Brunswick Nuclear Plant
Units 1 and 2

USI A-46
Seismic Evaluation Report

Final Report

Carolina Power & Light Company
September 1995

BRUNSWICK NUCLEAR PLANT
USI A-46 SEISMIC EVALUATION REPORT

September 1995
Revision 0

Prepared For:

CAROLINA POWER AND LIGHT COMPANY

BRUNSWICK NUCLEAR PLANT
USI A-46 SEISMIC EVALUATION REPORT

September 1995
Revision 0

EQE Report Number 52213-R-002

Prepared By:

EQE ENGINEERING CONSULTANTS

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Revision No.	Date	Description of Revision
0	September 13, 1995	Original Issue

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1. INTRODUCTION

1.1 PURPOSE

The purpose of this report is to document the evaluations performed to address Unresolved Safety Issue (USI) A-46 at Carolina Power and Light's (CP&L's) Brunswick Nuclear Plant (BNP), using the Generic Implementation Procedure (GIP) developed by the Seismic Qualification Utility Group (SQUG).

1.2 PLANT DESCRIPTION

The Brunswick site is located 20 miles south of Wilmington, N.C., at the mouth of the Cape Fear River in Brunswick County, N.C. The plant consists of two General Electric (GE) boiling water reactors with Mark I containments. The net electrical output of the reactors is 821 Mwe and 851 Mwe, respectively. Unit 2 went critical in March, 1975, and was commercially operational in November, 1975. Unit 1 went critical in October, 1976, and commercial operations began in March, 1977.

The architect/engineer was United Engineers and Constructors, Inc. (UE&C); the construction contractor was Brown and Root, Inc. (B&R). GE supplied the turbine-generator as well as startup services and installation technical supervision for the nuclear steam supply system (NSSS) and nuclear fu[illegible]

1.3 BACKGROUND

Seismic equipment qualification requirements have changed extensively since commercial nuclear power plants were first constructed. As a result, the U.S. Nuclear Regulatory Commission (NRC) initiated USI A-46, "Seismic Qualification of Equipment in Operating Nuclear Plants," in December of 1980. The purpose of USI A-46 is to verify the seismic adequacy of essential equipment in older operating plants that have not been qualified in accordance with more recent criteria.

In 1982, SQUG was formed to develop a practical approach for seismic qualification of equipment in operating plants. The approach developed by SQUG uses the performance of power plant and industrial equipment in actual earthquakes as the primary basis for evaluating the seismic ruggedness and functionality of essential

equipment in nuclear power plants. In 1983, the NRC issued NUREG 1018 which includes a general endorsement of the use of experience data to verify the seismic adequacy of equipment in nuclear plants.

In early 1987, the NRC issued Generic Letter (GL) 87-02 to owners of operating nuclear plants which were licensed prior to the development of modern seismic qualification standards. The recipients of GL 87-02, including Brunswick, are referred to as A-46 plants. GL 87-02 requires owners to take action to verify the seismic adequacy of important equipment in their plants. The SQUG approach embodied in the GIP is explicitly recognized by the NRC as the preferred method for accomplishing this objective.

In 1992, the NRC issued Supplement No. 1 to GL 87-02 (Reference 2) which transmitted Supplemental Safety Evaluation Report No. 2 on SQUG GIP, Revision 2, as corrected on February 14, 1992 (Reference 1). References 1 and 2 are the basis for the seismic evaluations described in this report.

Detailed plant walkdowns are considered to be the most cost-effective and beneficial aspect of the A-46 program. Combined A-46 and Individual Plant External Events Evaluations (IPEEE) walkdowns were performed by teams of CP&L and EQE International (EQE) engineers in accordance with the SQUG GIP, and enhancements based on EPRI NP-6041. Reference 3 describes CP&L's approach for resolving USI A-46. This approach was accepted by the NRC in Reference 4.

1.4 REPORT ORGANIZATION

The remaining sections of this report are organized in accordance with Section II.9.4 of the GIP. These sections include the following:

- Section 2: Project Team. The CP&L and EQE project teams are discussed. Resumes for the Seismic Capability Engineers (SCEs) are included in Appendix A of this report.
- Section 3: Safe Shutdown Earthquake. The BNP Ground Response Spectra (GRS) and In-structure Response Spectra (IRS) are briefly described.

- Section 4: Safe Shutdown Equipment List (SSEL). This section contains information from the SSEL report recommended for submittal to the NRC, per Section II.9.2 of the GIP. Descriptions of the safe shutdown path selection, plant operation procedures used, and CP&L Operations Department review of the SSEL are discussed. The Composite SSEL is contained in Appendix B.

- Section 5: Mechanical and Electrical Equipment Review. Screening verification and walkdown results for mechanical and electrical equipment are included in the Seismic Verification Data Sheets (SVDS) summary table which is found in Appendix C. Instances of meeting the intent of a caveat without meeting the specific wording of the caveat are summarized in Appendix D. Outlier summary tables are included in Appendices E.

- Section 6: Tanks and Heat Exchangers Review. Section 6 summarizes the results of the tanks and heat exchangers review. These results are documented in the SVDS summary table in Appendix C. Instances when the intent but not the letter of the caveat was met are summarized in Appendix D. Outliers are summarized in Appendices F.

- Section 7: Cable and Conduit Raceway Review. Results of the raceway review are discussed, and a summary of raceway outliers is presented Appendix G.

- Section 8: Plan and Schedule for Unresolved Outliers. CP&L's proposed plan and schedule for resolving outliers are described in this section.

- Section 9: Significant or Programmatic Deviations from the GIP. Significant or programmatic deviations from the GIP are described in this section.

- Section 10: Audit Summary. A brief summary of the A-46 third party audit is contained in this section. The report is in Appendix H.

- Section 11: References. References used in this document are listed in this section.

2. PROJECT TEAM

The A-46 program at the Brunswick site was accomplished using a multi-discipline team comprised of key CP&L and EQE personnel.

2.1 CP&L REPRESENTATIVES.

CP&L provided overall project management of the A-46 effort as a well as engineering support in the structural, mechanical, and instrumentation & control (I&C) disciplines. Operations, licensing, and quality assurance representatives were also part of the CP&L project team.

2.2 SEISMIC CAPABILITY ENGINEERS.

Seismic capability engineers (SCEs) were provided by both CP&L and EQE. The engineers who participated in the walkdown are listed below. Resumes for all SCEs are contained Appendix A.

CP&L	EQE
Ron Knott	Leo Bragagnolo
Kevin Poythress	Carl Nelman
Steve Bostian	Tom Roche
Jeff Bond	Brantley Buerger
Daryl Hughes	Jim Disser
	Kelly Merz

EQE SCEs Kelly Merz, Carl Nelman, and Jim Disser also participated in walkdowns unrelated to A-46 that were started by CP&L in December of 1994 to improve the material condition of the Brunswick plant. This walkdown effort was very thorough, and ultimately included most areas of the plant containing safety related equipment. As a result of their participation in these walkdowns, the SCEs developed a greater familiarity with the plant than would normally occur during the course of A-46 walkdowns. This increased familiarity significantly increased the effectiveness of the walkdowns.

2.3 THIRD-PARTY AUDITORS

In accordance with Part I Section 2.2.7 of the GIP, Mr. Charbel M. Abou-Jaoude and Mr. Stephen Reichle of Vectra Technologies performed the third-party audit. Neither of these individuals were part of the BNP Seismic Review Teams. Their resumes are presented in Appendix A.

3. DESIGN BASIS EARTHQUAKE

3.1 GROUND RESPONSE SPECTRA

The peak ground acceleration (PGA) for the Brunswick plant design basis earthquake (DBE) is 0.16g. For the four Category I structures included in the A-46 evaluation, the ground spectra specified for the resolution of A-46 correspond to two types of input ground motion as described below and summarized in Table 3-1.

For the Diesel Generator Building (DGB) and the Control Building (CB), the input ground motion corresponds to the Design Response Spectra (DRS) specified in the plant Final Safety Analysis Report (FSAR). The DRS are based on smoothed 1940 North-South El Centro spectrum normalized to 0.08g PGA (multiplied by two for DBE) with the spectral shape and amplifications similar to 84th percentile NUREG CR-0098 spectra.

For the Service Water Intake Structure (SWIS) and the Reactor and Containment structures, new spectra were generated based on a RG 1.60 (Reference 6) design response spectrum and a horizontal PGA of 0.16g (plant DBE).

The ground response spectra for vertical motion associated with the DBE are defined in the plant FSAR as two-thirds of the horizontal motions. The RG 1.60 and FSAR DBE spectra are both considered to be conservative, design spectra.

3.2 IN-STRUCTURE RESPONSE SPECTRA.

Either median-centered or conservative, design In-structure Response Spectra (IRS) may be used for resolution of A-46. For Brunswick, conservative design IRS were chosen, with the ground motion defined for each building as described in Section 3.1.

Conservative, design IRS were generated from three-dimensional soil-structure interaction (SSI) analyses for the Brunswick Reactor/Containment structure and the SWIS at 3% and 5% spectral damping. The buildings were analyzed per the Standard Review Plan and other current regulatory guidelines, e.g., RG 1.61 and 1.122.

For the CB and the DGB, the conservative, design IRS reported in the plant FSAR were utilized. The FSAR IRS were generated based on an artificial time history developed to envelope the DRS at the damping values of interest. This time history was utilized in

developing the IRS at various elevations. The spectral acceleration values were multiplied by two to arrive at the DBE IRS.

CP&L's approach for resolution of A-46 was described in a letter to the NRC (Reference 3). The approach was accepted by the NRC per Reference 4.

Table 3-1

BRUNSWICK GROUND RESPONSE SPECTRA

Structure	Input Ground Response Spectrum
Reactor/ Containment	RG 1.60 (new)
Control	Design Basis (FSAR)
Diesel Generator	Design Basis (FSAR)
Service Water Intake	RG 1.60 (new)

4. SAFE SHUTDOWN EQUIPMENT LIST

4.1 SAFE SHUTDOWN REQUIREMENTS

The purpose of this section is to document the selection of Brunswick Nuclear Plant Units 1 and 2 equipment needed to achieve and maintain a safe shutdown condition for resolution of Unresolved Safety Issue (USI) A-46.

The equipment identified in this report is that required to bring the plant to a safe shutdown condition following an earthquake and to maintain it there for a minimum of seventy-two hours. The safe shutdown equipment selection is based on the rules and requirements of Section 3, "Identification of Safe Shutdown Equipment," and the guidelines of Appendix A, "Procedure for Identification of Safe Shutdown Equipment" of the GIP (Reference 1).

Additional equipment, beyond that specified by the GIP, is also identified in this report as equipment which may be used as limited options to the equipment required for resolution of USI A-46.

Four functions should be accomplished to achieve and maintain a safe shutdown condition following a design basis earthquake. These functions are: (1) reactivity control, (2) reactor coolant pressure control, (3) reactor coolant inventory control, and (4) decay heat removal. The systems selected to perform these safe shutdown functions at BNP Units 1 & 2 are identified in this report. Some of the more significant criteria and assumptions used in selecting the safe shutdown systems, as outlined in the GIP, are as follows:

- The safe shutdown equipment should not rely upon off-site power. All identified equipment needing electrical power should be powered by the diesel generators or station batteries.

- The effects of restoring off-site power should be considered in cases where equipment would be re-energized and change to an undesirable state.

- Redundancy should be provided for each safe shutdown function such that out-of-service equipment or a single, active failure of any item of equipment does not preclude the fulfillment of the safe shutdown function.

- The safe shutdown systems chosen should be consistent with the normal and emergency operating procedures which are used to bring the plant to a safe shutdown condition.

- With the exception of loss of off-site power, no accidents or extraordinary events are postulated to occur concurrently with or sequentially to the safe shutdown earthquake.

- Operator action is permitted, if necessary, to accomplish the safe shutdown function provided that sufficient manpower and time are available and proper procedures are in place.

4.2 SAFE SHUTDOWN FUNCTIONS

The purpose of this section is to describe the safe shutdown paths that were chosen to respond to a postulated safe shutdown earthquake. Specifically, this section describes what systems are selected for performing the following four functions during shutdown:

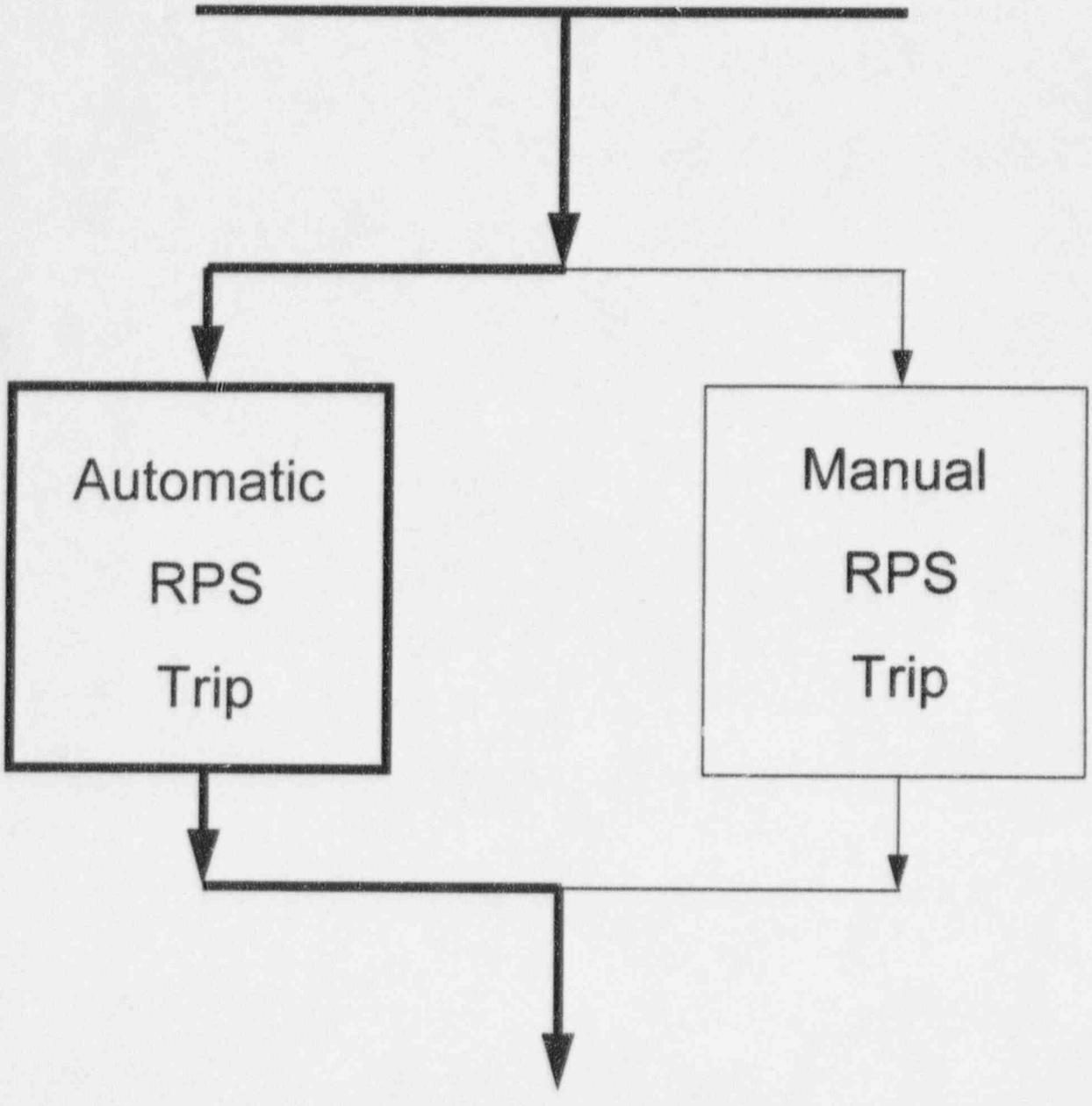
- Reactor reactivity control,
- Reactor coolant pressure control,
- Reactor coolant inventory control, and
- Decay heat removal.

The following figures illustrate the various BNP systems which are available to perform the above four functions. These figures use solid bold lines to identify the systems selected to meet the minimum requirements of USI A-46. The solid thin lines identify the alternative systems selected to fulfill the shutdown function. The dashed lines identify other systems which are available for shutdown but are not selected for this evaluation.

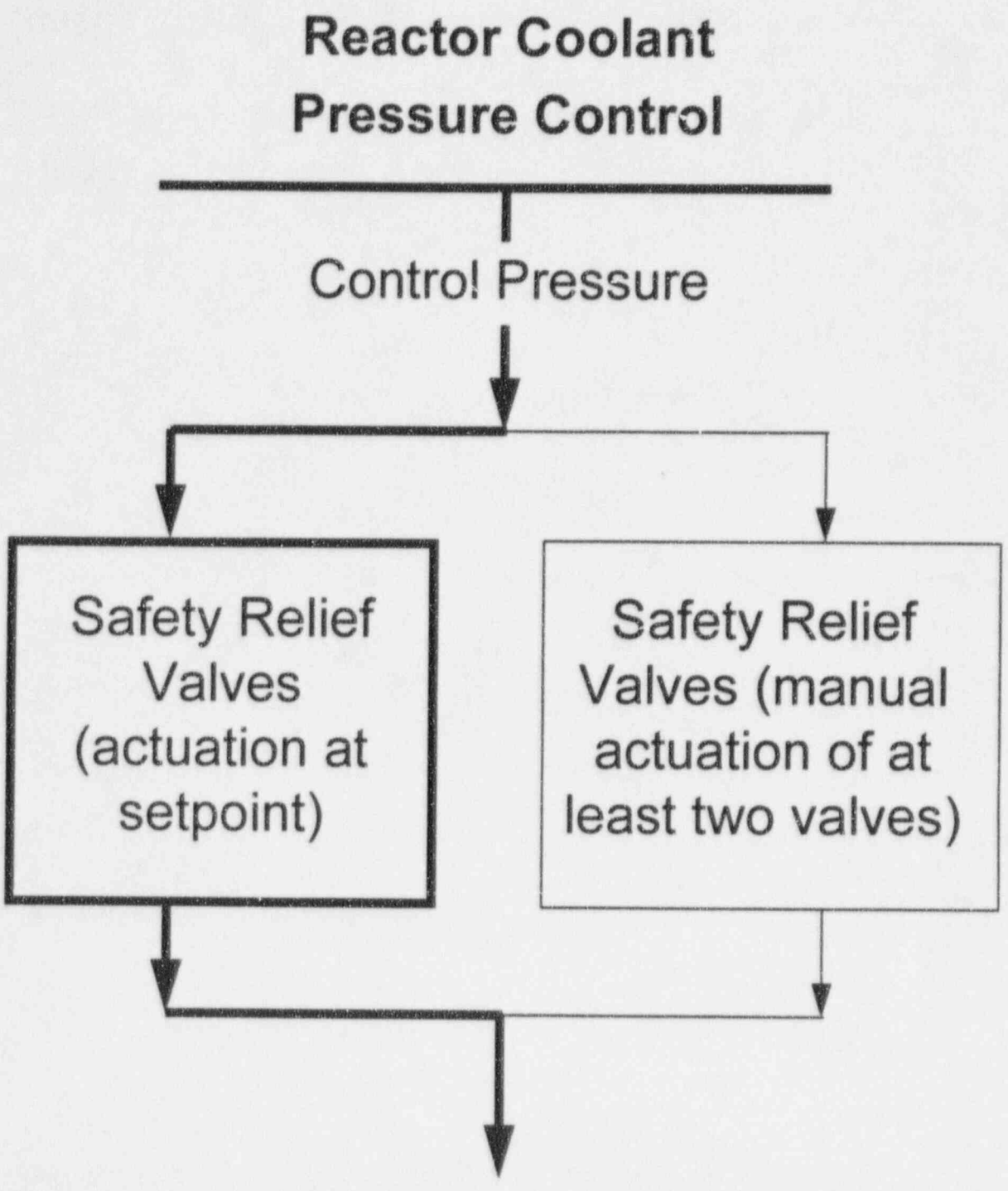
The primary path used for safe shutdown at BNP Units 1 & 2 is insertion of the control rods and depressurization of the reactor coolant system, using the SRVs and one of the inventory control systems. The residual heat removal system is then used to maintain reactor coolant inventory and remove decay heat.

The systems selected for performing the four safe shutdown functions and other optional systems are described below. More detailed descriptions of these safe shutdown systems are provided in Section 4.3 and 4.4.

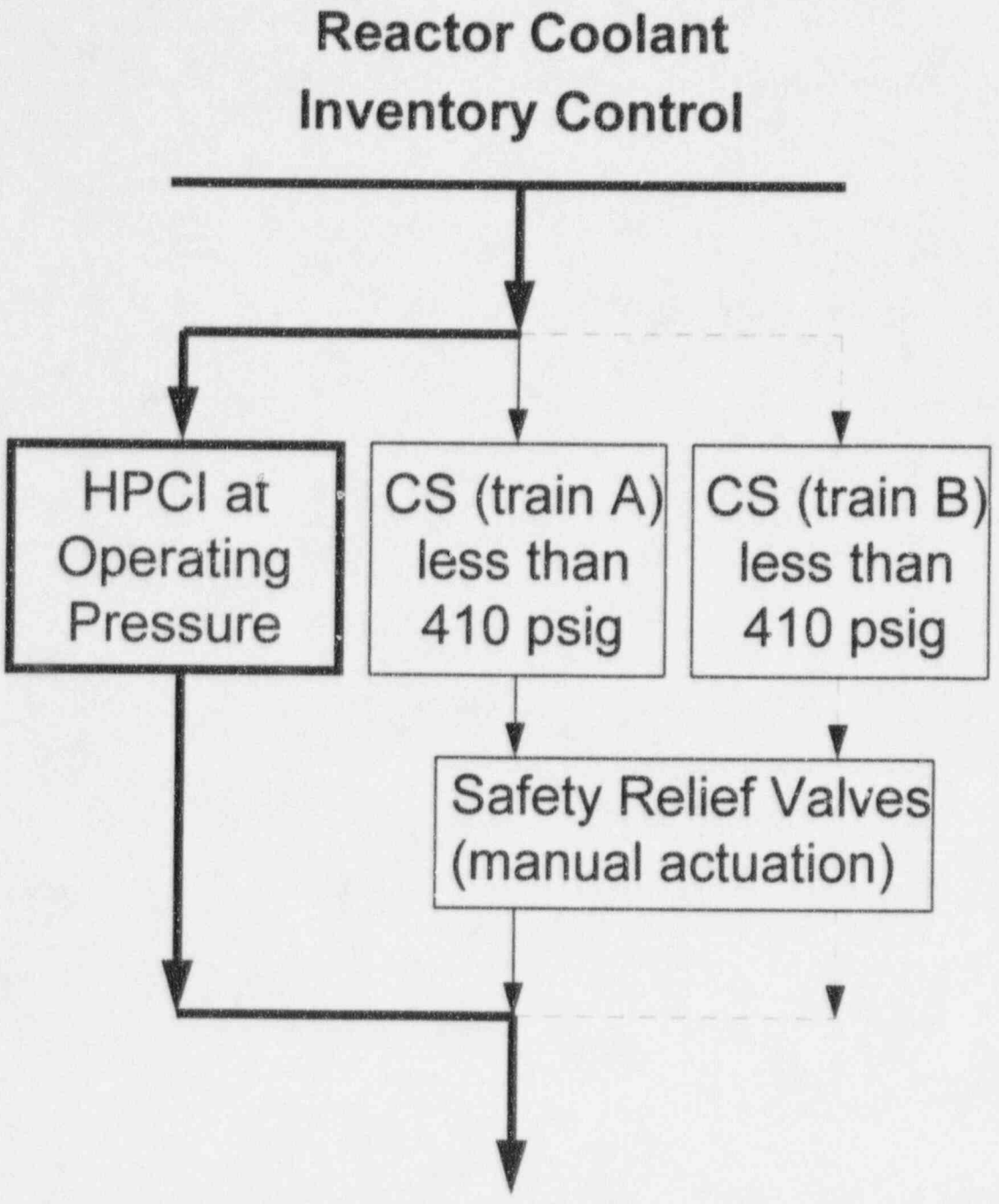
Reactor Reactivity Control



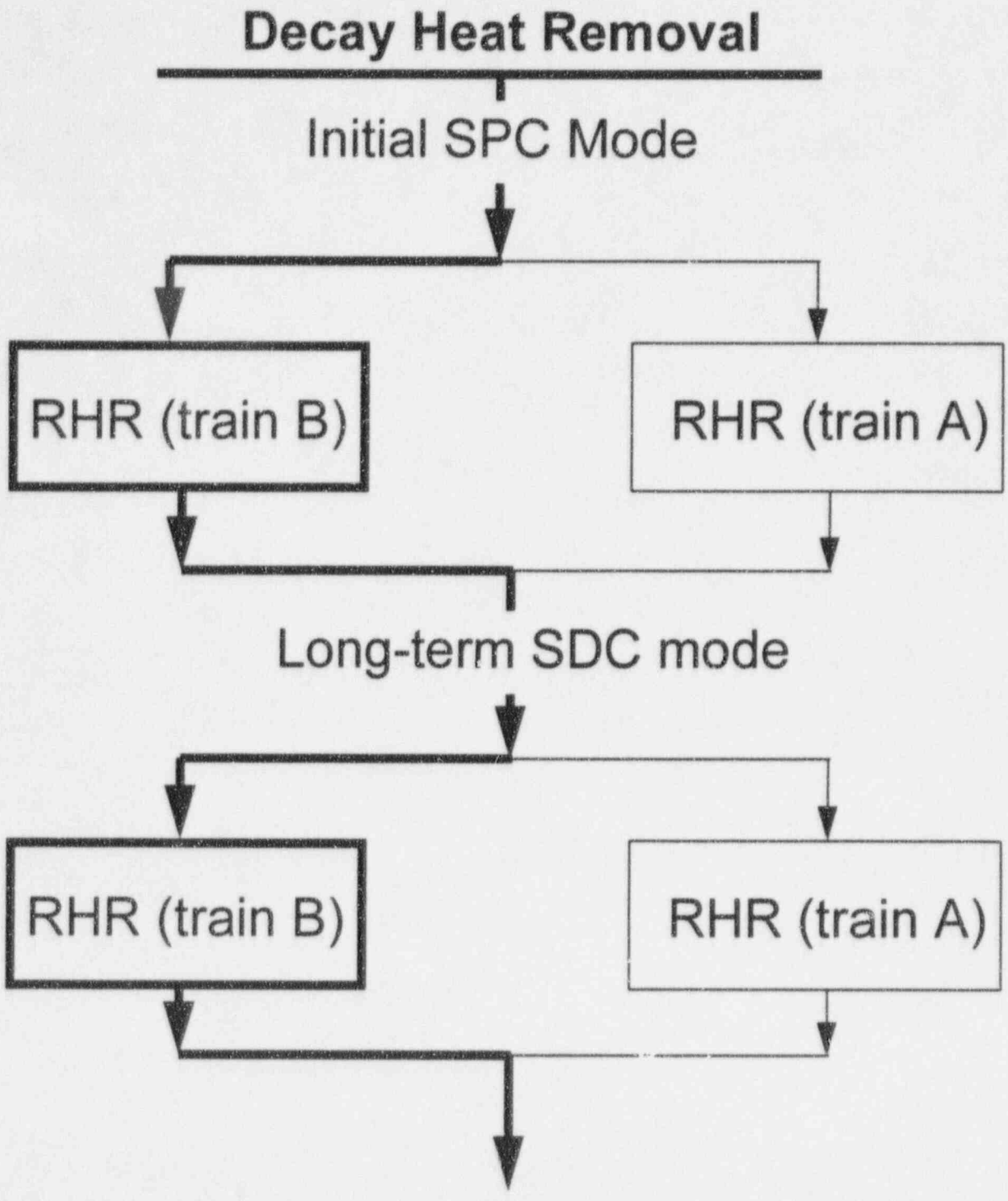
BNP Safe Shutdown for Reactor Reactivity Control



BNP Safe Shutdown for Reactor Coolant Pressure Control



BNP Safe Shutdown for Reactor Coolant Inventory Control



BNP Safe Shutdown for Decay Heat Removal

4.2.1 Reactor Reactivity Control

The first plant challenge in response to a seismic event is to control reactivity, thus reducing core power to decay heat levels. This function is accomplished by the rapid insertion of the control rods into the core. This is the normal method for reactor shutdown and occurs automatically when a reactor trip signal is generated. As a backup action, the operators can execute a manual reactor trip from the main control board. The control rods provide adequate shutdown margin to allow for the control rod of the highest worth to fail to insert. The inherent redundancy of this system provides protection against a single active failure. The Standby Liquid Control system was not selected as a backup means for reactivity control because it does not rapidly shut down the reactor and its operation is somewhat stressful for the operator.

The function of reactivity control is achieved by interaction between the Reactor Protection System (RPS) and the Control Rod Drive Hydraulic Control Unit (CRD/HCU) System. The RPS contains the actuation circuitry, alarms, active equipment, and passive equipment required to trip the reactor. It also contains the equipment used to confirm and monitor the trip status. The CRD system provides the passive, mechanical means to insert the control rods. Interaction between these two systems will provide for reactivity control. The previous figure shows the success path diagram for reactivity control. The bold lines represent the primary path and the thin lines represent the alternate path.

4.2.2 Reactor Coolant Pressure Control

Following a loss of offsite power and subsequent plant trip, the main steam isolation valves will automatically close and an increase in the Reactor Coolant System (RCS) pressure will occur requiring RCS pressure relief and control. The plant response to control RCS pressure is the lifting of the safety relief valves (SRVs) at their respective setpoints. An automatic depressurization system (ADS) exists, but is inhibited by the control room operators in accordance with the Emergency Operating Procedures (EOPs) and no credit is taken for ADS in this analysis. The SRVs are, however, manually operated by the control room operators to lower reactor pressure and allow low pressure injection, if needed, in accordance with EOPs. The redundancy against a single active failure is provided by the divisional separation and multiple SRVs, and the redundancy of the Nitrogen Backup System. The system is comprised of eleven valves

which are dependent on the Nitrogen Backup system for their pneumatic motive force. Success is defined by the proper functioning of at least two SRVs to control pressure. An alternate means to reduce reactor pressure which is included in the EOPs is "Alternate Emergency Depressurization". This pressure reduction alternative was not selected because of the redundancy of the SRVs and their support systems. Additionally, use of this means places a high burden on the operator. The previous figure shows the success path diagram for reactor pressure control. The bold lines represent the primary path and the thin lines represent the alternate path.

4.2.3 Reactor Coolant Inventory Control

This section describes the safe shutdown equipment required for accomplishing the reactor coolant inventory control function. The inventory of the reactor coolant system (RCS) is controlled by injecting water into the RCS and by minimizing the loss of water from the various openings in the system. Note that the alternatives for reactor coolant inventory control are closely related to some of the alternatives for reactor coolant pressure control.

RCS Inventory Supply

RCS inventory can be supplied by one of the following systems depending on the RCS pressure.

- High Pressure Coolant Injection (HPCI) - (Operating Pressure)

  The normal makeup function is provided by taking suction from the Condensate Storage Tank (CST) to the HPCI pump and then discharge through the normal charging paths to the RCS. However, the alternate suction path from the Suppression Pool (SP) has been chosen due to its greater seismic capacity and larger margin of success over the 72 hour mission time.

