67	1EQB-PN-DGLSA	Various Functions (i.e. H2 Igniters)	AUX	750	Rm 803 BB/51	Standby	Functional	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	0.29	Functional
68	1EPG-PN-EKVA	120VAC Inst and Control Panelboard	AUX	733	Rm 701 DD/54	Nominal 120 VAC Output	Functional	Walk-By	p 203		>RLGM	Screened per IPEEE
69	1EPG-BI-EVIA	Vital Inverter	AUX	733	Rm 701 CC/55	Nominal 120 VAC Output	Functional	Walk-By	p 65		>RLGM	Screened per IPEEE
70	1CF-LT-6000	Steam Generator NR Level Indication Loop 1	RX	739	Accum 1A Rm 39° 45R	Indication	Indication	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	>RLGM	Screened per IPEEE
71	1CF-LT-5540	Steam Generator NR Level Indication Loop 2	RX	742	Accum 1B Rm 146° 49R	Indication	Indication	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	>RLGM	Screened per IPEEE
72	1CF-LT-5570	Steam Generator NR Level Indication Loop 3	RX	741	Accum 1C Rm 214° 55R	Indication	Indication	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	>RLGM	Screened per IPEEE
73	1CF-LT-6030	Steam Generator NR Level Indication Loop 4	RX	744	Accum 1D Rm 326° 56R	Indication	Indication	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	>RLGM	Screened per IPEEE
74	1SM-PT-5080	Steam Generator #1 Wide Range Pressure Indication Loop	AUX	750	DD/44	Indication	Indication	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	>RLGM	Screened per EPRI NP-6041
74 a	1CA-PN-AFPA	1A CA Pump Control Panel	AUX	716	Rm 600 BB/51	Standby	Functional	Walk-By	p 180		>RLGM	Screened per IPEEE
75	1SM-PT-5110	Steam Generator #2 Wide Range Pressure Indication Loop	AUX	733	Rm 702 DD/53	Indication	Indication	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	>RLGM	Screened per EPRI NP-6041
76	1SM-PT-5140	Steam Generator #3 Wide Range Pressure Indication Loop	AUX	733	Rm 702 DD/53	Indication	Indication	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	>RLGM	Screened per EPRI NP-6041
76 a	1CA-PN-AFPB	1B CA Pump Control Panel	AUX	716	Rm 600 CC/51	Standby	Functional	Walk-By	p 180		>RLGM	Screened per IPEEE
77	1SM-PT-5170	Steam Generator #4 Wide Range Pressure Indication Loop	AUX	750	Rm 802 DD/45	Indication	Indication	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	>RLGM	Screened per EPRI NP-6041
78	1NC-RD-5850	Steam Generator #1 NC WR T-Hot Indication Loop	RX	740	24° 30R	Indication	Indication	Walkdown	Reference 10, Appendix C	Screens out based on EPRI-NP-6041-SL, Rev. 1, Table 2-4	>RLGM	Screened per EPRI NP-6041
78 a	1NC-CA-9010	Reactor Vessel Level Indication System (RVLIS) Cabinet Train A	Aux	767	BB/49	Standby	Functional	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	0.37	Functional
79	1NC-RD-5870	Steam Generator #2 NC WR T-Hot Indication Loop	RX	740	164° 30R	Indication	Indication	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	>RLGM	Screened per EPRI NP-6041

MNS Unit 1 ESEL and HCLPF Results

	EQUIPMENT					OPERATING STATE		Walkdown or				
ESEL ID	EQB	Description	Bldg	EL	Location	Normal State	Desired State	Walk-By	SEWS*	Screening Notes	HCLPF**	Key Failure Mode***
80	1NC-RD-5900	Steam Generator #3 NC WR T-Hot Indication Loop	RX	740	203° 30R	Indication	Indication	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	>RLGM	Screened per EPRI NP-6041
81	1NC-RD-5920	Steam Generator #4 NC WR T-Hot Indication Loop	RX	740	308° 30R	Indication	Indication	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	>RLGM	Screened per EPRI NP-6041
82	1NS-PT-5070	Containment NR Pressure Indication Loop	AUX	750	DD/51	Indication	Indication	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	>RLGM	Screened per EPRI NP-6041
83	1NC-PT-5120	NC WR Pressurizer Pressure Indication Loop	AUX	733	Rm 702 CC/46	Indication	Indication	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	>RLGM	Screened per EPRI NP-6041
84	1EIA-CA-9010	Process Control Cabinet 1 (7300 Cabinet)	AUX	767	Control Rm 925 AA/54	Indication	Indication	Walk-By	p 16		>RLGM	Screened per IPEEE
85	1FD-TK-0056	1A Diesel Generator Fuel Oil Storage Tank	yard	<760	N/A	Intact/Available	Intact/Available	Walk-By	p 556		>RLGM	Screened per IPEEE
86	1FD-TK-0057	1B Diesel Generator Fuel Oil Storage Tank	yard	<760	N/A	Intact/Available	Intact/Available	Walk-By	p 556		>RLGM	Screened per IPEEE
87	1EPE-MX-EMXA3	600 VAC Essential for H2 Skimmer Fan 1A Suction Isolation Valve 1VX1A (04A)	AUX	750	Rm 803 BB/45	Closed	Closed	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	>RLGM	Screened per EPRI NP-6041
88	1EPE-MX-EMXB5	600 VAC Essential for H2 Skimmer Fan 1B Suction Isolation Valve 1VX2B (01C)	AUX	733	Rm 705 BB/47	Closed	Closed	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	>RLGM	Screened per EPRI NP-6041
89	1EPE-MX-EMXC	600 VAC Essential VE/VX (04C, 06D & 05D)	AUX	750	Rm 803 BB/52	Closed	Closed	Walk-By	p 32		>RLGM	Screened per IPEEE
90	1EPE-MX-EMXD	600 VAC Essential for VE/VX (06E & 05D)	AUX	733	Rm 705 BB/52	Closed	Closed	Walk-By	p 32		>RLGM	Screened per IPEEE
91	1VX-VA-0001A	H2 Skimmer Fan 1A Suction Isolation Valve	RX	831	265° 43R	Closed	Open	Walkdown	Reference 10, Appendix C		0.60	Functional
92	1VX-AH-0003	Hydrogen Skimmer Fan No 1A	RX	818	272° 47R	Off	On	Walkdown	Reference 10, Appendix C		0.39	Anchorage
93	1VX-VA-0002B	H2 Skimmer Fan 1B Suction Isolation Valve	RX	831	279° 49R	Closed	Open	Walkdown	Reference 10, Appendix C		0.44	Functional
94	1VX-AH-0004	Hydrogen Skimmer Fan No 1B	RX	818	268° 47R	Off	On	Walkdown	Reference 10, Appendix C		0.40	Anchorage
95	1VX-DA-9120 (1RAF-D-2)	Containment Air Return Fan 1A Damper	RX	775	270° 50R	Closed	Open	Walk-By		Rule of the box with 1VX-AH-0001 which has IPEEE SEWS	>RLGM	Screened per IPEEE
96	1VX-AH-0001	Containment Air Return Fan 1A	RX	775	270° 50R	Off	On	Walk-By	p 434		>RLGM	Screened per IPEEE
97	1VE-XF-0004	Annulus Ventilation Fan 1A	AUX	767	JJ/51	Off	On	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	0.35	Anchorage
98	1VE-XF-0005	Annulus Ventilation Fan 1B	AUX	767	HH/52	Off	On	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	0.45	Anchorage
99	1KC-PU-0003	B1 Closed Cooling Water System Pump	AUX	733	HH/57	On	On	Walk-By	p 255		>RLGM	Screened per IPEEE
100	1KC-PU-0004	B2 Closed Cooling Water System Pump	AUX	733	HH/57	On	On	Walk-By	p 255		>RLGM	Screened per IPEEE
101	1KC-TK-0009	Component Cooling Water System Surge Tank	AUX	767	JJ/57	Intact/ In-Service	Intact/ In-Service	Walk-By	p 528		>RLGM	Screened per IPEEE
102	1KC-VA-0050A	KC Auxiliary Bldg Supply Non-Essential Isolation	AUX	750	JJ/55	Open/Closed	Closed	Walk-By	p 773	Included in IPEEE, p 773	>RLGM	Screened per IPEEE
103	1KC-VA-0230A	KC Reactor Bldg Supply Non-Essential Isolation	AUX	750	JJ/55	Open/Closed	Closed	Walk-By	p 773	Included in IPEEE, p 773	>RLGM	Screened per IPEEE
104	1KC-VA-0001A	KC Auxiliary Bldg Return Non-Essential Isolation	AUX	733	HH/55	Open/Closed	Closed	Walk-By	p 773	Included in IPEEE, p 773	>RLGM	Screened per IPEEE
105	1KC-VA-0003A	KC Reactor Bldg Return Non-Essential Isolation	AUX	733	HH/55	Open/Closed	Closed	Walk-By	p 308		>RLGM	Screened per IPEEE

MNS Unit 1 ESEL and HCLPF Results

	EQUIPMENT					OPERATING STATE						
ESEL ID	EDB	Description	Bldg	EL	Location	Normal State	Desired State	Walkdown or Walk-By	SEWS*	Screening Notes	HCLPF**	Key Failure Mode***
106	1KC-HX-0005	Train A Component Cooling Water HX	AUX	750	JJ/56	Intact/ In-Service	Intact/ In-Service	Walkdown	Reference 10, Appendix C	HCLPF based on IPEEE evaluation (p 1728) by Structural Mechanics Associates	>RLGM	Screened per IPEEE
107	1NC-VA-0032B	NC System Pressurizer PORV	RX	806	Pressurizer Cavity 110° 32R	Closed	Closed	Walk-By	p 773	Included in IPEEE, p 773	>RLGM	Screened per IPEEE
108	1NC-VA-0036B	NC System Pressurizer PORV	RX	806	Pressurizer Cavity 105° 32R	Closed	Closed	Walk-By	p 773	Included in IPEEE, p 773	>RLGM	Screened per IPEEE
109	1NC-VA-0001	Pressurizer Safety Relief Valve	RX	815	Pressurizer Cavity 105° 35R	Closed	Closed	Walk-By	p 773	Included in IPEEE, p 773	>RLGM	Screened per IPEEE
110	1NC-VA-0002	Pressurizer Safety Relief Valve	RX	801	Pressurizer Cavity 101° 35R	Closed	Closed	Walk-By	p 773	Included in IPEEE, p 773	>RLGM	Screened per IPEEE
111	1NC-VA-0003	Pressurizer Safety Relief Valve	RX	801	Pressurizer Cavity 101° 35R	Closed	Closed	Walk-By	p 773	Included in IPEEE, p 773	>RLGM	Screened per IPEEE
112	1ND-PU-0001	Train A ND Pump	AUX	695	Rm 500 FF/54	Off	Intact Pressure Boundary	Walk-By	p 273		>RLGM	Screened per IPEEE
113	1ND-PU-0002	Train B ND Pump	AUX	695	Rm 501 GG/54	Off	Intact Pressure Boundary	Walk-By	p 273		>RLGM	Screened per IPEEE
114	1ND-HX-0003	Train A ND HX	AUX	750	Rm 733 LL/52	Intact/ In-Service	Intact/ In-Service	Walk-By	p 458		>RLGM	Screened per IPEEE
115	1ND-HX-0004	Train B ND HX	AUX	750	Rm 732 LL/52	Intact/ In-Service	Intact/ In-Service	Walk-By	p 458		>RLGM	Screened per IPEEE
116	1ND-HX-0005	Train A ND Pump Seal Cooling HX	AUX	695	Rm 500 FF/54	Intact	Intact	Walk-By		Rule-of-the-box with 1ND-PU-0002, which has an IPEEE SEWS	>RLGM	Screened per IPEEE
117	1ND-VA-0002AC	RHR Pump Hotleg Suction Isolation	RX	745	182° 50R	Closed/Open	Open	Walk-By	p 773	Included in IPEEE, p 773	>RLGM	Screened per IPEEE
118	1ND-VA-0001B	RHR Pump Hotleg Suction Isolation	RX	745	180° 22R	Closed/Open	Open	Walk-By	p 773	Included in IPEEE, p 773	>RLGM	Screened per IPEEE
119	1NI-VA-0173A	Train A RHR Isolation to the Coldlegs	AUX	733	Rm 602 GG/52	Open/Closed	Open	Walk-By	p 774	Included in IPEEE, p 774	>RLGM	Screened per IPEEE
120	1NI-VA-0178B	Train B RHR Isolation to the Coldlegs	AUX	733	Rm 730 HH/52	Open/Closed	Open	Walk-By	p 774	Included in IPEEE, p 774	>RLGM	Screened per IPEEE
121	1NI-VA-0118A	Train A NI Isolation to the Coldlegs	AUX	716	Rm 603 JJ/52	Open/Closed	Open	Walk-By	p 774	Included in IPEEE, p 774	>RLGM	Screened per IPEEE
122	1NI-VA-0121A	Train A NI Isolation to the Hotlegs	AUX	742	FF/52	Open/Closed	Open/Closed	Walk-By	p 774	Included in IPEEE, p 774	>RLGM	Screened per IPEEE
123	1NI-VA-0150B	Train B NI Isolation to the Coldlegs	AUX	716	Rm 603 HH/52	Open/Closed	Open	Walk-By	p 774	Included in IPEEE, p 774	>RLGM	Screened per IPEEE
124	1NI-VA-0152B	Train B NI Isolation to the Hotlegs	AUX	750	Rm 817 HH/52	Open/Closed	Open/Closed	Walk-By	p 774	Included in IPEEE, p 774	>RLGM	Screened per IPEEE
125	1NI-VA-0162A	NI Isolation to the Coldlegs	AUX	733	Rm 730 JJ/51	Open/Closed	Open/Closed	Walk-By	p 774	Included in IPEEE, p 774	>RLGM	Screened per IPEEE
126	1NI-PU-0009	Train A NI Pump	AUX	716	Rm 628 HH/54	Off	Intact Pressure Boundary	Walk-By	p 245		>RLGM	Screened per IPEEE
127	1NI-PU-0010	Train B NI Pump	AUX	716	Rm 626 GG/53	Off	Intact Pressure Boundary	Walk-By	p 245		>RLGM	Screened per IPEEE
128	1NS-PU-0001	Train A NS Pump	AUX	695	Rm 502 GG/55	Off	Intact Pressure Boundary	Walk-By	p 277		>RLGM	Screened per IPEEE
129	1NS-PU-0002	Train B NS Pump	AUX	695	Rm 503 GG/55	Off	Intact Pressure Boundary	Walk-By	p 277		>RLGM	Screened per IPEEE
130	1NS-HX-0003	Train A NS Heat Exchanger	AUX	750	Rm 733 MM/51	Intact	Intact	Walk-By	p 451		>RLGM	Screened per IPEEE
131	1NS-HX-0004	Train B NS Heat Exchanger	AUX	750	Rm 732 MM/51	Intact	Intact	Walk-By	p 451		>RLGM	Screened per IPEEE
132	1SM-VA-007AB	Train A MSIV	Outer Doghouse (DH1)	792	DD/43	Open/Closed	Closed	Walk-By	p 300		>RLGM	Screened per IPEEE

MNS Unit 1 ESEL and HCLPF Results

ESEL ID	EQUIPMENT EDB	EQUIPMENT Description	Bldg	EL	Location	OPERATING STATE Normal State	OPERATING STATE Desired State	Walkdown or Walk-By	SEWS*	Screening Notes	HCLPF**	Key Failure Mode***
133	1SM-VA-0005AB	Train B MSIV	Inner Doghouse (DH2)	792	DD/53	Open/Closed	Closed	Walk-By	p 300		>RLGM	Screened per IPEEE
134	1SM-VA-0003ABC	Train C MSIV	Inner Doghouse (DH2)	792	DD/52	Open/Closed	Closed	Walk-By	p 300		>RLGM	Screened per IPEEE
135	1SM-VA-0001AB	Train D MSIV	Outer Doghouse (DH1)	792	DD/44	Open/Closed	Closed	Walk-By	p 300		>RLGM	Screened per IPEEE
136	1SV-VA-0020	Train A Main Steam Safety Relief Valve	Outer Doghouse (DH1)	791	EE/43	Closed	Closed	Walk-By	p 297		>RLGM	Screened per IPEEE
137	1SV-VA-0021	Train A Main Steam Safety Relief Valve	Outer Doghouse (DH1)	791	EE/43	Closed	Closed	Walk-By	p 297		>RLGM	Screened per IPEEE
138	1SV-VA-0022	Train A Main Steam Safety Relief Valve	Outer Doghouse (DH1)	791	EE/43	Closed	Closed	Walk-By	p 297		>RLGM	Screened per IPEEE
139	1SV-VA-0023	Train A Main Steam Safety Relief Valve	Outer Doghouse (DH1)	791	EE/43	Closed	Closed	Walk-By	p 297		>RLGM	Screened per IPEEE
140	1SV-VA-0024	Train A Main Steam Safety Relief Valve	Outer Doghouse (DH1)	791	EE/43	Closed	Closed	Walk-By	p 297		>RLGM	Screened per IPEEE
141	1SV-VA-0014	Train B Main Steam Safety Relief Valve	Inner Doghouse (DH2)	791	EE/53	Closed	Closed	Walk-By	p 297		>RLGM	Screened per IPEEE
142	1SV-VA-0015	Train B Main Steam Safety Relief Valve	Inner Doghouse (DH2)	791	EE/53	Closed	Closed	Walk-By	p 297		>RLGM	Screened per IPEEE
143	1SV-VA-0016	Train B Main Steam Safety Relief Valve	Inner Doghouse (DH2)	791	EE/53	Closed	Closed	Walk-By	p 297		>RLGM	Screened per IPEEE
144	1SV-VA-0017	Train B Main Steam Safety Relief Valve	Inner Doghouse (DH2)	791	EE/53	Closed	Closed	Walk-By	p 297		>RLGM	Screened per IPEEE
145	1SV-VA-0018	Train B Main Steam Safety Relief Valve	Inner Doghouse (DH2)	791	EE/53	Closed	Closed	Walk-By	p 297		>RLGM	Screened per IPEEE
146	1SV-VA-0008	Train C Main Steam Safety Relief Valve	Outer Doghouse (DH1)	791	EE/52	Closed	Closed	Walk-By	p 297		>RLGM	Screened per IPEEE
147	1SV-VA-0009	Train C Main Steam Safety Relief Valve	Outer Doghouse (DH1)	791	EE/52	Closed	Closed	Walk-By	p 297		>RLGM	Screened per IPEEE
148	1SV-VA-0010	Train C Main Steam Safety Relief Valve	Outer Doghouse (DH1)	791	EE/52	Closed	Closed	Walk-By	p 297		>RLGM	Screened per IPEEE
149	1SV-VA-0011	Train C Main Steam Safety Relief Valve	Outer Doghouse (DH1)	791	EE/52	Closed	Closed	Walk-By	p 297		>RLGM	Screened per IPEEE
150	1SV-VA-0012	Train C Main Steam Safety Relief Valve	Outer Doghouse (DH1)	791	EE/52	Closed	Closed	Walk-By	p 297		>RLGM	Screened per IPEEE
151	1SV-VA-0002	Train D Main Steam Safety Relief Valve	Inner Doghouse (DH2)	791	EE/43	Closed	Closed	Walk-By	p 297		>RLGM	Screened per IPEEE
152	1SV-VA-0003	Train D Main Steam Safety Relief Valve	Inner Doghouse (DH2)	791	EE/43	Closed	Closed	Walk-By	p 297		>RLGM	Screened per IPEEE
153	1SV-VA-0004	Train D Main Steam Safety Relief Valve	Inner Doghouse (DH2)	791	EE/43	Closed	Closed	Walk-By	p 297		>RLGM	Screened per IPEEE
154	1SV-VA-0005	Train D Main Steam Safety Relief Valve	Inner Doghouse (DH2)	791	EE/43	Closed	Closed	Walk-By	p 297		>RLGM	Screened per IPEEE
155	1SV-VA-0006	Train D Main Steam Safety Relief Valve	Inner Doghouse (DH2)	791	EE/43	Closed	Closed	Walk-By	p 297		>RLGM	Screened per IPEEE
156	1RN-HX-0006	1B RN Pump Motor Cooler	AUX	716	EE/57	In-Service	In-Service	Walk-By	p 249	Rule-of-the-box with 1RN-PU-0004, which has an IPEEE SEWS (p 249)	>RLGM	Screened per IPEEE
157	1RN-VA-0043A	RN Pump Discharge Cross Train Supply Isolation MOV	AUX	716	FF/56	Normally Open	Closed	Walk-By	p 776	Included in IPEEE, p 776	>RLGM	Screened per IPEEE
158	1RN-VA-0187B	KC HX Cooling Water Supply Isolation	AUX	750	LL/55	Throttled	Open	Walk-By	p 776	Included in IPEEE, p 776	>RLGM	Screened per IPEEE
159	1RN-VA-0190B	KC HX Cooling Water Outlet Isolation	AUX	750	HH/54	Throttled	Open	Walk-By	p 776	Included in IPEEE, p 776	>RLGM	Screened per IPEEE

MNS Unit 1 ESEL and HCLPF Results

ESEL ID	EQUIPMENT EDB	EQUIPMENT Description	Bldg	EL	Location	OPERATING STATE Normal State	OPERATING STATE Desired State	Walkdown or Walk-By	SEWS*	Screening Notes	HCLPF**	Key Failure Mode***
160	1RN-VA-0213B	B1 KC Pump Motor Cooler Cooling Water Outlet Isolation	AUX	733	HH/56	Open/Closed	Open	Walk-By	p 776	Included in IPEEE, p 776	>RLGM	Screened per IPEEE
161	1RN-VA-0218B	B2 KC Pump Motor Cooler Cooling Water Outlet Isolation	AUX	733	GG/57	Open/Closed	Open	Walk-By	p 776	Included in IPEEE, p 776	>RLGM	Screened per IPEEE
162	1RN-VA-0171B	EDG KD HX Supply MOV Isolation	AUX	736	Rm 704 BB/45	Open/Closed	Open	Walk-By	p 776	Included in IPEEE, p 776	>RLGM	Screened per IPEEE
163	1RN-VA-0174B	EDG KD HX Outlet MOV Isolation	AUX	736	Rm 704 BB/45	Open	Closed	Walk-By	p 776	Included in IPEEE, p 776	>RLGM	Screened per IPEEE
164	1RN-VA-0235B	Train B NS HX Supply Isolation MOV	AUX	733	Rm 732 KK/51	Closed	Closed	Walk-By	p 776	Included in IPEEE, p 776	>RLGM	Screened per IPEEE
165	1RN-HX-0018	Train B NV Pump Mtr Cooler	AUX	716	Rm 630 HH/55	Standby/ In-Service	Intact	Walk-By	p 252	Rule-of-the-box with 1NV-PU-0016, which has an IPEEE SEWS (p 252)	>RLGM	Screened per IPEEE
166	1RN-HX-0020	Train B NV Pump Bearing Oil Cooler	AUX	716	Rm 630 HH/55	Standby/ In-Service	Intact	Walk-By	p 252	Rule-of-the-box with 1NV-PU-0016, which has an IPEEE SEWS (p 252)	>RLGM	Screened per IPEEE
167	1RN-HX-0022	Train B NV Pump Gearbox Oil Cooler	AUX	716	Rm 630 HH/55	Standby/ In-Service	Intact	Walk-By	p 252	Rule-of-the-box with 1NV-PU-0016, which has an IPEEE SEWS (p 252)	>RLGM	Screened per IPEEE
168	1VA-AH-0023	Train B NS Pump AHU	AUX	695	Rm 503 GG/55	Standby	Intact	Walkdown	Reference 10, Appendix C	Same make/model as U2 ESEL 168	>RLGM	Screened per IPEEE
169	1VA-AH-0027	Train B ND Pump AHU	AUX	695	Rm 500 FF/54	Standby	Intact	Walk-By	p 413		>RLGM	Screened per IPEEE
170	1RN-HX-0024	Train B NI Pump Mtr Cooler	AUX	716	Rm 626 GG/53	Standby	Intact	Walk-By	p 245	Rule-of-the-box with 1NI-PU-0010, which has an IPEEE SEWS (p 245)	>RLGM	Screened per IPEEE
171	1RN-HX-0026	Train B NI Pump Brg Oil Cooler	AUX	716	Rm 626 GG/54	Standby	Intact	Walk-By	p 245	Rule-of-the-box with 1NI-PU-0010, which has an IPEEE SEWS (p 245)	>RLGM	Screened per IPEEE
172	1RN-VA-0297B	1B RN Essential Return Header to SNSWP	AUX	716	Rm 602 EE/52	Closed	Open	Walk-By	p776	Included in IPEEE, p 776	>RLGM	Screened per IPEEE
173	0RN-VA-0283AC	1B/2B RN Disch To RC X-Over Isol	AUX	716	Rm 602 EE/52	Open	Closed	Walk-By	p776	Included in IPEEE, p 776	>RLGM	Screened per IPEEE
174	0RN-VA-0152B	1B/2B RN Essential Return Header to SNSWP	AUX	716	Rm 647W EE/60	Closed	Open	Walk-By	p776	Included in IPEEE, p 776	>RLGM	Screened per IPEEE
175	0RN-VA-0151B	SNSWP Return Headers Cross Train Isolation	AUX	733	EE/54	Closed	Closed	Walk-By	p776	Included in IPEEE, p 776	>RLGM	Screened per IPEEE
176	2RN-VA-0297B	2B RN Ess Hdr SNSWP Return Iso	AUX	716	Rm 647W EE/60	Open	Closed	Walk-By	p786	Included in IPEEE, p 786	>RLGM	Screened per IPEEE
177	1CA-VA-162B	Auxiliary Feedwater Pump Suction Isolation from circulating water	Aux	716		Closed	Open	TBD	TBD	TBD	TBD	TBD
177 a	1CA-SV-1620	Solenoid Valve	Aux	716		Energized	Energized	TBD	TBD	TBD	TBD	TBD
177 b	1CA-RV-1622	Relief Valve	Aux	733		Closed	Closed	TBD	TBD	TBD	TBD	TBD
177 c	1CA-GC-1620	Control Air Gas Cylinder	Aux	733		Intact	Intact	TBD	TBD	TBD	TBD	TBD
177 d	1CA-GC-1621	Control Air Gas Cylinder	Aux	733		Intact	Intact	TBD	TBD	TBD	TBD	TBD
177 e	1CA-PS-5380	Pressure Switch	Aux	716		Functional	Functional	TBD	TBD	TBD	TBD	TBD
177 f	1CA-PS-5391	Pressure Switch	Aux	716		Functional	Functional	TBD	TBD	TBD	TBD	TBD
177 g	1CA-TB-901	Junction Box houses Relays 'AA' and 'BB'	Aux	733		Functional	Functional	TBD	TBD	TBD	TBD	TBD
178	1NV-VA-0035A	Letdown Inboard Containment Isolation	RX	752		Open	Closed	TBD	TBD	TBD	TBD	TBD
178 a	1NV-SV-0350	Solenoid Valve	RX	752		Energized	De-energized	TBD	TBD	TBD	TBD	TBD