- Core Spray (CS) - (RCS pressure < 410 PSIG)

  An option for providing makeup to the RCS is provided by one train of the Core Spray system (in conjunction with manual depressurization to < 410 psig). For resolution of USI A-46, train A is chosen as the preferred train,

although either train could be used. Each CS pump takes suction from the SP and injects into the RCS.

RCS Inventory Discharge

The discharge from the RCS is controlled by minimizing the loss of inventory through various paths. One significant path is shown below:

- Safety Relief Valves (SRVs)

  The SRVs are included in the USI A-46 SSEL to ensure that they close after demand.

4.2.4 Decay Heat Removal - Residual Heat Removal System

The final function required to meet safe shutdown is decay heat removal. Decay heat removal can be accomplished at either hot or cold shutdown conditions. BNP procedures direct the operators to go to cold shutdown following a seismic event. During the early stages of the plant shutdown procedure, decay heat removal is achieved by placing one loop of the Residual Heat Removal (RHR) system in the Suppression Pool Cooling (SPC) mode with the second RHR loop available as a backup path. In the latter stages of the plant shutdown procedure, decay heat removal is achieved by placing one loop of RHR in the Shutdown Cooling (SDC) mode with the second loop providing the backup function.

The suction and discharge paths are dependent on the mode of operation. During the SPC mode, the RHR system takes suction from and discharges to the Suppression Pool via the RHR Heat Exchangers. During the SDC mode, the system takes suction from and discharges to the reactor vessel via the RHR heat exchangers. The Suppression Pool inventory is sufficient for the designated 72 hour mission time.

4.3 SAFE SHUTDOWN SYSTEMS

Front line systems required to achieve safe shutdown are discussed below.

4.3.1 Reactor Protection System

System Function

In support of USI A-46, the reactor protection system (RPS) provides a means of reactor reactivity control. This is accomplished by control rod insertion, which is dependent on opening of the reactor trip breakers or interruption of power to the motor-generator sets.

System Design

The RPS contains the actuation circuitry, alarms, active equipment, and passive equipment required to trip the reactor. It also contains the equipment used to confirm and monitor the trip status. The RPS components mounted on or in the reactor vessel are excluded from the scope of the USI A-46 review.

System Dependencies

The following systems provide support functions required for success of the reactor protection system:

- Instrument Power System: The instrument power system provides 120 VAC supply for instrument operation. Two independent paths provide power to the RPS system. The normal path is from MCCs CA and CB through MG sets A and B to the RPS buses. An alternate path provides power to the RPS buses from Emergency Buses E5 & E6 (Unit 1) or E7 & E8 (Unit 2) via stepdown transformers and voltage regulators.

The RPS dependencies are summarized in Table 4-1.

4.3.2 Control Rod Drive/ Hydraulic Control Unit System

System Function

In support of USI A-46, reactivity control is provided by the passive portions of the Control Rod Drive (CRD).

System Design

The Control Rod Drive system required for reactivity control following a seismic event is limited to the nitrogen pressurization system, the scram accumulators, the scram AOVs, the scram solenoids and the control rod drive rams. The control rod drive itself is not listed on the SSEL as it is a part of the NSSS equipment deemed to be seismically

rugged and exempt from evaluation. The components listed on the SSEL are for one control rod drive unit and are typical of all 137 control rod drive units.

System Dependencies

The CRD system reactivity control (control rod drive insertion) function is a passive, fail safe function. Therefore, no system dependencies exist.

4.3.3 High Pressure Coolant Injection System

System Function

The High Pressure Coolant Injection (HPCI) system function is to provide coolant to the reactor vessel during accidents in which pressure remains high. It also serves to provide sufficient core cooling to prevent excessive fuel cladding temperature in the event of a small line break of any non-isolatable line directly associated with the nuclear boiler. In support of USI A-46, the HPCI system provides a high pressure method for maintaining reactor inventory control.

System Design

The HPCI system consists of a single train with a 100% capacity turbine and pump assembly, piping, valves, instrumentation, control and accessories. Steam for the HPCI turbine is supplied from Main Steam Line "A". The normal supply of water for the HPCI system is from the Condensate Storage Tank (CST) with backup provided by the Suppression Pool. For purposes of USI A-46, the HPCI pump will take suction from the Suppression Pool (SP) and inject to the reactor vessel via the feedwater lines and the spray ring mounted inside the core shroud.

System Dependencies Assessment

The following systems supply support functions for the HPCI system:

- DC Power (DC-I): Electric power for the HPCI components is supplied through Division I buses. Principally, DC power is supplied through MCC 1(2)XDA.
- HVAC: The HPCI room is cooled by air ducted from the two RHR Room coolers. Previous HVAC analysis indicates that room cooling is not required for a mission time of 24 hours. The study is not sufficient in scope to cover the 72 hour mission

time dictated by USI A-46. Therefore, the HVAC equipment and dependency is included in the SSEL.

- Emergency Core Cooling System (ECCS) Actuation: The ECCS automatically actuates the HPCI system given a reactor low level (LL#2) or high drywell pressure signal.

HPCI system dependencies are summarized in Table 4-1.

4.3.4 Safety Relief Valve System

System Function

In support of USI A-46, the Safety Relief Valves (SRVs) accomplish two safe shutdown functions - reactor coolant pressure control and reactor coolant inventory control. The SRVs accomplish reactor coolant pressure control by manual depressurization of the nuclear system in the event that the main condenser is not available. The SRVs assist in reactor coolant inventory control by blowdown of the nuclear system in conjunction with operation of the Core Spray system.

System Design

The SRV system consists of 11 safety relief valves associated with reactor pressure vessel overpressure protection, associated instrumentation and controls. For purposes of USI A-46, the SRV valve box includes the valve body, air positioner and solenoid. The valves are located on the four steam lines between the pressure vessel and the first Main Steam Isolation Valve (MSIV). When open, each valve discharges through a separate line to a point below the minimum water level of the Suppression Pool. The SRVs open by self-actuation at their set points or manual actuation per operating procedures.

System Dependencies

The following systems supply support functions for the SRV system:

- DC Power (DCP): Instrument power for the SRVs is provided by two 125 V DC power sources.

- Nitrogen Backup: The Nitrogen Backup system provides the motive force for manual operation of the SRVs.

SRV system dependencies are summarized in Table 4-1.

4.3.5 Residual Heat Removal System

System Function

The Residual Heat Removal (RHR) system is a closed loop system capable of operating in several different modes for the purpose of removing stored and decay heat from the reactor and containment during both normal and accident conditions. In support of USI A-46, the RHR system removes decay heat by the Suppression Pool Cooling (SPC) mode and the Shutdown Cooling (SDC) mode. These modes of operation provide for immediate and long term cooling of the nuclear system.

System Design

The RHR system consists of two complete and independent loops/trains, identified as Train A or Train B. Each train contains two pumps, piping, valves, a heat exchanger, and associated instrumentation and controls.

During the SPC mode, the RHR system takes suction from and discharges to the Suppression Pool via the RHR Heat Exchanger. The suction and discharge path for the SDC mode is to and from the Reactor Vessel via the RHR Heat Exchanger. Although the alignment and state of the components vary with mode, most components are common to all modes of operation.

System Dependencies

The following systems supply support functions for the successful operation of the RHR system:

- AC Power: In general, pumps and valves of Train A receive power from Division I buses and those of Train B receive power from Division II buses.
- DC Power: DC power from MCC 1(2)XDB provides control power to a limited number of valves.

- Service Water: The Service Water system provides cooling water to the RHR pumps and RHR Room Coolers.

- HVAC: The HVAC system provides room cooling for RHR system components.

- Emergency Core Cooling System (ECCS) Actuation: The ECCS automatically actuates the RHR system given a reactor low water level (LL#3) signal or a high drywell pressure signal coincident with a reactor vessel low pressure signal.

RHR system dependencies are summarized in Table 4-1.

4.3.6 Core Spray System

System Function

The Core Spray (CS) system is a low pressure Emergency Core Cooling System (ECCS). The CS System keeps the reactor core covered and prevents fuel cladding damage in the event that the core is uncovered by a Loss Of Coolant Accident (LOCA). In support of USI A-46, the CS system maintains reactor coolant inventory.

System Design

The CS system consists of two independent redundant trains, A and B. Each train has a motor-driven pump with 100% capacity, motor operated valves, piping, controls and instrumentation. The system operates in conjunction with the SRVs. The system takes suction from the Suppression Pool and discharges to the reactor vessel via a sparger ring/spray nozzle located above the core.

System Dependencies

The following systems supply support functions to the CS for successful operation:

- AC Power: AC power is supplied to CS pumps and valves via MCC 1(2)XC and MCC 1(2)XD.

- DC Power: Core Spray actuation control circuitry is powered by a 125V DC source.

- HVAC: The HVAC system provides room cooling for CS system components.

- Emergency Core Cooling System (ECCS) Actuation: The ECCS automatically actuates the CS system given a reactor low water level (LL#3) signal or a high drywell pressure signal coincident with a reactor vessel low pressure signal.

CS system dependencies are summarized in Table 4-1.

4.3.7 Safe Shutdown Monitoring System

System Function

The safe shutdown of the plant involves monitoring of a variety of plant systems with emphasis on the temperature and pressure of the reactor vessel and the drywell area. The Safe Shutdown Monitoring Instrument list was generated from the list of "critical plant instruments" documented in the Station Blackout procedure, AOP 36.2. It represents the minimum instrumentation necessary to monitor plant shutdown status. Additional instrumentation used to monitor plant/system status is identified in the SSELs for specific systems. In support of USI A-46, the Safe Shutdown Monitoring System (SSDM) provides monitoring of the plant safe shutdown status.

System Design

The system contains sensors, transmitters, indicators and process instruments used to monitor plant status. Multiple sensors in the field protect the system from a single active failure. Instruments were chosen to provide indication over the level ranges anticipated for the USI A-46 scenario.

System Dependencies

The following systems supply support functions to the Safe Shutdown Monitoring System for successful operation:

- AC Power: The Safe Shutdown Monitoring System is dependent on AC power for its instrument power.

Safe Shutdown system dependencies are summarized in Table 4-1.

4.4 SUPPORTING SYSTEMS

The safe shutdown listing for the supporting systems of the front line systems in section 4.3 are described below:

Dependency Matrix

As a prelude to the presentation of summary descriptions of the support systems, it is useful to have an overall perspective on the important systems and their interactions. Dependency matrices are provided for the BNP plant systems in Table 4-1. This table identifies the direct dependencies of the front-line systems on the support systems. Only direct dependencies are indicated in each table.

Table 4-1

Matrix of Front-Line System Direct Dependencies on Support Systems

FRONT LINE SYSTEM	DEPENDENCY					
	ACP	DCP	SW	HVAC	ECCS	N2 BACKUP
RPS	X					
CRD/HCU						
HPCI	X	X		X	X	
SRVs		X				X
RHR	X	X	X	X	X	
CS	X	X		X	X	
SSDM	X	X				

4.4.1 Service Water System

System Function

Under the USI A-46 scenario, the service water (SW) system functions as a decay heat removal support system supplying cooling water to the front-line systems required for shutdown of the plant. The SW system is an open-loop system that supplies cooling water from the Atlantic Ocean, the ultimate heat sink (UHS), to the plant and discharges heated water back into the Atlantic Ocean. Major components and systems of interest which are cooled by SW are listed in Table 4-1.

System Design

The Service Water System (SWS) contains pumps, valves, piping, instrumentation and controls. The system is subdivided into a Conventional Header/Train and a Nuclear Header/Train. In support of USI A-46, the Nuclear Service Water Header/Train provides sufficient cooling for the dependent front-line systems. Therefore, the Conventional Header/Train is excluded from the SSEL.

System Dependencies

The following systems supply support functions necessary for the successful operation of the SW system:

- AC Power: The AC Power system provides power to the SW pumps, valves, strainers and traveling screens.
- DC Power: The DC Power system provides control power for the SW pumps and control signals.

4.4.2 Emergency Core Cooling Actuation System

System Function

The Emergency Core Cooling Actuation System (ECCS) monitors the plant status and provides the signals required to actuate the Front-Line systems. In support of USI A-46, ECCS actuates HPCI, CS and RHR as the accident scenario dictates.

System Design

The ECCS system contains sensors, transmitters and relay logic used to automatically actuate safety related systems. Most of the components are located in instrument racks/panels.

System Dependencies

The following systems supply support functions necessary for the successful operation of the ECCS:

- DC Power: The ECCS instrumentation is dependent on 125V DC power.

4.4.3 AC Power System

System Function

The AC power system is comprised of the off-site power system, the on-site normal and emergency power systems, and the emergency diesel generator (EDG) system. Under USI A-46 conditions, the offsite power system may be unavailable for 72 hours. Therefore, AC power will be supplied by the emergency diesel generator (EDG) system for this scenario.

System Design

Safety-related 480V buses are equipped with diesel generators which supply power to those buses under emergency conditions. Each safety-related 480V AC bus supplies power directly to various 480V auxiliaries and to various motor control centers (MCCs). The safety-related MCCs supply power to the DC system battery chargers and the 120V AC instrument buses.

The emergency buses supply power to plant shutdown auxiliaries and engineered safety features. Each bus represents an independent power system with 100% emergency load capacity and contains independent control power and logic. Power is normally provided to the emergency buses by the 4160V AC buses but they can also be supplied by their respective diesel generators.

If offsite power is not available, isolation of the safety buses from the non-safety buses and the shedding of all non-essential loads from the safety buses will occur. In addition, the EDGs will start.

The EDGs are supplied with fuel oil from the fuel oil system. The diesel fuel oil storage tanks (Saddle Tanks and Four Day Tanks) store fuel oil in sufficient quantity to run the diesels during the 72 hour mission time. Loads on the emergency buses are automatically reloaded after the EDGs have successfully started.

System Dependencies

The following systems provide support functions required for successful operation of the AC power system:

- On-site Emergency DC Power System: The on-site emergency DC power system provides DC power for emergency switchgear control power, 480V AC switchgear control power, diesel generator field flashing, and breaker control power to the 4.16KV switchgear.

- Service Water: The service water system provides cooling water to the diesel generator heat exchangers (lube oil coolers, jacket water coolers, and intercoolers).

- Heating, Ventilation and Air Conditioning: The HVAC System supports the AC power system by maintaining plant temperature conditions within the range of electrical equipment ratings and capacity limitations. HVAC cooling is necessary in the diesel rooms to assure the functional capabilities of the EDGs.

4.4.4 DC Power System

System Function

The 125/250V DC Power System is a highly reliable system primarily used for accident mitigation during a loss of AC power. In support of USI A-46, the DC Power system helps mitigate the anticipated LOOP.

System Design

The DC power system consists of two independent 125 VDC vital trains. Each vital DC train includes two batteries, two battery chargers, a motor control center, and one or more power distribution panels. All battery chargers are convection cooled. During a LOOP, the battery chargers receive power from the EDGs via the MCCs.

System Dependencies

- AC Power: The DC power system is served by batteries and battery chargers. The battery chargers are supplied from the 480 volt AC system and normally supply the DC loads as well as maintain proper charges on the batteries.

4.4.5 Heating, Ventilation, and Air Conditioning

System Function

The function of the HVAC system is to remove the normal heat gain within various rooms to enable the essential equipment within the rooms to function as designed and to provide adequate ventilation for personnel access to the rooms during normal and accident conditions. For purposes of the USI A-46 evaluation, the HVAC cooling function is included for the following locations:

Control room
EDG Rooms
HPCI Pump Room
RHR Pump Pit
CS Pump Room

The DC Battery Room area was excluded from the SSEL for the following reason:

DC Battery Room:

The function of the Battery Room HVAC system is to maintain room temperature for optimum battery discharge and to reduce the buildup of hydrogen. BNP procedures require frequent monitoring of the room temperature. Should the room temperature exceed 110 degrees Fahrenheit, the procedures dictate corrective actions which should be sufficient to maintain battery function. The hydrogen build up issue was resolved by calculations performed as part of plant modification 92-51 and 92-52. The calculations show that dangerous hydrogen levels would not be reached for at least seven days. Therefore, the Battery Room HVAC has been excluded from the SSEL.

System Design

The HVAC system consists of air handling, air cleaning, and air cooling units in addition to supply fans, exhaust fans, and dampers. The system configurations vary with the specific HVAC area.

System Dependencies

The following systems supply support functions for the HVAC system for successful operation:

- AC Electrical Power System: The AC power system provides power to the fans and air operated louvers.
- Service Water System: The service water system provides the cooling medium at the evaporative air coolers.

4.4.6 Nitrogen Backup System

System Function

The Nitrogen Backup System (NBS) is a subsystem of the Instrument Air System designed to provide an independent safety-related pneumatic source to selected safety-related loads. In support of USI A-46, the Nitrogen Backup system provides the pneumatic motive force to operate the SRVs.

System Design

The system consists of two redundant and physically separated nitrogen bottle racks with the capability for remote makeup following an accident, valves, piping, controls and instrumentation.

System Dependencies

The Backup Nitrogen system depends on the following systems for successful operation:

- AC Power: The 120V AC Power Distribution Panels provide control power for the Nitrogen Backup solenoid valves.

4.5 OPERATIONS UNIT REVIEW OF SSEL

The Operations Unit review of the SSEL was performed by a NRC licensed senior reactor operator. A desktop review was performed to confirm that the safe shutdown

options selected for the SSEL were compatible with approved normal and emergency operating procedures and associated operator training.

The Operations review was thorough in that the necessary components for each system were verified to be included on the SSEL. Additionally, instrumentation needed to monitor plant operation (e.g., reactor water level, pressure, power and primary containment parameters) were verified. The reviewer concluded that the SSEL was adequate to place the plant in a safe shutdown condition following the prescribed seismic event with some exception. Changes made as a result of the review are summarized below.

- There were several components associated with the Automatic Depressurization System (ADS). Automatic depressurization of the reactor vessel is inhibited by operators in accordance with the EOPs to avoid an uncontrolled depressurization event. Therefore, components that are associated with ADS permissives (e.g., discharge pressure instrumentation of the RHR and Core Spray Systems) were deleted from the SSEL.

- The automatic makeup of fuel oil for the Emergency Diesel Generator four day tank inventory is not performed. This evolution is a manual function. Therefore, components associated with the automatic makeup were deleted from the SSEL.

- Operations did not agree that the primary train of RHR for suppression pool cooling and shutdown cooling should be the A train because the Nuclear Service Water Header was selected as the cooling medium for the RHR Heat Exchanger. The normal service water lineup for B train of RHR is the nuclear header. Therefore, the primary train of RHR was changed from A train to B train. This change had no impact on the SSEL.

- Operations pointed out that the Service Water Lube Water System has been abandoned in place and no longer provides lube water supply for the Service Water System Pumps. All service water pumps are now self-cooled and lubricated. This plant modification occurred after the initial SSEL was prepared. The Service Water Lube Water System was deleted from the SSEL.

- Plant normal operating procedures for shutdown cooling using RHR require the Demineralized Water System to be used to fill the RHR suction piping from the

reactor vessel prior to placing shutdown cooling in service. The Demineralizer Water System, however, will be unavailable due to the assumed loss of offsite power. Placing SDC in service without demineralized water can be accomplished by the operator, however, more emphasis would need to be placed on monitoring reactor water level. Operations agreed that no procedure change is necessary.

- The vacuum relief valves for the HPCI turbine exhaust line were included on the SSEL, however, the HPCI System dependency did not reflect this dependency. The dependency matrix was updated to reflect this dependency.

- Operations requested that pressure switches which monitor the Core Spray System discharge pressure for high and low pressure annunciation be added to the SSEL. This addition is consistent with other mitigating system monitoring instrumentation. These switches were added to the SSEL.

- Operations accepted the use of the suppression pool for HPCI System operation, however, it was pointed out that the EOPs direct the operator to defeat the HPCI high suppression pool level suction transfer to the CST. The purpose of this procedure step is to ensure the HPCI system will not utilize the suppression pool as makeup source during accident conditions with highly elevated suppression pool temperatures. During the prescribed seismic event a high level in the suppression pool should not occur and suppression pool temperatures should not increase to a point requiring the transfer of suction to the CST. Operations agreed that a procedural conflict did not exist and no change was required.

- Operations agreed that the Cable Spread Area in the Control Building did not require HVAC as a dependency, but suggested that the proper reference be included for justification. EER 93-154, "Evaluation of the Loss of Ventilation in the Cable Spread Rooms At BNP demonstrated that the loss of ventilation in the Cable Spread Areas would not cause temperatures to exceed their design values (104 degrees F).

The acceptance of the revised SSEL by Operations is on file.

5. MECHANICAL AND ELECTRICAL EQUIPMENT REVIEW

5.1 SUMMARY OF REVIEW

Mechanical and electrical equipment components on the Brunswick SSEL were evaluated for seismic adequacy in accordance with Part II, Section 4 of the GIP. In general, the walkdown evaluations were conducted on an area-by-area basis within a given unit of the plant. In some cases, for example the cable tray and conduit evaluations, it was more efficient to conduct the walkdowns on an equipment category basis. The walkdowns were coordinated with plant outages, Brunswick's ALARA program, and equipment operational status to minimize disruption to the plant, reduce SRT exposure, and maximize walkdown effectiveness.

Walkdowns were performed using pen-based computers utilizing the software program EWALK. EWALK is a companion to the EHOST program, which was developed specifically for use in performing USI A-46 and IPEEE walkdowns. The program is set up so that the data is electronically recorded on Screening Evaluation Work Sheets (SEWS) consistent with those recommended in Appendix G of the GIP. For each walkdown the appropriate SEWS were loaded into portable computers and observations were recorded for each equipment item as it was evaluated in the field. Each SSEL equipment item was evaluated by a Seismic Review Team (SRT) consisting of at least two SCEs. At least one member of each SRT was a registered Professional Engineer. The results of the SEWS evaluations were tabulated on Screening Verification Data Sheets (SVDSs), which have been reviewed and signed by appropriate Seismic Review Team and Operations personnel. The SVDSs are presented in Appendix C.

5.1.1 Seismic Capacity vs. Demand

The 5% damped SQUG Bounding Spectrum envelopes the Brunswick SSE ground spectrum. Therefore, equipment located within 40 feet of the effective grade and having natural frequencies greater than 8 Hz satisfy the seismic capacity to seismic demand spectra comparison.

Capacity versus demand can also be satisfied by comparing 1.5 times the SQUG Bounding Spectrum to the A-46 IRS. Graphs comparing the A-46 spectra to 1.5 times the SQUG Bounding Spectrum for the Reactor Building, Control Building, Diesel

Generator Building and Service Water Intake Structure were generated to evaluate seismic capacity versus seismic demand when in-structure A-46 spectra were used. Table 5-1 summarizes the locations where the A-46 spectra exceed 1.5 times the Bounding Spectrum.

5.1.2 Equipment Class Descriptions

There are twenty-two unique classes of equipment included in the A-46 program. These equipment classes, a description of the components, and the abbreviations used for documentation at Brunswick are listed in Table 5-2.

5.1.3 Equipment Anchorage

Verifying the adequacy of the anchorage for mechanical and electrical equipment is a significant part of an A-46 evaluation. Lack of anchorage or inadequate anchorage has been a significant cause of equipment failure during and following past earthquakes.

The screening approach for verifying the seismic adequacy of equipment anchorage is based on a combination of field inspections, analytical calculations, and engineering judgment. The Seismic Capability Engineers considered the advantages and disadvantages of each of these approaches when evaluating the equipment anchorage.

The field inspection approach was typically the first method attempted. During the prescreening of the equipment, existing calculations, drawings, vendor manuals, and other plant documentation were reviewed to determine the type of anchorage used for the specific component. If the information was available, it was documented in the Seismic Evaluation Work Sheets (SEWS) for reference by the Seismic Capability Engineers during the walkdown. The Seismic Review Teams used this information to confirm that plant documentation accurately represented the as-installed anchorage. If no information was available, this was noted in the prescreening notes so that the SRT could identify the as-installed anchorage and incorporate it into the SEWS.

During the field inspection process, the SRT noted attributes such as equipment characteristics, type of anchorage, size and location of anchorage, installation adequacy, embedment length, gaps, spacing, and edge distance. Expansion anchors were also checked for tightness. Typically, the team would use a box or open-end

wrench on the bolt head or nut and apply a torque by hand to determine if the anchor was wrench tight. This inspection was performed on all accessible anchorages.

In cases where the SRT could confirm that the installed anchorage configuration matched available plant documentation, the anchorage caveat was marked as being seismically adequate. If no plant documentation was available but the SRT was able to specifically identify and accept the as-built anchorage attributes, engineering judgment was utilized. If no plant documentation was available and the SRT was unable to clearly identify and evaluate all attributes of the anchorage in order to use engineering judgment, then the component anchorage was identified as requiring analytical calculations to determine the seismic capacity versus demand.

Most of the anchorage observed at the plant was expansion anchors (including Phillips Redhead Nuclear Wedge Anchors (NWS), Hilti Kwik Bolts, Phillips "WS" Wedge anchors, and Drillco Maxi-bolts), and cast-in-place headed bolts and J-bolts. In some cases, equipment was welded or bolted with welded studs to embedded channels and penetration perimeter angles. Based on a review of the applicable plant drawings, the embedded channels and the penetration perimeter angles are typically anchored to the concrete with expansion anchors or Nelson-type welded studs.

The larger equipment components, such as the RHR pumps and diesel generators, were typically anchored using cast-in-place anchor details provided on engineering drawings. Although original plant drawings provided structural and installation details for the cast-in-place headed bolts, J-Bolts, and embedded steel, usually no documented analysis was available to satisfy SRT concerns about the seismic adequacy of the installation. In these cases, anchorage calculations were performed. Adequate documentation was prepared by the SRT to facilitate the performance of this analysis.

Smaller mechanical and electrical components were generally installed using the expansion anchors identified above. These anchors were checked for tightness and compared with available documentation. Several items were chosen for analytical evaluation, and others were accepted based on comparison to documented information or engineering judgment.

When possible, components in the same equipment class with similar anchorage installations were reviewed for a worst case, bounding condition and only one anchorage calculation was performed. This worst case component typically became the

bounding case for the entire class. This bounding case analytical approach was used for the control room cabinets, MCCs, switchgear, instrument racks, and others.

Most components were determined to have adequate anchorage capacity based on a combination of field inspection, analytical evaluation, and engineering judgment. Any components whose anchorage capacity could not be verified using these methods were identified as outliers.

5.1.4 Seismic Interaction

The GIP screening guidelines require that the SRT evaluate SSEL equipment items for possible seismic spatial interactions with nearby equipment, systems, and structures. The interactions of concern are:

1. Proximity effects;
2. Structural failure and falling; and,
3. Flexibility of attached lines and cables.

The SRT evaluated credible and significant interaction hazards for all of the safe shutdown components and documented them on the SEWS. The teams utilized training, judgment, and past earthquake experience to differentiate between likely and unlikely interactions. The GIP was closely followed by the teams during the walkdown and evaluation process.

5.2 INSTANCES OF MEETING THE INTENT BUT NOT THE LETTER OF THE CAVEAT

Comments regarding each equipment item were added to the EWALK documentation to clarify specific line items on the SEWS. Many of these comments pertained to the Bounding Spectrum caveats. Comments were identified by an asterisk next to the appropriate SEWS line item, and each comment was stored in text fields to be printed along with hard copy versions of the SEWS for file storage. During the walkdowns there were instances where the letter of the caveat was not met. However, the SRT exercised sound engineering judgment to demonstrate that the intent of the caveat was satisfied. Appendix D presents instances demonstrating the use of engineering judgment by the SRT.

Note. Numerous comments were added to SEWS to provide additional information, clarification, and enhancements to the walkdown evaluations. They were not primarily written to justify meeting the intent but not the letter of the caveat. Only those comments associated with meeting the intent but not the letter of the caveat are summarized in Appendix D.

5.3 SUMMARY OF OUTLIERS

During the course of the seismic evaluation, some of the SSEL items were not screened out and were identified as outliers requiring further evaluation or repair. Outliers are grouped by resolution methodology into four categories as described in sections 5.3.1 through 5.3.4 below. Housekeeping, WR/JO, and ESR outliers are considered minor issues that can be resolved through existing plant programs. These issues are summarized in Appendix E2. Other outliers are grouped into 24 resolution categories which are summarized in Appendix E1.

5.3.1 Housekeeping

The SRTs took note of any housekeeping issues observed while performing A-46 walkdowns of the SSEL components. In general, housekeeping issues were noted only for rooms and areas within the plant where safe shutdown components were located. Most issues were noted for general cleanliness or safety reasons and were identified to the plant as items that could easily be remedied without the necessity of preparing work tickets or modifications. Housekeeping issues also address temporary fixtures and equipment identified as potentially significant sources for seismic interaction. It is expected that resolution of these items will be accomplished through the use of existing plant procedures or enhancements to existing procedures.

5.3.2 WR/JO

Items identified for resolution through the use of a Work Request/Job Order (WR/JO) can be corrected through routine plant maintenance activities using existing documentation and procedures. The WR/JO will be used to implement and track the repair.

5.3.3 ESR

Items requiring new or revised design documentation to implement an upgrade are initiated through an Engineering Support Request (ESR). Engineering analysis for the change, if required, will also be performed and tracked through the ESR program.

5.3.4 Outlier Evaluation

Outliers are identified as requiring further analytical evaluation. They address concerns with capacity versus demand, inclusion in the seismic experience database, anchorage and load path issues.

Table 5-1

Summary of Frequencies and Locations where A-46 In-Structure Spectra Exceed 1.5 times the SQUG Bounding Spectrum

Structure	Elevation (ft)	Frequency Range of Exceedances (Hz)
Sacrificial Shield	71.5	12.0 - 19.0
	63.5	11.0 - 20.0
	56.5	10.5 - 20.5
	49.5	12.0 - 20.0
Reactor Building	138.4	2.0 - 11.5 18.5 - 50.0
	116.4	2.1 - 5.1
	79.4	2.2 - 4.1
	49.4	2.3 - 3.8
Control Building	70.0	2.6 - 4.7 12.0 - 22.0
Diesel Generator Building	23.0 (Floor)	3.0 - 6.2
	23.0 (Pedestal)	2.0 - 2.4 2.8 - 6.3 16.0 - 50.0
	50.0	2.0 - 6.9 16.5 - 50.0
	68.0	2.0 - 7.5 9.0 - 50.0

Table 5-2

USI A-46 EQUIPMENT CLASSES

CLASS	DESCRIPTION	BRUNSWICK ABBREVIATION
00	Generic Input Form	GOT
01	Motor Control Center	GMC
02	Low Voltage Switchgear	GLS
03	Medium Voltage Switchgear	GMS
04	Transformers	GTR
05	Horizontal Pumps	GHP
06	Vertical Pumps	GVP
07	Fluid-Operated Valves	GFV
08A	Motor-Operated Valves	GMV
08B	Solenoid-Operated Valves	GSV
09	Fans	GFN
10	Air Handlers	GAH
11	Chillers	GCH
12	Air Compressors	GAC
13	Motor-Generators	GMG
14	Distribution Panels	GDP
15	Batteries on Racks	GBR
16	Battery Chargers and Inverters	GBC
17	Engine-Generators	GEG
18	Instruments on Racks	GIR
19	Temperature Sensors	GTS
20	I & C Panels and Cabinets	GIC
21	Tanks and Heat Exchangers	GTE

6. TANKS AND HEAT EXCHANGERS REVIEW

Tanks and heat exchangers were evaluated per the requirements of the GIP and documented on Equipment Class 21 SEWS. An anchorage calculation was performed for most tanks on the SSEL, although some anchorages were determined to be adequate through engineering judgment. The tanks evaluated as part of the A-46 effort generally were smaller tanks on legs (e.g. diesel generator air start tanks) although there were some exceptions to this (e.g. saddle tanks and day tanks for the diesel generators). Signed SVDSs are presented in Appendix C. Appendix D summarizes instances where the intent but not letter of the GIP caveats were met. Appendices F1 and F2 summarize tanks and heat exchangers identified as outliers and their recommended resolution.

7. CABLE TRAY AND CONDUIT REVIEW

The review of cable trays and conduit at Brunswick was performed by Jeff Bond (CP&L), Leo Bragagnolo (EQE), and Jim Disser (EQE) and relied heavily on the prior experience of the SRT with conduit and cable tray systems at BNP. The three members of the raceway evaluation team have been intimately involved with past programs at BNP related to evaluating and upgrading the plant's raceway systems. Below is a brief summary of the past programs and the team's involvement in them.

Background On April 21, 1992, CP&L's senior management voluntarily decided to shut down both BNP units because of concerns with the seismic qualification of masonry walls in the Diesel Generator Building.

Hotside/Coldside Program. As a result of issues raised by the NRC following the shutdown, CP&L management committed to numerous pre-startup actions to improve the condition of the plant. Chief among these commitments was the effort to significantly improve the material condition of the plant and to reduce the backlog of maintenance work existing at the time of the shutdown. This resulted in an NRC commitment by CP&L to perform walkdowns of the plant to identify and correct plant hardware deficiencies. This effort became commonly known as the Hotside/Coldside project. Teams of plant engineers proceeded to walk down areas of the plant containing safety-related equipment to identify problems with the plant's physical condition (e.g. missing anchor bolts, loose or degraded hardware, deviations from plant drawings, etc.). The walkdowns identified hundreds of deficiencies which were either sent directly to maintenance to be fixed, or sent to engineering for evaluation.

Jeff Bond was initially in charge of engineering support for deficiencies identified during the Hotside/Coldside walkdowns, with Leo Bragagnolo serving as project manager for a team of EQE engineers supporting the resolution of these items. The engineering team accomplished the following:

- Approximately 800 deficiencies were resolved
- Over 350 design sketches were issued for plant modification
- Over 300 requests for engineering assistance were issued or answered
- All evaluations were documented in calculations. In addition, all work (sketches, calculations, etc.) was performed under and controlled by CP&L's QA program.

The majority of identified deficiencies were related to conduit or cable tray systems, and all were resolved using either plant design basis documents or GIP methodology.

Material Condition Program. Towards the end of 1992, questions were raised about the thoroughness of the inspection activities under the original Hotside/Coldside walkdowns. As a result, plant management committed to re-evaluating certain areas of the plant. EQE participated in developing the Material Condition walkdown procedure, which incorporated several features of the GIP.

The Material Condition walkdowns began in December of 1992, and several EQE engineers supported these walkdowns including SCEs Kelly Merz, Carl Nelman, and Jim Disser. This walkdown effort was very thorough, and ultimately identified over 4500 individual deficiencies, many related to the raceway systems. The walkdown effort also generated close to 900 Engineering Work Requests (EWRs) and 144 requests for Operability Reviews. EQE was given primary responsibility for both the EWR resolutions and the Operability Reviews. Leo Bragagnolo and Jim Disser were both on the EQE team for the duration of the project. Raceway deficiencies were typically resolved using either plant design basis documents or the GIP methodology.

As a result of their involvement with these programs, the raceway evaluation SRT has knowledge of the Brunswick raceways far in excess of that typically required by the A-46 raceway review. The SRT has been intimately involved with walking down significant portions of the plant and analyzing hundreds of raceway configurations. As a result, the Brunswick A-46 raceway evaluation consisted of walkthroughs of all areas of the plant containing safety related trays and conduit, with emphasis on areas known from prior experience to be heavily congested and/or loaded. Due to the large number of calculations and modifications generated during the Hotside/Coldside and Material Condition programs, only a limited number of samples were selected for analysis. Emphasis was placed on identifying outlier configurations not previously analyzed.

The table in Appendix G summarizes the raceway outliers identified during the plant walkdowns and their recommended resolutions. The outliers involved hardware issues such as missing anchors or unique configurations. Minor issues were also identified regarding missing fasteners, loose cables, etc. These minor items will be resolved through plant maintenance.

8. PLAN AND SCHEDULE FOR UNRESOLVED OUTLIERS

The SSEL components designated as outliers or open items are detailed in Appendices E1, E2, F1, F2 and G. These components are scheduled to be repaired before or by the end of Spring 1998. At this time, the plant has not prepared a specific modification schedule for the individual SSEL components. The plant will complete as many of these modifications as possible prior to the refueling outage dates.

9. SIGNIFICANT OR PROGRAMMATIC DEVIATIONS FROM THE GIP

No significant or programmatic deviations from the GIP have been made in the BNP A-46 program.

10. THIRD PARTY AUDIT SUMMARY

The Brunswick A-46 third party audit was performed by Mr. Charbel M. Abou-Jaoude and Mr. Steve Reichle of Vectra Technologies, Inc. during May and June of 1995. Auditor resumes are included in Appendix A. The third party audit report is summarized below. The entire report is contained in Appendix H.

The A-46 program for the two Brunswick Units was found to have been conducted in a very thorough and competent manner. The auditors found that the effort is being performed in accordance with the guidance of the GIP. The results and findings from the program appear to be reasonable and are consistent with expectations for a plant of this vintage. The plant structures and piping were found to be rugged owing to original design and upgrades that were performed in response to various IE Bulletins or self-initiated reassessment studies. A number of equipment and general housekeeping upgrades were also noted during the plant walk-through which have resulted in improved seismic ruggedness.

Several questions were raised during the course of the audit regarding documentation and calculations. The CP&L response to these questions was found to be acceptable.

11. REFERENCES

1 Generic Implementation Procedure (GIP) for Seismic Verification of Nuclear Plant Equipment, February 1992. Copyright Seismic Qualification Utility Group (SQUG), Revision 2, corrected February 14, 1992.

2 U.S. Nuclear Regulatory Commission, "Supplement No. 1 to Generic Letter (GL) 87-02 that Transmits Supplemental Safety Evaluation Report No. 2 (SSER No. 2) on SQUG Generic Implementation Procedure, Revision 2, as Corrected on February 14, 1992 (GIP-2)." May 22, 1992.

3 Letter from CP&L to NRC describing approach for resolution of A-46. NLS-92-252, September 19, 1992.

4 NRC acceptance of CP&L's approach to resolution of A-46. Letter from Ronnie Lo (NRC) to R. A. Watson (CP&L). November 23, 1992.

5 Carolina Power & Light, "BSEP 1 & 2 Updated FSAR."

6 U.S. Atomic Energy Commission, " Design Response Spectra for Seismic Design of Nuclear Power Plants," Regulatory Guide 1.60, Revision 1, December 1973.

APPENDIX A

SEISMIC REVIEW TEAM QUALIFICATIONS

SEISMIC REVIEW TEAM QUALIFICATIONS

JEFFREY H. BOND

Jeffrey H. Bond has over seventeen years of experience in the design, analysis, testing, and qualification of industrial and nuclear systems, structures, and components. His responsibilities have included finite element modeling and analysis; vibration testing and analysis; and load, shock, vibration, and environmental testing for hardware qualification. His experience includes fourteen years with an engineering consulting organization with primary responsibilities in the area of equipment qualification for both manufacturers and utilities. His three years of experience at CP&L have included design responsibilities, NRC audit preparations, forced-outage plant material condition resolution programs, and responsibility for SQUG/IPEEE implementation at CP&L's Brunswick Plant. He completed the SQUG and IPE Seismic add-on courses in preparation for participation in USI A-46/IPEEE resolution at all CP&L's nuclear power plants. He holds both BS and MS degrees in mechanical engineering, and is a registered professional engineer in the state of North Carolina.

STEVEN R. BOSTIAN

Steven R. Bostian has over thirteen years of experience in nuclear plant construction and design. This experience includes two years of on-site field engineering during the construction phase of the Comanche Peak Nuclear Plant, three years of on-site field engineering during the construction phase of the Shearon Harris Nuclear Plant, six years of civil/structural design engineering for the three nuclear plants operated by Carolina Power and Light Company, and two years in the USI A-46/Seismic IPEEE project. Primary engineering responsibilities have been in seismic support design and justification of mechanical and electrical components including electrical raceway, small and large bore piping systems, instrumentation, HVAC equipment, cabinets, and panels. He was selected for CP&L's USI A-46/Seismic IPEEE project in late 1992. He completed the SQUG and IPE Seismic add-on courses in preparation for participation in the USI A-46/Seismic IPEEE resolution at all CP&L's nuclear facilities in early 1993. He is currently the responsible engineer for the A-46/Seismic IPEEE project for the Robinson Nuclear Plant in Hartsville, SC. He has also participated in the efforts for the Harris and Brunswick plants. He is a graduate of North Carolina State University with a

Bachelor of Science Degree in Civil Engineering. He is currently registered as a professional engineer in both North and South Carolina.

DARYL W. HUGHES

Daryl W. Hughes has over fourteen years of experience associated with structural design, analysis, testing and construction of nuclear power plant systems, equipment and components. He responsibilities have included seismic qualification of mechanical and electrical equipment and their supporting structures, review and approval of vendor seismic qualification reports, providing seismic requirements for equipment specifications, and evaluating equipment modifications. He has coordinated and directed reverification efforts of HVAC air handling units, plenums and equipment supports including supervision of personnel, design of hardware modifications, evaluation and resolution of design changes. He has four years of on-site design and construction experience of two nuclear plants. He completed the SQUG Walkdown Screening and Seismic Evaluation Training Course and the add-on Seismic IPE Training Course in preparation for participation in USI A-46 and Seismic IPEEE resolution at CP&L's Harris, Brunswick and Robinson nuclear power plants. He holds a BS in Mechanical Engineering from the University of Illinois. He is a registered professional engineer in the state of North Carolina.

RONALD L. KNOTT

Ronald L. Knott has over eleven years of experience associated with the design and construction of nuclear power plants. For the majority of that time he has been involved with the seismic qualification of equipment. He has reviewed vendor reports and prepared calculations and reports documenting the dynamic analysis and qualification of distribution systems, structures, tanks, valves, and mechanical and electrical equipment for seismic loads. He served as equipment seismic qualification supervisor for the nuclear engineering department at CP&L. He was assigned to the probabilistic risk assessment section and later assigned to the Brunswick Plant for restart following a dual unit shutdown associated with structural deficiencies. In this capacity, he was responsible for the reanalysis of 250 masonry walls under the IEB 80-11 criteria, plant walkdowns and evaluations for material condition deficiencies, electrical equipment anchorage assessments, HVAC ducting upgrade and instrument rack replacements. He has completed the SQUG and the IPEEE Seismic Add-on courses. He has participated

development of a resolution approach for CP&L, performed walkdowns and documentation reviews. He holds a BS in Civil Engineering. He is a registered Professional Engineer in North Carolina.

THOMAS R. ROCHE

Mr. Roche has over eleven years of experience in the design, engineering, startup and analysis of systems and equipment at power, industrial and nuclear facilities. His responsibilities have included evaluation and analysis of systems and equipment for seismic events, preoperational testing of nuclear power plant systems, system engineer for nuclear and non-nuclear power plant systems, equipment qualification and post earthquake investigations. Mr. Roche is a Technical Manager with EQE International. He is responsible for various seismic evaluation efforts for nuclear facility systems and equipment. Mr. Roche is the Electric Power Research Institute (EPRI) Principal Investigator for investigating the 1989 Loma Prieta, 1994 Northridge and 1995 Great Hanchin earthquakes. He completed the SQUG walkdown and relay evaluation courses as well as the EPRI seismic individual plant evaluation of external events add-on course. He is a registered Mechanical Engineer in the State of California.

Mr. Roche has contributed to the development of the earthquake experience data base generated for the Seismic Qualification Utilities Group (SQUG). He concentrates on the response of systems to earthquakes at power and industrial facilities. Systems are investigated for the effects of power interruption, relay actuation due to vibration, relay actuation due to system transients, spurious electrical and pneumatic signals, and control room alarms. This seismic experience data is being utilized by the nuclear industry to resolve the seismic issues associated with the NRC's Unresolved Safety Issue A-46.

CARL R. NELMAN

At EQE Mr. Nelman is Project Engineer for various piping, and equipment. The efforts involve seismic interaction, analysis, and seismic qualification efforts for nuclear facility systems, review of data from past earthquake investigations, post earthquake investigations, development of criteria based on the EQE Earthquake Experience Database, analysis, field investigations, and retrofit design. The systems and components evaluated include mechanical, electrical, instrumentation, electrical

raceways, and piping systems. Major programs have included seismic interaction evaluation for Watts Bar Nuclear Plant and Comanche Peak Steam Electric Station, and equipment, piping, HVAC, and electrical raceways, and piping evaluation for the Beznau Facility in Switzerland. Mr. Nelman has performed A-46 and IPEEE evaluations for Brunswick and Oconee Nuclear Power Plants.

LEO J. BRAGAGNOLO

Mr. Bragagnolo has over ten years of experience in the seismic evaluation of structures and equipment, seismic criteria development, and structural analysis and design. He has participated in and managed projects for industrial, petrochemical, power, Department of Energy (DOE), and nuclear facilities. Most of the projects Mr. Bragagnolo has been involved with concern the seismic evaluation and upgrade of equipment and structures. He has also performed site investigations following the 1987 New Zealand, 1987 Whittier, and 1989 Loma Prieta earthquakes. Mr. Bragagnolo is a Principal Engineer with EQE International and has participated in A-46 and/or IPEEE evaluations for the following plants: CP&L Robinson, CP&L Brunswick, Duke Keowee/Oconee, TVA Sequoyah, TVA Browns Ferry, and Nebraska Public Power Cooper Station. He has completed the SQUG A-46 training course as well as the EPRI seismic individual plant evaluation of external events add-on course. He is a registered Civil Engineer in the state of California.

JAMES R. DISSER

Mr. Disser has over fourteen years of experience in seismic design, analysis and qualification of piping, HVAC, and electrical distribution systems, structures, and mechanical and electrical equipment for nuclear power generation facilities. This includes over eleven years of on-site experience at the Beaver Valley Nuclear Station, the Comanche Peak Steam Electric Station and the Brunswick Nuclear Plant. His experience includes design and analysis, design supervision, project management and walkdown and analytical resolution experience in various Seismic Category II/I, hazards and material condition programs. Mr. Disser is a Project Engineer for EQE Engineering Consultants and completed the SQUG Walkdown Screening and Seismic Evaluation Training Course in preparation for A-46/IPEEE programs. He holds a Bachelor of Science Degree in Civil Engineering from the University of Michigan.

BRANTLEY C. BUERGER

Mr. Buerger is a Principal Engineer in the EQE Engineering Consultants division. He has over 13 years of experience in various areas pertaining to the nuclear power generation industry. His efforts have been primarily related to structural analysis and design with an emphasis on structural dynamics. This includes major building design, piping analysis, seismic equipment qualification, Seismic Margins assessments and finite element analysis. Mr. Buerger has supervisory and project management experience and is certified as a Seismic Capability Engineer (SQUG) for A46/IPEEE. He holds a Bachelor of Science Degree in Civil Engineering from the University of Virginia and is a licensed Professional Engineer in several states.

PEER REVIEWER RESUMES

CHARBEL M. ABOU-JAOUDE

Mr. Abou-Jaoude is a Project/Service Area Manager in VECTRA's Boston Office, with a broad technical and managerial experience in the power industry. His areas of technical expertise are Structural Mechanics and Seismic Design; he has an in-depth knowledge of various industry codes/standards such as Sections III & XI of the ASME Code, ANSI B31.1, IEEE-344 and 382, various USNRC Reg. Guides and NUREG Reports, WRC Bulletins, AISC, and ACI-349. He is well versed in the Generic Implementation Procedure developed by the Seismic Qualification Utility Group for the resolution of USI-A-46, and the methodologies developed by the industry for the response to Generic Letter 88-20 as outlined in NUREG-1407; he has completed the SQUG/EPRI sponsored A-46 and Seismic IPEEE training courses and has participated in several A-46/IPEEE walkdowns as an SRT member. While at VECTRA, he has lead the engineering efforts of various work scopes; his responsibilities have included: Criteria development, training and personnel development, project execution, interface with regulators and outside organizations, and overall project management.

STEPHEN P. REICHLE

Mr. Reichle has over 20 years of power plant engineering, design, maintenance, and operations experience. As Technical Services Consultant for Mechanical Systems in VECTRA's Boston office he is currently assigned as the Project Manager for the Fire Hazards Analysis (FHA) project for the New York Power Authority. This project consists of updating the FHAs for both the James A. FitzPatrick and Indian Point 3 nuclear plants. The project also includes the preparation of an analysis that assesses the effects of pipe rupture, inadvertent actuation and manual use of fire protection systems on safety-related equipment at JAF and IP3.

Mr. Reichle is also currently serving as the Systems Project Engineer on the NRC's Unresolved Safety Issue (USI) A-46 projects for: Northeast Utilities (Millstone 1, 2 and Connecticut Yankee), Philadelphia Electric (Peach Bottom and Limerick) and Public Service Electric & Gas (Salem). In this role, he is responsible for the identification of safe shutdown paths and the development of a Success Path Component List for each unit. These NRC programs deal with the seismic adequacy, or margin of equipment in operating plants.

APPENDIX B

COMPOSITE SSEL

APPENDIX B
SAFE SHUTDOWN EQUIPMENT LIST
UNIT 1 AND COMMON

E.C.	Equipment ID Number	Description	Bldg.	Floor Elev.	Location	A-46	IPEEE	Train	Unit
18	1-E41-LSL-N002	CST LO WATER LEVEL ACTUATION OF HPCI	AT CST	GRADE		1	1	A	1
18	1-E41-LSL-N003	CST LO WATER LEVEL ACTUATION OF HPCI	AT CST	GRADE		1	1	A	1
15	1-1A-1-125VDC-BAT	BATTERY 1A-1	CB	023	BATT RM	1	1	A	1
16	1-1A-1-125VDC-CHGR	BATTERY CHARGER 1A-1	CB	023	BATT RM	1	1	A	1
14	1-1A-120V	CB PANEL - 120VAC EMERG PWR	CB	023	E WALL 11C	1	1	A	0
15	1-1A-2-125VDC-BAT	BATTERY 1-A2	CB	023	BATT RM	1	1	A	1
16	1-1A-2-125VDC-CHGR	BATTERY CHARGER 1A-2	CB	023	BATT RM	1	1	A	1
03	1-1A-250VDC	SWITCHBOARD 1A	CB	023	BATT RM	1	1	A	1
14	1-1A-480V	480-120/208VAC PANEL	CB	023	MC/10C	1	1	A	0
02	1-1A-UPS	120/208VAC MAIN UPS DP	CB	023	CABLE SPRD	1	1	A/B	0
14	1-1AB	CB PANEL - 120VAC EMERG PWR	CB	023	E WALL 10C	1	1	A/B	0
15	1-1B-1-125VDC-BAT	BATTERY 1B-1	CB	023	BATT RM	2	2	B	1
16	1-1B-1-125VDC-CHGR	BATTERY CHARGER 1B-1	CB	023	BATT RM	2	2	B	1
14	1-1B-120V	CB PANEL - 120VAC EMERG PWR	CB	023	E WALL 9C	2	2	B	0
15	1-1B-2-125VDC-BAT	BATTERY 1B-2	CB	023	BATT RM	2	2	B	1
16	1-1B-2-125VDC-CHGR	BATTERY CHARGER 1B-2	CB	023	BATT RM	2	2	B	1
03	1-1B-250VDC	SWITCHBOARD 1B	CB	023	BATT RM	2	2	B	1
14	1-1B-480V	480-120/208VAC PANEL	CB	023	MC/10C	2	2	B	0
14	1-1C-120V	CB PANEL - 120VAC EMERG PWR	CB	023	E WALL 11C	1	1	A	0
01	1-1CA	MCC 1CA	CB	023	NE MC/10C	1	1	A	0
01	1-1CB	MCC 1CB	CB	023	NW MC/10C	2	2	B	0
14	1-1D-120V	CB PANEL - 120VAC EMERG PWR	CB	023	W WALL 9C	2	2	B	0
14	1-1E5	DISTRIBUTION PANEL 1E5	CB	023	MC/10C	1	1	A	0
14	1-1E6	DISTRIBUTION PANEL 1E6	CB	023	NC/10C	2	2	B	0
14	1-2A	480-120/208VAC PANEL	CB	023	MC/15C	1	1	A	0
14	1-2B	480-120/208VAC PANEL	CB	023	MC/15C	2	2	B	0
14	1-31A	CB PANEL - 120VAC EMERG PWR	CB	023	NC/11C	1	1	A	0
14	1-C71-P001	POWER DIST. PNL. W/RPS BUS A & B	CB	023	CABLE SPRD	2	2		1
13	1-C71-S001A	MOTOR GENERATOR SET A	CB	023	BATT RM	12	12		1
13	1-C71-S001B	MOTOR GENERATOR SET B	CB	023	BATT RM	12	12		1

APPENDIX B
SAFE SHUTDOWN EQUIPMENT LIST
UNIT 1 AND COMMON

E C	Equipment ID Number	Description	Bldg.	Floor Elev.	Location	A-46	IPEEE	Train	Unit
03	1-UPS-1A	50 KVA POWER SUPPLY	CB	023	BATT RM	1	1	B	0
03	1-UPS-1B	50 KVA POWER SUPPLY	CB	023	BATT RM	1	1	A	0
14	2-2A-120V	CB PANEL - 120VAC EMERG PWR	CB	023	NC/15C	1	1	A	0
02	2-2A-UPS	120/208VAC MAIN UPS DP	CB	023	CABLE SPRD	1	1	A/B	0
14	2-2AB	CB PANEL - 120VAC EMERG PWR	CB	023	NC/16C	1	1	A/B	0
14	2-2B-120V	CB PANEL - 120VAC EMERG PWR	CB	023	NC/16C	2	2	B	0
14	2-2C-120V	CB PANEL - 120VAC EMERG PWR	CB	023	NC/15C	1	1	A	0
01	2-2CA	MCC 2CA	CB	023	SE MC/15C	1	1	A	0
01	2-2CB	MCC 2CB	CB	023	SW MC/15C	2	2	B	0
14	2-2D-120V	CB PANEL - 120VAC EMERG PWR	CB	023	NC/16C	2	2	B	0
14	2-2E7	DISTRIBUTION PANEL 2E7	CB	023	NC/15C	1	1	A	0
14	2-2E8	DISTRIBUTION PANEL 2E8	CB	023	NC/16C	2	2	B	0
14	2-32A	CB PANEL - 120VAC EMERG PWR	CB	023	NC/14C	1	1	A	0
03	2-UPS-2A	50 KVA POWER SUPPLY	CB	023	BATT RM	1	1	A	0
03	2-UPS-2B	50 KVA POWER SUPPLY	CB	023	BATT RM	2	2	B	0
14	1-31AB	CB PANEL - 120VAC EMERG PWR	CB	049	N WALL	2	2	B	0
14	1-31B	CB PANEL - 120VAC EMERG PWR	CB	049	N WALL	2	2	B	0
20	1-CAC-TY-4426-1	DRYWELL/SUPP POOL SIGNAL CONVERTER	CB	049	C RM	1	1		1
20	1-CAC-TY-4426-2	DRYWELL/SUPP POOL SIGNAL CONVERTER	CB	049	C RM	1	1		1
20	1-H12-P601	ENGINEERED SAFEGUARDS VERTICAL BOARD	CB	049	C RM	1	1		1
20	1-H12-P603	REACTOR CONTROL PANEL	CB	049	C RM	1	1		1
20	1-H12-P608	POWER RANGE NEUTRON MONITORING PANEL	CB	049	C RM	2	2		1
20	1-H12-P609	RPS TRIP SYSTEM A	CB	049	C RM	1	1		1
20	1-H12-P610	RPS TEST & MONITOR PANEL	CB	049	C RM	1	1		1
20	1-H12-P611	RPS TRIP SYSTEM B	CB	049	C RM	1	1		1
20	1-H12-P612	FEEDWATER & REACTOR RECIRC INSTR PANEL	CB	049	C RM	1	1	A/B	1
20	1-H12-P613	PROCESS INSTRUMENTATION CABINET	CB	049	C RM	2	2	A	1
20	1-H12-P614	NSSS TEMP REC & LEAK DET VERTICAL BOARD	CB	049	C RM	1	1		1
20	1-H12-P615	ROD POSITION INFORMATION SYSTEM CABINET	CB	049	C RM	1	1		1
20	1-H12-P616	ROD MANUAL CONTROL PANEL	CB	049	C RM	1	1		1

APPENDIX B
SAFE SHUTDOWN EQUIPMENT LIST
UNIT 1 AND COMMON

E.C.	Equipment ID Number	Description	Bldg.	Floor Elev.	Location	A-46	IPEEE	Train	Unit
20	1-H12-P617	RHR A RELAY VERTICAL BOARD	CB	049	C RM	1	1		1
20	1-H12-P618	RHR RELAY VERTICAL BOARD	CB	049	C RM	1	1		1
20	1-H12-P620	HPCI VERTICAL BOARD RELAY	CB	049	C RM	1	1		1
20	1-H12-P624	BENCHBOARD AUXILARY RELAY CABINET	CB	049	C RM	1	1		1
20	1-H12-P626	CORE SPRAY "A" RELAY VERTICAL BOARD	CB	049	C RM	1	1		1
20	1-H12-P627	CORE SPRAY "B" RELAY VERTICAL BOARD	CB	049	C RM	1	1		1
20	1-H12-P630	REACTOR ANNUNCIATOR CABINET	CB	049	C RM	2	2		1
20	1-XU-13	TERM CABINET FOR SYSTEMS SW, EB, RCC & BAT	CB	049	C RM	1	1		1
20	1-XU-2	MAIN CONTROL ROOM RTG BOARD	CB	049	C RM	1	1		0
20	1-XU-24	DG2 ESS LOGIC CABINET	CB	049	C RM	1	1		0
20	1-XU-25	TERM CABINET FOR SYSTEMS SW, EB, RCC & BAT	CB	049	C RM	1	1		1
20	1-XU-3	RX,CONT & TURB HVAC & TURB AUX CTRL PNL	CB	049	C RM	1	1		1
20	1-XU-39	DIV-I TERM CAB FOR XU-2 FOR SYSTEMS EB AND ED	CB	049	C RM	1	1		0
20	1-XU-40	DIV-II TERMINAL CABINET FOR XU-2	CB	049	C RM	1	1		0
20	1-XU-50	RIP TERMINAL CABINET	CB	049	C RM	1	1		0
20	1-XU-51	BOP RTG BOARD	CB	049	C RM	1	1		1
20	1-XU-53	TERMINATING CABINET DIV-I	CB	049	C RM	1	1		1
20	1-XU-57	RIP TERMINAL CABINET DIV-II	CB	049	C RM	1	1		0
20	1-XU-58	RIP TERMINAL CABINET DIV-I	CB	049	C RM	1	1		0
20	1-XU-63	TRIP CALIBRATION CABINET - ECCS DIVISION I	CB	049	C RM	1	1	A	1
20	1-XU-64	TRIP CALIBRATION CABINET - ECCS DIVISION II	CB	049	C RM	2	2	B	1
20	1-XU-7	DG1 ESS LOGIC CABINET	CB	049	C RM	1	1		0
20	1-XU-73	FLUID FLOW DET CAB FOR SRV POSITION IND	CB	049	C RM	1	1		1
20	1-XU-76	TSC/EOF COMPUTER ISOLATOR CABINET	CB	049	C RM	2	2	2	1
20	1-XU-77	TSC/EOF COMPUTER ISOLATOR CABINET	CB	049	C RM	1	1	1	1
20	1-XU-9	BOP PROCESS INSTR POWER SUPPLY CABINET	CB	049	C RM	1	1		1
14	2-32AB	CB PANEL - 120VAC EMERG PWR	CB	049	NC/18C	1	1	A/B	0
14	2-32B	CB PANEL - 120VAC EMERG PWR	CB	049	NC/18C	2	2	B	0
10	2-VA-CB-FDMP-18	FIRE DAMPER	CB	049	C RM	1	1		0
10	2-VA-CB-FDMP-81	FIRE DAMPER	CB	049	C RM	1	1		0

APPENDIX B
SAFE SHUTDOWN EQUIPMENT LIST
UNIT 1 AND COMMON

E C	Equipment ID Number	Description	Bldg.	Floor Elev	Location	A-46	IPEEE	Train	Unit
10	2-VA-CB-FDMP-82	FIRE DAMPER	CB	049	C RM	1	1		0
20	2-XU-29	DG3 ESS LOGIC CABINET	CB	049	C RM	1	1		0
20	2-XU-30	DG4 ESS LOGIC CABINET	CB	049	C RM	1	1		0
20	2-XU-41	DIV-I TERM CAB FOR EB & ED SYSTEMS	CB	049	C RM	1	1		0
20	2-XU-42	DIV-II TERM CAB FOR RTGB XU-2	CB	049	C RM	1	1		0
20	EGH	TURBINE CONTROLLER	CB	049	C RM	1	1		1
14	1-11A	DISTRIBUTION PANEL 11A	CB	053	NW LC/9C	1	1	A	1
14	1-11B	DISTRIBUTION PANEL 11B	CB	053	NE NC/10C	2	2	B	1
14	1-3A	DISTRIBUTION PANEL 3A	CB	053	NE NC/10C	1	1	A	1
14	1-3AB	DISTRIBUTION PANEL 3AB	CB	053	NE NC/10C	1	1	A/B	1
14	1-3B	DISTRIBUTION PANEL 3B	CB	053	NW LC/8	2	2	B	1
20	1-VA-TY-1026A	C RM THERMOSTAT	CB	055	NE NC/10C	1	1		0
20	2-VA-TY-1028A	C RM THERMOSTAT	CB	055	SE NC/15C	1	1		0
11	1-VA-1A-CC-CB	COOLING COIL - UNIT 1	CB	070	MECH EQ RM	1	1		0
10	1-VA-1A-D-CB	AO DAMPER	CB	070	MECH EQ RM	1	1		0
0	1-VA-1A-EHE-CB	ELECTRIC HTR COIL - UNIT 1	CB	070	MECH EQ RM	1	1		0
10	1-VA-1A-SH-CB	STEAM HUMIDIFIER	CB	070	MECH EQ RM	1	1		0
10	1-VA-1D-CU-CB	AIR COOLED CONDENSER	CB	070	MECH EQ RM	1	1		0
21	1-VA-1D-HX-CB	HX	CB	070	MECH EQ RM	1	1		0
11	1-VA-1D-SCDU-CB	SUBCOOLING CONDENSER	CB	070	MECH EQ RM	1	1		0
09	1-VA-1D-SF-CB	AC SUPPLY FAN - UNIT 1	CB	070	MECH EQ RM	1	1		0
10	1-VA-1H-D-CB	AO DAMPER - UNIT 1	CB	070	MECH EQ RM	1	1		0
10	1-VA-ISOL-DMP-CB	SUPPLY ISOL DAMPER	CB	070	MECH EQ RM	1	1		0
0	1-VA-MC-1026-1	MOISTURE CONTROLLER	CB	070	MECH EQ RM	1	1		0
18	1-VA-PS-1026	COOLING UNIT PRESSURE SWITCH	CB	070	SW LC/13	1	1		0
08b	1-VA-SV-1026	SUPPLY FAN SOL VALVES	CB	070	SW LC/13	1	1		0
08b	1-VA-SV-1026A	SOL VALVE FOR KS 1026	CB	070	SW LC/13	1	1		0
0	1-VA-TC-1026	TEMP CONTROLLER	CB	070	SW LC/13	1	1		0
07	1-VA-V023	ISOL VALVE	CB	070	MECH EQ RM	1	1		0
11	2-VA-2A-CC-CB	COOLING COIL - UNIT 2	CB	070	MECH EQ RM	1	1		0