MNS Unit 1 ESEL and HCLPF Results

ESEL ID	EQUIPMENT EDB	EQUIPMENT Description	Bldg	EL	Location	OPERATING STATE Normal State	OPERATING STATE Desired State	Walkdown or Walk-By	SEWS*	Screening Notes	HCLPF**	Key Failure Mode***
178 b	1NV-SV-0351	Solenoid Valve	RX	752		Energized	De-energized	TBD	TBD	TBD	TBD	TBD
179	1NV-VA-0121	Auxiliary Letdown Isolation	AUX	733	RHR HtX Room	Closed	Closed	TBD	TBD	TBD	TBD	TBD
179 a	1NV-ML-1210	Manual Loader	AUX	767	Control Rm 925	Functional	Functional	TBD	TBD	TBD	TBD	TBD
180	1NV-VA-0457A	Letdown Inboard Containment Isolation	RX	752		Closed	Closed	TBD	TBD	TBD	TBD	TBD
180 a	1NV-SV-4570	Solenoid Valve	RX	752		De-energized	De-energized	TBD	TBD	TBD	TBD	TBD
180 b	1NV-SV-4571	Solenoid Valve	RX	752		De-energized	De-energized	TBD	TBD	TBD	TBD	TBD
181	1NV-VA-0458A	Letdown Inboard Containment Isolation	RX	752		Closed	Closed	TBD	TBD	TBD	TBD	TBD
181 a	1NV-SV-4580	Solenoid Valve	RX	752		De-energized	De-energized	TBD	TBD	TBD	TBD	TBD
181 b	1NV-SV-4581	Solenoid Valve	RX	752		De-energized	De-energized	TBD	TBD	TBD	TBD	TBD
182	1NV-VA-0025B	Excess Letdown Isolation	RX	725		Closed	Closed	TBD	TBD	TBD	TBD	TBD
182 a	1NV-SV-0250	Solenoid Valve	RX	725		De-energized	De-energized	TBD	TBD	TBD	TBD	TBD
183	1VI-TK-0010	Instrument Air Blackout Accumulator	AUX	750		Intact	Intact	TBD	TBD	TBD	TBD	TBD
184	1VI-1328	Blackout Accumulator Relief	AUX	750		Closed	Closed	TBD	TBD	TBD	TBD	TBD
185	1VI-1330	Blackout Header Relief	AUX	750		Closed	Closed	TBD	TBD	TBD	TBD	TBD

* Page number refers to IPEEE scanned document page.

** HCLPF values of >RLGM indicate that the HCLPF exceeds the Review Level Ground Motion (0.26g), but that a specific HCLPF value was not calculated since the component was screened out from further evaluation.

*** Key Failure Modes are defined as follows:

Screened per IPEEE – Indicates that the component was evaluated in the IPEEE and therefore meets the RLGM demand.

Screened per EPRI NP-6041 – Indicates that the component meets the screening criteria of EPRI NP-6041, Table 2-4 and that neither anchorage, relay chatter, nor nor interactions limit the reported HCLPF.

Interaction - Block Wall – Indicates that the component is located near a block wall. The block wall was evaluated in the IPEEE and therefore the block wall meets the RLGM demand. The functional and anchorage HCLPFs exceed the reported HCLPF value.

Anchorage – Indicates that the anchorage is the governing failure mode for the component.

Functional – Indicates that functional failure is the governing failure mode for the component.

**** Component adjacent to block wall. Aux building block walls were evaluated in the IPEEE as robust without a specific value. HCLPF of component provided in Table 7-1. However block wall may have lower HCLPF than component, therefore HCLPF reported here as >RLGM.

Appendix B

MNS Unit 2 ESEL and HCLPF Results

MNS Unit 2 ESEL and HCLPF Results

	EQUIPMENT					OPERATING STATE						
ESEL ID	EDB	Description	Bldg	EL	Location	Normal State	Desired State	Walkdown or Walk-By	SEWS*	Screening Notes	HCLPF**	Key Failure Mode***
1	2FW-VA-0032B	Refueling Water Recirc Pump Suction Isolation	AUX	750	Rm 828 JJ/61	Open/Closed	Open/Closed	Walk-By	p 782	Included in IPEEE, p 782	>RLGM	Screened per IPEEE
2	2FW-VA-0033A	Refueling Water Recirc Pump Suction Isolation	AUX	750	Rm 824 JJ/61	Open/Closed	Closed	Walk-By	p 782	Included in IPEEE, p 782	>RLGM	Screened per IPEEE
3	2FW-VA-0001A	Refueling Water Recirc Pump Suction Isolation	AUX	750	Rm 828 JJ/61	Open/Closed	Closed	Walk-By	p 782	Included in IPEEE, p 782	>RLGM	Screened per IPEEE
4	2ND-VA-0056	ND Relief- 'A' Coldlegs	AUX	733	HH/60	Closed	Closed	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	>RLGM	Screened per EPRI NP-6041
5	2ND-VA-0061	ND Relief - Hotlegs	AUX	716	FF/60	Closed	Closed	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	>RLGM	Screened per EPRI NP-6041
6	2ND-VA-0064	ND Relief - 'B' Coldlegs	AUX	733	JJ/61	Closed	Closed	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	>RLGM	Screened per EPRI NP-6041
7	2NI-VA-0119	NI Relief - 'A' Train Hotleg	AUX	716	GG/60	Closed	Closed	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	>RLGM	Screened per EPRI NP-6041
8	2NI-VA-0151	NI Relief - 'B' Train Hotleg	AUX	750	Rm 830 GG/60	Closed	Closed	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	>RLGM	Screened per EPRI NP-6041
9	2NI-VA-0161	NI Relief - Coldleg	AUX	733	Rm 788 HH/60	Closed	Closed	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	>RLGM	Screened per EPRI NP-6041
10	0RN-VA-0007A	SNSWP Supply to Units 1 and 2	AUX	716	Rm 601 AA/63	Closed	Open	Walk-By	p 776	Included in IPEEE, p 776	>RLGM	Screened per IPEEE
11	2NV-VA-0095B	NC Pumps Seal Water Return Cont	AUX	733	Rm 602A EE/60	Open	Closed	Walk-By	p 785	Included in IPEEE, p 785	>RLGM	Screened per IPEEE
12	2NC-VA-0272AC	Reactor Vessel Head-Vent Solenoid Isolation Valve	RX	772	RX Cavity Window B-C Side 117° 20R	Closed	Open and Closed	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	>RLGM	Screened per EPRI NP-6041
13	2NC-VA-0273AC	Reactor Vessel Head-Vent Solenoid Isolation Valve	RX	772	RX Cavity Window B-C Side 117° 20R	Closed	Open and Closed	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	>RLGM	Screened per EPRI NP-6041
14	2NC-VA-0034A	NC System Pressurizer PORV Solenoids and Pneumatic Controls	RX	806	Pressurizer Cavity 105° 35R	Closed	Open and Closed	Walk-By	p 783	Included in IPEEE, p 783	>RLGM	Screened per IPEEE
15	2NI-VA-0430A	2NC-34A Assured Nitrogen Supply from 2A CLA (MOV)	RX	762	2A CLA Rm 45° 51R	Closed	Open and Closed	Walk-By	p 785	Included in IPEEE, p 785	>RLGM	Screened per IPEEE
16	2FW-TK-0001	Refueling Water Storage Tank	Yard	>760	N/A	n/a	n/a	Walkdown	Reference 10, Appendix C	Included in IPEEE (p 772). Evaluated by Structural Mechanics Associates (p 1461).	>RLGM	Screened per IPEEE
17	2NI-VA-0054A	2A CLA Block Valve (MOV)	RX	733	Pipe Chase 43° 46R	Open M1-4	Closed	Walk-By	p 784	Included in IPEEE, p 784	>RLGM	Screened per IPEEE
18	2NI-VA-0065B	2B CLA Block Valve (MOV)	RX	733	Pipe Chase 138° 47R	Open M1-4	Closed	Walk-By	p 784	Included in IPEEE, p 784	>RLGM	Screened per IPEEE
19	2NI-VA-0076A	2C CLA Block Valve (MOV)	RX	733	Pipe Chase 221° 47R	Open M1-4	Closed	Walk-By	p 784	Included in IPEEE, p 784	>RLGM	Screened per IPEEE
20	2NI-VA-0088B	2D CLA Block Valve (MOV)	RX	733	Pipe Chase 317° 49R	Open M1-4	Closed	Walk-By	p 784	Included in IPEEE, p 784	>RLGM	Screened per IPEEE
21	2EHM-TF-HMTA	H2 Igniter Transformer	AUX	750	CC/61	Off	Functional	Walk-By	p 74	New equipment - updated IPEEE SEWS evaluation. "Reference 10, Appendix B1, pg. B1-10"	>RLGM	Screened per IPEEE
22	2EHM-PN-HMPPA	H2 Igniter Power Panel	AUX	750	CC/61	Standby	Functional	Walkdown	Reference 10, Appendix C	Bounded by evaluation of 2EHM-TB-1589.	>RLGM	Screened per EPRI NP-6041
23	2EHM-HR-TB03 thru TB71 (Odd numbers only)	A' Train H2 Igniters (35 Igniters per Train)	RX	Various	Various	De-energized	Functional	Walkdown	Reference 10, Appendix C	Not in experience database. Tested to SQURTS TRS.	>RLGM	Undetermined
23 a	2EHM-SX-HMBPA	Voltage Reg Bypass Switch	AUX	750	CC/61	De-energized	Functional	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	>RLGM	Screened per EPRI NP-6041

MNS Unit 2 ESEL and HCLPF Results

	EQUIPMENT					OPERATING STATE						
ESEL ID	EDB	Description	Bldg	EL	Location	Normal State	Desired State	Walkdown or Walk-By	SEWS*	Screening Notes	HCLPF**	Key Failure Mode***
23 b	2EHM-VR-HMRA	Voltage Regulator	AUX	750	CC/61	De-energized	Functional	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	0.29	Functional
24	2EHM-TB-1589	Local Terminal Box	AUX	750	CC/61	n/a	Functional	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	0.90	Functional
25	Deleted											
26	2CA-HX-0003	TDCAP Bearing Oil Cooler	AUX	716	AA/60	Idle	Functional	Walk-By	p 542		>RLGM	Screened per IPEEE
27	2CA-PU-0003	TDCAP (Auxiliary Feedwater Turbine Driven Pump)	AUX	716	AA/60	Idle	Functional	Walk-By	p 242		>RLGM	Screened per IPEEE
27 a	2SA-TR-0003	TDCAP Turbine	AUX	716	AA/60	Idle	Functional	Walk-By		Rule-of-the-box with 2CA-PU-0003, which has an IPEEE SEWS	>RLGM	Screened per IPEEE
27 b	2SA-VA-0004	TDCAP Steam Control Valve	AUX	716	AA/60	Idle	Functional	Walk-By		Rule-of-the-box with 2CA-PU-0003, which has an IPEEE SEWS	>RLGM	Screened per IPEEE
27 c	2SA-GV-0003	TDCAP Governor Valve	AUX	716	AA/60	Idle	Functional	Walk-By		Rule-of-the-box with 2CA-PU-0003, which has an IPEEE SEWS	>RLGM	Screened per IPEEE
27 d	2SA-GX-0003	Gear Reducer	AUX	716	AA/60	Idle	Functional	Walk-By		Rule-of-the-box with 2CA-PU-0003, which has an IPEEE SEWS	>RLGM	Screened per IPEEE
28	2CA-PN-AFTP	TDCAP Control Panel	AUX	716	AA/61	n/a	Available	Walk-By	p 187		>RLGM	Screened per IPEEE
29	2SA-VA-0048ABC	TDCAP Steam Supply Isolation (AOV)	Inner Doghouse (DH3)	767	FF/59	Idle	Open	Walk-By	p 786	Included in IPEEE, p 786	>RLGM	Screened per IPEEE
29 a	2SA-SV-0480	Air Supply Solenoid Dump Valve	Inner Doghouse (DH3)	767	FF/59	Energized	De-energized	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	>RLGM	Screened per EPRI NP-6041
29 b	2SA-SV-0481	Air Supply Solenoid Dump Valve	Inner Doghouse (DH3)	767	FF/59	Energized	De-energized	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	>RLGM	Screened per EPRI NP-6041
30	2SA-VA-0003	TDCAP Trip-Throttle Valve	AUX	716	Rm 601 FF/69	Open	Open	Walk-By	p 786	Included in IPEEE, p 786	>RLGM	Screened per IPEEE
31	Deleted											
32	Deleted											
33	Deleted											
34	2VI-VA-0032	2A VI Essential Hdr Supply from VG Inlet Relief (115 psig)	AUX	733	Rm 726 FF/59	Closed	Closed	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	>RLGM	Interaction - Block Wall
35	2VI-VA-0034	2B VI Essential Hdr Supply from VG Inlet Relief (115 psig)	AUX	733	FF/58	Closed	Closed	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	>RLGM	Interaction - Block Wall
36	2VI-VA-0112	2A VI Aux Bldg Instrument Air Tank Relief (115 psig)	AUX	733	Rm 726 FF/59	Closed	Closed	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	>RLGM	Screened per EPRI NP-6041
37	2VI-VA-0134	2A VI Aux Bldg Instrument Air Tank Relief (115 psig)	AUX	733	Rm 726 FF/59	Closed	Closed	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	>RLGM	Screened per EPRI NP-6041
38	2VI-VA-0155	2B VI Aux Bldg Instrument Air Tank Relief (115 psig)	AUX	733	FF/58	Closed	Closed	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	>RLGM	Screened per EPRI NP-6041
39	2VI-VA-0156	2B VI Aux Bldg Instrument Air Tank Relief (115 psig)	AUX	733	FF/58	Closed	Closed	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	>RLGM	Screened per EPRI NP-6041
40	2VI-VA-2009	2SM-1AB VI Accumulator Relief (120 psig)	Outer Doghouse (DH4)	790	DD/67	Closed	Closed	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	>RLGM	Screened per EPRI NP-6041