APPENDIX B
SAFE SHUTDOWN EQUIPMENT LIST
UNIT 1 AND COMMON

E.C	Equipment ID Number	Description	Bldg.	Floor Elev.	Location	A-46	IPEEE	Train	Unit
10	2-VA-2A-D-CB	AO DAMPER	CB	070	MECH EQ RM	1	1		0
0	2-VA-2A-EHE-CB	ELECTRIC HTR COIL - UNIT 2	CB	070	MECH EQ RM	1	1		0
R	2-VA-2A-RAF-CB	ROLL TYPE FILTER	CB	070	MECH EQ RM	1	1		0
10	2-VA-2A-SH-CB	STEAM HUMIDIFIER	CB	070	MECH EQ RM	1	1		0
11	2-VA-2B-CC-CB	COOLING COIL - UNITS 1 & 2	CB	070	MECH EQ RM	2	2		0
0	2-VA-2B-EHE-CB	ELECTRIC HTR COIL - UNIT 1 & 2	CB	070	MECH EQ RM	2	2		0
10	2-VA-2D-CU-CB	AIR COOLED CONDENSER	CB	070	MECH EQ RM	1	1		0
21	2-VA-2D-HX-CB	HX	CB	070	MECH EQ RM	1	1		0
11	2-VA-2D-SCDU-CB	SUBCOOLING CONDENSER	CB	070	MECH EQ RM	1	1		0
09	2-VA-2D-SF-CB	AC SUPPLY FAN - UNIT 2	CB	070	MECH EQ RM	1	1		0
10	2-VA-2E-CU-CB	AIR COOLED CONDENSER	CB	070	MECH EQ RM	2	2		0
21	2-VA-2E-HX-CB	HX	CB	070	MECH EQ RM	2	2		0
11	2-VA-2E-SCDU-CB	SUBCOOLING CONDENSER	CB	070	MECH EQ RM	2	2		0
09	2-VA-2E-SF-CB	AC SUPPLY FAN - UNIT 1 & 2	CB	070	MECH EQ RM	2	2		0
10	2-VA-2I-D-CB	AO DAMPER - UNIT 2	CB	070	MECH EQ RM	1	1		0
10	2-VA-ISOL-SHP-CB	SUPPLY ISOL DAMPER	CB	070	MECH EQ RM	1	1		0
18	2-VA-M1-CB	CONTROL PANEL	CB	070	SW LC/13	1	1		0
0	2-VA-MC-1028-1	MOISTURE CONTROLLER	CB	070	MECH EQ RM	1	1		0
18	2-VA-PS-1026A	COOLING UNIT PRESSURE SWITCH	CB	070	SW LC/13	1	1		0
18	2-VA-PS-1027	COOLING UNIT PRESSURE SWITCH	CB	070	2-VA-M1-CB	2	2		0
18	2-VA-PS-1027A	COOLING UNIT PRESSURE SWITCH	CB	070	2-VA-M1-CB	2	2		0
18	2-VA-PS-1028	COOLING UNIT PRESSURE SWITCH	CB	070	2-VA-M1-CB	1	1		0
18	2-VA-PS-1028A	COOLING UNIT PRESSURE SWITCH	CB	070	2-VA-M1-CB	1	1		0
18	2-VA-PS-1632	'A' AIR COMPRESSOR PRESS SWITCH	CB	070	MECH EQ RM	1	1		0
18	2-VA-PS-1633	'B' AIR COMPRESSOR PRESS SWITCH	CB	070	MECH EQ RM	2	2		0
18	2-VA-PSL-1646	INSTRUMENT AIR LOW PRESS	CB	070	MECH EQ RM	1	1		0
08b	2-VA-SV-1027	SUPPLY FAN SOL VALVES	CB	070	2-VA-M1-CB	2	2		0
08b	2-VA-SV-1027A	SOL VALVE FOR KS 1027	CB	070	SW LC/13	2	2		0
08b	2-VA-SV-1028	SUPPLY FAN SOL VALVES	CB	070	2-VA-M1-CB	1	1		0
08b	2-VA-SV-1028A	SOL VALVE FOR KS 1028	CB	070	SW LC/13	1	1		0

APPENDIX B
SAFE SHUTDOWN EQUIPMENT LIST
UNIT 1 AND COMMON

E.C.	Equipment ID Number	Description	Bldg.	Floor Elev.	Location	A-46	IPEEE	Train	Unit
08b	2-VA-SV-916-1	SOLENOID FOR FV916B	CB	070	MECH EQ RM	1	1		0
0	2-VA-TC-1028	TEMP CONTROLLER	CB	070	SW LC/13	1	1		0
07	2-VA-V023	ISOL VALVE	CB	070	MECH EQ RM	1	1		0
07	2-VA-V024	ISOL VALVE	CB	070	MECH EQ RM	2	2		0
12	A-AC-CB	AIR COMPRESSOR	CB	070	MECH EQ RM	2	2		0
12	B-AC-CB	AIR COMPRESSOR	CB	070	MECH EQ RM	2	2		0
0	UH-1	ELECTRIC HTR	CB	070	MECH EQ RM	1	1		0
0	1-VA-KS-1026	HEATING COIL TIMER	CB	071	NW LC/11C	1	1		0
0	2-VA-KS-1027	HEATING COIL TIMER	CB	071	NE NC/11C	2	2		0
0	2-VA-KS-1028	HEATING COIL TIMER	CB	071	NE NC 11C	1	1		0
0	1-VA-FS-1026	SUPPLY FAN DSCH FLOW SWITCH	CB	073	NW LC/13	1	1		0
0	2-VA-FS-1027	SUPPLY FAN DSCH FLOW SWITCH	CB	073	NW MC/13	2	2		0
0	2-VA-FS-1028	SUPPLY FAN DSCH FLOW SWITCH	CB	073	NE NC/13	1	1		0
07	1-VA-FV-1026	DAMPER 1A-D OPERATOR	CB	082	NW LC/13	1	1		0
07	1-VA-FV-1027B	DAMPER 1H-D OPERATOR	CB	082	NW LC/13	1	1		C
19	1-VA-TT-1299-1	TEMPERATURE TRANSMITTER	CB	082	SW LC13	1	1		0
04	1-VA-XPT-1299	120/24 AC TRANSFORMER	CB	082	SW LC/13	1	1		0
0	1-VA-ZS-1026	SUPPLY FAN LIMIT SWITCH	CB	082	NW LC/13	1	1		0
07	2-VA-FV-1027A	DAMPER 2I-D OPERATOR	CB	082	SW MC/13	1	1		0
07	2-VA-FV-1028	DAMPER 2A-D OPERATOR	CB	082	SW MC/13	1	1		0
19	2-VA-TT-1299-2	TEMPERATURE TRANSMITTER	CB	082	SW LC/13	1	1		0
04	2-VA-XPT-1299	120/24 AC TRANSFORMER	CB	082	SW LC/13	1	1		0
0	2-VA-ZS-1028	SUPPLY FAN LIMIT SWITCH	CB	082	SW MC/13	1	1		0
19	1-VA-TE-1299-1	TEMPERATURE ELEMENT	CB	083	SW LC13	1	1		0
19	1-VA-TT-1026	TEMPERATURE TRANSMITTER	CB	083	SW LC/13	1	1		0
19	2-VA-TE-1299-2	TEMPERATURE ELEMENT	CB	083	SW LC/13	1	1		0
19	2-VA-TT-1028	TEMPERATURE TRANSMITTER	CB	083	SW LC/13	1	1		0
0	2-VA-ZS-1027A	SUPPLY FAN LIMIT SWITCH	CB	083	SW MC/13	2	2		0
0	2-VA-ZS-1027B	SUPPLY FAN LIMIT SWITCH	CB	083	SW LC/13	2	2		0
20	2-DGB-PNL-NU6	DG SUMP PMP DGB-2G-1&2 ALTERNATOR PANEL	DG			1	1		0

APPENDIX B
SAFE SHUTDOWN EQUIPMENT LIST
UNIT 1 AND COMMON

E.C.	Equipment ID Number	Description	Bldg.	Floor Elev	Location	A-46	IPEEE	Train	Unit
0	2-X-LSH-3135	DG B DELAY VALVE PIT FLOOD SWITCH	DG		VALVE PIT	12	12		0
20	2-DGB-PNL-SQ4	CONTROL PANEL F-9776(17)	DG	002	WW U/10D	1	1		0
02	1-E5	480 VOLT UNIT SUBSTATION E5	DG	023	NE W/9D	1	1	A	0
02	1-E6	480 VOLT UNIT SUBSTATION E6	DG	023	NW V/9D	2	2	B	0
18	2-DG1-ENG-CTRL-PNL	DG1 ENGINE CONTROL PANEL	DG	023	NW V/10D	1	1	A	0
20	2-DG1-EXCIT-PNL	EXCITATION PANEL	DG	023	NW V/10D	1	1		0
17	2-DG1-GEN	EMERGENCY DIESEL GENERATOR 1	DG	023	NW V/9D	1	1	A	0
20	2-DG1-GEN-CTRL-PNL	DIESEL GEN 1 CONTROL PANEL	DG	023	NW V/10D	1	1		0
08b	2-DG1-SV-6553-1	DG1 START AIR SOLENOID	DG	023	NW V/9D	1	1	A	0
08b	2-DG1-SV-6554-1	DG1 START AIR SOLENOID	DG	023	NW V/9D	1	1	A	0
09	2-DG1-VAC-BL	DG1 CRANKCASE VACUUM BLOWER	DG	023	NW V/9D	1	1	A	0
18	2-DG2-ENG-CTRL-PNL	DG2 ENGINE CONTROL PANEL	DG	023	WW V/11D	2	2	B	0
20	2-DG2-EXCIT-PNL	EXCITATION PANEL	DG	023	WW V/11D	1	1		0
17	2-DG2-GEN	EMERGENCY DIESEL GENERATOR 2	DG	023	WW V/10D	2	2	B	0
20	2-DG2-GEN-CTRL-PNL	DIESEL GEN 2 CONTROL PANEL	DG	023	WW V/11D	1	1		0
08b	2-DG2-SV-6553-2	DG2 START AIR SOLENOID	DG	023	WW V/10D	2	2	B	0
08b	2-DG2-SV-6554-2	DG2 START AIR SOLENOID	DG	023	WW V/10D	2	2	B	0
09	2-DG2-VAC-BL	DG2 CRANKCASE VACUUM BLOWER	DG	023	WW V/10D	2	2	B	0
18	2-DG3-ENG-CTRL-PNL	DG3 ENGINE CONTROL PANEL	DG	023	WW V/12D	1	1	A	0
20	2-DG3-EXCIT-PNL	EXCITATION PANEL	DG	023	WW V/12D	1	1		0
17	2-DG3-GEN	EMERGENCY DIESEL GENERATOR 3	DG	023	WW V/11D	1	1	A	0
20	2-DG3-GEN-CTRL-PNL	DIESEL GEN 3 CONTROL PANEL	DG	023	WW V/12D	1	1		0
08b	2-DG3-SV-6553-2	DG3 START AIR SOLENOID	DG	023	WW V/11D	1	1	A	0
08b	2-DG3-SV-6554-3	DG3 START AIR SOLENOID	DG	023	WW V/11D	1	1	A	0
09	2-DG3-VAC-BL	DG3 CRANKCASE VACUUM BLOWER	DG	023	WW V/11D	1	1	A	0
18	2-DG4-ENG-CTRL-PNL	DG4 ENGINE CONTROL PANEL	DG	023	SW V/13D	2	2	B	0
20	2-DG4-EXCIT-PNL	EXCITATION PANEL	DG	023	SW V/13D	1	1		0
17	2-DG4-GEN	EMERGENCY DIESEL GENERATOR 4	DG	023	SW V/12D	2	2	B	0
20	2-DG4-GEN-CTRL-PNL	DIESEL GEN 4 CONTROL PANEL	DG	023	SW V/13D	1	1		0
08b	2-DG4-SV-6553-4	DG4 START AIR SOLENOID	DG	023	SW V/12D	2	2	B	0

APPENDIX B
SAFE SHUTDOWN EQUIPMENT LIST
UNIT 1 AND COMMON

E.C.	Equipment ID Number	Description	Bldg.	Floor Elev.	Location	A-46	IPEEE	Train	Unit
08b	2-DG4-SV-6554-4	DG4 START AIR SOLENOID	DG	023	SW V/12D	2	2	B	0
09	2-DG4-VAC-BL	DG4 CRANKCASE VACUUM BLOWER	DG	023	SW V/12D	2	2	B	0
01	2-DGA	MCC DGA	DG	023	NN V/10D	1	1	A	0
01	2-DGB	MCC DGB	DG	023	CC V/11D	2	2	B	0
01	2-DGC	MCC DGC	DG	023	CC V/12D	1	1	A	0
01	2-DGD	MCC DGB	DG	023	SS V/13D	2	2	B	0
R	2-DIE-AIR-INTAKE-SI	DG1 AIR INTAKE SILENCER	DG	023	NE W/10D	1	1	A	0
R	2-DIE-AIR-INTAKE-SI-2	DG2 AIR INTAKE SILENCER	DG	023	EE W/11D	2	2	B	0
R	2-DIE-AIR-INTAKE-SI-3	DG3 AIR INTAKE SILENCER	DG	023	EE W/12D	1	1	A	0
R	2-DIE-AIR-INTAKE-SI-4	DG4 AIR INTAKE SILENCER	DG	023	EE W/12D	2	2	B	0
21	2-DSA-DG1-TK-1	DG1 AIR START TANKS & FILTER	DG	023	NW V/9D	1	1	A	0
21	2-DSA-DG1-TK-2	DG1 AIR START TANKS & FILTER	DG	023	NW V/9D	1	1	A	0
12	2-DSA-DG2-TK-1	DG2 AIR START TANK & FILTER	DG	023	WW V/10D	2	2	B	0
21	2-DSA-DG2-TK-2	DG2 AIR START TANK & FILTER	DG	023	WW V/10D	2	2	B	0
21	2-DSA-DG3-TK-1	DG3 START AIR TANK & FILTER	DG	023	WW V/11D	1	1	A	0
21	2-DSA-DG3-TK-2	DG3 START AIR TANK & FILTER	DG	023	WW V/11D	1	1	A	0
21	2-DSA-DG4-TK-1	DG4 START AIR TANK & FILTER	DG	023	SW V/11D	2	2	B	0
21	2-DSA-DG4-TK-2	DG4 START AIR TANK & FILTER	DG	023	SW V/11D	2	2	B	0
02	2-E7	480 VOLT UNIT SUBSTATION E7	DG	023	SS W/13D	1	1	A	0
02	2-E8	480 VOLT UNIT SUBSTATION E8	DG	023	SS W/13D	2	2	B	0
21	2-LO-COOLER-1	DG1 LUBE OIL COOLER	DG	023	NW V/9D	1	1	A	0
21	2-LO-COOLER-2	DG2 LUBE C COOLER	DG	023	WW V/10D	2	2	B	0
21	2-LO-COOLER-3	DG3 LUBE OIL COOLER	DG	023	WW V/11D	1	1	A	0
21	2-LO-COOLER-4	DG4 LUBE OIL COOLER	DG	023	SW V/12D	2	2	B	0
0	2-LO-TCV-1463	DG1 LUBE OIL TCV	DG	023	NW V/9D	1	1	A	0
0	2-LO-TCV-2054	DG2 LO TCV	DG	023	WW V/10D	2	2	B	0
0	2-LO-TCV-2077	DG3 LO TCV	DG	023	WW V/11D	1	1	A	0
0	2-LO-TCV-2100	DG4 LO TCV	DG	023	SW V/12D	2	2	B	0
R	2-LO-V446	DG1 LUBE OIL STRAINER	DG	023	NW V/9D	1	1	A	0
R	2-LO-V447	DG2 LUBE OIL STRAINER	DG	023	WW V/10D	2	2	B	0

APPENDIX B
SAFE SHUTDOWN EQUIPMENT LIST
UNIT 1 AND COMMON

E.C.	Equipment ID Number	Description	Bldg.	Floor Elev.	Location	A-46	IPEEE	Train	Unit
R	2-LO-V448	DG3 LUBE OIL STRAINER	DG	023	WW V/11D	1	1	A	0
R	2-LO-V449	DG4 LUBE OIL STRAINER	DG	023	SW V/12D	2	2	B	0
21	2-MUD-JKT-WTR-CLR-1	DG1 JACKET WATER COOLER	DG	023	NW V/9D	1	1	A	0
21	2-MUD-JKT-WTR-CLR-2	DG2 JACKET WATER COOLER	DG	023	WW V/10D	2	2	B	0
21	2-MUD-JKT-WTR-CLR-3	DG3 JACKET WATER COOLER	DG	023	WW V/11D	1	1	A	0
21	2-MUD-JKT-WTR-CLR-4	DG4 JACKET WATER COOLER	DG	023	SW V/12D	2	2	B	0
07	2-MUD-TCV-2112	DG1 JACKET WATER TCV	DG	023	NW V/9D	1	1	A	0
0	2-MUD-TCV-2129	DG1 JACKET WATER TCV	DG	023	NW V/9D	1	1	A	0
0	2-MUD-TCV-2138	DG3 JACKET WATER TCV	DG	023	WW V/11D	1	1	A	0
07	2-MUD-TCV-2139	DG2 JACKET WATER TCV	DG	023	WW V/10D	2	2	B	0
0	2-MUD-TCV-2155	DG2 JACKET WATER TCV	DG	023	WW V/10D	2	2	B	0
07	2-MUD-TCV-2166	DG3 JACKET WATER TCV	DG	023	WW V/11D	1	1	A	0
07	2-MUD-TCV-2193	DG4 JACKET WATER TCV	DG	023	SW V/12D	2	2	B	0
0	2-MUD-TCV-2210	DG4 JACKET WATER TCV	DG	023	SW V/12D	2	2	B	0
0	2-SW-PS-1995	DG4 NSW PRESSURE SWITCH	DG	023	EE W/11D	2	2	B	0
0	2-SW-PS-1996	DG3 NSW PRESSURE SWITCH	DG	023	SE W/12D	1	1	A	0
0	2-SW-PS-1998	DG2 NSW PRESSURE SWITCH	DG	023	SE W/12D	2	2	B	0
0	2-SW-PS-1999	DG1 NSW JW PRESSURE	DG	023	NE W/9D	1	1	A	0
19	2-VA-TS-1606A	START TEMP SWITCH FOR SUPPLY FAN	DG	023	CC W/10D	1	1	A	1
19	2-VA-TS-1606B	START TEMP SWITCH FOR SUPPLY FAN	DG	023	CC W/10D	1	1	B	1
19	2-VA-TS-1607A	START TEMP SWITCH FOR SUPPLY FAN	DG	023	CC W/11D	2	2	A	1
19	2-VA-TS-1607B	START TEMP SWITCH FOR SUPPLY FAN	DG	023	CC W/11D	2	2	B	1
19	2-VA-TS-1608A	START TEMP SWITCH FOR SUPPLY FAN	DG	023	CC W/12D	1	1	A	1
19	2-VA-TS-1608B	START TEMP SWITCH FOR SUPPLY FAN	DG	023	CC W/12D	1	1	B	1
19	2-VA-TS-1609A	START TEMP SWITCH FOR SUPPLY FAN	DG	023	CC W/13D	2	2	A	1
19	2-VA-TS-1609B	START TEMP SWITCH FOR SUPPLY FAN	DG	023	CC W/13D	2	2	B	1
0	2-X-LSH-3120	DG1 PIPE TRENCH HIGH WATER LEVEL SWITCH	DG	023	NN W/9D	1	1	A	0
0	2-X-LSH-3123	DG2 PIPE TRENCH HIGH WATER LEVEL SWITCH	DG	023	CC W/10D	2	2	B	0
0	2-X-LSH-3126	DG3 PIPE TRENCH HIGH WATER LEVEL SWITCH	DG	023	WW W/11D	1	1	A	0
0	2-X-LSH-3129	DG4 PIPE TRENCH HIGH WATER LEVEL SWITCH	DG	023	SS W/12D	2	2	B	0

APPENDIX B
SAFE SHUTDOWN EQUIPMENT LIST
UNIT 1 AND COMMON

E.C.	Equipment ID Number	Description	Bldg.	Floor Elev.	Location	A-46	IPEEE	Train	Unit
0	2-X-LSHH-3121	DG1 PIPE TRENCH HIGH WATER LEVEL SWITCH	DG	023	NN W/9D	1	1	A	0
0	2-X-LSHH-3122	DG1 PIPE TRENCH HIGH WATER LEVEL SWITCH	DG	023	NN W/9D	1	1	A	0
0	2-X-LSHH-3124	DG2 PIPE TRENCH HIGH WATER LEVEL SWITCH	DG	023	CC W/10D	2	2	B	0
0	2-X-LSHH-3125	DG2 PIPE TRENCH HIGH WATER LEVEL SWITCH	DG	023	CC W/10D	2	2	B	0
0	2-X-LSHH-3127	DG3 PIPE TRENCH HIGH WATER LEVEL SWITCH	DG	023	WW W/11D	1	1	A	0
0	2-X-LSHH-3128	DG3 PIPE TRENCH HIGH WATER LEVEL SWITCH	DG	023	WW W/11D	1	1	A	0
0	2-X-LSHH-3130	DG4 PIPE TRENCH HIGH WATER LEVEL SWITCH	DG	023	SS W/12D	2	2	B	0
0	2-X-LSHH-3131	DG4 PIPE TRENCH HIGH WATER LEVEL SWITCH	DG	023	SS W/12D	2	2	B	0
08	1-SW-V210	NSW UNIT 1 SUPPLY TO DG1 JW	DG	024	NE X/9D	1	1	A	0
08	1-SW-V211	NSW UNIT 1 SUPPLY TO DG2	DG	024	EE X/10D	2	2	B	0
08	2-SW-V210	NSW UNIT 1 SUPPLY TO DG1 JW	DG	024	NE X/9D	1	1	A	0
08	2-SW-V211	NSW UNIT 1 SUPPLY TO DG2	DG	024	EE X/10D	2	2	B	0
08	1-SW-V212	DG3 NSW UNIT 2 SUPPLY	DG	027	EE X/11D	1	1	A	0
08	1-SW-V213	DG4 NSW UNIT 2 SUPPLY	DG	027	SE X/12D	2	2	B	0
08	2-SW-V212	DG3 NSW UNIT 2 SUPPLY	DG	027	EE X/11D	1	1	A	0
08	2-SW-V213	DG4 NSW UNIT 2 SUPPLY	DG	027	SE X/12D	2	2	B	0
21	2-MUD-EXP-TK-1	DG1 JACKET WATER EXP TANK	DG	039	NE W/9D	1	1	A	0
21	2-MUD-EXP-TK-2	DG2 JACKET WATER EXP TANK	DG	039	EE W/10D	2	2	B	0
21	2-MUD-EXP-TK-3	DG3 JACKET WATER EXP TANK	DG	039	EE W/11D	1	1	A	0
21	2-MUD-EXP-TK-4	DG4 JACKET WATER EXP TANK	DG	039	SE W/12D	2	2	B	0
03	1-E1	SWITCHGEAR ASSEMBLY E1	DG	050	NW V/90	1	1	A	0
03	1-E2	SWITCHGEAR ASSEMBLY E2	DG	050	WW V/10D	2	2	B	0
19	1-SW-TY-4887	RHRSW PUMP DISCHARGE TEMP	DG	050	WW V/11D	1	1	A	1
19	1-SW-TY-4888	RHRSW PUMP DISCHARGE TEMP	DG	050	SW U/13D	1	1	B	1
19	1-SW-TY-4889	RHRSW PUMP DISCHARGE TEMP	DG	050	NW V/9D	1	1	A	1
19	1-SW-TY-4890	RHRSW PUMP DISCHARGE TEMP	DG	050	WW U/10D	1	1	B	1
09	1-VA-E-EF-DG	DG CELL EXHAUST FAN	DG	050	NE X/9D	1	1	A	1
09	1-VA-F-EF-DG	DG CELL EXHAUST FAN	DG	050	EE X/10D	2	2	B	1
09	1-VA-G-EF-DG	DG CELL EXHAUST FAN	DG	050	EE X/11D	1	1	A	1
09	1-VA-H-EF-DG	DG CELL EXHAUST FAN	DG	050	SE X/12D	2	2	B	1

APPENDIX B
SAFE SHUTDOWN EQUIPMENT LIST
UNIT 1 AND COMMON

E.C	Equipment ID Number	Description	Bldg	Floor Elev	Location	A-46	IPEEE	Train	Unit
R	2-DSA-DG1-FLT	DG1 AIR INTAKE FILTER	DG	050	NE W/10D	1	1	A	0
R	2-DSA-DG2-FLT	DG2 AIR INTAKE FILTER	DG	050	EE W/11D	2	2	B	0
R	2-DSA-DG3-FLT	DG3 AIR INTAKE FILTER	DG	050	EE W/12D	1	1	A	0
R	2-DSA-DG4-FLT	DG4 AIR INTAKE FILTER	DG	050	EE W/12D	2	2	B	0
03	2-E3	SWITCHGEAR ASSEMBLY E3	DG	050	WW V/12D	1	1	A	0
03	2-E4	SWITCHGEAR ASSEMBLY E4	DG	050	SW V/13D	2	2	B	0
0	DG-B-SUP-PLNM	DG B SUPPLY PLENUM	DG	050		12	12	A/B	1
14	1-1A-125VDC	DISTRIBUTION PANEL 1A	DG	054	NW U/9D	1	1	A	1
14	1-1B-125VDC	DISTRIBUTION PANEL 1B	DG	054	NW U/10D	2	2	B	1
09	1-VA-A-SF-DG	DG SUPPLY FAN	DG	055	NN W/10D	1	1	A	1
09	1-VA-B-SF-DG	DG SUPPLY FAN	DG	055	CC W/11D	2	2	B	1
09	1-VA-C-SF-DG	DG SUPPLY FAN	DG	055	CC W/12D	1	1	A	1
09	1-VA-D-SF-DG	DG SUPPLY FAN	DG	055	SS W/13D	2	2	B	1
R	2-DIE-AIR-EXH-SIL-1	DG1 AIR EXHAUST SILENCER	DG	080	WW V/10D	1	1	A	0
R	2-DIE-AIR-EXH-SIL-2	DG2 AIR EXHAUST SILENCER	DG	080	WW V/11D	2	2	B	0
R	2-DIE-AIR-EXH-SIL-3	DG3 AIR EXHAUST SILENCER	DG	080	SW V/12D	1	1	A	0
R	2-DIE-AIR-EXH-SIL-4	DG4 AIR EXHAUST SILENCER	DG	080	SW V/13D	2	2	B	0
0	2-X-LSH-3116	DG1 TANK ROOM HIGH FLOOD LEVEL SWITCH	DG/T		DG1 TNK RM	1	1	A	0
0	2-X-LSH-3117	DG2 TANK ROOM HIGH FLOOD LEVEL SWITCH	DG/T		DG2 TNK RM	2	2	B	0
0	2-X-LSH-3118	DG3 TANK ROOM HIGH FLOOD LEVEL SWITCH	DG/T		DG3 TNK RM	1	1	A	0
0	2-X-LSH-3119	DG4 TANK ROOM HIGH FLOOD LEVEL SWITCH	DG/T		DG4 TNK RM	2	2	B	0
05	2-FOD-1A-XFER-PMP	FUEL OIL TRANSFER PUMP 1A	DG/T	000	EE Z/11D	1	1	A	0
05	2-FOD-1B-XFER-PMP	FUEL OIL TRANSFER PUMP 1B	DG/T	000	EE Y/11D	1	1	A	0
05	2-FOD-2A-XFER-PMP	FUEL OIL TRANSFER PUMP 2A	DG/T	000	EE Z/11D	2	2	B	0
05	2-FOD-2B-XFER-PMP	FUEL OIL TRANSFER PUMP 2B	DG/T	000	EE Y/11D	2	2	B	0
05	2-FOD-3A-XFER-PMP	FUEL OIL TRANSFER PUMP 3A	DG/T	000	SE Z/12D	1	1	A	0
05	2-FOD-3B-XFER-PMP	FUEL OIL TRANSFER PUMP 3B	DG/T	000	SE Y/12D	1	1	A	0
05	2-FOD-4A-XFER-PMP	FUEL OIL TRANSFER PUMP 4A	DG/T	000	SE Z/13D	2	2	B	0
05	2-FOD-4B-XFER-PMP	FUEL OIL TRANSFER PUMP 4B	DG/T	000	SE Y/13D	2	2	B	0
0	2-FO-LS-2285	4 DAY TANK 1 LEVEL SWITCH	DG/T	012	EE Y/11D	1	1	A	0

APPENDIX B
SAFE SHUTDOWN EQUIPMENT LIST
UNIT 1 AND COMMON

C	Equipment ID Number	Description	Bldg.	Floor Elev.	Location	A-46	IPEEE	Train	Unit
0	2-FO-LS-2286	DAY TANK LEVEL SWITCH	DG/T	012	EE Y/11D	2	2	B	0
0	2-FO-LS-2287	4 DAY TANK LEVEL SWITCH	DG/T	012	SE Y/12D	1	1	A	0
0	2-FO-LS-2288	DAY TANK LEVEL SWITCH	DG/T	012	SE Y/12D	2	2	B	0
21	2-FOD-4-DAY-TK-1	4 DAY TANK FOR DG1	DG/T	BELOW GND	NW V/9D	1	1	A	0
21	2-FOD-4-DAY-TK-2	DG2 4 DAY TANK	DG/T	BELOW GND	WW V/10D	2	2	B	0
21	2-FOD-4-DAY-TK-3	DG3 4 DAY TANK	DG/T	BELOW GND	WW V/11D	1	1	A	0
21	2-FOD-4-DAY-TK-4	DG4 4 DAY TANK	DG/T	BELOW GND		2	2	B	0
08	1-SW-V118	NSW ROOM COOLER CROSS CONNECT	RB	-001	NE T/4R	1	1	A	1
18	1-E41-LSH-N015B	SUPP POOL HI WTR LEVEL ACTUATION OF HPCI	RB	-002	NE P/2R	1	1	A	1
08a	1-E11-F003A	RHR HX 1A OUTLET VALVE	RB	-003	NE S/2R	1	1	A	1
08a	1-E11-F007A	MIN FLOW BYPASS VALVE	RB	-003	NE S/4R	1	1	A	1
08a	1-E11-F047A	RHR HX 1A INLET VALVE	RB	-003	NE T/3R	1	1	A	1
08a	1-E11-F048A	RHR HX 1A BYPASS VALVE	RB	-003	NE S/3R	1	1	A	1
18	1-E11-PDIS-N021A	RHR HX 1A PRESS DIFF SWITCH	RB	-003	NE S/2R	1	1	A	1
18	1-E11-PSL-2746	RHR HX 1A LO PRESSURE SWITCH	RB	-003	NE S/2R	2	2	A	1
08a	1-E21-F015A	CS FULL FLOW TEST BYPASS VALVE	RB	-003	N CS RM	2	2	A	1
08a	1-SW-V111-MO	CSW TO RHR PUMPS ISOLATION	RB	-004	NE R/2R	1	1	A	1
07	1-SW-V129-AO	RHR ROOM COOLER RETURN ISOLATION	RB	-005	NE T/3R	1	1	A	1
10	1-VA-1C-FCU-RB	COIL FOR CS FAN COOLING UNIT A	RB	-007	NW L/2R	1	1	A	1
10	1-VA-1D-FCU-RB	COIL FOR CS FAN COOLING UNIT B	RB	-007	SW L/8R	2	2	B	1
08a	1-E21-F031A	CS MIN. FLOW BYPASS VALVE - TRAIN A	RB	-008	N CS RM	2	2	A	1
08b	1-E41-SV-1220D	SP SOLENOID VALVE FOR LSHN015A	RB	-008	SE R/8R	1	1		1
08b	1-E41-SV-1221D	SP SOLENOID VALVE FOR LSHN015B	RB	-008	NE P/2R	1	1		1
18	1-SW-PSL-1178	PRESSURE SWITCH	RB	-008	SE T/7R	1	1	B	1
08a	1-E11-F020A	SP SUCTION VALVE	RB	-009	NE R/3R	2	2	A	1
06	1-E21-C001A	CSP-1A	RB	-009	NW CORNER	2	2	A	1
08a	1-E21-F001A	CSP-1A SP SUCTION VALVE	RB	-009	NW L/3R	2	2	A	1
07	1-SW-V124-AO	RHR ROOM COOLER 1B OUTLET ISOLATION	RB	-009	SE T/7R	1	1	B	1
08b	1-CAC-SV-4345	SP SOLENOID VALVE	RB	-010	SE R/7R	1	1		1
07	1-SW-V123-AO	CS ROOM COOLER 1B OUTLET ISOLATION	RB	-010	SW M/8R	1	1	B	1

APPENDIX B
SAFE SHUTDOWN EQUIPMENT LIST
UNIT 1 AND COMMON

E.C.	Equipment ID Number	Description	Bldg.	Floor Elev	Location	A-46	IPEEE	Train	Unit
07	1-SW-V128-AO	CS ROOM COOLER RETURN ISOLATION	RB	-010	NW M/2R	1	1	A	1
18	1-CAC-PT-1257-2A	SP PRESSURE TRANSMITTER	RB	-012	NE R/2R	1	1		1
18	1-SW-FSL-825	SEAL COOLER LOW FLOW SWITCH	RB	-012	SE T/7R	1	1	B	1
18	1-SW-FSL-834	SEAL COOLER LOW FLOW SWITCH	RB	-012	NE T/3R	1	1	A	1
18	1-SW-FSL-835	SEAL COOLER LOW FLOW SWITCH	RB	-012	SE T/7R	1	1	B	1
18	1-SW-FSL-836	SEAL COOLER LOW FLOW SWITCH	RB	-012	NE T/3R	1	1	A	1
07	1-SW-V125-AO	RHR 1D SEAL COOLER DISCHARGE	RB	-012	SE T/7R	1	1	B	1
07	1-SW-V126-AO	RHR 1B SEAL COOLER DISCHARGE	RB	-012	SE T/7R	1	1	B	1
18	1-SW-PSL-1174	LOW PRESSURE SWITCH	RB	-013	NE R/2R	1	1		1
07	1-SW-V130-AO	RHR PUMP 1A SEAL COOLING RETURN	RB	-013	NE T/3R	1	1	A	1
07	1-SW-V131-AO	RHR PUMP 1C SEAL COOLING RETURN	RB	-013	NE T/3R	1	1	A	1
07	1-E11-V138	RHRSW PUMP HX AOV VALVE & SOLENOID	RB	-014	SE T/8R	1	1	B	1
07	1-E11-V139	RHRSW PUMP HX AOV VALVE & SOLENOID	RB	-014	SE T/8R	1	1	B	1
19	1-VA-TT-1601	TEMPERATURE SENSOR	RB	-014	SE T/6R	1	1	A	1
19	1-VA-TT-1601A	INDICATOR BRIDGE	RB	-014	SE T/6R	1	1	A	1
19	1-VA-TT-1602	TEMPERATURE SENSOR	RB	-014	NE T/4R	2	2	B	1
19	1-VA-TT-1602A	INDICATOR BRIDGE	RB	-014	NE T/4R	2	2	B	1
05	1-E11-C002A	RHRP-1A	RB	-015	NE T/3P	1	1	A	1
05	1-E11-C002C	RHRP-1C	RB	-015	NE T/3R	1	1	A	1
08a	1-E11-F004A	RHRP-1A SP SUCTION VALVE	RB	-015	NE T/2R	1	1	A	1
08a	1-E11-F004C	RHRP-1C SP SUCTION VALVE	RB	-015	NE T/2R	1	1	A	1
08a	1-E11-F006A	SHUTDOWN COOLING SUCTION VALVE	RB	-015	NE T/3R	1	1	A	1
08a	1-E11-F006B	SHUTDOWN COOLING SUCTION VALVE	RB	-015	SE T/7R	2	2	B/A	1
08a	1-E11-F006C	SHUTDOWN COOLING SUCTION VALVE	RB	-015	NE S/3R	1	1	A	1
08a	1-E11-F006D	SHUTDOWN COOLING SUCTION VALVE	RB	-015	SE S/7R	2	2	B/A	1
07	1-E11-V136	RHRSW PUMP HX AOV VALVE & SOLENOID	RB	-015	SE T/7R	1	1	A	1
07	1-E11-V137	RHRSW PUMP HX AOV VALVE & SOLENOID	RB	-015	SE S/7R	1	1	A	1
06	1-E41-C001	HPCI MAIN PUMP	RB	-017	EE S/5R	1	1		1
05	1-E41-C001-BOOST-PMP	HPCI BOOSTER PUMP	RB	-017	EE S/6R	1	1		1
0	1-E41-C002	TURBINE	RB	-017	EE S/5R	1	1		1

APPENDIX B
SAFE SHUTDOWN EQUIPMENT LIST
UNIT 1 AND COMMON

E.C.	Equipment ID Number	Description	Bldg.	Floor Elev.	Location	A-46	IPEEE	Train	Unit
21	1-E41-C002-LUB-OIL-CLR	LUBE OIL COOLER	RB	-017	EE T/5R	1	1		1
08a	1-E41-F001	TURBINE STEAM SUPPLY VALVE	RB	-017	EE S/5R	1	1		1
08a	1-E41-F004	HPCI/CST SUCTION VALVE	RB	-017	EE S/6R	1	1		1
08a	1-E41-F007	HPCI DISCHARGE VALVE	RB	-017	NE S/4R	1	1		1
08a	1-E41-F008	HPCI TEST LINE/CST RETURN VALVE	RB	-017	NE S/4R	1	1		1
08a	1-E41-F011	HPCI TEST LINE/CST RETURN VALVE	RB	-017	SE T/8R	1	1		1
08a	1-E41-F012	MIN FLOW BYPASS VALVE	RB	-017	EE S/6R	1	1		1
07	1-E41-F025	HPCI COND PUMP DRAIN TO CRW ISOL VALVE	RB	-017	EE S/6R	1	1		1
07	1-E41-F026	HPCI COND PUMP DRAIN TO CRW ISOL VALVE	RB	-017	EE S/6R	1	1		1
08a	1-E41-F041	HPCI/SP SUCTION VALVE	RB	-017	EE S/6R	1	1		1
08a	1-E41-F042	HPCI/SP SUCTION VALVE	RB	-017	EE S/5R	1	1		1
0	1-E41-F050	L.O. COOLER LINE RELIEF VALVE	RB	-017	EES/5R	1	1		1
08a	1-E41-F059	HPCI LO COOLING WATER VALVE	RB	-017	EE S/5R	1	1		1
08a	1-E41-F075	TURBINE VACUUM BREAKER VALVE	RB	-017	NE S/4R	1	1		1
08a	1-E41-F079	TURBINE VACUUM BREAKER VALVE	RB	-017	NE S/3R	1	1		1
15	1-E41-LSH-4915A	SUPP POOL HI WTR LEVEL ACTUATION OF HPCI	RB	-017	SE S/6R	1	1	A	1
07	1-E41-PCV-F035	HPCI LO CLR PRESS CONTROL VALVE	RB	-017	EE T/5P	1	1		1
18	1-E41-PSE-D003	TURBINE EXHAUST RUPTURE DIAPHRAM	RB	-017	EE T/4R	1	1		1
18	1-E41-PSE-D004	TURBINE EXHAUST RUPTURE DIAPHRAM	RB	-017	EE T/4R	1	1		1
07	1-E41-V8	TURBINE STOP VALVE	RB	-017	EE S/5R	1	1		1
07	1-E41-V9	TURBINE CONTROL VALVE	RB	-017	EE S/5R	1	1		1
18	1-H21-P001	CORE SPRAY SYSTEM A INSTRUMENT RACK	RB	-017	N CS RM	2	2	A	1
18	1-H21-P014	HPCI INSTRUMENT RACK	RB	-017	NE S/4R	1	1		1
18	1-H21-P018	RHR CHANNEL A INSTRUMENT RACK	RB	-017	NE T/4R	1	1		1
18	1-H21-P021	RHR CHANNEL B INSTRUMENT RACK	RB	-017	SE T/6R	1	1		1
18	1-H21-P022	RECIRC PUMP B INSTRUMENT RACK	RB	-017	SE R/7R	1	1		1
18	1-H21-P034	HPCI LEAK DETECT SYSTEM A INSTR RACK	RB	-017	EE T/6R	1	1		1
19	1-VA-TT-1603	CS ROOM TEMPERATURE SENSOR	RB	-017	CSP ROOM A	1	1	A	1
19	1-VA-TT-1603A	CS ROOM INDICATING BRIDGE	RB	-017	CSP ROOM A	1	1	A	1
19	1-VA-TT-1604	CS ROOM TEMPERATURE SENSOR	RB	-017	CSP ROOM B	2	2	B	1

APPENDIX B
SAFE SHUTDOWN EQUIPMENT LIST
UNIT 1 AND COMMON

E.C.	Equipment ID Number	Description	Bldg.	Floor Elev.	Location	A-46	IPEEE	Train	Unit
19	1-VA-TT-1604A	CS ROOM INDICATING BRIDGE	RB	-017	CSP ROOM B	2	2	B	1
04	1-VA-TZ-3	TRANSFORMER	RB	-017	NW L/2R	1	1	A	1
04	1-VA-TZ-4	TRANSFORMER	RB	-017	SW L/8R	2	2	B	1
08b	1-CAC-SV-1230C (B?)	SOLENOID VALVE TO DRYWELL INST	RB	000	CC N/6R	1	1		1
10	1-VA-1A-FCU-RB	COIL FOR RHR FAN COOLING UNIT A	RB	000	NE T/2R	1	1	A	1
10	1-VA-1B-FCU-RB	COIL FOR RHR FAN COOLING UNIT B	RB	000	SE T/8R	2	2	B	1
18	1-SW-FT-5115	CR FLOW INDICATION OF TRAIN B ROOM CLG	RB	003	SW M/8R	1	1	B	1
08b	1-CAC-SV-4222	CONTAINMENT ATMOSPHERE SOLENOID VALVE	RB	002	NE R/3R	1	1	1	1
08b	1-CAC-SV-4223	CONTAINMENT ATMOSPHERE SOLENOID VALVE	RB	002	NE R/3R	2	2	2	1
08a	1-E11-F024A	SP COOLING ISOLATION VALVE	RB	002	NE S/3R	1	1	A	1
08a	1-E11-F027A	SP SPRAY ISOLATION VALVE	RB	002	NE S/4R	1	1	A	1
08a	1-E11-F028A	SP DISCHARGE ISOLATION VALVE	RB	002	NE S/3R	1	1	A	1
18	1-SW-FT-5114	CSP RM COOLER DISCHARGE FLOW INDICATOR	RB	003	NW M/2R	1	1	A	1
07	1-E11-CV-F053A	RHR HX TORUS CONTROL VALVE	RB	006	NE S/3R	1	1	A	1
08a	1-E11-F016A	DRYWELL SPRAY OUTBOARD ISOLATION VALVE	RB	006	EE S/4R	1	1	A	1
08b	1-E11-SV-F053A	PILOT SOLENOID VALVE FOR CV-F053A	RB	006	NE S/3R	1	1	A	1
07	1-VA-1J-TPD-RB	DISCHARGE DAMPER FOR RHR COOLING UNIT A	RB	006	NE T/3R	1	1	A	1
07	1-VA-1K-TPD-RB	DISCHARGE DAMPER FOR RHR COOLING UNIT B	RB	006	SE T/7R	2	2	B	1
07	1-VA-FV-936A	RHR DAMPER OPERATOR	RB	006	NE T/3R	1	1	A	1
07	1-VA-FV-936B	RHR DAMPER OPERATOR	RB	006	SE T/7R	2	2	B	1
08b	1-VA-SV-936A	SOLENOID VALVE	RB	006	NE T/3R	1	1	A/B	1
08b	1-VA-SV-936B	SOLENOID VALVE	RB	006	SE T/7R	1	1	A/B	1
13	1-VA-ZS-936A	FAN/DAMPER LIMIT SWITCH	RB	006	NE T/3R	1	1	A	1
18	1-VA-ZS-936B	FAN/DAMPER LIMIT SWITCH	RB	006	SE T/7R	2	2	B	1
08b	1-CAC-SV-1219B	SP SOLENOID VALVE	RB	007	NE R/2R	1	1		1
08b	1-E41-SV-1219D	SP SOLENOID VALVE FOR LSHN015B	RB	007	NE P/2R	1	1		1
07	1-C11-V140-AO	SCRAM DISCHARGE VOLUME VENT VALVE	RB	008	NE S/19R	1	1		1
08b	1-E41-SV-1218D	SP SOLENOID VALVE FOR LSHN015A	RB	008	SE R/8R	1	1		1
07	1-C11-CV-F011-AO	SCRAM DISCHARGE VOLUME VENT VALVE	RB	009	NE S/19R	1	1		1
16	1-E11-CY-K001A	SIGNAL CONVERTER FOR SV-F053A	RB	009	NE T/3R	1	1	A	1

APPENDIX B
SAFE SHUTDOWN EQUIPMENT LIST
UNIT 1 AND COMMON

E.C.	Equipment ID Number	Description	Bldg.	Floor Elev.	Location	A-46	IPEEE	Train	Unit
08a	1-SW-V117-MO	ROOM COOLING SW ISOLATION	RB	009	SE T/7R	1	1	B	1
19	1-VA-TS-936A	RHR RM TEMPERATURE SWITCH	RB	015	NE S/4R	1	1	A	1
19	1-VA-TS-936B	RHR RM TEMPERATURE SWITCH	RB	015	NE S/4R	2	2	B	1
19	1-VA-TS-936C	RHR RM TEMPERATURE SWITCH	RB	015	SE S/5R	2	2	B	1
19	1-VA-TS-936D	RHR RM TEMPERATURE SWITCH	RB	015	SE S/6R	1	1	A	1
19	1-VA-TS-936E	HPCI RM TEMPERATURE SWITCH	RB	015	EE S/6R	1	1		1
19	1-VA-TS-936F	HPCI RM TEMPERATURE SWITCH	RB	015	EE S/4R	2	2		1
04	1-VA-TZ-1	TRANSFORMER	RB	015	SE T/6R	1	1	A	1
04	1-VA-TZ-2	TRANSFORMER	RB	015	NE T/4R	2	2	B	1
14	1-1A-RX	RB PANEL - 120VAC EMERG PWR	RB	020	P/2R	1	1	A	0
14	1-1AB-RX	RB PANEL - 120VAC EMERG PWR	RB	020	P/3R	1	1	A/B	0
14	1-1B-RX	RB PANEL - 120VAC EMERG PWR	RB	020	P/2R	2	2	B	0
01	1-1XA	MCC 1XA	RB	020	NN P/2R	1	1	A	0
01	1-1XA-2	MCC 1XA-2	RB	020	NN P/2R	1	1	A	0
01	1-1XB	MCC 1XB	RB	020	SS P/8R	2	2	B	0
01	1-1XB-2	MCC 1XB-2	RB	020	SS P/8R	2	2	B	0
01	1-1XC	MCC 1XC	RB	020	EE T/5R	1	1	A	0
01	1-1XD	MCC 1XD	RB	020	SE T/6R	2	2	B	0
01	1-1XDA	MCC-1XDA	RB	020	NE	1	1	A	1
01	1-1XDB	MCC-1XDB	RB	020	SE	2	2	B	1
01	1-1XL	MCC 1XL	RB	020	NE S/4R	1	1	A	0
01	1-1XM	MCC 1XM	RB	020	EE S/6R	1	1	A/B	0
0	1-C11-125	SCRAM ACCUMULATOR	RB	020	HCU	1	1		1
0	1-C11-A001A-N2	NITROGEN BOTTLE & REGULATOR	RB	020	1-C11-A001	1	1		1
07	1-C11-CV-126-AO	SCRAM INLET ISOLATION VALVE	RB	020	HCU	1	1		1
07	1-C11-CV-127-AO	SCRAM OUTLET ISOLATION VALVE	RB	020	HCU	1	1		1
18	1-C11-LDSH-129	N2 ACCUMULATOR LEVEL SWITCH	RB	020	HCU	1	1		1
18	1-C11-PSL-130	N2 ACCUMULATOR PRESSURE SWITCH	RB	020	HCU	1	1		1
08b	1-C11-SV-117	SCRAM VALVE	RB	020	HCU	1	1		1
08b	1-C11-SV-118	SCRAM VALVE	RB	020	HCU	1	1		1

APPENDIX B
SAFE SHUTDOWN EQUIPMENT LIST
UNIT 1 AND COMMON

E.C.	Equipment ID Number	Description	Bldg.	Floor Elev.	Location	A-46	IPEEE	Train	Unit
08b	1-C11-SV-F009A	SCRAM SOLENOID VALVE	RB	020	EE S/21R	1	1		1
08b	1-C11-SV-F009B	SCRAM SOLENOID VALVE	RB	020	EE S/21R	1	1		1
21	1-E11-B001A	RHR HX 1A	RB	020	NE T/3R	1	1	A	1
20	1-E11-F008-L6C	1XDA-B26/1XDB-B5 XFER CONTACTOR PANEL	RB	020	EE S/6R	1	1		1
08a	1-E41-F003	STEAM SUPPLY OUTBOARD ISOLATION VALVE	RB	020	EE R/5R	1	1		1
20	1-H21-P003	CRD ACCUMULATOR MONITOR PNL BANK 1 & 2	RB	020	NN M/3R	1	1		1
18	1-H21-P009	JET PUMP INSTRUMENT RACK	RB	020	NN N/3R	1	1	A	1
18	1-H21-P010	JET PUMP INSTRUMENT RACK	RB	020	SS P/6R	2	2	B	1
20	1-H21-P012	CRD ACCUMULATOR MONITOR PNL BANK 3 & 4	RB	020	SS M/7R	1	1		1
18	1-H21-P016	CORE SPRAY/HPCI LEAK DETECT INSTR RACK	RB	020	NN P/3R	1	1		1
18	1-H21-P036	CORE SPRAY/HPCI LEAK DETECT INSTR RACK	RB	020	SS P/6R	1	1		1
20	1-IR-RB-4	REMOTE SHUTDOWN PANEL	RB	020		2	2	A/B	1
18	1-PNS-PSL-5843A	PNS/BACKUP N2 LO PRESSURE SWITCH	RB	020	NE R/3R	1	1	1	1
18	1-PNS-PSL-5843B	PNS/BACKUP N2 LO PRESSURE SWITCH	RB	020	SE R/7R	2	2	2	1
20	1-XU-4168	FLUID FLO DET PREAMP CAB FOR SRV POSITION	RB	020	SS N/7R	1	1		1
14	2-2A-RX	RB PANEL - 120VAC EMERG PWR	RB	020	P/18R	1	1	A	0
14	2-2AB-RX	RB PANEL - 120VAC EMERG PWR	RB	020	P/18R	1	1	A/B	0
14	2-2B-RX	RB PANEL - 120VAC EMERG PWR	RB	020	P/24R	2	2	B	0
01	2-2XA	MCC 2XA	RB	020	NE P/18R	1	1	A	0
01	2-2XA-2	MCC 2XA-2	RB	020	NE P/18R	1	1	A	0
01	2-2XB	MCC 2XB	RB	020	SE P/23R	2	2	B	0
01	2-2XB-2	MCC 2XB-2	RB	020	SE P/23R	2	2	B	0
01	2-2XC	MCC 2XC	RB	020	EE T/21R	1	1	A	0
01	2-2XD	MCC 2XD	RB	020	SE T/22R	2	2	B	0
01	2-2XL	MCC 2XL	RB	020	EE S/20R	1	1	A	0
01	2-2XM	MCC 2XM	RB	020	EE S/22R	1	1	A/B	0
20	1-E11-F009-L6E	MCC 1XA-DHB TO 1XD-DX5 TRANSFER PANEL	RB	022	EE T/5R	1	1		1
20	1-E41-F002-L6G	XFER CONTACTOR PANEL FOR E41-F002-MO	RB	022		1	1		1
08a	1-E11-F002A-MO	RHR HT EXCH 1A OUT ISO	RB	023	NE T/2R	1	1	A	1
08a	1-E11-F002B-MO	RHR HT EXCH OUT ISO	RB	023	SE S/8R	1	1	B	1

APPENDIX B
SAFE SHUTDOWN EQUIPMENT LIST
UNIT 1 AND COMMON

E C	Equipment ID Number	Description	Bldg	Floor Elev	Location	A-46	IPEEE	Train	Unit
20	1-E11-F008-L1F	E11-F008-MO ALTERNATOR STARTER PANEL	RB	023	NE P/3R	1	1		1
20	1-E41-F079-L6F	XFER CONTACTOR PANEL FOR E41-F079-MO	RB	023	EE T/5R	1	1		1
18	1-CAC-PT-2685	DRYWELL PRESSURE TRANSMITTER	RB	024	SS N/7R	1	1		1
18	1-CAC-PT-5113	DRYWELL PRESSURE TRANSMITTER	RB	024	SS N/7R	1	1		1
08a	1-E11-F008	SHUTDWN CLG OUTBOARD SUCTION ISOL VALVE	RB	024	EE R/5R	2	2	A/B	1
08a	1-E11-F015A	LPCI INBOARD INJECTION VALVE	RB	024	EE R/5R	2	2	A	1
08a	1-E11-F017A	LPCI OUTBOARD INJECTION VALVE	RB	024	EE S/5R	1	1	A	1
18	1-IA-PSL-3596	RNA/BACKUP N2 LO PRESSURE SWITCH	RB	024	NW K/3R	1	1	1	1
18	1-IA-PSL-3597	RNA/BACKUP N2 LO PRESSURE SWITCH	RB	024	SE R/7R	2	2	2	1
08a	1-E11-F073	ISOLATION VALVE (MOV)	RB	027	SE T/7R	1	1	B	1
08b	1-CAC-SV-1225C	DRYWELL SOLENOID VALVE	RB	028	SS N/7R	1	1		1
18	1-E11-TE-N004A	RHR HX TEMPERATURE ELEMENT	RB	032	NE T/2R	2	2	A	1
0	1-E11-F055A	PHR HX 1A RELIEF VALVE	RB	036	NE T/2R	2	2	A	1
08a	1-E11-PDV-F068B-MO	RHR HT EXCH OUT ISO	RB	042	SW L/7R	1	1	B	1
08a	1-E41-F006	HPCI INJECTION VALVE	RB	042	NW M/4R	1	1		1
01	1-1XE	MCC 1XE	RB	050	NN M/4R	1	1	A	0
01	1-1XF	MCC 1XF	RB	050	SE P/7R	2	2	B	0
05	1-E11-C001A	RHRSW BOOSTER PUMP 1A	RB	050	EE R/4R	1	1	A	1
05	1-E11-C001B	RHRSW BOOSTER PUMP 1B	RB	050	EE R/6R	1	1	B	1
05	1-E11-C001C	RHRSW BOOSTER PUMP 1C	RB	050	EE R/5R	1	1	A	1
05	1-E11-C001D	RHRSW BOOSTER PUMP 1D	RB	050	SE R/7R	1	1	B	1
18	1-H21-P004	RX PROTECTION & NSSS INSTR RACK	RB	050	CC P/4R	1	1		1
18	1-H21-P005	RX PROTECTION & NSSS INSTR RACK	RB	050	EE P/6R	1	1		1
0	1-RNA-DIVI-N2-TANKS	N2 BOTTLES	RB	050	SW M/6R	2	2	2	1
18	1-RNA-PT-5267	BACKUP N2 PRESSURE TRANSMITTER	RB	050	SS M/6R	2	2	2	1
18	1-RNA-PT-5268	BACKUP N2 PRESSURE TRANSMITTER	RB	050	SS M/6R	2	2	2	1
18	1-RNA-PT-5269	BACKUP N2 PRESSURE TRANSMITTER	RB	050	NN N/4R	1	1	1	1
18	1-RNA-PT-5270	BACKUP N2 PRESSURE TRANSMITTER	RB	050	NN N/4R	1	1	1	1
18	1-SW-PS-1176B	RHR SW PUMPS INLET PRESSURE	RB	050	EE R/6R	1	1	B	1
18	1-SW-PS-1176D	RHR SW PUMPS INLET PRESSURE	RB	050	SE R/7R	1	1	B	1

APPENDIX B
SAFE SHUTDOWN EQUIPMENT LIST
UNIT 1 AND COMMON

E.C.	Equipment ID Number	Description	Bldg.	Floor Elev.	Location	A-46	IPEEE	Train	Unit
01	2-2XE	MCC 2XE	RB	050	NN M/20R	1	1	A	0
01	2-2XF	MCC 2XF	RB	050	SE P/23R	2	2	B	0
07	1-C11-CV-F010-AO	SCRAM DISCHARGE VOLUME VENT VALVE	RB	052	NE P/18R	1	1		1
07	1-C11-V139-AO	SCRAM DISCHARGE VOLUME VENT VALVE	RB	052	NE P/18R	1	1		1
18	1-SW-PS-1175A	RHR SW PUMPS INLET PRESSURE	RB	054	EE S/5R	1	1	A	1
18	1-SW-PS-1175C	RHR SW PUMPS INLET PRESSURE	RB	054	EE R/5R	1	1	A	1
R	1-RNA-FLT-103	BACKUP N2 INLINE FILTER	RB	056	SW M/6R	2	2	2	1
R	1-RNA-FLT-104	BACKUP N2 IN LINE FILTER	RB	056	NN N/4R	1	1	1	1
07	1-RNA-PCV-5247	BACKUP N2 DISCHARGE PRESS CONTROL VALVE	RB	056	SW M/6R	2	2	2	1
07	1-RNA-PCV-5248	BACKUP N2 DISCHARGE PRESS CONTROL VALVE	RB	056	SS M/4R	1	1	1	1
0	1-RNA-PRV-5260	BACKUP PRESSURE RELIEF VALVE	RB	056	NN N/4R	1	1	1	1
0	1-RNA-PSE-101	BACKUP N2 DISCHARGE RUPTURE DIAPHRAM	RB	056	SS M/6R	2	2	2	1
08b	1-RNA-SV-5251	BACKUP N2 SOLENOID VALVE	RB	056	CC P/6R	2	2	2	1
08b	1-RNA-SV-5481	BACKUP N2 DISCHARGE SOLENOID VALVE	RB	056	SW H/6R	2	2	2	1
08b	1-RNA-SV-5482	BACKUP N2 DISCHARGE SOLENOID VALVE	RB	056	NN N/4R	1	1	1	1
0	1-RNA-PRV-5256	BACKUP N2 PRESSURE RELIEF VALVE	RB	057	SS M/6R	2	2	2	1
0	1-RNA-PRV-5258	BACKUP N2 PRESSURE RELIEF VALVE	RB	057	NN N/3R	1	1	1	1
0	1-RNA-PRV-5259	BACKUP PRESSURE RELIEF VALVE	RB	057	SS M/6R	2	2	2	1
08b	1-RNA-SV-5253	BACKUP N2 SOLENOID VALVE	RB	057	CC P/4R	1	1	1	1
18	1-SW-PT-1154	RHRSWP DISCHARGE PRESSURE TRANSMITTER	RB	058	EE R/5R	1	1	A	1
18	1-SW-PT-1155	RHRSWP DISCHARGE PRESSURE TRANSMITTER	RB	058	SE R/6R	1	1	B	1
18	1-SW-PT-1156	RHRSWP DISCHARGE PRESSURE TRANSMITTER	RB	058	EE R/5R	1	1	A	1
18	1-SW-PT-1157	RHRSWP DISCHARGE PRESSURE TRANSMITTER	RB	058	SE R/6R	1	1	B	1
19	1-SW-TSH-1109	RHRSW PUMP DISCHARGE TEMP	RB	058	EE R/4R	1	1	A	1
19	1-SW-TSH-1110	RHRSW PUMP DISCHARGE TEMP	RB	058	EE R/6R	1	1	B	1
19	1-SW-TSH-1111	RHRSW PUMP DISCHARGE TEMP	RB	058	EE R/4R	1	1	A	1
08a	1-E11-PDV-F068A-MO	RHR HT EXCH 1A DISCH ISOL	RB	060	NW L/3R	1	1	B	1
08	1-SW-V101	CSW TO RHRSW SUPPLY	RB	061	EE R/4R	1	1	A	1
08a	1-SW-V102-MO	RHRSW PUMP SUCTION XTIE	RB	061	EE S/6R	1	1	B	1
08a	1-SW-V103-MO	NSW TO RRCCW TRAIN B	RB	061	SE R/7R	1	1	B	1