MNS Unit 2 ESEL and HCLPF Results

	EQUIPMENT					OPERATING STATE						
ESEL ID	EDB	Description	Bldg	EL	Location	Normal State	Desired State	Walkdown or Walk-By	SEWS*	Screening Notes	HCLPF**	Key Failure Mode***
41	2VI-VA-2019	2SM-7AB VI Accumulator Relief (120 psig)	Outer Doghouse (DH4)	790	DD/69	Closed	Closed	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	>RLGM	Screened per EPRI NP-6041
42	2VI-VA-2029	2SM-3ABC VI Accumulator Relief (120 psig)	Inner Doghouse (DH3)	790	DD/60	Closed	Closed	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	>RLGM	Screened per EPRI NP-6041
43	2VI-VA-2039	2SM-5AB VI Accumulator Relief (120 psig)	Inner Doghouse (DH3)	790	DD/59	Closed	Closed	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	>RLGM	Screened per EPRI NP-6041
44	2CA-VA-0064AB	TDCA Flow Control to 2A SG and Associated Pneumatic Controls	AUX	716	Rm 601 BB/62	Open	Open/Throttled/ Closed	Walk-By	p 781	Included in IPEEE, p 781	>RLGM	Screened per IPEEE
44 a	2CA-ML-0640	Manual Loader	AUX	767	Control Rm 925	Functional	Functional	Walk-By		Rule-of-the-box with 2MC10	>RLGM	Screened per IPEEE
44 b	2CA-SS-0640	Selector Switch	AUX	716	Rm 601 BB/62	Functional	Functional	Walk-By		Rule-of-the-box with 2CA-64AB	>RLGM	Screened per IPEEE
44 c	2CA-MT-0640	Misc Transmitter	AUX	716	Rm 601 BB/62	Functional	Functional	Walk-By		Rule-of-the-box with 2CA-64AB	>RLGM	Screened per IPEEE
44 d	2CA-VP-0640	Valve Positioner	AUX	716	Rm 601 BB/62	Functional	Functional	Walk-By		Rule-of-the-box with 2CA-64AB	>RLGM	Screened per IPEEE
44 e	2CA-SV-0640	Solenoid Valve	AUX	716	Rm 601	Energized	Energized	Walkdown	Reference 10, Appendix C		>RLGM	Screened per EPRI NP-6041
44 f	2CA-SV-0641	Solenoid Valve	AUX	716	Rm 601	Energized	Energized	Walkdown	Reference 10, Appendix C		>RLGM	Screened per EPRI NP-6041
45	2CA-VA-0052AB	TDCA Flow Control to 2B SG and Associated Pneumatic Controls	AUX	716	Rm 601 BB/61	Open	Open/Throttled/ Closed	Walk-By	p 781	Included in IPEEE, p 781	>RLGM	Screened per IPEEE
45 a	2CA-ML-0520	Manual Loader	AUX	767	Control Rm 925	Functional	Functional	Walk-By		Rule-of-the-box with 2MC10	>RLGM	Screened per IPEEE
45 b	2CA-SS-0520	Selector Switch	AUX	716	Rm 601 BB/61	Functional	Functional	Walk-By		Rule-of-the-box with 2CA-52AB	>RLGM	Screened per IPEEE
45 c	2CA-MT-0520	Misc Transmitter	AUX	716	Rm 601 BB/61	Functional	Functional	Walk-By		Rule-of-the-box with 2CA-52AB	>RLGM	Screened per IPEEE
45 d	2CA-VP-0520	Valve Positioner	AUX	716	Rm 601 BB/61	Functional	Functional	Walk-By		Rule-of-the-box with 2CA-52AB	>RLGM	Screened per IPEEE
45 e	2CA-SV-0520	Solenoid Valve	AUX	716	Rm 601	Energized	Energized	Walkdown	Reference 10, Appendix C		>RLGM	Screened per EPRI NP-6041
45 f	2CA-SV-0521	Solenoid Valve	AUX	716	Rm 601	Energized	Energized	Walkdown	Reference 10, Appendix C		>RLGM	Screened per EPRI NP-6041
46	2CA-VA-0048AB	TDCA Flow Control to 2C SG and Associated Pneumatic Controls	AUX	716	Rm 601 CC/60	Open	Open/Throttled/ Closed	Walk-By	p 781	Included in IPEEE, p 781	>RLGM	Screened per IPEEE
46 a	2CA-ML-0480	Manual Loader	AUX	767	Control Rm 925	Functional	Functional	Walk-By		Rule-of-the-box with 2MC10	>RLGM	Screened per IPEEE
46 b	2CA-SS-0480	Selector Switch	AUX	716	Rm 601 CC/60	Functional	Functional	Walk-By		Rule-of-the-box with 2CA-48AB	>RLGM	Screened per IPEEE
46 c	2CA-MT-0480	Misc Transmitter	AUX	716	Rm 601 CC/60	Functional	Functional	Walk-By		Rule-of-the-box with 2CA-48AB	>RLGM	Screened per IPEEE
46 d	2CA-VP-0480	Valve Positioner	AUX	716	Rm 601 CC/60	Functional	Functional	Walk-By		Rule-of-the-box with 2CA-48AB	>RLGM	Screened per IPEEE
46 e	2CA-SV-0480	Solenoid Valve	AUX	716	Rm 601	Energized	Energized	Walkdown	Reference 10, Appendix C		>RLGM	Screened per EPRI NP-6041
46 f	2CA-SV-0481	Solenoid Valve	AUX	716	Rm 601	Energized	Energized	Walkdown	Reference 10, Appendix C		>RLGM	Screened per EPRI NP-6041
47	2CA-VA-0036AB	TDCA Flow Control to 2D SG and Associated Pneumatic Controls	AUX	716	Rm 601 BB/63	Open	Open/Throttled/ Closed	Walk-By	p 781	Included in IPEEE, p 781	>RLGM	Screened per IPEEE

MNS Unit 2 ESEL and HCLPF Results

	EQUIPMENT					OPERATING STATE						
ESEL ID	EDB	Description	Bldg	EL	Location	Normal State	Desired State	Walkdown or Walk-By	SEWS*	Screening Notes	HCLPF**	Key Failure Mode***
47 a	2CA-ML-0360	Manual Loader	AUX	767	Control Rm 925	Functional	Functional	Walk-By		Rule-of-the-box with 2MC10	>RLGM	Screened per IPEEE
47 b	2CA-SS-0360	Selector Switch	AUX	716	Rm 601 BB/63	Functional	Functional	Walk-By		Rule-of-the-box with 2CA-36AB	>RLGM	Screened per IPEEE
47 c	2CA-MT-0360	Misc Transmitter	AUX	716	Rm 601 BB/63	Functional	Functional	Walk-By		Rule-of-the-box with 2CA-36AB	>RLGM	Screened per IPEEE
47 d	2CA-VP-0360	Valve Positioner	AUX	716	Rm 601 BB/63	Functional	Functional	Walk-By		Rule-of-the-box with 2CA-36AB	>RLGM	Screened per IPEEE
47 e	2CA-SV-0360	Solenoid Valve	AUX	716	Rm 601	Energized	Energized	Walkdown	Reference 10, Appendix C		>RLGM	Screened per EPRI NP-6041
47 f	2CA-SV-0361	Solenoid Valve	AUX	716	Rm 601	Energized	Energized	Walkdown	Reference 10, Appendix C		>RLGM	Screened per EPRI NP-6041
48	2SV-CV-0019AB	2A SG Main Steam PORV and Associated Pneumatic Controls	Outer Doghouse (DH4)	809	FF/69	Closed	Open/Throttled/ Closed	Walk-By	p 294		>RLGM	Screened per IPEEE
49	2SV-CV-0013AB	2B SG Main Steam PORV and Associated Pneumatic Controls	Outer Doghouse (DH4)	809	FF/69	Closed	Open/Throttled/ Closed	Walk-By	p 294		>RLGM	Screened per IPEEE
50	2SV-CV-0007ABC	2C SG Main Steam PORV and Associated Pneumatic Controls	Inner Doghouse (DH3)	809	FF/59	Closed	Open/Throttled/ Closed	Walk-By	p 294		>RLGM	Screened per IPEEE
51	2SV-CV-0001AB	2D SG Main Steam PORV and Associated Pneumatic Controls	Inner Doghouse (DH3)	809	FF/59	Closed	Open/Throttled/ Closed	Walk-By	p 294		>RLGM	Screened per IPEEE
52	2EPL-PN-EVDA	Vital Battery 125 VDC Distribution Panel	AUX	733	DD/54	Functional	Functional	Walk-By	p 212		>RLGM	Screened per IPEEE
52 a	2EPL-PN-EVDD	Vital Battery 125 VDC Distribution Panel	AUX	733	CC/57	Functional	Functional	Walk-By	p 212		>RLGM	Screened per IPEEE
53	0EPL-BA-EVCA	Vital Battery	AUX	733	Rm 707 CC/54	Functional	Functional	Walkdown	Reference 10, Appendix C	Redundant component listing, refer to U1 ESEL item # 53	>RLGM****	Interaction - Block Wall
54	0EPL-BC-EVCS	Vital Battery Charger and Charger Connection Box ECB5	AUX	733	Rm 701 BB/54	Functional	Functional	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	0.45	Functional
55	2EPE-MX-EMXA4	600 VAC Essential Power	AUX	750	BB/65	Functional	Functional	Walk-By	p 32		>RLGM	Screened per IPEEE
56	2EPE-MX-EMXA2	600 VAC Essential Power	AUX	750	BB/65	Functional	Functional	Walk-By	p 32		>RLGM	Screened per IPEEE
57	2EPE-MX-EMXB4	600 VAC Essential Power	AUX	733	Rm 716 BB/65	Functional	Functional	Walk-By	p 32		>RLGM	Screened per IPEEE
58	2ETP-CA-0010 (2ATC 10)	Pzr PORV Relay/Indication	AUX	767	HH/58	Standby	Functional	Walk-By	p 216		>RLGM	Screened per IPEEE
59	2EOA-PN-MCS	Main Control Board Cabinet for Head-Vent Operation, Hotleg Temperature Indication	AUX	767	Control Rm 925	Standby	Functional	Walk-By	p 86		>RLGM	Screened per IPEEE
60	2EOA-PN-MC7	Main Control Board Cabinet with H2 Igniter Control Switch	AUX	767	Control Rm 925	Standby	Functional	Walk-By	p 86		>RLGM	Screened per IPEEE
61	2EOA-PN-MC10	Main Control Board Cabinet for CA / NC Systems	AUX	767	Control Rm 925	Standby	Functional	Walk-By	p 86		>RLGM	Screened per IPEEE
62	2EOA-PN-MC11	Main Control Board Cabinet for NI System, Containment Pressure Indication	AUX	767	Control Rm 925	Standby	Functional	Walk-By	p 86		>RLGM	Screened per IPEEE
63	2EOA-PN-MC2	Main Control Board Cabinet for SM System (PORV Control, CF/SM Indication)	AUX	767	Control Rm 925	Standby	Functional	Walk-By	p 86		>RLGM	Screened per IPEEE

MNS Unit 2 ESEL and HCLPF Results

	EQUIPMENT					OPERATING STATE						
ESEL ID	EDB	Description	Bldg	EL	Location	Normal State	Desired State	Walkdown or Walk-By	SEWS*	Screening Notes	HCLPF**	Key Failure Mode***
ICCM a	2EOA-PN-MC1	Main Control Board Cabinet for ICCM Remote Display	AUX	767	Control Rm 925	Standby	Functional	Walk-By	p 86		>RLGM	Screened per IPEEE
ICCM b	2EIA-CA-9211	Train A Remote Display Processor behind 2MC2	AUX	767	Control Rm 925	Standby	Functional	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	>RLGM	Screened per EPRI NP-6041
ICCM c	2EIA-CA-9221	Train B Remote Display Processor behind 2MC2	AUX	767	Control Rm 925	Standby	Functional	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	>RLGM	Screened per EPRI NP-6041
ICCM d	2EIA-P-9210	Train A Remote Display	AUX	767	Control Rm 925	Standby	Functional	Walk-By		Rule-of-the-box with 2MC1, which has an IPEEE SEWS	>RLGM	Screened per IPEEE
ICCM e	2EIA-P-9220	Train B Remote Display	AUX	767	Control Rm 925	Standby	Functional	Walk-By		Rule-of-the-box with 2MC1, which has an IPEEE SEWS	>RLGM	Screened per IPEEE
ICCM f	2EIA-CA-9210	Train A ICCM-86 Cabinet	AUX	750	CC/55	Standby	Functional	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	0.29	Functional
ICCM g	2EIA-CA-9220	Train B ICCM-86 Cabinet	AUX	750	CC/55	Standby	Functional	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	0.29	Functional
64	2IPE-CA-9010	SSPS Cabinet 'A' (CLA Block Valves Closure Permissive)	AUX	767	Control Rm 925 CC/58	Standby	Functional	Walk-By	p 11		>RLGM	Screened per IPEEE
65	2IPE-CA-9020	SSPS Cabinet 'B' (CLA Block Valves Closure Permissive)	AUX	767	Control Rm 925 CC/58	Standby	Functional	Walk-By	p 11		>RLGM	Screened per IPEEE
66	2EQB-PN-DGLSA	Various Functions (i.e. H2 Igniters)	AUX	750	Rm 805 BB/61	Standby	Functional	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	0.29	Functional
67	2EPG-PN-EKVA	120VAC Inst and Control Panelboard	AUX	733	Rm 701 DD/54	Nominal 120 VAC Output	Functional	Walk-By	p 203		>RLGM	Screened per IPEEE
68	2EPG-BI-EVIA	Vital Inverter	AUX	No	Rm 701 CC/55	Nominal 120 VAC Output	Functional	Walk-By	p 65		>RLGM	Screened per IPEEE
69	2CF-LT-6000	Steam Generator NR Level Indication Loop 1	RX	739	Accum 2A Rm 36° 46R	Indication	Indication	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	>RLGM	Screened per EPRI NP-6041
70	2CF-LT-5540	Steam Generator NR Level Indication Loop 2	RX	742	Accum 2B Rm 145° 58R	Indication	Indication	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	>RLGM	Screened per EPRI NP-6041
71	2CF-LT-5570	Steam Generator NR Level Indication Loop 3	RX	740	Accum 2C Rm 215° 56R	Indication	Indication	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	>RLGM	Screened per EPRI NP-6041
72	2CF-LT-6030	Steam Generator NR Level Indication Loop 4	RX	744	Accum 2D Rm 326° 57R	Indication	Indication	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	>RLGM	Screened per EPRI NP-6041
73	2SM-PT-5080	Steam Generator #1 Wide Range Pressure Indication Loop	AUX	750	Rm 804 DD/67	Indication	Indication	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	>RLGM	Screened per EPRI NP-6041
73 a	2CA-PN-AFPA	2A CA Pump Control Panel	AUX	716	Rm 601 BB/61	Standby	Functional	Walk-By	p 180		>RLGM	Screened per IPEEE
74	2SM-PT-5110	Steam Generator #2 Wide Range Pressure Indication Loop	AUX	733	Rm 713 DD/59	Indication	Indication	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	>RLGM	Screened per EPRI NP-6041
75	2SM-PT-5140	Steam Generator #3 Wide Range Pressure Indication Loop	AUX	733	Rm 713 DD/59	Indication	Indication	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	>RLGM	Screened per EPRI NP-6041
75 a	2CA-PN-AFPB	2B CA Pump Control Panel	AUX	716	Rm 601 CC/62	Stand	Functional	Walk-By	p 180		>RLGM	Screened per IPEEE
76	2SM-PT-5170	Steam Generator #4 Wide Range Pressure Indication Loop	AUX	750	Rm 804 DD/67	Indication	Indication	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	>RLGM	Screened per EPRI NP-6041
77	2NC-RD-5850	Steam Generator #1 NC WR T-Hot Indication Loop	RX	740	24° 30R	Indication	Indication	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	>RLGM	Screened per EPRI NP-6041
77 a	N/A (no EDB #)	Reactor Vessel Level Indication System (RVLIS) Cabinet	AUX	767	BB/63	Standby	Functional	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	0.37	Functional
78	2NC-RD-5870	Steam Generator #2 NC WR T-Hot Indication Loop	RX	740	164° 30R	Indication	Indication	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	>RLGM	Screened per EPRI NP-6041
79	2NC-RD-5900	Steam Generator #3 NC WR T-Hot Indication Loop	RX	740	203° 30R	Indication	Indication	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	>RLGM	Screened per EPRI NP-6041

MNS Unit 2 ESEL and HCLPF Results

	EQUIPMENT					OPERATING STATE						
ESEL ID	EDB	Description	Bldg	EL	Location	Normal State	Desired State	Walkdown or Walk-By	SEWS*	Screening Notes	HCLPF**	Key Failure Mode***
80	2NC-RD-5920	Steam Generator #4 NC WR T-Hot Indication Loop	RX	740	308° 30R	Indication	Indication	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	>RLGM	Screened per EPRI NP-6041
81	2NS-PT-5070	Containment WR Pressure Indication Loop	AUX	750	DD/60	Indication	Indication	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	>RLGM	Screened per EPRI NP-6041
82	2NC-PT-5120	NC WR Pressurizer Pressure Indication Loop	AUX	733	Rm 713 DD/67	Indication	Indication	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	>RLGM	Screened per EPRI NP-6041
83	2EIA-CA-9010	Process Control Cabinet 1 (7300 cabinet)	AUX	767	Control Rm 925 AA/54	Indication	Indication	Walk-By	p 16		>RLGM	Screened per IPEEE
84	2FD-TK-0056	2A Diesel Generator Fuel Oil Storage Tank	Yard	<760	N/A	Intact/Available	Intact/Available	Walk-By	p 556		>RLGM	Screened per IPEEE
85	2FD-TK-0057	2B Diesel Generator Fuel Oil Storage Tank	Yard	<760	N/A	Intact/Available	Intact/Available	Walk-By	p 556		>RLGM	Screened per IPEEE
86	2EPE-MX-EMXA3	600 VAC Essential for H2 Skimmer Fan 2A Suction Isolation Valve 2VX1A (04A)	AUX	750	Rm 805 BB/66	Closed	Closed	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	>RLGM	Screened per EPRI NP-6041
87	2EPE-MX-EMXB5	600 VAC Essential for H2 Skimmer Fan 2B Suction Isolation Valve 2VX2B (01C)	AUX	733	Rm 716 BB/65	Closed	Closed	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	>RLGM	Screened per EPRI NP-6041
88	2EPE-MX-EMXC	600 VAC Essential VE/VX (04C, 06D & 05D)	AUX	750	Rm 805 BB/59	Closed	Closed	Walk-By	p 32		>RLGM	Screened per IPEEE
89	2EPE-MX-EMXD	600 VAC Essential for VE/VX (06E & 05D)	AUX	733	Rm 716 BB/60	Closed	Closed	Walk-By	p 32		>RLGM	Screened per IPEEE
90	2VX-VA-0001A	H2 Skimmer Fan 2A Suction Isolation Valve	RX	826	264° 45R	Closed	Open	Walkdown	Reference 10, Appendix C		0.60	Functional
91	2VX-AH-0003	Hydrogen Skimmer Fan No 2A	RX	816	272° 38R	Off	On	Walkdown	Reference 10, Appendix C		0.39	Anchorage
92	2VX-VA-0002B	H2 Skimmer Fan 2B Suction Isolation Valve	RX	827	283° 46R	Closed	Open	Walkdown	Reference 10, Appendix C		0.41	Functional
93	2VX-AH-0004	Hydrogen Skimmer Fan No 2B	RX	816	268° 38R	Off	On	Walkdown	Reference 10, Appendix C		0.39	Anchorage
94	2VX-DA-9120 (2RAF-D-2)	Containment Air Return Fan 2A Damper	RX	775	270° 50R	Closed	Open	Walk-By		Rule-of-the-box with 2VX-AH-0001, which has an IPEEE SEWS	>RLGM	Screened per IPEEE
95	2VX-AH-0001	Containment Air Return Fan 2A	RX	775	270° 50R	Off	On	Walk-By	p 434		>RLGM	Screened per IPEEE
96	2VE-XF-0004	Annulus Ventilation Fan 2A	AUX	767	JJ/59	Off	On	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	0.35	Anchorage
97	2VE-XF-0005	Annulus Ventilation Fan 2B	AUX	767	JJ/60	Off	On	Walkdown	Reference 10, Appendix C	Screens out based on EPRI NP-6041-SL, Rev. 1, Table 2-4	0.35	Anchorage
98	2KC-PU-0001	A1 Closed Cooling Water System Pump	AUX	750	GG/55	On	On	Walk-By	p 255		>RLGM	Screened per IPEEE
99	2KC-PU-0002	A2 Closed Cooling Water System Pump	AUX	750	FF/55	On	On	Walk-By	p 255		>RLGM	Screened per IPEEE
100	2KC-TK-0009	Component Cooling Water System Surge Tank	AUX	767	JJ/57	Intact/In-Service	Intact/In-Service	Walk-By	p 528		>RLGM	Screened per IPEEE
101	2KC-VA-0050A	KC Auxiliary Bldg Supply Non-Essential Isolation	AUX	750	LL/59	Open/Closed	Closed	Walk-By	p 783	Included in IPEEE, p 783	>RLGM	Screened per IPEEE
102	2KC-VA-0230A	KC Reactor Bldg Supply Non-Essential Isolation	AUX	750	LLI58	Open/Closed	Closed	Walk-By	p 783	Included in IPEEE, p 783	>RLGM	Screened per IPEEE
103	2KC-VA-0001A	KC Auxiliary Bldg Return Non-Essential Isolation	AUX	750	GG/56	Open/Closed	Closed	Walk-By	p 783	Included in IPEEE, p 783	>RLGM	Screened per IPEEE
104	2KC-VA-0003A	KC Reactor Bldg Return Non-Essential Isolation	AUX	750	GG/56	Open/Closed	Closed	Walk-By	p 308		>RLGM	Screened per IPEEE

MNS Unit 2 ESEL and HCLPF Results

	EQUIPMENT					OPERATING STATE						
ESEL ID	EDB	Description	Bldg	EL	Location	Normal State	Desired State	Walkdown or Walk-By	SEWS*	Screening Notes	HCLPF**	Key Failure Mode***
105	2KC-HX-0005	Train A Component Cooling Water HX	AUX	750	JJ/57	Intact/In-Service	Intact/In-Service	Walkdown	Reference 10, Appendix C	HCLPF based on IPEEE evaluation (p 1728) by Structural Mechanics Associates	>RLGM	Screened per IPEEE
106	2NC-VA-0032B	NC System Pressurizer PORV	RX	806	Pressurizer Cavity 110° 32R	Closed	Closed	Walk-By	p 783	Included in IPEEE, p 783	>RLGM	Screened per IPEEE
107	2NC-VA-0036B	NC System Pressurizer PORV	RX	806	Pressurizer Cavity 105° 32R	Closed	Closed	Walk-By	p 783	Included in IPEEE, p 783	>RLGM	Screened per IPEEE
108	2NC-VA-0001	Pressurizer Safety Relief Valve	RX	794	Pressurizer Cavity 109° 34R	Closed	Closed	Walk-By	p 783	Included in IPEEE, p 783	>RLGM	Screened per IPEEE
109	2NC-VA-0002	Pressurizer Safety Relief Valve	RX	802	Pressurizer Cavity 109° 34R	Closed	Closed	Walk-By	p 783	Included in IPEEE, p 783	>RLGM	Screened per IPEEE
110	2NC-VA-0003	Pressurizer Safety Relief Valve	RX	802	Pressurizer Cavity 109° 34R	Closed	Closed	Walk-By	p 783	Included in IPEEE, p 783	>RLGM	Screened per IPEEE
111	2ND-PU-0001	Train A ND Pump	AUX	695	Rm 506 GG/59	Off	Intact	Walk-By	p 273		>RLGM	Screened per IPEEE
112	2ND-PU-0002	Train B ND Pump	AUX	695	Rm 507 FF/58	Off	Intact	Walk-By	p 273		>RLGM	Screened per IPEEE
113	2ND-HX-0003	Train A ND HX	AUX	733	Rm 785 LL/60	Intact	Intact	Walk-By	p 458		>RLGM	Screened per IPEEE
114	2ND-HX-0004	Train B ND HX	AUX	733	Rm 786 LL/60	Intact	Intact	Walk-By	p 458		>RLGM	Screened per IPEEE
115	2ND-HX-0005	Train A ND Pump Seal Cooling HX	AUX	695	Rm 506 GG/59	Intact	Intact	Walk-By		*Rule-of-the-box with 2ND-PU-0001, which has an* IPEEE SEWS	>RLGM	Screened per IPEEE
116	2ND-VA-0002AC	RHR Pump Hotleg Suction Isolation	RX	746	184° 48R	Closed	Open	Walk-By	p 783	Included in IPEEE, p 783	>RLGM	Screened per IPEEE
117	2ND-VA-0001B	RHR Pump Hotleg Suction Isolation	RX	743	184° 27R	Closed	Open	Walk-By	p 783	Included in IPEEE, p 783	>RLGM	Screened per IPEEE
118	2NI-VA-0173A	Train A RHR Isolation to the Coldlegs	AUX	733	GG/60	Open/Closed	Open	Walk-By	p 784	Included in IPEEE, p 784	>RLGM	Screened per IPEEE
119	2NI-VA-0178B	Train B RHR Isolation to the Coldlegs	AUX	733	Rm 788 HH/60	Open/Closed	Open	Walk-By	p 784	Included in IPEEE, p 784	>RLGM	Screened per IPEEE
120	2NI-VA-0118A	Train A NI Isolation to the Coldlegs	AUX	716	Rm 646 JJ/60	Open/Closed	Open	Walk-By	p 784	Included in IPEEE, p 784	>RLGM	Screened per IPEEE
121	2NI-VA-0121A	Train A NI Isolation to the Hotlegs	AUX	740	Rm 646 GG/60	Open/Closed	Open/Closed	Walk-By	p 784	Included in IPEEE, p 784	>RLGM	Screened per IPEEE
122	2NI-VA-0150B	Train B NI Isolation to the Coldlegs	AUX	716	Rm 646 GG/60	Open/Closed	Open	Walk-By	p 784	Included in IPEEE, p 784	>RLGM	Screened per IPEEE
123	2NI-VA-0152B	Train B NI Isolation to the Hotlegs	AUX	750	Rm 830 HH/60	Open/Closed	Open/Closed	Walk-By	p 784	Included in IPEEE, p 784	>RLGM	Screened per IPEEE
124	2NI-VA-0162A	NI Isolation to the Coldlegs	AUX	733	Rm 788 JJ/61	Open/Closed	Open/Closed	Walk-By	p 784	Included in IPEEE, p 784	>RLGM	Screened per IPEEE
125	2NI-PU-0009	Train A NI Pump	AUX	716	Rm 635 HH/58	Off	Intact	Walk-By	p 245		>RLGM	Screened per IPEEE
126	2NI-PU-0010	Train B NI Pump	AUX	716	Rm 633 GG/59	Off	Intact	Walk-By	p 245		>RLGM	Screened per IPEEE
127	2NS-PU-0001	Train A NS Pump	AUX	695	Rm 505 GG/57	Off	Intact	Walk-By	p 277		>RLGM	Screened per IPEEE
128	2NS-PU-0002	Train B NS Pump	AUX	695	Rm 504 GG/57	Off	Intact	Walk-By	p 277		>RLGM	Screened per IPEEE
129	2NS-HX-0003	Train A NS Heat Exchanger	AUX	750	Rm 786 LL/60	Intact	Intact	Walk-By	p 451		>RLGM	Screened per IPEEE
130	2NS-HX-0004	Train B NS Heat Exchanger	AUX	750	Rm 786 LL/60	Intact	Intact	Walk-By	p 451		>RLGM	Screened per IPEEE