APPENDIX B
SAFE SHUTDOWN EQUIPMENT LIST
UNIT 1 AND COMMON

E.C.	Equipment ID Number	Description	Bldg.	Floor Elev	Location	A-46	IPEEE	Train	Unit
08	1-SW-V105	RHRSW PUMP SUPPLY	RB	061	SE R/7R	1	1	B	1
08a	1-SW-V106-MO	RBCCW SUPPLY ISO	RB	061	SE S/7R	1	1	A	1
18	1-SW-FT-1158	NSW TO RBCCW FLOW TRANSMITTER	RB	062	EE R/6R	1	1	A	1
19	1-SW-TSH-1112	RHRSW PUMP DISCHARGE TEMP	RB	062	SE R/78	1	1	B	1
08a	1-E21-F004A	CS OUTBOARD INJECTION VALVE	RB	063	NN N/4R	2	2	A	1
08a	1-E21-F005A	CS INBOARD INJECTION VALVE	RB	063	NN N/4R	2	2	A	1
18	1-E21-PSL-2678	CS TRAIN A LOW PRESSURE DSCH SWITCH	RB	063	NN N/4R	2	2	A	1
08a	1-G31-F004	RHR/RWCU MOV (INBOARD)	RB	063		2	2	A/B	1
01	1-1XG	MCC 1XG	RB	080	EE P/4R	1	1	A	0
01	1-1XH	MCC 1XH	RB	080	WW M/6R	2	2	B	0
01	2-2XG	MCC 2XG	RB	080	EE P/20R	1	1	A	0
01	2-2XH	MCC 2XH	RB	080	WW M/22R	2	2	B	0
18	1-CAC-PT-1230	DRYWELL PRESSURE TRANSMITTER	RB	088	EE P/6R	1	1		1
19	1-CAC-TE-1258-13	DRYWELL TEMPERATURE ELEMENT	RB/DW	010	DW AZ-300	1	1		1
19	1-CAC-TE-1258-12	DRYWELL TEMPERATURE ELEMENT	RB/DW	013	DW AZ-055	1	1		1
19	1-CAC-TE-1258-11	DRYWELL TEMPERATURE ELEMENTS	RB/DW	015	DW AZ-135	1	1		1
19	1-CAC-TE-1258-10	DRYWELL TEMPERATURE ELEMENTS	RB/DW	018	DW AZ-315	1	1		1
08a	1-E41-F002	STEAM SUPPLY INBOARD ISOLATION VALVE	RB/DW	020	DW AZ-065	1	1		1
19	1-CAC-TE-1258-9	DRYWELL TEMPERATURE ELEMENTS	RB/DW	023	DW AZ-135	1	1		1
19	1-CAC-TE-1258-8	DRYWELL TEMPERATURE ELEMENTS	RB/DW	028	DW AZ-335	1	1		1
08a	1-E11-F009	SHUTDWN CLG INBOARD SUCTION THROTTLE VLV	RB/DW	034	DW AZ-180	2	2	A/B	1
19	1-CAC-TE-1258-7	DRYWELL TEMPERATURE ELEMENTS	RB/DW	035	DW AZ-100	1	1		1
19	1-CAC-TE-1258-6	DRYWELL TEMPERATURE ELEMENTS	RB/DW	040	DW AZ-260	1	1		1
07	1-B21-F013A	SAFETY RELIEF VALVE A & SOLENOID	RB/DW	044	DW AZ-030	1	1		1
07	1-B21-F013B	SAFETY RELIEF VALVE B & SOLENOID	RB/DW	044	DW AZ-051	1	1		1
07	1-B21-F013C	SAFETY RELIEF VALVE C & SOLENOID	RB/DW	044	DW AZ-060	1	1		1
07	1-B21-F013D	SAFETY RELIEF VALVE D & SOLENOID	RB/DW	044	DW AZ-080	1	1		1
07	1-B21-F013E	SAFETY RELIEF VALVE E & SOLENOID	RB/DW	044	DW AZ-095	1	1		1
07	1-B21-F013F	SAFETY RELIEF VALVE F & SOLENOID	RB/DW	044	DW AZ-299	1	1		1
07	1-B21-F013G	SAFETY RELIEF VALVE G & SOLENOID	RB/DW	044	DW AZ-281	1	1		1

APPENDIX B
SAFE SHUTDOWN EQUIPMENT LIST
UNIT 1 AND COMMON

E.C.	Equipment ID Number	Description	Bldg.	Floor Elev.	Location	A-46	IPEEE	Train	Unit
07	1-B21-F013H	SAFETY RELIEF VALVE H & SOLENOID	RB/DW	044	DW AZ-330	1	1		1
07	1-B21-F013J	SAFETY RELIEF VALVE J & SOLENOID	RB/DW	044	DW AZ-280	1	1		1
07	1-B21-F013K	SAFETY RELIEF VALVE K & SOLENOID	RB/DW	044	DW AZ-265	1	1		1
07	1-B21-F013L	SAFETY RELIEF VALVE L & SOLENOID	RB/DW	044	DW AZ-097	1	1		1
18	1-B21-FT-4157	SRV A FLOW TRANSMITTER	RB/DW	044	DW AZ-030	1	1		1
18	1-B21-FT-4158	SRV B FLOW TRANSMITTER	RB/DW	044	DW AZ-051	1	1		1
18	1-B21-FT-4159	SRV C FLOW TRANSMITTER	RB/DW	044	DW AZ-060	1	1		1
18	1-B21-FT-4160	SRV D FLOW TRANSMITTER	RB/DW	044	DW AZ-080	1	1		1
18	1-B21-FT-4161	SRV E FLOW TRANSMITTER	RB/DW	044	DW AZ-095	1	1		1
18	1-B21-FT-4162	SRV F FLOW TRANSMITTER	RB/DW	044	DW AZ-299	1	1		1
18	1-B21-FT-4163	SRV G FLOW TRANSMITTER	RB/DW	044	DW AZ-281	1	1		1
18	1-B21-FT-4164	SRV H FLOW TRANSMITTER	RB/DW	044	DW AZ-330	1	1		1
18	1-B21-FT-4165	SRV J FLOW TRANSMITTER	RB/DW	044	DW AZ-280	1	1		1
18	1-B21-FT-4166	SRV K FLOW TRANSMITTER	RB/DW	044	DW AZ-265	1	1		1
18	1-B21-FT-4167	SRV L FLOW TRANSMITTER	RB/DW	044	DW AZ-097	1	1		1
19	1-B21-TE-N004A	TEMPERATURE SENSOR - SRV A	RB/DW	044	DW AZ-030	1	1		1
19	1-B21-TE-N004B	TEMPERATURE SENSOR - SRV B	RB/DW	044	DW AZ-051	1	1		1
19	1-B21-TE-N004C	TEMPERATURE SENSOR - SRV C	RB/DW	044	DW AZ-060	1	1		1
19	1-B21-TE-N004D	TEMPERATURE SENSOR - SRV D	RB/DW	044	DW AZ-080	1	1		1
19	1-B21-TE-N004E	TEMPERATURE SENSOR - SRV E	RB/DW	044	DW AZ-095	1	1		1
19	1-B21-TE-N004F	TEMPERATURE SENSOR - SRV F	RB/DW	044	DW AZ-299	1	1		1
19	1-B21-TE-N004G	TEMPERATURE SENSOR - SRV G	RB/DW	044	DW AZ-281	1	1		1
19	1-B21-TE-N004H	TEMPERATURE SENSOR - SRV H	RB/DW	044	DW AZ-330	1	1		1
19	1-B21-TE-N004J	TEMPERATURE SENSOR - SRV J	RB/DW	044	DW AZ-280	1	1		1
19	1-B21-TE-N004K	TEMPERATURE SENSOR - SRV K	RB/DW	044	DW AZ-265	1	1		1
19	1-B21-TE-N004L	TEMPERATURE SENSOR - SRV L	RB/DW	044	DW AZ-097	1	1		1
19	1-CAC-TE-1258-5	DRYWELL TEMPERATURE ELEMENTS	RB/DW	045	DW AZ-080	1	1		1
21	1-B21-A003A	SRV ACCUMULATOR A	RB/DW	055	DW AZ-031	1	1		1
21	1-B21-A003B	SRV ACCUMULATOR B	RB/DW	055	DW AZ-051	1	1		1
21	1-B21-A003C	SRV ACCUMULATOR C	RB/DW	055	DW AZ-055	1	1		1

APPENDIX B
SAFE SHUTDOWN EQUIPMENT LIST
UNIT 1 AND COMMON

E.C.	Equipment ID Number	Description	Bldg.	Floor Elev.	Location	A-46	IPEEE	Train	Unit
21	1-B21-A003D	SRV ACCUMULATOR D	RB/DW	055	DW AZ-059	1	1		1
21	1-B21-A003E	SRV ACCUMULATOR E	RB/DW	055	DW AZ-095	1	1		1
21	1-B21-A003F	SRV ACCUMULATOR F	RB/DW	055	DW AZ-299	1	1		1
21	1-B21-A003G	SRV ACCUMULATOR G	RB/DW	055	DW AZ-281	1	1		1
21	1-B21-A003H	SRV ACCUMULATOR H	RB/DW	055	DW AZ-328	1	1		1
21	1-B21-A003J	SRV ACCUMULATOR J	RB/DW	055	DW AZ-325	1	1		1
21	1-B21-A003K	SRV ACCUMULATOR K	RB/DW	055	DW AZ-297	1	1		1
21	1-B21-A003L	SRV ACCUMULATOR L	RB/DW	055	DW AZ-062	1	1		1
08a	1-G31-F001	RHR/RWCU MOV (OUTBOARD)	RB/DW	059	DW AZ-243	2	2	A/B	1
19	1-CAC-TE-1258-4	DRYWELL TEMPERATURE ELEMENTS	RB/DW	070	DW AZ-270	1	1		1
19	1-CAC-TE-1258-3	DRYWELL TEMPERATURE ELEMENTS	RB/DW	075	DW AZ-090	1	1		1
19	1-CAC-TE-1258-2	DRYWELL TEMPERATURE ELEMENTS	RB/DW	080	DW AZ-260	1	1		1
19	1-CAC-TE-1258-1	DRYWELL TEMPERATURE ELEMENTS	RB/DW	087	DW AZ-330	1	1		1
19	1-CAC-TE-1258-22	DRYWELL TEMPERATURE ELEMENT	RB/DW	093	DW AZ-105	1	1		1
19	1-CAC-TE-1258-23	DRYWELL TEMPERATURE ELEMENT	RB/DW	093	DW AZ-225	1	1		1
19	1-CAC-TE-1258-24	DRYWELL TEMPERATURE ELEMENT	RB/DW	093	DW AZ-345	1	1		1
R	1-E11-S1	SP STRAINER	RB/SP	-009	SU AZ-135	1	1	A	1
R	1-E21-S2A	CS STRAINER SUCTION LINE	RB/SP	-009	SU AZ-045	2	2	A	1
R	1-E41-S2	HPCI/SP STRAINER	RB/SP	-009	SU AZ-180	1	1		1
19	1-CAC-TE-1258-17	SP TEMPERATURE ELEMENT	RB/SP	004	SU AZ-040	1	1		1
19	1-CAC-TE-1258-18	SP TEMPERATURE ELEMENT	RB/SP	004	SU AZ-145	1	1		1
19	1-CAC-TE-1258-19	SP TEMPERATURE ELEMENT	RB/SP	004	SU AZ-215	1	1		1
19	1-CAC-TE-1258-20	SP TEMPERATURE ELEMENT	RB/SP	004	SU AZ-320	1	1		1
08a	1-SW-V255-MO	NSW DG SUPPLY VALVE	SWB	002	EE Z/11D	1	1		1
08a	1-SW-18-MO	CSW PUMP 1C NSW DISCHARGE	SWB	009	NW	1	1		1
08a	1-SW-V14-MO	CSW PUMP 1A NSW DISCHARGE	SWB	009	NW	1	1		1
08a	1-SW-V16-MO	CSW PUMP 1B NSW DISCHARGE	SWB	009	NW	1	1		1
08a	1-SW-V19-MO	NSW 1A DISCHARGE VALVE	SWB	009	NW	1	1	A	1
08a	1-SW-V20-MO	NSW 1B DISCHARGE VALVE	SWB	009	NW	1	1	B	1
14	1-1A-SW	SW PANEL - 120VAC EMERG PWR	SWB	020	N WALL	1	1	A	0

APPENDIX B
SAFE SHUTDOWN EQUIPMENT LIST
UNIT 1 AND COMMON

E C	Equipment ID Number	Description	Bldg	Floor Elev.	Location	A-46	IPEEE	Train	Unit
04	1-1A-SW-XFMR	DIST. PANEL TRANSFORMER MCC 1PA	SWB	020	NORTH WALL	1	1		0
14	1-1B-SW	SW PANEL - 120VAC EMERG PWR	SWB	020	N WALL	2	2	B	0
04	1-1B-SW-XFMR	DIST. PANEL TRANSFORMER MCC 1PB	SWB	020	NORTH WALL	1	1		0
01	1-1PA	MCC 1PA	SWB	020	NW	1	1	A	0
01	1-1PB	MCC 1PB	SWB	020	NW	2	2	B	0
06	1-SW-1A-NUC-PMP	NUCLEAR SERVICE WATER PUMP 1A	SWB	020	NW	1	1	A	1
06	1-SW-1B-NUC-PMP	NUCLEAR SERVICE WATER PUMP 1B	SWB	020	NW	1	1	B	1
20	1-SW-PNL-VW8	PARTIAL WINDING HTR CAB FOR MCC 1PA	SWB	020	NW	1	1		1
20	1-SW-PNL-VX0	PARTIAL WINDING HTR CAB FOR MCC 1PB	SWB	020	NW	1	1		1
18	1-SW-PS-271	NUCLEAR HDR PRESSURE SWITCH	SWB	020	NW	1	1		1
18	1-SW-PT-143	NUCLEAR HDR PRESSURE TRANSMITTER	SWB	020	NW	1	1		1
14	2-2A-SW	SW PANEL - 120VAC EMERGE PWR	SWB	020	S WALL	1	1	A	0
04	2-2A-SW-XFMR	DIST. PANEL TRANSFORMER MCC 2PA	SWB	020	WEST WALL	1	1		0
14	2-2B-SW	SW PANEL - 120VAC EMERGE PWR	SWB	020	S WALL	2	2	B	0
04	2-2B-SW-XFMR	DIST. PANEL TRANSFORMER MCC 2PB	SWB	020	WEST WALL	1	1		0
01	2-2PA	MCC 2PA	SWB	020	SW	1	1	A	0
01	2-2PB	MCC 2PB	SWB	020	SW	2	2	B	0
18	1-SW-PV-138	AOV FOR STRAINER BACKWASH	SWB	021	NE	1	1	A	1
18	1-SW-PV-140	AOV FOR STRAINER BACKWASH	SWB	021	NE	1	1	B	1
18	1-SW-PY-128	SOLENOID VALVE (SV)	SWB	021	NE	1	1	A	1
18	1-SW-PY-140	SOLENOID VALVE (SV)	SWB	021	NE	1	1	B	1
R	1-SW-1A-NUC-PMP-STR	NSW PUMP 1A STRAINER	SWB	025	NE	1	1	A	1
R	1-SW-1B-NUC-PMP-STR	NSW PUMP 1B STRAINER	SWB	025	NE	1	1	B	1
18	1-SW-PDIC-138	DIFFERENTIAL PRESSURE CONTROLLER	SWB	025	NW	1	1	A	1
18	1-SW-PDIC-140	DIFFERENTIAL PRESSURE CONTROLLER	SWB	025	NW	1	1	B	1
0	1-SW-PDSH-139	NSW PUMP 1A STRAINER PRESS SWITCH	SWB	025	NW	1	1	A	1
0	1-SW-PDSH-141	NSW PUMP 1B STRAINER PRESS SWITCH	SWB	025	NW	1	1	B	1
14	1-7A	DISTRIBUTION PANEL 7A	SWYD RLY HSE			1	1	A	1
14	1-7B	DISTRIBUTION PANEL 7B	SWYD RLY HSE			2	2	B	1

APPENDIX B
SAFE SHUTDOWN EQUIPMENT LIST
UNIT 2

E.C.	Equipment ID Number	Description	Bldg.	Floor Elev.	Location	A-46	IPEEE	Train	Unit
18	2-E41-LSL-N002	CST LO WATER LEVEL ACTUATION OF HPCI	AT CST	GRADE		1		A	2
18	2-E41-LSL-N003	CST LO WATER LEVEL ACTUATION OF HPCI	AT CST	GRADE		1		A	2
15	2-2A-1-125VDC-BAT	BATTERY 2A-1	CB	023	BATT RM	1	1	A	2
16	2-2A-1-125VDC-CHGR	BATTERY CHARGER 2A-1	CB	023	BATT RM	1	1	A	2
15	2-2A-2-125VDC-BAT	BATTERY 2A-2	CB	023	BATT RM	1	1	A	2
16	2-2A-2-125VDC-CHGR	BATTERY CHARGER 2A-2	CB	023	BATT RM	1	1	A	2
03	2-2A-250VDC	SWITCHBOARD 2A	CB	023	BATT RM	1	1	A	2
15	2-2B-1-125VDC-BAT	BATTERY 2B-1	CB	023	BATT RM	2	2	B	2
16	2-2B-1-125V. C-CHGR	BATTERY CHARGER 2B-1	CB	023	BATT RM	2	2	B	2
15	2-2B-2-125VDC-BAT	BATTERY 2B-2	CB	023	BATT RM	2	2	B	2
16	2-2B-2-125VDC-CHGR	BATTERY CHARGER 2B-2	CB	023	BATT RM	2	2	B	2
03	2-2B-250VDC	SWITCHBOARD 2B	CB	023	BATT RM	2	2	B	2
14	2-C72-P001	RPS POWER DIST. PNL. - RPS A AND B	CB	023	CABLE SPRD	2	2		2
13	2-C72-S001A	MOTOR GENERATOR SET A	CB	023	BATT RM	12	12		2
13	2-C72-S001B	MOTOR GENERATOR SET B	CB	023	BATT RM	12	12		2
14	2-12A	DISTRIBUTION PANEL 12A	CB	049	SW LC/16C	1	1	A	2
14	2-12B	NODE HZ5 - DISTRIBUTION PANEL 12B	CB	049	SE NC/15C	2	2	B	2
14	2-4A	NODE H23 - DISTRIBUTION PANEL 4A	CB	049	SE NC/15C	2	2	B	2
14	2-4AB	NODE H37 - DISTRIBUTION PANEL 4AB	CB	049	SE NC/16C	1	1	A/B	2
14	2-4B	NODE H24 - DISTRIBUTION PANEL 4B	CB	049	SW LC/18	2	2	B	2
20	2-B21-PNL-QV9	MIAN STEAM LEAK DETECTION CABINET	CB	049	C RM	1	1		2
20	2-CAC-TY-4426-1	DIVISION I SPTMS SIGNAL RELAY DEVICE	CB	049	C RM	1			2
20	2-CAC-TY-4426-2	DIVISION II SPTMS SIGNAL RELAY DEVICE	CB	049	C RM	1			2
20	2-H12-P601	ENGINEERED SAFEGUARDS VERTICAL BOARD	CB	049	C RM	1			2
20	2-H12-P603	REACTOR CONTROL PANEL	CB	049	C RM	1			2
20	2-H12-P608	POWER RANGE NEUTRON MONITORING PANEL	CB	049	C RM	2	2		2
20	2-H12-P609	RPS TRIP SYSTEM A	CB	049	C RM	1	1		2
20	2-H12-P610	RPS TEST & MONITOR PANEL	CB	049	C RM	1	1		2
20	2-H12-P611	RPS TRIF SYSTEM B	CB	049	C RM	1	1		2
20	2-H12-P612	FEEDWATER & REACTOR RECIRC INSTR PANEL	CB	049	C RM	1		A/B	2

APPENDIX B
SAFE SHUTDOWN EQUIPMENT LIST
UNIT 2

E.C.	Equipment ID Number	Description	Bldg.	Floor Elev.	Location	A-46	IPEEE	Train	Unit
20	2-H12-P613	PROCESS INSTRUMENTATION CABINET	CB	049	C RM	2		A	2
20	2-H12-P614	NSSS TEMP REC & LEAK DETECT VERT BOARD	CB	049	C RM	1			2
20	2-H12-P615	ROD POSITION INFORMATION SYSTEM CABINET	CB	049	C RM	1	1		2
20	2-H12-P616	ROD MANUAL CONTROL PANEL	CB	049	C RM	1			2
20	2-H12-P617	RHR A RELAY VERTICAL BOARD	CB	049	C RM	1	1		2
20	2-H12-P618	RHR B RELAY VERTICAL BOARD	CB	049	C RM	1	1		2
20	2-H12-P620	HPCI VERTICAL RELAY PANEL	CB	049	C RM	1	1		2
20	2-H12-P622	NSSS INBOARD VALVE REALY BOARD	CB	049	C RM	1	1		2
20	2-H12-P623	NSSS OUTBOARD VALVE RELAY BOARD	CB	049	C RM	1	1		2
20	2-H12-P624	BENCHBOARD AUXILIARY RELAY CABINET	CB	049	C RM	1	1		2
20	2-H12-P626	CORE SPRAY A RELAY VERTICAL BOARD	CB	049	C RM	1	1		2
20	2-H12-P627	CORE SPRAY B RELAY VERTICAL BOARD	CB	049	C RM	1	1		2
20	2-H12-P630	REACTOR ANNUNCIATOR CABINET	CB	049	C RM	2	2		2
20	2-XU-13	TERMINAL CAB FOR SYSTEMS SW,EB,RCC & BAT	CB	049	C RM	1	1		2
20	2-XU-2	MAIN CONTROL ROOM RTG BOARD	CB	049	C RM	1			2
20	2-XU-25	TERMINAL CAB FOR SYSTEMS SW,EB,RCC & BAT	CB	049	C RM	1	1		2
20	2-XU-27	RX,DG & CTRL BLDGS HVAC DIV-I TERMINAL CABINET	CB	049	C RM	1	1		2
20	2-XU-28	RX,DG & CTRL BLDGS HVAC DIV-II TERMINAL CABINET	CB	049	C RM	1	1		2
20	2-XU-3	RX CONT & TURB BLDG HVAC & TURB AUX CONT PNL	CB	049	C RM	12		A/B	2
20	2-XU-50	RIP TERMINAL CABINET	CB	049	C RM	1	1		2
20	2-XU-51	BOP RTG BOARD	CB	049	C RM	1			2
20	2-XU-53	TERMINATING CABINET DIV-I	CB	049	C RM	1	1		2
20	2-XU-56	TERMINATING CABINET DIV-II	CB	049	C RM	1	1		2
20	2-XU-57	RIP TERMINAL CABINET DIV-II	CB	049	C RM	1	1		2
20	2-XU-58	RIP TERMINAL CABINET DIV-I	CB	049	C RM	1	1		2
20	2-XU-63	TRIP CALIBRATION CABINET - ECCS DIVISION I	CB	049	C RM	1		A	2
20	2-XU-64	TRIP CALIBRATION CABINET - ECCS DIVISION II	CB	049	C RM	2		B	2
20	2-XU-73	FLUID FLOW DETECT CAB FOR SRV POSITION IND	CB	049	C RM	1			2
20	2-XU-75	POST-ACCIDENT MISC INSTRUMENT CABINET, DIV-I	CB	049	C RM	1	1		2
20	2-XU-76	TSC/EOF COMPUTER ISOLATOR CABINET	CB	049	C RM	2			2

APPENDIX B
SAFE SHUTDOWN EQUIPMENT LIST
UNIT 2

E.C.	Equipment ID Number	Description	Bldg.	Floor Elev.	Location	A-46	IPEEE	Train	Unit
20	2-XU-77	TSC/EOF COMPUTER ISOLATOR CABINET	CB	049	C RM	1			2
20	2-XU-79	POST ACCIDENT MISC INSTRUMENT CABINET	CB	049	C RM	1	1		2
20	2-XU-9	BOP PROCESS INSTR POWER SUPPLY CABINET	CB	049	C RM	1			2
20	EGM	TURBINE CONTROLLER	CB	049		1			2
08	2-SW-V255	DG SUPPLY ISOL, NSW	DG	002	SE Z/13D	1			2
19	2-SW-TY-4887	RHRSW PUMP DISCHARGE TEMP	DG	050	WW V/11D	1		A	2
19	2-SW-TY-4888	RHRSW PUMP DISCHARGE TEMP	DG	050	SW U/13D	1		B	2
19	2-SW-TY-4889	RHRSW PUMP DISCHARGE TEMP	DG	050	NW V/9D	1		A	2
19	2-SW-TY-4890	RHRSW PUMP DISCHARGE TEMP	DG	050	WW U/10D	1		B	2
14	2-2A-125VDC	DISTRIBUTION PANEL 2A	DG	054	WW U/12D	1	1	A	2
14	2-2B-125VDC	DISTRIBUTION PANEL 2B	DG	054	SW U/13D	2	2	B	2
19	2-VA-TT-1603	CS RM TEMPERATURE SENSOR	RB		CSP RM A	1		A	2
19	2-VA-TT-1603A	CS RM INDICATING BRIDGE	RB		CSP RM A	1		A	2
19	2-VA-TT-1604	CS RM TEMPERATURE SENSOR	RB		CSP RM B	2		B	2
19	2-VA-TT-1604A	CS RM INDICATING BRIDGE	RB		CSP RM B	2		B	2
08a	2-SW-V118-MO	ROOM COOLING NSW XTIE	RB	-001	SE T/22R	1		A	2
18	2-SW-PSL-1174	LOW PRESSURE SWITCH	RB	-002	NE R/18R	1		A	2
08a	2-E11-F003A	RHR HX 2A OUTLET VALVE	RB	-003	NE S/18R	1		A	2
08a	2-E11-F007A	MIN FLOW BYPASS VALVE	RB	-003	NE S/20R	1		A	2
08a	2-E11-F047A	RHR HX 2A INLET VALVE	RB	-003	NE T/19R	1		A	2
08a	2-E11-F048A	RHR HX 2A BYPASS VALVE	RB	-003	NE S/19R	1		A	2
18	2-E11-PDIS-N021A	RHR HX 2A PRESS DIFF SWITCH	RB	-003	NE S/18R	1		A	2
08a	2-E21-F015A	CS FULL FLOW TEST BYPASS VALVE	RB	-003	N CS RM L	2		A	2
08a	2-E41-F011	HPCI TEST LINE/CST RETURN VALVE	RB	-003	NE T/19R	1			2
08a	2-SW-V111-MO	ROOM COOLING NSW ISO	RB	-003	NE R/18R	1		A	2
09	2-VA-2C-FCU-RB	FAN FOR CS FAN COOLING UNIT A	RB	-007	NW L/18R	1		A	2
10	2-VA-2C-FCV-RB	COIL FOR CS FAN COOLING UNIT A	RB	-007	NW L/18R	1		A	2
10	2-VC-2D-FC-RB	COIL FOR CS FAN COOLING UNIT B	RB	-007	SW L/24R	2		B	2
09	2-VC-2D-FCU-RB	FAN FOR CS FAN COOLING UNIT B	RB	-007	SW L/24R	2		B	2
08b	2-CAC-SV-4345	SP SOLENOID VALVE	RB	-008	SE R/23R	1			2

APPENDIX B
SAFE SHUTDOWN EQUIPMENT LIST
UNIT 2

E C	Equipment ID Number	Description	Bldg.	Floor Elev.	Location	A-46	IPEEE	Train	Unit
08a	2-E21-F031A	CS MIN FLOW BYPASS VALVE - TR A	RB	-008	N CS RM L	2		A	2
08b	2-E41-SV-1220D	SP SOLENOID VALVE FOR LSH-N015A	RB	-008	SE R/21R	1			2
18	2-SW-PSL-1178	PRESSURE SWITCH	RB	-008	SE T/23R	1		B	2
07	2-SW-V124-AO	RHR ROOM COOLER 2B ISO	RB	-008	SE T/23R	1		B	2
19	2-VA-TS-936A	RHR RM TEMPERATURE SWITCH	RB	-008	NE T/20R	1		A	2
08a	2-E11-F020A	SP SUCTION VALVE	RB	-009	NE R/19R	2		A	2
06	2-E21-C001A	CSP-2A	RB	-009	NW CORNER	2		A	2
08a	2-E21-F001A	CSP-2A SP SUCTION VALVE	RB	-009	NW L/19R	2		A	2
07	2-E41-PCV-F035	HPCI LO CLR PRESS CONTROL VALVE	RB	-009	EE T/21R	1			2
07	2-SW-V123-AO	CS PUMP ROOM 2D ISO	RB	-010	SS M/24R	1		B	2
07	2-SW-V128-AO	CS ROOM COOLER NSW OUT ISO	RB	-010	NN M/18R	1		A	2
19	2-VA-TS-936D	RHR RM TEMPERATURE SWITCH	RB	-010	SE T/22R	1		A	2
18	2-CAC-PT-1257-2A	SP PRESSURE TRANSMITTER	RB	-012	NE R/18R	1			2
18	2-SW-FSL-825	SEAL COOLER LOW FLOW SWITCH	RB	-012	SE T/23R	1		B	2
18	2-SW-FSL-834	SEAL COOLER LOW FLOW SWITCH	RB	-012	NE T/19R	1		B	2
18	2-SW-FSL-835	SEAL COOLER LOW FLOW SWITCH	RB	-012	SE T/23R	1		B	2
18	2-SW-FSL-836	SEAL COOLER LOW FLOW SWITCH	RB	-012	NE T/19R	1		A	2
07	2-SW-V126-AO	RHR PUMP 2B SEAL COOLER OUTLET	RB	-012	SE T/23R	1		B	2
07	2-SW-V130-AO	RHRP 2A SEAL COOLING DISCHARGE	RB	-012	NE T/19R	1		A	2
07	2-SW-V131-AO	RHRP 2C SEAL COOLING DISCHARGE	RB	-012	NE T/19R	1		A	2
07	2-SW-V125-AO	RHR PUMP 2D SEAL COOLER OUTLET	RB	-013	SE T/23R	1		B	2
05	2-E11-C002A	RHRP-2A	RB	-015	NE T/19R	1		A	2
05	2-E11-C002C	RHRP-2C	RB	-015	NE T/19R	1		A	2
08a	2-E11-F004A	RHRP-2A SP SUCTION VALVE	RB	-015	NE T/18R	1		A	2
08a	2-E11-F004C	RHRP-2C SP SUCTION VALVE	RB	-015	NE T/18R	1		A	2
08a	2-E11-F006A	SHUTDOWN COOLING SUCTION VALVE	RB	-015	NE T/19R	1		A	2
08a	2-E11-F006C	SHUTDOWN COOLING SUCTION VALVE	RB	-015	NE S/19R	1		A	2
07	2-SW-V136	RHRSW PUMP HX AOV VALVE & SOLENOID	RB	-015	SE T/27R	1		A	2
07	2-SW-V137	RHRSW PUMP HX AOV VALVE & SOLENOID	RB	-015	SE S/23R	1		A	2
07	2-SW-V138	RHRSW PUMP HX AOV VALVE & SOLENOID	RB	-015	SE T/24R	1		B	2