MNS Unit 2 ESEL and HCLPF Results

ESEL ID	EQUIPMENT EDB	EQUIPMENT Description	Bldg	EL	Location	OPERATING STATE Normal State	OPERATING STATE Desired State	Walkdown or Walk-By	SEWS*	Screening Notes	HCLPF**	Key Failure Mode***
131	2SM-VA-0007AB	Train A MSIV	Outer Doghouse (DH4)	792	DD/69	Open/Closed	Closed	Walk-By	p 300		>RLGM	Screened per IPEEE
132	2SM-VA-0005AB	Train B MSIV	Inner Doghouse (DH3)	792	DD/59	Open/Closed	Closed	Walk-By	p 300		>RLGM	Screened per IPEEE
133	2SM-VA-0003ABC	Train C MSIV	Inner Doghouse (DH3)	792	DD/60	Open/Closed	Closed	Walk-By	p 300		>RLGM	Screened per IPEEE
134	2SM-VA-0001AB	Train D MSIV	Outer Doghouse (DH4)	792	DD/67	Open/Closed	Closed	Walk-By	p 300		>RLGM	Screened per IPEEE
135	2SV-VA-0020	Train A Main Steam Safety Relief Valve	Outer Doghouse (DH4)	788	EE/68	Closed	Closed	Walk-By	p 297		>RLGM	Screened per IPEEE
136	2SV-VA-0021	Train A Main Steam Safety Relief Valve	Outer Doghouse (DH4)	788	EE/68	Closed	Closed	Walk-By	p 297		>RLGM	Screened per IPEEE
137	2SV-VA-0022	Train A Main Steam Safety Relief Valve	Outer Doghouse (DH4)	788	EE/68	Closed	Closed	Walk-By	p 297		>RLGM	Screened per IPEEE
138	2SV-VA-0023	Train A Main Steam Safety Relief Valve	Outer Doghouse (DH4)	788	EE/68	Closed	Closed	Walk-By	p 297		>RLGM	Screened per IPEEE
139	2SV-VA-0024	Train A Main Steam Safety Relief Valve	Outer Doghouse (DH4)	788	EE/68	Closed	Closed	Walk-By	p 297		>RLGM	Screened per IPEEE
140	2SV-VA-0014	Train B Main Steam Safety Relief Valve	Inner Doghouse (DH3)	788	EE/58	Closed	Closed	Walk-By	p 297		>RLGM	Screened per IPEEE
141	2SV-VA-0015	Train B Main Steam Safety Relief Valve	Inner Doghouse (DH3)	788	EE/58	Closed	Closed	Walk-By	p 297		>RLGM	Screened per IPEEE
142	2SV-VA-0016	Train B Main Steam Safety Relief Valve	Inner Doghouse (DH3)	788	EE/58	Closed	Closed	Walk-By	p 297		>RLGM	Screened per IPEEE
143	2SV-VA-0017	Train B Main Steam Safety Relief Valve	Inner Doghouse (DH3)	788	EE/58	Closed	Closed	Walk-By	p 297		>RLGM	Screened per IPEEE
144	2SV-VA-0018	Train B Main Steam Safety Relief Valve	Inner Doghouse (DH3)	788	EE/58	Closed	Closed	Walk-By	p 297		>RLGM	Screened per IPEEE
145	2SV-VA-0008	Train C Main Steam Safety Relief Valve	Inner Doghouse (DH3)	788	EE/60	Closed	Closed	Walk-By	p 297		>RLGM	Screened per IPEEE
146	2SV-VA-0009	Train C Main Steam Safety Relief Valve	Inner Doghouse (DH3)	788	EE/60	Closed	Closed	Walk-By	p 297		>RLGM	Screened per IPEEE
147	2SV-VA-0010	Train C Main Steam Safety Relief Valve	Inner Doghouse (DH3)	788	EE/60	Closed	Closed	Walk-By	p 297		>RLGM	Screened per IPEEE
148	2SV-VA-0011	Train C Main Steam Safety Relief Valve	Inner Doghouse (DH3)	788	EE/60	Closed	Closed	Walk-By	p 297		>RLGM	Screened per IPEEE
149	2SV-VA-0012	Train C Main Steam Safety Relief Valve	Inner Doghouse (DH3)	788	EE/60	Closed	Closed	Walk-By	p 297		>RLGM	Screened per IPEEE

MNS Unit 2 ESEL and HCLPF Results

	EQUIPMENT					OPERATING STATE						
ESEL ID	EDB	Description	Bldg	EL	Location	Normal State	Desired State	Walkdown or Walk-By	SEWS*	Screening Notes	HCLPF**	Key Failure Mode***
150	2SV-VA-0002	Train D Main Steam Safety Relief Valve	Outer Doghouse (DH4)	788	EE/68	Closed	Closed	Walk-By	p 297		>RLGM	Screened per IPEEE
151	2SV-VA-0003	Train D Main Steam Safety Relief Valve	Outer Doghouse (DH4)	788	EE/68	Closed	Closed	Walk-By	p 297		>RLGM	Screened per IPEEE
152	2SV-VA-004	Train D Main Steam Safety Relief Valve	Outer Doghouse (DH4)	788	EE/68	Closed	Closed	Walk-By	p 297		>RLGM	Screened per IPEEE
153	2SV-VA-0005	Train D Main Steam Safety Relief Valve	Outer Doghouse (DH4)	788	EE/68	Closed	Closed	Walk-By	p 297		>RLGM	Screened per IPEEE
154	2SV-VA-0006	Train D Main Steam Safety Relief Valve	Outer Doghouse (DH4)	788	EE/68	Closed	Closed	Walk-By	p 297		>RLGM	Screened per IPEEE
155	2RN-HX-0005	2A RN Pump Motor Cooler	AUX	716	FF/56	In-Service	In-Service	Walk-By	p 249	Rule-of-the-box with 2RN-PU-0003, which has an IPEEE SEWS (p 249)	>RLGM	Screened per IPEEE
156	2RN-VA-0040A	RN Pump Discharge Cross Train Supply Isolation MOV	AUX	716	GG/56	Normally Open	Closed	Walk-By	p 786	Included in IPEEE, p 786	>RLGM	Screened per IPEEE
157	2RN-VA-0086A	KC HX Cooling Water Supply Isolation	AUX	760	HH/56	Throttled	Open	Walk-By	p 786	Included in IPEEE, p 786	>RLGM	Screened per IPEEE
158	2RN-VA-0089A	KC HX Cooling Water Outlet Isolation	AUX	750	HH/58	Throttled	Open	Walk-By	p 786	Included in IPEEE, p 786	>RLGM	Screened per IPEEE
159	2RN-VA-0112A	A1 KC Pump Motor Cooler Cooling Water Outlet Isolation	AUX	750	GG/55	Open/Closed	Open	Walk-By	p 786	Included in IPEEE, p 786	>RLGM	Screened per IPEEE
160	2RN-VA-0117A	A2 KC Pump Motor Cooler Cooling Water Outlet Isolation	AUX	750	GG/55	Open/Closed	Open	Walk-By	p 786	Included in IPEEE, p 786	>RLGM	Screened per IPEEE
161	2RN-VA-0070A	EDG KD HX Supply MOV Isolation	AUX	736	Rm 714 DD/68	Open/Closed	Closed	Walk-By	p 786	Included in IPEEE, p 786	>RLGM	Screened per IPEEE
162	2RN-VA-0073A	EDG KD HX Outlet MOV Isolation	AUX	736	Rm 714 DD/68	Open	Closed	Walk-By	p 786	Included in IPEEE, p 786	>RLGM	Screened per IPEEE
163	2RN-VA-0134A	Train A NS HX Supply Isolation MOV	AUX	750	Rm 785 MM/61	Closed	Closed	Walk-By	p 786	Included in IPEEE, p 786	>RLGM	Screened per IPEEE
164	2RN-HX-0017	Train A NV Pump Mtr Cooler	AUX	716	Rm 634 HH/57	Standby/ In-Service	Intact	Walk-By	p 252	Rule-of-the-box with 2NV-PU-0015, which has an IPEEE SEWS (p 252)	>RLGM	Screened per IPEEE
165	2RN-HX-0019	Train A NV Pump Bearing Oil Cooler	AUX	716	Rm 634 HH/57	Standby/ In-Service	Intact	Walk-By	p 252	Rule-of-the-box with 2NV-PU-0015, which has an IPEEE SEWS (p 252)	>RLGM	Screened per IPEEE
166	2RN-HX-0021	Train A NV Pump Gearbox Oil Cooler	AUX	716	Rm 634 HH/57	Standby/ In-Service	Intact	Walk-By	p 252	Rule-of-the-box with 2NV-PU-0015, which has an IPEEE SEWS (p 252)	>RLGM	Screened per IPEEE
167	2VA-AH-0024	Train A NS Pump AHU	AUX	695	Rm 505 GG/57	Standby	Intact	Walkdown	Reference 10, Appendix C	Same make/model as ESEL 168	>RLGM	Screened per IPEEE
168	2VA-AH-0028	Train A ND Pump AHU	AUX	695	Rm 506 GG/58	Standby	Intact	Walk-By	p 413		>RLGM	Screened per IPEEE
169	2RN-HX-0023	Train A NI Pump Mtr Cooler	AUX	716	Rm 635 HH/58	Standby	Intact	Walk-By	p 245	Rule-of-the-box with 2NI-PU-0009, which has an IPEEE SEWS (p 245)	>RLGM	Screened per IPEEE
170	2RN-HX-0025	Train A NI Pump Brg Oil Cooler	AUX	716	Rm 635 HH/59	Standby	Intact	Walk-By	p 245	Rule-of-the-box with 2NI-PU-0009, which has an IPEEE SEWS (p 245)	>RLGM	Screened per IPEEE
171	2RN-VA-0279B	Unit 2 Aux Bldg Ventilation Return Isolation	AUX	750	Rm 830 HH/60	Closed	Open	Walk-By	p 786	Included in IPEEE, p 786	>RLGM	Screened per IPEEE
172	0RN-VA-0147AC	1A/2A RN Disch to RC X-Over Isol	AUX	716	Rm 602 FF/53	Open	Closed	Walk-By	p 776	Included in IPEEE, p 776	>RLGM	Screened per IPEEE
173	0RN-VA-0149A	1A/2A RN Essential Return Header to SNSWP	AUX	716	FF/59	Closed	Open	Walk-By	p 776	Included in IPEEE, p 776	>RLGM	Screened per IPEEE

MNS Unit 2 ESEL and HCLPF Results

	EQUIPMENT					OPERATING STATE						
ESEL ID	EDB	Description	Bldg	EL	Location	Normal State	Desired State	Walkdown or Walk-By	SEWS*	Screening Notes	HCLPF**	Key Failure Mode***
174	2RN-VA-0296A	2A RN Ess Hdr SNSWP Return Isolation	AUX	733	Rm 647 FF/60	*Open*	*Open*	Walk-By	*p 786*	*Included in IPEEE, p 786*	>RLGM	*Screened per IPEEE*
175	1RN-VA-0296A	1A RN Ess Hdr SNSWP Return Isolation	AUX	733	EE/53	Open	Closed	Walk-By	p 776	Included in IPEEE, p 776	>RLGM	Screened per IPEEE
176	1RN-VA-0064A	Unit 1 Non-ESS Return Isolation to SNSWP	AUX	733	Rm 602E FF/55	Open	Closed	Walk-By	p 776	Included in IPEEE, p 776	>RLGM	Screened per IPEEE
177	2EPE-MX-EMXB	600 VAC Essential Power	AUX	733	Rm 724 GG/56	Functional	Functional	Walk-By	p 32		>RLGM	Screened per IPEEE
178	2CA-VA-162B	Auxiliary Feedwater Pump Suction Isolation from circulating water	Aux	716		Closed	Open	TBD	TBD	TBD	TBD	TBD
179 a	2CA-SV-1620	Solenoid Valve	Aux	716		Energized	De-energized	TBD	TBD	TBD	TBD	TBD
179 b	2CA-RV-1622	Relief Valve	Aux	733		Closed	Closed	TBD	TBD	TBD	TBD	TBD
179 c	2CA-GC-1620	Control Air Gas Cylinder	Aux	733		Intact	Intact	TBD	TBD	TBD	TBD	TBD
179 d	2CA-GC-1621	Control Air Gas Cylinder	Aux	733		Intact	Intact	TBD	TBD	TBD	TBD	TBD
179 e	2CA-PS-5380	Pressure Switch	Aux	716		Functional	Functional	TBD	TBD	TBD	TBD	TBD
179 f	2CA-PS-5391	Pressure Switch	Aux	716		Functional	Functional	TBD	TBD	TBD	TBD	TBD
179 g	2CA-TB-1901	Junction Box houses Relays 'AA' and 'BB'	Aux	733	Electr Pen Room	Functional	Functional	TBD	TBD	TBD	TBD	TBD
180	2NV-VA-003SA	Letdown Inboard Containment Isolation	RX	752		Open	Closed	TBD	TBD	TBD	TBD	TBD
180 a	2NV-SV-0350	Solenoid Valve	RX	752		Energized	De-energized	TBD	TBD	TBD	TBD	TBD