APPENDIX B
SAFE SHUTDOWN EQUIPMENT LIST
UNIT 2

E.C.	Equipment ID Number	Description	Bldg	Floor Elev	Location	A-46	IPEEE	Train	Unit
07	2-SW-V139	RHRSW PUMP HX AOV VALVE & SOLENOID	Rb	-015	SE T/24R	1		B	2
06	2-E41-C001	HPCI MAIN PUMP	RB	-017	EE S/21R	1			2
05	2-E41-C001-BOOST-PMP	HPCI BOOSTER PUMP	RB	-017	EE S/22R	1			2
00	2-E41-C002	TURBINE	RB	-017	EE S/21R	1			2
21	2-E41-C002-LUB-OILCLR	LUBE OIL COOLER	RB	-017	EE T/21R	1			2
08a	2-E41-F001	TURBINE STEAM SUPPLY VALVE	RB	-017	EE S/21R	1			2
08a	2-E41-F003	STEAM SUPPLY OUTBOARD ISOLATION VALVE	RB	-017	EE R/21	1			2
08a	2-E41-F004	HPCI/CST SUCTION VALVE	RB	-017	EE S/22R	1			2
08a	2-E41-F007	HPCI DISCHARGE VALVE	RB	-017	NE S/20R	1			2
08a	2-E41-F008	HPCI TEST LINE/CST RETURN VALVE	RB	-017	NE S/20R	1			2
08a	2-E41-F012	MIN FLOW BYPASS VALVE	RB	-017	EE S/22R	1			2
07	2-E41-F025	HPCI COND PUMP DRAIN TO CRW ISOL VALVE	RB	-017	EE S/22R	1			2
07	2-E41-F026	HPCI COND PUMP DRAIN TO CRW ISOL VALVE	RB	-017	EE S/22R	1			2
08a	2-E41-F041	HPCI/SP SUCTION VALVE	RB	-017	EE S/22R	1			2
08a	2-E41-F042	HPCI/SP SUCTION VALVE	RB	-017	EE S/21R	1			2
07	2-E41-F050	L.O. COOLER LINE RELIEF VALVE	RB	-017	EE S/21R	1			2
08a	2-E41-F059	HPCI LO COOLING WATER VALVE	RB	-017	EE T/21R	1			2
08a	2-E41-F075	TURBINE VACUUM BREAKER VALVE	RB	-017	NE S/20R	1			2
08a	2-E41-F079	TURBINE VACUUM BREAKER VALVE	RB	-017	NE S/19R	1			2
18	2-E41-LSH-N015A	SUPP POOL HI WATER LVL ACTUATION OF HPCI	RB	-017	SE R/24R	1		A	2
18	2-E41-LSH-N015B	SUPP POOL HI WATER LVL ACTUATION OF HPCI	RB	-017	NE R/18R	1		A	2
18	2-E41-PSE-D003	TURBINE EXHAUST RUPTURE DIAPHRAM	RB	-017	EE T/20R	1			2
18	2-E41-PSE-D004	TURBINE EXHAUST RUPTURE DIAPHRAM	RB	-017	EE T/20R	1			2
08b	2-E41-SV-1218D	SP SOLENOID VALVE FOR LSH-N015A	RB	-017	SE R/21R	1			2
08b	2-E41-SV-1219D	SP SOLENOID VALVE FOR LSH-N015B	RB	-017	NE P/18R	1			2
08b	2-E41-SV-1221D	SP SOLENOID VALVE FOR LSH-N015B	RB	-017	NE P/18R	1			2
07	2-E41-V8	TURBINE STOP VALVE	RB	-017	EE S/21R	1			2
07	2-E41-V9	TURBINE CONTROL VALVE	RB	-017	EE S/21R	1			2
18	2-H21-P001	CORE SPRAY SYSTEM A INSTRUMENT RACK	RB	-017	N CS RM	2		A	2
18	2-H21-P014	HPCI INSTRUMENT RACK	RB	-017		1			2

APPENDIX B
SAFE SHUTDOWN EQUIPMENT LIST
UNIT 2

E C	Equipment ID Number	Description	Bldg.	Floor Elev.	Location	A-46	IPEEE	Train	Unit
18	2-H21-P018	RHR CHANNEL A INSTRUMENT RACK	RB	-017	NE T/20R	1			2
18	2-H21-P021	RHR CHANNEL B INSTRUMENT RCK	RB	-017	SE T/23R	1			2
20	2-H21-P022	RECIRC PUMP B INSTRUMENT RACK	RB	-017	SE R/23R	1			2
18	2-H21-P034	HPCI LEAK DETECTION SYSTEM A INSTR RACK	RB	-017		1			2
19	2-VA-TT-1601	TEMPERATURE SENSOR	RB	-017	NE T/20R	1		A	2
19	2-VA-TT-1601A	INDICATION BRIDGE	RB	-017	NE T/20R	1		A	2
10	2-VA-2A-FC-RB	COIL FOR RHR FAN COOLING UNIT A	RB	000	NE T/18R	1		A	2
09	2-VA-2A-FCU-RB	FAN FOR RHR FAN COOLING UNIT A	RB	000	NE T/18R	1		A	2
10	2-VA-2B-FC-RB	COIL FOR RHR FAN COOLING UNIT B	RB	000	SE T/24R	2		B	2
09	2-VA-2B-FCU-RB	FAN FOR RHR FAN COOLING UNIT B	RB	000	SE T/24R	2		B	2
07	2-SW-V129-AO	RHR PUMP 2A ROOM COOLER OUT ISO	RB	001	NE T/19R	1		A	2
08b	2-CAC-SV-4222	CONTAINMENT ATMOSPHERE SOLENOID VALVE	RB	002	NE /R19R	1		1	2
08	2-CAC-SV-4223	CONTAINMENT ATMOSPHERE SOLENOID VALVE	RB	002	NE R/19R	2		2	2
08a	2-E11-F024A	SP COOLING ISOLATION VALVE	RB	002	NE S/19R	1		A	2
08a	2-E11-F027A	SP SPRAY ISOLATION VALVE	RB	002	NE S/20R	1		A	2
08a	2-E11-F028A	SP DISCHARGE ISOLATION VALVE	RB	002	NE S/19R	1		A	2
18	2-SW-FT-5114	ROOM COOLER DISCHARGE FLOW	RB	003	NW M/18R	1		A	2
18	2-SW-FT-5115	ROOM COOLER FLOW TRANSMITTER	RB	003	SW M/24R	1		B	2
07	2-E11-CV-F053A	RHR HX/TORUS CONTROL VALVE	RB	006	NE S/19R	1		A	2
08a	2-E11-F016A	DRYWELL SPRAY OUTBOARD ISOLATION VALVE	RB	006	EE S/20R	1		A	2
07	2-VA-2J-TPD-RB	DISCHARGE DAMPER FOR RHR COOLING UNIT A	RB	006	NE T/19R	1		A	2
07	2-VA-2K-TPD-RB	DISCHARGE DAMPER FOR RHR COOLING UNIT B	RB	006	SE T/23R	2		B	2
00	2-VA-FV-936A	RHR DAMPER OPERATOR	RB	006	NE T/19R	1		A	2
00	2-VA-FV-936B	RHR DAMPER OPERATOR	RB	006	SE T/23R	2		B	2
08b	2-VA-SV-936A	SOLENOID VALVE	RB	006	NE T/19R	1		A/B	2
08b	2-VA-SV-936B	SOLENOID VALVE	RB	006	SE T/23R	1		A/B	2
18	2-VA-ZS-936A	FAN/DAMPER LIMIT SWITCH	RB	006	NE T/19R	1		A	2
18	2-VA-ZS-936B	FAN/DAMPER LIMIT SWITCH	RB	006	SE T/23R	2		B	2
08b	2-CAC-SV-1219B	SP SOLENOID VALVE	RB	007	NE R/18R	1			2
08b	2-E11-SV-F053A	PILOT SOLENOID VALVE FOR CV-F053A	RB	007	NE T/19R	1		A	2

APPENDIX B
SAFE SHUTDOWN EQUIPMENT LIST
UNIT 2

E.C.	Equipment ID Number	Description	Bldg.	Floor Elev.	Location	A-46	IPEEE	Train	Unit
07	2-C12-V140-AO	SCRAM DISCHARGE VOLUME DRAIN VALVE	RB	008	NE S/19R	1			2
07	2-C12-CV-F011-AO	SCRAM DISCHARGE VOLUME DRAIN VALVE	RB	009	NE S/19R	1			2
16	2-E11-CY-K001A	SIGNAL CONVERTER FOR SV-F053A	RB	009	NE T/19R	1		A	2
08a	2-SW-V117-MO	ROOM COOLING NSW ISO	RB	009	SE T/23R	1		B	2
19	2-VA-TS-936B	RHR RM TEMPERATURE SWITCH	RB	015	SE S/22R	2		B	2
19	2-VA-TS-936C	RHR RM TEMPERATURE SWITCH	RB	015	NE S/20R	2		B	2
19	2-VA-TS-936E	HPCI RM TEMPERATURE SWITCH	RB	015	SE T/22R	1			2
19	2-VA-TS-936F	HPCI RM TEMPERATURE SWITCH	RB	015	SE S/22R	2			2
04	2-VA-TZ-1	TRANSFORMER	RB	015	SE T/22R	1		A	2
04	2-VA-TZ-2	TRANSFORMER	RB	015	NE T/20R	2		B	2
04	2-VA-TZ-3	TRANSFORMER	RB	015	SE T/22R	1		A	2
04	2-VA-TZ-4	TRANSFORMER	RB	015	NE T/20R	2		B	2
19	2-VA-TT-1602	TEMPERATURE SENSOR	RB	017	SE T/22R	2		B	2
19	2-VA-TT-1602A	INDICATION BRIDGE	RB	017	SE T/22R	2		B	2
01	2-2XDA	MCC-2XDA	RB	020	NE	1	1	A	2
01	2-2XDB	MCC-2XDB	RB	020	SS	2	2	B	2
00	2-C12-125	SCRAM ACCUMULATOR	RB	020	HCU	1			2
00	2-C12-A001A-N2	NITROGEN BOTTLE & REGULATOR	RB	020	2-C12-A001	1			2
07	2-C12-CV-126-AO	SCRAM INLET ISOLATION VALVE	RB	020	HCU	1			2
07	2-C12-CV-127-AO	SCRAM OUTLET ISOLATION VALVE	RB	020	HCU	1			2
18	2-C12-LDSH-129	N2 ACCUMULATOR LEVEL SWITCH	RB	020	HCU	1			2
18	2-C12-PSL-130	N2 ACCUMULATOR PRESSURE SWITCH	RB	020	HCU	1			2
08	2-C12-SV-117	SCRAM VALVE	RB	020	HCU	1			2
08	2-C12-SV-118	SCRAM VALVE	RB	020	HCU	1			2
08	2-C12-SV-F009A	SCRAM SOLENOID VALVE	RB	020	EE S/21R	1			2
08	2-C12-SV-F009B	SCRAM SOLENOID VALVE	RB	020	EE S/21R	1			2
21	2-E11-B001A	RHR HX 2A	RB	020	NE T/19R	1		A	2
20	2-H21-P003	CRD ACCUMULATOR MONITOR PANEL BANK 1 & 2	RB	020	NN M/19R	1	1		2
18	2-H21-P009	JET PUMP INSTRUMENT RACK	RB	020	NN N/19R	1		A	2
18	2-H21-P010	JET PUMP INSTRUMENT RAK	RB	020	SS P/22R	2		B	2

APPENDIX B
SAFE SHUTDOWN EQUIPMENT LIST
UNIT 2

E.C.	Equipment ID Number	Description	Bldg.	Floor Elev.	Location	A-46	IPEEE	Train	Unit
20	2-H21-P012	CRD ACCUMULATOR MONITOR PANLE BANK 3 & 4	RB	020	SS M/23R	1	1		2
18	2-H21-P016	CORE SPRAY/HPCI LEAK DETECTION INSTR RACK	RB	020		1			2
18	2-H21-P036	CORE SPRAY/HPCI LEAK DETECTION INSTR RACK	RB	020		1			2
18	2-IA-PSL-3596	RNA/BACKUP N2 LO PRESSURE SWITCH	RB	020	NE R/18R	1		1	2
20	2-IR-RB-4	REMOTE SHUTDOWN PANEL	RB	020		2		A/B	2
20	2-XU-4168	FLUID FLO DET PREAMP CAB FOR SRV POSITION	RB	020	SS N/23R	1			2
20	2-E11-F009-L6E	MCC 2XA-DH3 TO 2XD-DX5 XFEER CONTACTOR	RB	021	EE T/21R	1	1		2
20	2-E41-F002-L6G	XFER CONTACTOR PANEL FOR E41-F002-MO	RB	021	EE T/22R	1	1		2
08a	2-E11-F002A-MO	RHR HT EXCH 2A OUT ISO	RB	023	NE T/18R	1		A	2
08a	2-E11-F002B-MO	RHR HX 2B NSW OUT FLOW CTL	RB	023	SE T/23R	1		B	2
20	2-E11-F008-L6C	MCC 2XDA-B26 TO 2XDB-B50 XFER CONTACTOR	RB	023	EE S/22R	1	1		2
20	2-E41-F079-L6F	XFER CONTACTOR PANEL FOR E41-F079-MO	RB	023	EE T/21R	1	1		2
18	2-CAC-PT-2685	DRYWELL PRESSURE TRANSMITTER	RB	024	SS N/23R	1			2
18	2-CAC-PT-5113	DRYWELL PRESSURE TRANSMITTER	RB	024	CC N/21R	1			2
08a	2-E11-F008	SHUTDWN CLG OUTBOARD SUCTION ISOL VALVE	RB	024	EE R/21R	2		A/B	2
08a	2-E11-F015A	LPCI INBOARD INJECTION VALVE	RB	024	EE R/21R	2		A	2
08a	2-E11-F017A	LPCI OUTBOARD INJECTION VALVE	RB	024	EE S/21R	1		A	2
20	2-E11-F008-L1F	RHR SUCT OUTBD ISV ASSD STARTER PANEL	RB	025	NE P/19R	1	1		2
08a	2-E11-F073	ISOLATION VALVE (MOV)	RB	027	SE T/23R	1		B	2
08b	2-CAC-SV-1225C	DRYWELL SOLENOID VALVE	RB	029	SS N/23R	1			2
18	2-IA-PSL-3597	RNA/BACKUP N2 LO PRESSURE SWITCH	RB	029	SW J/22R	2		2	2
19	2-E11-TE-N004A	RHR HX 2A TEMPERATURE ELEMENT	RB	032	NE T/18R	2		A	2
00	2-E11-F055A	RHR HX 2A RELIEF VALVE	RB	039	NE T/18R	2		A	2
08a	2-E41-F006	HPCI INJECTION VALVE	RB	041	WW L/20R	1			2
08a	2-E11-PDV-F068B-MO	RHR HX 2B NSW OUT ISO	RB	042	SW L/23R	1		B	2
05	2-E11-C001A	RHRSW BOOSTER PUMP 2A	RB	050	EE R/22R	1		A	2
05	2-E11-C001B	RHRSW BOOSTER PUMP 2B	RB	050	EE R/22R	1		B	2
05	2-E11-C001C	RHRSW BOOSTER PUMP 2C	RB	050	EE R/21R	1		A	2
05	2-E11-C001D	RHRSW BOOSTER PUMP 2D	RB	050	SE R/23R	1		B	2
18	2-H21-P004	RX PROTECTION & NSSS INSTRUMENT RACK	RB	050	CS P/20R	1		A	2

APPENDIX B
SAFE SHUTDOWN EQUIPMENT LIST
UNIT 2

E.C.	Equipment ID Number	Description	Bldg.	Floor Elev.	Location	A-46	IPEEE	Train	Unit
18	2-H21-P005	RX PROTECTION & NSSS INSTRUMENT RACK	RB	050	EE P/21R	2		B	2
00	2-RNA-DIVI-N2-TANKS	N2 BOTTLES	RB	050	NN N/4R	1		1	2
00	2-RNA-DIVII-N2-TANK	N2 BOTTLES	RB	050	SW M/6R	2		2	2
18	2-SW-PS-1175A	RHRSW PUMP INLET PRESSURE	RB	050	EE R/21R	1		A	2
18	2-SW-PS-1175C	RHRSW PUMP INLET PRESSURE	RB	050	EE R/21R	1		A	2
18	2-SW-PS-1176B	RHRSW PUMP INLET PRESSURE	RB	050	SE R/22R	1		B	2
18	2-SW-PS-1176D	RHRSW PUMP INLET PRESSURE	RB	050	SW R/23R	1		B	2
07	2-C12-CV-F010-AO	SCRAM DISCHARGE VOLUME VENT VALVE	RB	052	NE P/18R	1			2
07	2-C12-V-139-AO	SCRAM DISCHARGE VOLUME VENT VALVE	RB	052	NE P/18R	1			2
18	2-RNA-PT-5269	BACKUP N2 PRESSURE TRANSMITTER	RB	053	SE S/23R	1		1	2
18	2-PNS-PSL-5843A	PNS/BACKUP N2 LO PRESSURE SWITCH	RB	054	NN N/20R	1		1	2
18	2-PNS-PSL-5843B	PNS/BACKUP N2 LO PRESSURE SWITCH	RB	054	SS P/22R	2		2	2
18	2-RNA-PT-5267	BACKUP N2 PRESSURE TRANSMITTER	RB	054	SS M/22R	2		2	2
18	2-RNA-PT-5268	BACKUP N2 PRESSURE TRANSMITTER	RB	054	SS M/22R	2		2	2
18	2-RNA-PT-5270	BACKUP N2 PRESSURE TRANSMITTER	RB	054	SE S/23R	1		1	2
R	2-RNA-FLT-104	BACKUP N2 INLINE FILTER	RB	055	EE S/22R	1		1	2
08b	2-RNA-SV-5482	BACKUP N2 DISCHARGE SOLENOID VALVE	RB	055	EE S/22R	1		1	2
R	2-RNA-FLT-103	BACKUP N2 INLINE FILTER	RB	056	SW M/22R	2		2	2
07	2-RNA-PCV-5247	BACKUP N2 DISCHARGE PRESS CONTROL VALVE	RB	056	SS M/22R	2		2	2
07	2-RNA-PCV-5248	BACKUP N2 DISCHARGE PRESS CONTROL VALVE	RB	056	EE S/22R	1		1	2
07	2-RNA-PRV-5256	BACKUP N2 PRESSURE RELIEF VALVE	RB	056	SS M/22R	2		2	2
07	2-RNA-PRV-5258	BACKUP N2 PRESSURE RELIEF VALVE	RB	056	EE R/21R	1		1	2
07	2-RNA-PRV-5260	BACKUP PRESSURE RELIEF VALVE	RB	056	EE S/22R	1		1	2
00	2-RNA-PSE-101	BACKUP N2 DISCHARGE RUPTURE DIAPHRAM	RB	056	SS M/22R	2		2	2
00	2-RNA-PSE-102	BACKUP N2 DISCHARGE RUPTURE DIAPHRAM	RB	056	EE S/22R	1		1	2
08b	2-RNA-SV-5481	BACKUP N2 DISCHARGE SOLENOID VALVE	RB	056	SW M/22R	2		2	2
07	2-RNA-PRV-5259	BACKUP PRESSURE RELIEF VALVE	RB	057	SS M/22R	2		2	2
08	2-E11-PDV-F068A	RHRSW HEAT EXCHANGER DISCH ISOLATION	RB	058	NW L/18R	1		B	2
08b	2-RNA-SV-5253	BACKUP N2 SOLENOID VALVE	RB	058	NE P/20R	1		1	2
18	2-SW-PT-1154	RHRSWP DISCHARGE PRESSURE TRANSMITTER	RB	058	EE R/21R	1		A	2

APPENDIX B
SAFE SHUTDOWN EQUIPMENT LIST
UNIT 2

E C	Equipment ID Number	Description	Bldg.	Floor Elev.	Location	A-46	IPEEE	Train	Unit
18	2-SW-PT-1156	RHRSWP DISCHARGE PRESSURE TRANSMITTER	RB	058	EE R/21R	1		A	2
18	2-SW-PT-1157	RHRSWP DISCHARGE PRESSURE TRANSMITTER	RB	058	SE R/22R	1		B	2
19	2-SW-TSH-1109	RHRSW PUMP DISCHARGE TEMP	RB	058	EE R/20R	1		A	2
19	2-SW-TSH-1110	RHRSW PUMP DISCHARGE TEMP	RB	058	SE R/22R	1		B	2
19	2-SW-TSH-1111	RHRSW PUMP DISCHARGE TEMP	RB	058	EE R/21R	1		A	2
19	2-SW-TSH-1112	RHRSW PUMP DISCHARGE TEMP	RB	058	EE R/22R	1		B	2
18	2-SW-PT-1155	RHRSWP DISCHARGE PRESSURE TRANSMITTER	RB	059	SE R/22R	1		B	2
08a	2-SW-V106	RBCCW XTIE, TR A	RB	060	SE S/23R	1		A	2
08b	2-RNA-SV-5251	BACKUP N2 SOLENOID VALVE	RB	061	CC P/22R	2		2	2
18	2-SW-FT-1158	NSW TO RBCCW FLOW TRANSMITTER	RB	061	EE S/22R	1		A	2
08a	2-SW-V101-MO	RHRSW PUMP SUCTION ISO	RB	061	EE R/20R	1		A	2
08a	2-SW-V102-MO	RHRSW PUMP SUCT XTIE	RB	061	EE S/22R	1		B	2
08a	2-SW-V103	NSW TO RBCCW	RB	061	SE R/23R	1		B	2
08a	2-SW-V105-MO	RHRSW PUMP SUCTION ISO	RB	061	SE R/23R	1		B	2
08a	2-E21-F004A	CS OUTBOARD INJECTION VALVE	RB	063	NN N/20R	2		A	2
08a	2-E21-F005A	CS INBOARD INJECTION VALVE	RB	063	NN N/20R	2		A	2
18	2-E21-PSL-2678	CS TRAIN A LO DSCH PRESSURE SWITCH	RB	063	NN N/20R	2	2	A	2
08a	2-G31-F004	RHR/RWCU MOV (INBOARD)	RB	063	SS N/22R	2		A/B	2
08b	2-CAC-SV-1230B	SOLENOID VALVE FOR DRYWELL INST	RB	086	CC N/22R	1			2
18	2-CAC-PT-1230	DRYWELL PRESSURE TRANSMITTER	RB	088	EE P/22R	1			2
19	2-CAC-TE-1258-13	DRYWELL TEMPERATURE ELEMENT	RB/DW	010	DW AZ-300	1			2
19	2-CAC-TE-1258-12	DRYWELL TEMPERATURE ELEMENT	RB/DW	013	DW AZ-055	1			2
19	2-CAC-TE-1258-11	DRYWELL TEMPERATURE ELEMENT	RB/DW	015	DW AZ-135	1			2
19	2-CAC-TE-1258-10	DRYWELL TEMPERATURE ELEMENT	RB/DW	018	DW AZ-315	1			2
08a	2-E41-F002	STEAM SUPPLY INBOARD ISOLATION VALVE	RB/DW	020	DW AZ-162	1			2
19	2-CAC-TE-1258-9	DRYWELL TEMPERATURE ELEMENT	RB/DW	023	DW AZ-135	1			2
19	2-CAC-TE-1258-8	DRYWELL TEMPERATURE ELEMENT	RB/DW	028	DW AZ-335	1			2
08a	2-E11-F009	SHUTDWN CLG INBOARD SUCTION THROTTLE VLV	RB/DW	034	DW AZ-180	2		A/B	2
19	2-CAC-TE-1258-7	DRYWELL TEMPERATURE ELEMENT	RB/DW	035	DW AZ-100	1			2
19	2-CAC-TE-1258-6	DRYWELL TEMPERATURE ELEMENT	RB/DW	040	DW AZ-260	1			2

APPENDIX B
SAFE SHUTDOWN EQUIPMENT LIST
UNIT 2

E.C.	Equipment ID Number	Description	Bldg.	Floor Elev.	Location	A-46	IPEEE	Train	Unit
07	2-B21-F013A	SAFETY RELIEF VALVE A & SOLENOID	RB/DW	044	DW AZ-030	1			2
07	2-B21-F013B	SAFETY RELIEF VALVE B & SOLENOID	RB/DW	044	DW AZ-051	1			2
07	2-B21-F013C	SAFETY RELIEF VALVE C & SOLENOID	RB/DW	044	DW AZ-060	1			2
07	2-B21-F013D	SAFETY RELIEF VALVE D & SOLENOID	RB/DW	044	DW AZ-080	1			2
07	2-B21-F013E	SAFETY RELIEF VALVE E & SOLENOID	RB/DW	044	DW AZ-095	1			2
07	2-B21-F013F	SAFETY RELIEF VALVE F & SOLENOID	RB/DW	044	DW AZ-299	1			2
07	2-B21-F013G	SAFETY RELIEF VALVE G & SOLENOID	RB/DW	044	DW AZ-281	1			2
07	2-B21-F013H	SAFETY RELIEF VALVE H & SOLENOID	RB/DW	044	DW AZ-330	1			2
07	2-B21-F013J	SAFETY RELIEF VALVE J & SOLENOID	RB/DW	044	DW AZ-280	1			2
07	2-B21-F013K	SAFETY RELIEF VALVE K & SOLENOID	RB/DW	044	DW AZ-265	1			2
07	2-B21-F013L	SAFETY RELIEF VALVE L & SOLENOID	RB/DW	044	DW AZ-097	1			2
18	2-B21-FT-4157	SRV A FLOW TRANSMITTER	RB/DW	044	DW AZ-030	1			2
18	2-B21-FT-4158	SRV B FLOW TRANSMITTER	RB/DW	044	DW AZ-051	1			2
18	2-B21-FT-4159	SRV C FLOW TRANSMITTER	RB/DW	044	DW AZ-060	1			2
18	2-B21-FT-4160	SRV D FLOW TRANSMITTER	RB/DW	044	DW AZ-080	1			2
18	2-B21-FT-4161	SRV E FLOW TRANSMITTER	RB/DW	044	DW AZ-095	1			2
18	2-B21-FT-4162	SRV F FLOW TRANSMITTER	RB/DW	044	DW AZ-299	1			2
18	2-B21-FT-4163	SRV G FLOW TRANSMITTER	RB/DW	044	DW AZ-281	1			2
18	2-B21-FT-4164	SRV H FLOW TRANSMITTER	RB/DW	044	DW AZ-330	1			2
18	2-B21-FT-4165	SRV J FLOW TRANSMITTER	RB/DW	044	DW AZ-280	1			2
18	2-B21-FT-4166	SRV K FLOW TRANSMITTER	RB/DW	044	DW AZ-265	1			2
18	2-B21-FT-4167	SRV L FLOW TRANSMITTER	RB/DW	044	DW AZ-097	1			2
19	2-B21-TE-N004A	TEMPERATURE SENSOR - SRV A	RB/DW	044	DW AZ-030	1			2
19	2-B21-TE-N004B	TEMPERATURE SENSOR - SRV B	RB/DW	044	DW AZ-051	1			2
19	2-B21-TE-N004C	TEMPERATURE SENSOR - SRV C	RB/DW	044	DW AZ-060	1			2
19	2-B21-TE-N004D	TEMPERATURE SENSOR - SRV D	RB/DW	044	DW AZ-080	1			2
19	2-B21-TE-N004E	TEMPERATURE SENSOR - SRV E	RB/DW	044	DW AZ-095	1			2
19	2-B21-TE-N004F	TEMPERATURE SENSOR - SRV F	RB/DW	044	DW AZ-299	1			2
19	2-B21-TE-N004G	TEMPERATURE SENSOR - SRV G	RB/DW	044	DW AZ-281	1			2
19	2-B21-TE-N004H	TEMPERATURE SENSOR - SRV H	RB/DW	044	DW AZ-330	1			2

APPENDIX B
SAFE SHUTDOWN EQUIPMENT LIST
UNIT 2

E.C.	Equipment ID Number	Description	Bldg.	Floor Elev.	Location	A-46	IPEEE	Train	Unit
19	2-B21-TE-N004J	TEMPERATURE SENSOR - SRV J	RB/DW	044	DW AZ-280	1			2
19	2-B21-TE-N004K	TEMPERATURE SENSOR - SRV K	RB/DW	044	DW AZ-265	1			2
19	2-B21-TE-N004L	TEMPERATURE SENSOR - SRV L	RB/DW	044	DW AZ-097	1			2
19	2-CAC-TE-1258-5	DRYWELL TEMPERATURE ELEMENT	RB/DW	045	DW AZ-080	1			2
21	2-B21-A003A	SRV A ACCUMULATOR	RB/DW	055	DW AZ-030	1			2
21	2-B21-A003B	SRV ACCUMULATOR B	RB/DW	055	DW AZ-051	1			2
21	2-B21-A003C	SRV C ACCUMULATOR	RB/DW	055	DW AZ-055	1			2
21	2-B21-A003D	SRV D ACCUMULATOR	RB/DW	055	DW AZ-060	1			2
21	2-B21-A003E	SRV ACCUMULATOR E	RB/DW	055	DW AZ-095	1			2
21	2-B21-A003F	SRV ACCUMULATOR F	RB/DW	055	DW AZ-299	1			2
21	2-B21-A003G	SRV ACCUMULATOR G	RB/DW	055	DW AZ-281	1			2
21	2-B21-A003H	SRV H ACCUMULATOR	RB/DW	055	DW AZ-331	1			2
21	2-B21-A003J	SRV J ACCUMULATOR	RB/DW	055	DW AZ-325	1			2
21	2-B21-A003K	SRV K ACCUMULATOR	RB/DW	055	DW AZ-297	1			2
21	2-B21-A003L	SRV L ACCUMULATOR	RB/DW	055	DW AZ-062	1			2
08a	2-G31-F001	RHR/RWCU MOV (OUTBOARD)	RB/DW	059	DW AZ-243	2		A/B	2
19	2-CAC-TE-1258-4	DRYWELL TEMPERATURE ELEMENT	RB/DW	070	DW AZ-270	1			2
19	2-CAC-TE-1258-3	DRYWELL TEMPERATURE ELEMENT	RB/DW	075	DW AZ-090	1			2
19	2-CAC-TE-1258-2	DRYWELL TEMPERATURE ELEMENT	RB/DW	080	DW AZ-270	1			2
19	2-CAC-TE-1258-1	DRYWELL TEMPERATURE ELEMENT	RB/DW	086	DW AZ-019	1			2
19	2-CAC-TE-1258-22	DW TEMPERATURE ELEMENT	RB/DW	092	DW AZ-105	1			2
19	2-CAC-TE-1258-23	DRYWELL TEMPERATURE ELEMENT	RB/DW	092	DW AZ-225	1			2
19	2-CAC-TE-1258-24	DRYWELL TEMPERATURE ELEMENT	RB/DW	092	DW AZ-345	1			2
R	2-E11-S1	SP STRAINER	RB/SP	-009	SU AZ-135	1		A	2
R	2-E21-S2A	CS STRAINER SUCTION LINE	RB/SP	-009	SU AZ-045	2		A	2
R	2-E41-S2	HPCI/SP STRAINER	RB/SP	-017	SU AZ-180	1			2
19	2-CAC-TE-1258-17	SP TEMPERATURE ELEMENT	RB/SP	004	SU AZ-040	1			2
19	2-CAC-TE-1258-18	SP TEMPERATURE ELEMENT	RB/SP	004	SU AZ-145	1			2
19	2-CAC-TE-1258-19	SP TEMPERATURE ELEMENT	RB/SP	004	SU AZ-215	1			2
19	2-CAC-TE-1258-20	SP TEMPERATURE ELEMENT	RB/SP	004	SU AZ-320	1			2