MNS Unit 2 ESEL and HCLPF Results

	EQUIPMENT					OPERATING STATE						
ESEL ID	EDB	Description	Bldg	EL	Location	Normal State	Desired State	Walkdown or Walk-By	SEWS*	Screening Notes	HCLPF**	Key Failure Mode***
180 b	2NV-SV-0351	Solenoid Valve	RX	752		Energized	De-energized	TBD	TBD	TBD	TBD	TBD
181	2NV-VA-0121	Auxiliary Letdown Isolation	AUX	733	RHR HtX Room	Closed	Closed	TBD	TBD	TBD	TBD	TBD
181 a	2NV-ML-1210	Manual Loader	AUX	767	Control Rm 925	Functional	Functional	TBD	TBD	TBD	TBD	TBD
182	2NV-VA-0457A	Letdown Inboard Containment Isolation	RX	752		Closed	Closed	TBD	TBD	TBD	TBD	TBD
182 a	2NV-SV-4570	Solenoid Valve	RX	752		De-energized	De-energized	TBD	TBD	TBD	TBD	TBD
182 b	2NV-SV-4571	Solenoid Valve	RX	752		De-energized	De-energized	TBD	TBD	TBD	TBD	TBD
183	2NV-VA-0458A	Letdown Inboard Containment Isolation	RX	752		Closed	Closed	TBD	TBD	TBD	TBD	TBD
183 a	2NV-SV-4580	Solenoid Valve	RX	752		De-energized	De-energized	TBD	TBD	TBD	TBD	TBD
183 b	2NV-SV-4581	Solenoid Valve	RX	752		De-energized	De-energized	TBD	TBD	TBD	TBD	TBD
184	2NV-VA-0025B	Excess Letdown Isolation	RX	725		Closed	Closed	TBD	TBD	TBD	TBD	TBD
184 a	2NV-SV-0250	Solenoid Valve	RX	725		De-energized	De-energized	TBD	TBD	TBD	TBD	TBD
185	2VI-TK-0010	Instrument Air Blackout Accumulator	AUX	750		Intact	Intact	TBD	TBD	TBD	TBD	TBD
186	2VI-1328	Blackout Accumulator Relief	AUX	750		Closed	Closed	TBD	TBD	TBD	TBD	TBD
187	2VI-1330	Blackout Header Relief	AUX	750		Closed	Closed	TBD	TBD	TBD	TBD	TBD

* Page number refers to IPEEE scanned document page.

** HCLPF values of >RLGM indicate that the HCLPF exceeds the Review Level Ground Motion (0.26g), but that a specific HCLPF value was not calculated since the component was screened out from further evaluation.

*** Key Failure Modes are defined as follows:

Screened per IPEEE – Indicates that the component was evaluated in the IPEEE and therefore meets the RLGM demand.

Screened per EPRI NP-6041 – Indicates that the component meets the screening criteria of EPRI NP-6041, Table 2-4 and that neither anchorage, relay chatter, nor nor interactions limit the reported HCLPF.

Interaction - Block Wall – Indicates that the component is located near a block wall. The block wall was evaluated in the IPEEE and therefore the block wall meets the RLGM demand. The functional and anchorage HCLPFs exceed the reported HCLPF value.

Anchorage – Indicates that the anchorage is the governing failure mode for the component.

Functional – Indicates that functional failure is the governing failure mode for the component.

**** Component adjacent to block wall. Aux building block walls were evaluated in the IPEEE as robust without a specific value. HCLPF of component provided in Table 7-2. However block wall may have lower HCLPF than component, therefore HCLPF reported here as >RLGM.

Appendix C

MNS FLEX Flow Paths

List of Figures

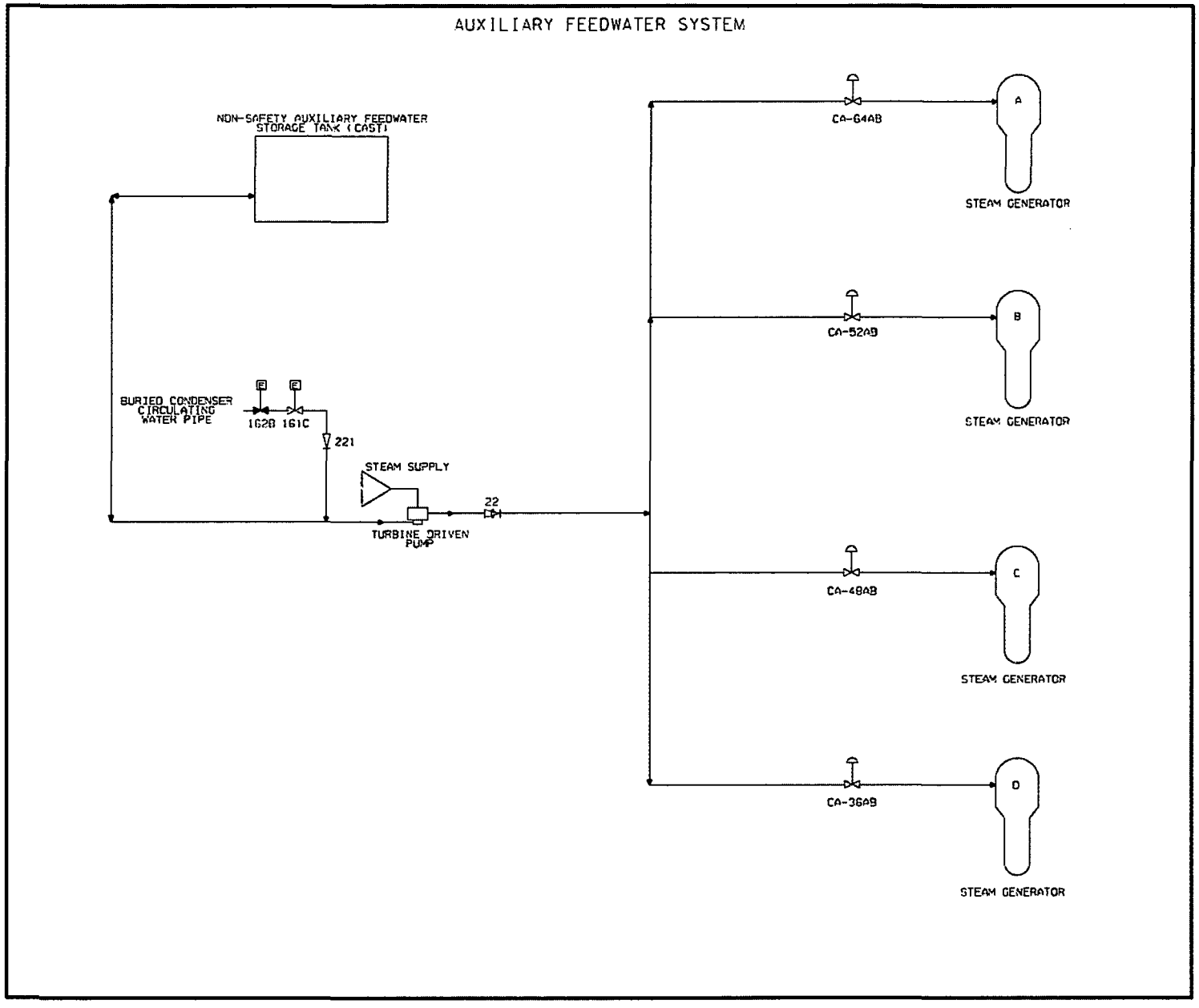

Figure C-1. Auxiliary Feedwater System

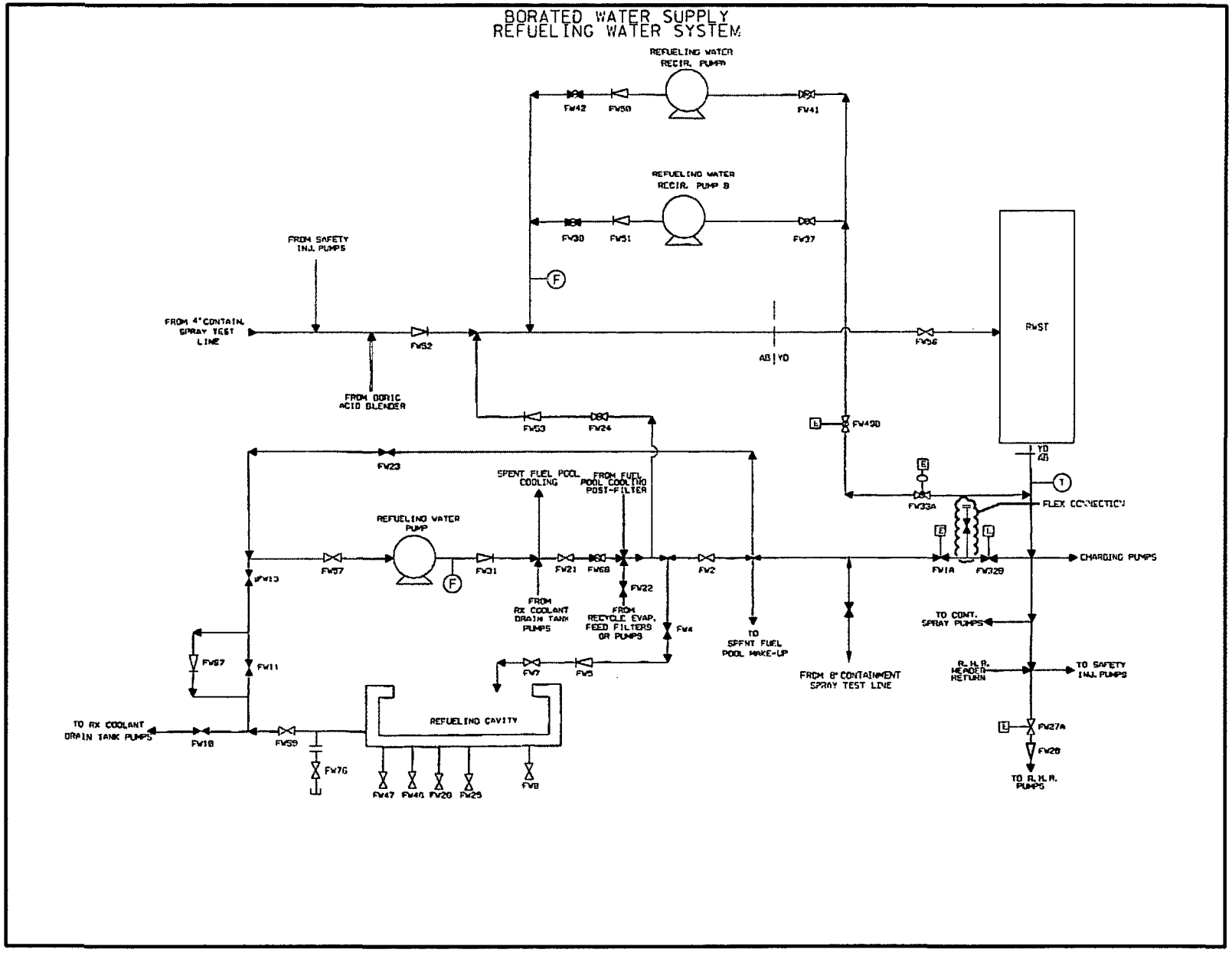

Figure C-2. Borated Water Supply Refueling Water System

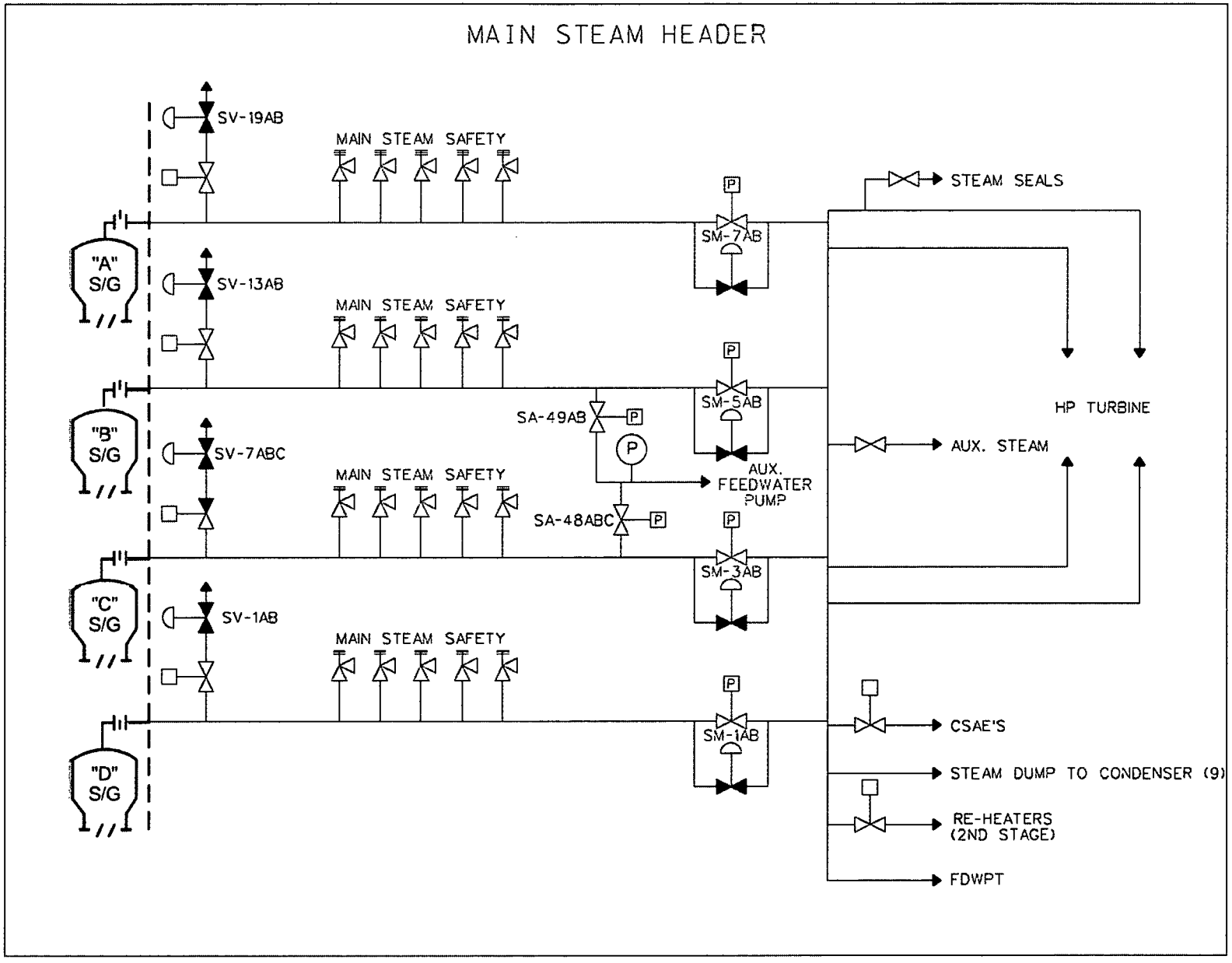

Figure C-3. Main Steam Header

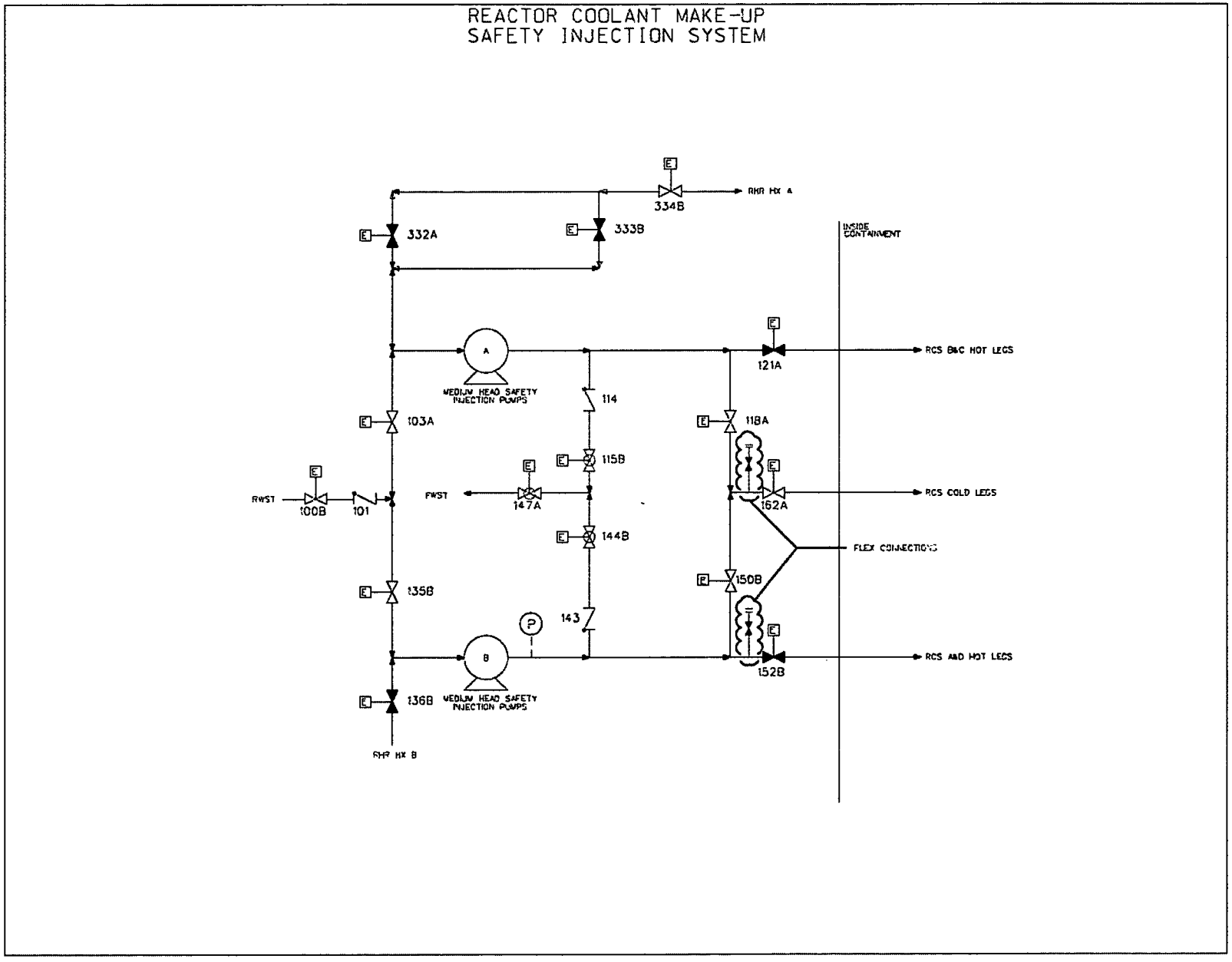

Figure C-4. Reactor Coolant Make-Up Safety Injection System

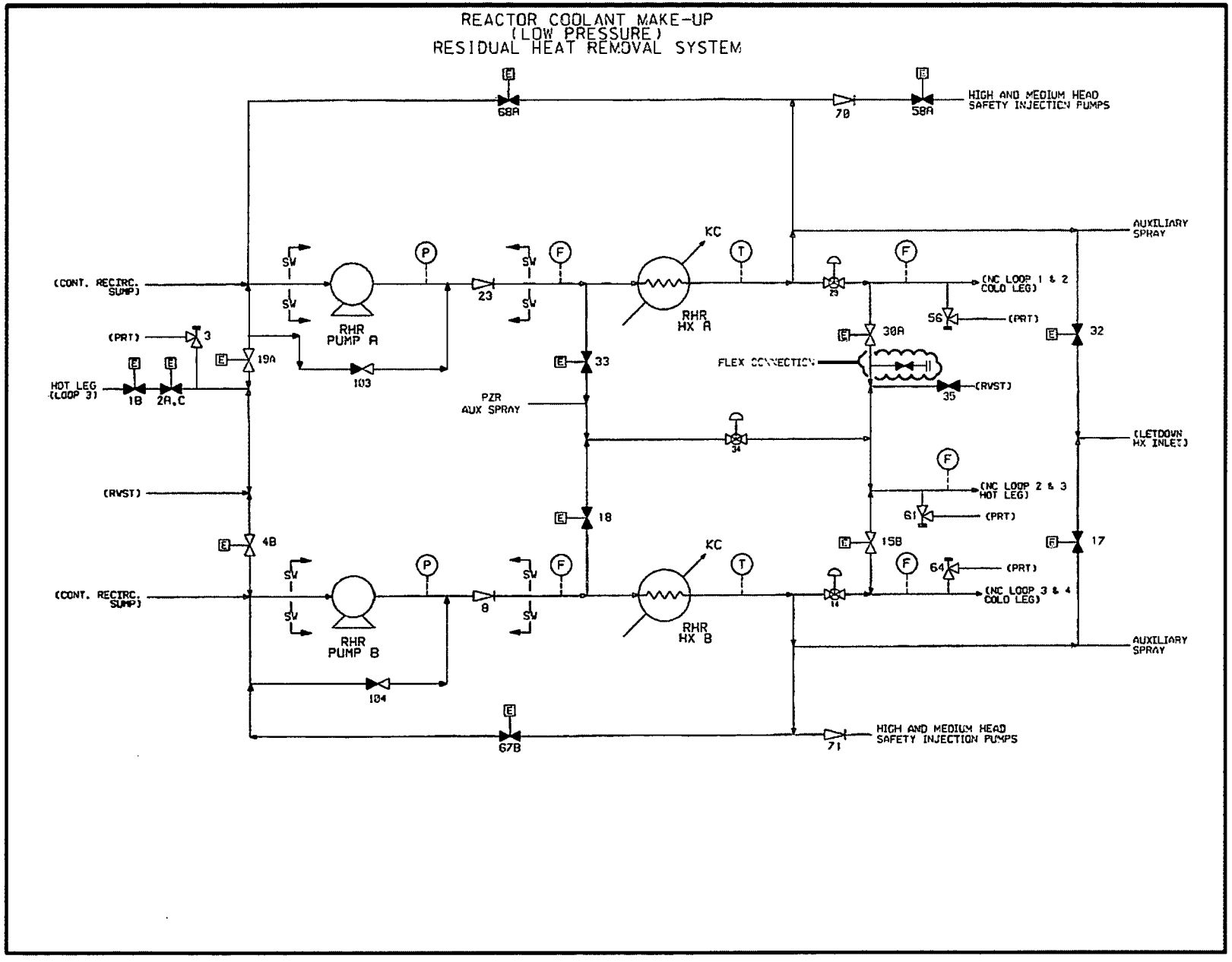

Figure C-5. Reactor Coolant Make-Up (Low Pressure) Residual Heat Removal System

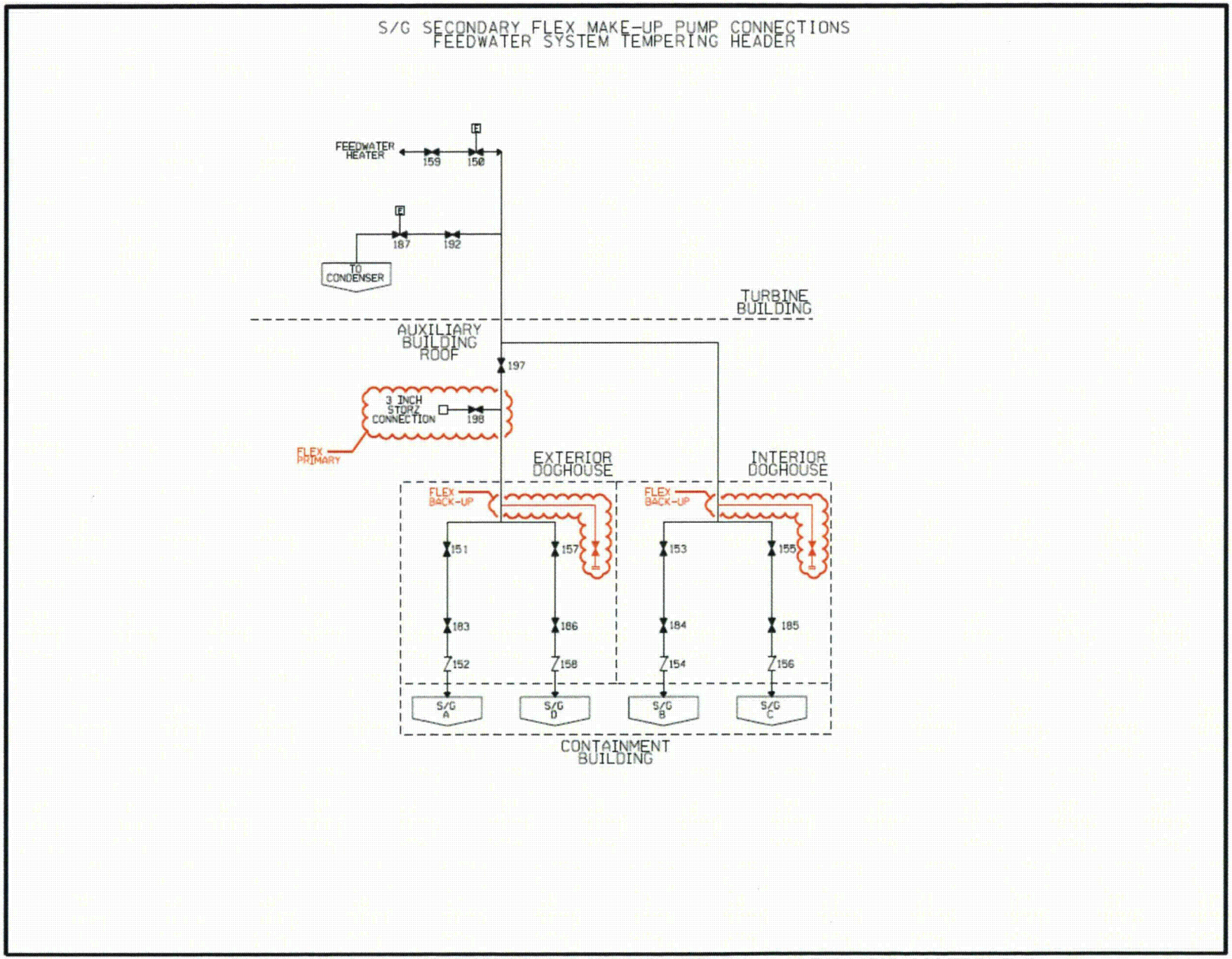

Figure C-6. SG Secondary FLEX Make-Up Pump Connections Feedwater System Tempering Header.