APPENDIX B
SAFE SHUTDOWN EQUIPMENT LIST
UNIT 2

E.C.	Equipment ID Number	Description	Bldg.	Floor Elev.	Location	A-46	IPEEE	Train	Unit
18	2-SW-PS-271	NUCLEAR HDR PRESSURE SWITCH	SWB	007		1			2
08a	2-SW-V14-MO	CONV SW PUMP 2A N HDR ISO	SWB	007	SW	1			2
08a	2-SW-V16-MO	CONV SW PUMP 2B N HDR ISO	SWB	007	SW	1			2
08a	2-SW-V18-MO	CONV SW PUMP 2C N HDR ISO	SWB	007	SW	1			2
08	2-SW-V19	NSWP 2A DISCH ISOL	SWB	007	SW	1		A	2
08	2-SW-V20	NSWP 2B DISCH ISOL	SWB	007	SW	1		B	2
06	2-SW-2A-NUC-PMP	NSW PUMP 2A	SWB	020	SW	1		A	2
06	2-SW-2B-NUC-PMP	NSW PUMP 2B	SWB	020	SW	1		B	2
21	2-SW-2B-NUC-PMP-STR	NSW 2B SELF CLEANING STRAINER, MO	SWB	020	SE	1		B	2
20	2-SW-PNL-VW7	PARTIAL WINDING HTR CAB FOR MCC 2PB	SWB	020		1	1		2
20	2-SW-PNL-VW8	PARTIAL WINDING HTR CAB FOR MCC 2PA	SWB	020		1	1		2
18	2-SW-PT-143	NUCLEAR HDR PRESSURE TRANSMITTER	SWB	020	SW	1			2
18	2-SW-PV-138	AOV FOR STRAINER BACKWASH	SWB	021	SE	1		A	2
18	2-SW-PV-140	AOV FOR STRAINER BACKWASH	SWB	021	SE	1		B	2
18	2-SW-PY-138	SOLENOID VALVE (SV)	SWB	021	SE	1		A	2
18	2-SW-PY140	SOLENOID VALVE (SV)	SWB	021	SE	1		B	2
00	2-E11-PDSH-139	STRAINER 2A DP SWITCH	SWB	025	SE	1		A	2
00	2-E11-PDSH-141	STRAINER 2B DP SWITCH	SWB	025	SW	1		B	2
R	2-SW-2A-NUC-PMP-STR	NSW 2A SELF CLEANING STRAINER, MO	SWB	025	SE	1		A	2
18	2-SW-PDIC-138	DIFFERENTIAL PRESSURE CONTROLLER	SWB	025	SW	1		A	2
18	2-SW-PDIC-140	DIFFERENTIAL PRESSURE CONTROLLER	SWB	025	SW	1		B	2
14	2-8A	DISTRIBUTION PANEL 8A	SWYD RLY HSE			1	1	A	2
14	2-8B	DISTRIBUTION PANEL 8B	SWYD RLY HSE			2	2	B	2

APPENDIX C

SCREENING VERIFICATION DATA SHEETS

Equip Class	Equipment ID No.	System/Equipment Description	Bldg.	Floor Elev.	Room or Row/Col	Elev. of Seismic Input	Below 40' above grade?	Seismic Capacity based on?	Seismic Demand based on?	Capacity greater than Demand?	Bounding Spectrum Caveats OK?	Anchor-age OK?	Inter-actions OK?	Overall OK?
00	1-C11-A001A-N2	NITROGEN BOTTLE & REGULATOR	RB	020	1-C11-A001	N/A	N/A	N/A	N/A	No	N/A	No	No	No
00	1-D12-RE-N006A	ION DETECTOR	RB/PIT	050	WW L/5R	050	Yes	ABS	CRS	Yes	No	Yes	Yes	No
00	1-D12-RE-N006B	ION DETECTOR	RB/PIT	050	WW L/5R	050	Yes	ABS	CRS	Yes	No	Yes	Yes	No
00	1-D12-RE-N006C	ION DETECTOR	RB/PIT	050	WW L/5R	050	Yes	ABS	CRS	Yes	No	Yes	Yes	No
00	1-D12-RE-N006D	ION DETECTOR	RB/PIT	050	WW L/5R	050	Yes	ABS	CRS	Yes	No	Yes	Yes	No
00	1-E11-S1	SP STRAINER	RB/SP	-009	SU-AZ135	N/A	N/A	N/A	N/A	Yes	N/A	Yes	Yes	Yes
00	1-E21-S2A	CS STRAINER SUCTION LINE	RB/SP	-009	SU-AZ045	N/A	N/A	N/A	N/A	Yes	N/A	Yes	Yes	Yes
00	1-E41-PSE-D003	TURBINE EXHAUST RUPTURE DIAPHRAM	RB	-017	EE T/4R	N/A	N/A	N/A	N/A	Yes	N/A	Yes	Yes	Yes
00	1-E41-PSE-D004	TURBINE EXHAUST RUPTURE DIAPHRAM	RB	-017	EE T/4R	N/A	N/A	N/A	N/A	Yes	N/A	Yes	Yes	Yes
00	1-E41-S2	HPCI/SP STRAINER	RB/SP	-009	SU-AZ180	N/A	N/A	N/A	N/A	Yes	N/A	Yes	Yes	Yes
00	1-RNA-DIV-I-N2-TANKS	N2 BOTTLES	RB	050	NN N/4R	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Yes
00	1-RNA-DIV-II-N2-TANKS	DIV II N2 BACKUP BOTTLE RACK	RB	050		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Yes
00	1-RNA-FLT-103	BACKUP N2 INLINE FILTER	RB	056	SV' M/6R	N/A	N/A	N/A	N/A	Yes	N/A	Yes	Yes	Yes
00	1-RNA-FLT-104	BACKUP N2 IN LINE FILTER	RB	056	NN N/4R	N/A	N/A	N/A	N/A	Yes	N/A	Yes	Yes	Yes
00	1-RNA-PSE-101	BACKUP N2 DISCHARGE RUPTURE DIAPHRAM	RB	050	SS M/6R	N/A	N/A	N/A	N/A	Yes	N/A	Yes	Yes	Yes
00	1-RNA-PSE-102	DIV I BACKUP N2 HDR RUPTURE DIAPHRAM	RB	050		N/A	N/A	N/A	N/A	Yes	N/A	Yes	Yes	Yes
00	1-SW-1A-LUBE-PMP-STR	NSW LUBE WATER PUMP 1A SUCTION STRAINER	SWB	-011	NW	N/A	N/A	N/A	N/A	Yes	N/A	Yes	Yes	Yes
00	1-SW-1A-NUC-CYC-SEP	NSW 1A CYCLONE SEPARATOR	SWB	025	NE	N/A	N/A	N/A	N/A	Yes	N/A	N/A	Yes	Yes
00	1-SW-1A-NUC-PMP-STR	NSW PUMP 1A STRAINER	SWB	025	NE	N/A	N/A	N/A	N/A	Yes	N/A	Yes	Yes	Yes
00	1-SW-1B-LUBE-PMP-STR	NSW LUBE WATER PUMP 1B SUCTION STRAINER	SWB	-011	NW	N/A	N/A	N/A	N/A	Yes	N/A	Yes	Yes	Yes
00	1-SW-1B-NUC-CYC-SEP	NSW 1B CYCLONE SEPARATOR	SWB	025	NE	N/A	N/A	N/A	N/A	Yes	N/A	Yes	Yes	Yes
00	1-SW-1B-NUC-PMP-STR	NSW PUMP 1B STRAINER	SWB	025	NE	N/A	N/A	N/A	N/A	Yes	N/A	Yes	Yes	Yes
00	1-VA-1A-BFIV-RB	RB DAMPERS	RB	099	WW L/5R	99 FT.	No	ABS	CRS	Yes	Yes	N/A	Yes	No
00	1-VA-1A-EHE-CB	ELECTRIC HTR COIL - UNIT 1	CB	070	MECH EQ RM	N/A	N/A	N/A	N/A	No	N/A	No	Yes	No
00	1-VA-1A-SH-CB	STEAM HUMIDIFIER	CB	070	MECH EQ RM	N/A	N/A	N/A	N/A	Yes	N/A	Yes	Yes	Yes
00	1-VA-1B-BFIV-RB	RB DAMPERS	RB	099	WW L/5R	99 FT.	No	ABS	CRS	Yes	Yes	N/A	No	No

Equip Class	Equipment ID No.	System/Equipment Description	Bldg	Floor Elev.	Room or Row/Col	Elev. of Seismic Input	Below 40' above grade?	Seismic Capacity based on?	Seismic Demand based on?	Capacity greater than Demand?	Bounding Spectrum Caveats OK?	Anchor-age OK?	Inter-actions OK?	Overall OK?
00	1-VA-1C-BFIV-RB	RB DAMPERS	RB	170	WW M/5R	170 ft	No	ABS	CRS	No	Yes	N/A	Yes	No
00	1-VA-1D-BFIV-RB	RB DAMPERS	RB	170	WW M/5R	170 ft	No	ABS	CRS	No	Yes	N/A	Yes	No
00	1-VA-1J-TPD-RB	DISCHARGE DAMPER FOR RHR COOLING UNIT A	RB	006	NE T/3R	N/A	N/A	N/A	N/A	Yes	N/A	Yes	Yes	Yes
00	1-VA-1K-TPD-RB	DISCHARGE DAMPER FOR RHR COOLING UNIT B	RB	006	SE T/7R	N/A	N/A	N/A	N/A	Yes	N/A	N/A	Yes	Yes
00	2-C12-A001A-N2	NITROGEN BOTTLE & REGULATOR CRD PORTABLE ACCUMULATOR CHARGING SYSTEM	RB	020	2-C12-A001	N/A	N/A	N/A	N/A	No	N/A	No	No	No
00	2-D12-RE-N006A	ION DETECTOR	RB/PIT	050	WW L/21R	N/A	N/A	N/A	N/A	No	N/A	No	Yes	No
00	2-D12-RE-N006B	ION DETECTOR	RB/PIT	050	WW L/21R	N/A	N/A	N/A	N/A	No	N/A	No	Yes	No
00	2-D12-RE-N006C	ION DETECTOR	RB/PIT	050	WW L/21R	N/A	N/A	N/A	N/A	No	N/A	No	Yes	No
00	2-D12-RE-N006D	ION DETECTOR	RB/PIT	050	WW L/21R	N/A	N/A	N/A	N/A	No	N/A	No	Yes	No
00	2-DIE-AIR-EXH-SIL-1	DG1 AIR EXHAUST SILENCER	DG	080	WW V/10D	N/A	N/A	N/A	N/A	Yes	N/A	Yes	Yes	Yes
00	2-DIE-AIR-EXH-SIL-2	DG2 AIR EXHAUST SILENCER	DG	080	WW V/11D	N/A	N/A	N/A	N/A	Yes	N/A	Yes	Yes	Yes
00	2-DIE-AIR-EXH-SIL-3	DG3 AIR EXHAUST SILENCER	DG	080	SW V/12D	N/A	N/A	N/A	N/A	Yes	N/A	Yes	Yes	Yes
00	2-DIE-AIR-EXH-SIL-4	DG4 AIR EXHAUST SILENCER	DG	080	SW V/13D	N/A	N/A	N/A	N/A	Yes	N/A	Yes	Yes	Yes
00	2-DIE-AIR-INTAKE-SIL-1	DG1 AIR INTAKE SILENCER	DG	023	NE W/10D	N/A	N/A	N/A	N/A	Yes	N/A	N/A	Yes	Yes
00	2-DIE-AIR-INTAKE-SIL-2	DG2 AIR INTAKE SILENCER	DG	023	EE W/11D	N/A	N/A	N/A	N/A	Yes	N/A	N/A	Yes	Yes
00	2-DIE-AIR-INTAKE-SIL-3	DG3 AIR INTAKE SILENCER	DG	023	EE W/12D	N/A	N/A	N/A	N/A	Yes	N/A	N/A	Yes	Yes
00	2-DIE-AIR-INTAKE-SIL-4	DG4 AIR INTAKE SILENCER	DG	023	EE W/12D	N/A	N/A	N/A	N/A	Yes	N/A	N/A	Yes	Yes
00	2-DSA-DG1-FLT	DG1 AIR INTAKE FILTER	DG	050	NE W/10D	N/A	N/A	N/A	N/A	Yes	N/A	Yes	Yes	Yes
00	2-DSA-DG2-FLT	DG2 AIR INTAKE FILTER	DG	050	EE W/11D	N/A	N/A	N/A	N/A	Yes	N/A	Yes	Yes	Yes
00	2-DSA-DG3-FLT	DG3 AIR INTAKE FILTER	DG	050	EE W/12D	N/A	N/A	N/A	N/A	Yes	N/A	Yes	Yes	Yes
00	2-DSA-DG4-FLT	DG4 AIR INTAKE FILTER	DG	050	EE W/12D	N/A	N/A	N/A	N/A	Yes	N/A	Yes	Yes	Yes
00	2-E11-S1	SP STRAINER	RB/SP	-009	SU AZ-135	N/A	N/A	N/A	N/A	Yes	N/A	Yes	Yes	Yes
00	2-E11-S2	SP STRAINER	RB/SP	-009	SU AZ-225	N/A	N/A	N/A	N/A	Yes	N/A	Yes	Yes	Yes
00	2-E21-S2A	CS STRAINER SUCTION LINE	RB/SP	-009	SU AZ-045	N/A	N/A	N/A	N/A	Yes	N/A	Yes	Yes	Yes
00	2-E21-S2B	CS STRAINER SUCTION LINE	RB/SP	-009	SU AZ-315	N/A	N/A	N/A	N/A	Yes	N/A	Yes	Yes	Yes
00	2-E41-PSE-D003	TURBINE EXHAUST RUPTURE DIAPHRAM	RB	-002	EE T/20R	N/A	N/A	N/A	N/A	Yes	N/A	N/A	Yes	Yes
00	2-E41-PSE-D004	TURBINE EXHAUST RUPTURE DIAPHRAM	RB	-017	EE T/20R	N/A	N/A	N/A	N/A	Yes	N/A	N/A	Yes	Yes
00	2-E41-S2	HPCI/SP STRAINER	RB/SP	-017	SU AZ-180	N/A	N/A	N/A	N/A	Yes	N/A	Yes	Yes	Yes

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00	2-LO-TCV-1463	DG1 LUBE OIL TCV	DG	023	NW V/9D	N/A	N/A	N/A	N/A	Yes	N/A	N/A	Yes	Yes
00	2-LO-TCV-2054	DG2 LUBE OIL TCV (rule of the box - 2-DG2-GEN)	DG	023	WW V/10D	N/A	N/A	N/A	N/A		N/A			Yes
00	2-LO-TCV-2077	DG3 LUBE OIL TCV	DG	023	WW V/11D	N/A	N/A	N/A	N/A	Yes	N/A	Yes	Yes	Yes
00	2-LO-TCV-2100	DG4 LUBE OIL TCV	DG	023	SW V/12D	N/A	N/A	N/A	N/A	Yes	N/A	Yes	Yes	Yes
00	2-LO-V446	DG1 LUBE OIL STRAINER W/XFER VALVE	DG	023	NW V/9D	N/A	N/A	N/A	N/A	Yes	N/A	Yes	Yes	Yes
00	2-LO-V447	DG2 LUBE OIL STRAINER W/XFER VALVE (rule of the box - 2-DG2-GEN)	DG	023	WW V/10D	N/A	N/A	N/A	N/A		N/A			Yes
00	2-LO-V448	DG3 LUBE OIL STRAINER W/XFER VALVE	DG	023	WW V/11D	N/A	N/A	N/A	N/A	Yes	N/A	Yes	Yes	Yes
00	2-LO-V449	DG4 LUBE OIL STRAINER W/XFER VALVE	DG	023	SW V/12D	N/A	N/A	N/A	N/A	Yes	N/A	Yes	Yes	Yes
00	2-RNA-DIVI-N2-TANKS	N2 BOTTLES	RB	050	NN N/21R	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Yes
00	2-RNA-DIVII-N2-TANK	N2 BOTTLES	RB	050	SW M/22R	N/A	N/A	N/A	N/A	Yes	N/A	Yes	Yes	Yes
00	2-RNA-FLT103	BACKUP N2 INLINE FILTER	RB	050	SW M/22P	N/A	N/A	N/A	N/A	Yes	N/A	N/A	Yes	Yes
00	2-RNA-FLT104	BACKUP N2 INLINE FILTER	RB	050	EE S/22R	N/A	N/A	N/A	N/A	Yes	N/A	N/A	Yes	Yes
00	2-RNA-PSE-101	BACKUP N2 DISCHARGE RUPTURE DIAPHRAM	RB	056	SS M/22R	N/A	N/A	N/A	N/A	Yes	N/A	N/A	Yes	Yes
00	2-RNA-PSE-102	BACKUP N2 DISCHARGE RUPTURE DIAPHRAM	RB	056	EE S/22R	N/A	N/A	N/A	N/A	Yes	N/A	N/A	Yes	Yes
00	2-SW-2A-NUC-PMP-STR	NSW 2A SELF CLEANING STRAINER, MOTOR OPERATED	SWB	025	SE	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Yes
00	2-SW-2B-NUC-PMP-STR	NSW 2B SELF CLEANING STRAINER, MOTOR OPERATED	SWB	020	SE	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Yes
00	2-VA-2A-BFIV-RB	RB DAMPERS	RB	099	WW L/21R	N/A	N/A	N/A	N/A	No	N/A	Yes	Yes	No
00	2-VA-2A-EHE-CB	ELECTRIC HTR COIL - UNIT 2	CB	070	MECH EQ RM	N/A	N/A	N/A	N/A	No	N/A	No	Yes	No
00	2-VA-2A-SH-CB	STEAM HUMIDIFIER	CB	070	MECH EQ RM	N/A	N/A	N/A	N/A	Yes	N/A	Yes	Yes	Yes
00	2-VA-2B-BFIV-RB	RB DAMPERS	RB	099	WW L/21R	N/A	N/A	N/A	N/A	No	N/A	Yes	Yes	No
00	2-VA-2B-EHE-CB	ELECTRIC HTR COIL - UNIT 1 & 2	CB	070	MECH EQUIP	N/A	N/A	N/A	N/A	No	N/A	No	Yes	No
00	2-VA-2C-BFIV-RB	RB DAMPERS	RB	170	WW M/21R	N/A	N/A	N/A	N/A	No	N/A	Yes	Yes	No
00	2-VA-2D-BFIV-RB	RB DAMPERS	RB	170	WW M/21R	N/A	N/A	N/A	N/A	No	N/A	Yes	Yes	No

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00	2-VA-2J-TPD-RB	DISCHARGE DAMPER FOR RHR COOLING UNIT A	RB	0(	NE T/19R	N/A	N/A	N/A	N/A	Yes	N/A	Yes	Yes	Yes
00	2-VA-2K-TPD-RB	DISCHARGE DAMPER FOR RHR COOLING UNIT B	RB	006	SE T/23R	N/A	N/A	N/A	N/A	Yes	N/A	Yes	Yes	Yes
00	2-VA-CB-FDMP-18	FIRE DAMPER	CB	049	C RM	N/A	N/A	N/A	N/A	Yes	N/A	Yes	Yes	Yes
00	2-VA-CB-FDMP-81	FIRE DAMPER	CB	049	C RM	N/A	N/A	N/A	N/A	Yes	N/A	Yes	Yes	Yes
00	2 VA-CB-FDMP-82	FIRE DAMPER	CB	049	C RM	N/A	N/A	N/A	N/A	Yes	N/A	Yes	Yes	Yes
00	DG B SUP-PLNM	DG B SUPPLY PLENUM	DG	050		N/A	N/A	N/A	N/A	Yes	N/A	Yes	Yes	Yes
01	1-1A-250VDC	SWITCHBOARD 1A	CB	023	CABLE SPRD	23	Yes	ABS	CRS	Yes	No	Yes	Yes	No
01	1-1B-250VDC	SWITCHBOARD 1B	CB	023	CABLE SPRD	23	Yes	ABS	CRS	Yes	No	Yes	Yes	No
01	1-1CA	MCC 1CA	CB	023	NE MC/10C	23	Yes	ABS	CRS	Yes	Yes	Yes	No	No
01	1-1CB	MCC 1CB	CB	023	NW MC/10C	23	Yes	ABS	CRS	Yes	Yes	Yes	No	No
01	1-1PA	MCC 1PA	SWB	020	NW	20	Yes	ABS	CRS	Yes	No	No	Yes	No
01	1-1PB	MCC 1PB	SWB	020	NW	20	Yes	ABS	CRS	Yes	No	No	Yes	No
01	1-1XA	MCC 1XA	RB	020	NN P/2R	20	Yes	ABS	CRS	Yes	No	Yes	No	No
01	1-1XA-2	MCC 1XA-2	RB	020	NN P/2R	20	Yes	ABS	CRS	Yes	Yes	Yes	No	No
01	1-1XB	MCC 1XB	RB	020	SS P/8R	20	Yes	ABS	CRS	Yes	No	Yes	Yes	No
01	1-1XB-2	MCC 1XB-2	RB	020	SS P/8R	20	Yes	ABS	CRS	Yes	No	Yes	Yes	No
01	1-1XC	MCC 1XC	RB	020	EE T/5R	20	Yes	ABS	CRS	Yes	Yes	Yes	No	No
01	1-1XD	MCC 1XD	RB	020	SE T/6R	20	Yes	ABS	CRS	Yes	Yes	Yes	No	No
01	1-1XDA	MCC-1XDA	RB	020	NE	20	Yes	ABS	CRS	Yes	No	Yes	Yes	No
01	1-1XDB	MCC-1XDB	RB	020	SE	20	Yes	ABS	CRS	Yes	No	Yes	Yes	No
01	1-1XE	MCC 1XE	RB	050	NN M/4R	50	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
01	1-1XF	MCC 1XF	RB	050	SE P/7R	50	No	ABS	CRS	Yes	Yes	Yes	No	No
01	1-1XG	MCC 1XG	RB	080	EE P/4R	80	No	ABS	CRS	Yes	No	Yes	Yes	No
01	1-1XH	MCC 1XH	RB	080	WW M/6R	80	No	ABS	CRS	Yes	Yes	Yes	Yes	Yes
01	1-1XL	MCC 1XL	RB	020	NE S/4R	20	Yes	ABS	CRS	Yes	Yes	Yes	No	No
01	1-1XM	MCC 1XM	RB	020	EE S/6R	20	Yes	ABS	CRS	Yes	Yes	Yes	No	No
01	2-2A-250VDC	SWITCHBOARD 2A	CB	023	CABLE SPRD	23'	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
01	2-2B-250VDC	SWITCHBOARD 2B	CB	023	CABLE SPRD	23'	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
01	2-2CA	MCC 2CA	CB	023	SE MC/15C	23'	Yes	ABS	CRS	Yes	Yes	Yes	No	No
01	2-2CB	MCC 2CB	CB	023	SW MC/15C	23'	Yes	ABS	CRS	Yes	Yes	Yes	No	No
01	2-2PA	MCC 2PA	SWB	020	SW	28'	Yes	ABS	CRS	Yes	No	No	No	No

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01	2-2PB	MCC 2PB	SWB	020	SW	28	Yes	ABS	CRS	Yes	No	No	Yes	No
01	2-2XA	MCC 2XA	RB	020	NE P/18R	20'	Yes	ABS	CRS	Yes	Yes	Yes	No	No
01	2-2XA-2	MCC 2XA-2	RB	020	NE P/18R	20'	Yes	ABS	CRS	Yes	Yes	Yes	No	No
01	2-2XB	MCC 2XB	RB	020	SE P/23R	20'	Yes	ABS	CRS	Yes	Yes	Yes	No	No
01	2-2XB-2	MCC 2XB-2	RB	020	SE P/23R	20'	Yes	ABS	CRS	Yes	Yes	Yes	No	No
01	2-2XC	MCC 2XC	RB	020	EE T/21R	20'	Yes	ABS	CRS	Yes	Yes	Yes	No	No
01	2-2XD	MCC 2XD	RB	020	SE T/22R	20'	Yes	ABS	CRS	Yes	Yes	Yes	No	No
01	2-2XDA	MCC-2XDA	RB	020	NE	20'	Yes	ABS	CRS	Yes	Yes	Yes	No	No
01	2-2XDB	MCC-2XDB	RB	020	SS	20'	Yes	ABS	CRS	Yes	Yes	Yes	No	No
01	2-2XE	MCC 2XE	RB	050	NN M/20R	50'	No	ABS	CRS	Yes	Yes	Yes	Yes	Yes
01	2-2XF	MCC 2XF	RB	050	SE P/23R	50'	No	ABS	CRS	Yes	Yes	Yes	Yes	Yes
01	2-2XG	MCC 2XG	RB	080	EE P/20R	80'	No	ABS	CRS	Yes	Yes	Yes	Yes	Yes
01	2-2XH	MCC 2XH	RB	080	WW M/22R	80'	No	ABS	CRS	Yes	Yes	Yes	Yes	Yes
01	2-2XL	MCC 2XL	RB	020	EE S/20R	20'	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
01	2-2XM	MCC 2XM	RB	020	EE S/22R	20'	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
01	2-DGA	MCC DGA	DG	023	NN V/10D	023	Yes	ABS	CRS	Yes	Yes	No	Yes	No
01	2-DGB	MCC DGB	DG	023	CC V/11D	023	Yes	ABS	CRS	Yes	Yes	No	Yes	No
01	2-DGC	MCC DGC	DG	023	CC V/12D	23	Yes	ABS	CRS	Yes	No	No	Yes	No
01	2-DGD	MCC DGD	DG	023	SS V/13D	23	Yes	ABS	CRS	Yes	No	No	Yes	No
02	1-E5	SWITCHGEAR ASSEMBLY E5	DG	023	NE W/9D	23	Yes	ABS	CRS	Yes	No	No	Yes	No
02	1-E6	SWITCHGEAR ASSEMBLY E6	DG	023	NW V/9D	23	Yes	ABS	CRS	Yes	No	No	Yes	No
02	2-E7	SWITCHGEAR ASSEMBLY E7	DG	023	SS W/13D	23'	Yes	ABS	CRS	Yes	No	No	Yes	No
02	2-E8	SWITCHGEAR ASSEMBLY E8	DG	023	SS W/13D	23'	Yes	ABS	CRS	Yes	No	No	Yes	No
03	1-E1	SWITCHGEAR ASSEMBLY E1	DG	050	NW V/90	50	Yes	DOC	CRS	Yes	Yes	Yes	No	No
03	1-E2	SWITCHGEAR ASSEMBLY E2	DG	050	WW V/10D	50	Yes	DOC	CRS	Yes	Yes	Yes	No	No
03	2-E3	SWITCHGEAR ASSEMBLY E3	DG	050	WW V/12D	50'	Yes	BS	GRS	Yes	Yes	Yes	No	No
03	2-E4	SWITCHGEAR ASSEMBLY E4	DG	050	SW V/13D	50'	Yes	BS	GRS	Yes	Yes	Yes	No	No
04	1-1A-SW-XFMR	DIS PNL XFMR MCC 1PA	SWB	020	NORTH WALL	30	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
04	1-1B-SW-XFMR	DIS PNL XFMR MCC 1PB	SWB	020	NORTH WALL	30	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
04	1-VA-TZ-1	TRANSFORMER	RB	-017	SE T/6R	-10	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
04	1-VA-TZ-2	TRANSFORMER	RB	-017	NE T/4R	-010	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
04	1-VA-TZ-3	TRANSFORMER	RB	-017	NW L/2R	008	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
04	1-VA-TZ-4	TRANSFORMER	RB	-017	SW L/8R	010	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes

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04	1-VA-XPT-1299	120/24 AC TRANSFORMER	CB	070	SW LC/13	ON DUCT-85'	No		CRS	Yes	Yes	Yes	Yes	Yes
04	2-2A-SW-XFMR	DISTR PNL XFMR MCC 2PA	SWB	020	WEST WALL	030	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
04	2-2B-SW-XFMR	DISTR PNL XFMR MCC 2PB	SWB	020	WEST WALL	030	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
04	2-E7-FB2-XFMR	TRANSFORMER SUPPLY MCC E7	DG	023	SS W/13D	23	Yes			No	No	No	Yes	No
04	2-E8-FB1-XFMR	TRANSFORMER SUPPLY MCC E8	DG	023	SS W/13D	23'	Yes			No	No	No	Yes	No
04	2-VA-TZ-1	TRANSFORMER	RB	-017	SE T/22R	-11	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
04	2-VA-TZ-2	TRANSFORMER	RB	-017	NE T/20R	-11	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
04	2-VA-TZ-3	TRANSFORMER	RB	-017	SE T/22R	-11	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
04	2-VA-TZ-4	TRANSFORMER	RB	-017	NE T/20R	-11	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
04	2-VA-XPT-1299	120/24 AC TRANSFORMER	CB	070	SW LC/13	ON DUCT-85'	No		CRS	Yes	Yes	Yes	Yes	Yes
05	1-E11-C001A	RHR SW BOOSTER PUMP 1A	RB	050	EE R/4R	50	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
05	1-E11-C001B	RHR SW BOOSTER PUMP 1B	RB	050	EE R/6R	50	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
05	1-E11-C001C	RHR SW BOOSTER PUMP 1C	RB	050	EE R/5R	50	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
05	1-E11-C001D	RHR SW BOOSTER PUMP 1D	RB	050	SE R/7R	50	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
05	1-E41-C001	HPCI MAIN PUMP	RB	-017	EE S/5R	-17	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
05	1-E41-C001-BOOST-PMP	HPCI BOOSTER PUMP	RB	-017	EE S/6R	-17	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
05	1-E41-C002	HPCI TURBINE (rule of the box - 1-E41-C001)	RB	-017	EE S/5R	N/A	N/A	N/A	N/A		N/A			Yes
05	1-SW-1A-LUBE-PMP	NSW LUBE WATER PUMP 1A	SWB	004	NW	4	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
05	1-SW-1B-LUBE-PMP	NSW LUBE WATER PUMP 1B	SWB	004	NW	4	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
05	2-E11-C001A	RHRSW BOOSTER PUMP 2A	RB	050	EE R/20R	50	No	ABS	CRS	Yes	Yes	Yes	Yes	Yes
05	2-E11-C001B	C001B RHRSW BOOSTER PUMP 2B	RB	050	EE R/22R	50	No	ABS	CRS	Yes	Yes	Yes	Yes	Yes
05	2-E11-C001C	C001C RHRSW BOOSTER PUMP 2C	RB	050	EE R/21R	50	No	ABS	CRS	Yes	Yes	Yes	Yes	Yes
05	2-E11-C001D	RHRSW BOOSTER PUMP 2D	RB	050	SE R/23R	50	No	ABS	CRS	Yes	Yes	Yes	Yes	Yes
05	2-E41-C001	HPCI MAIN PUMP	RB	-017	EE S/21R	-17	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
05	2-E41-C001-BOOST-PMP	HPCI BOOSTER PUMP	RB	-017	EE S/22R	-17	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
05	2-E41-C002	TURBINE (rule of the box - 2-E41-C001)	RB	-017	EE S/21R	-017								Yes
05	2-FOD-1A-XFER-PMP	FUEL OIL TRANSFER PUMP 1A	DG/T	000	EE Z/11D	0	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
05	2-FOD-1B-XFER-PMP	FUEL OIL TRANSFER PUMP 1B	DG/T	000	EE Y/11D	0	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
05	2-FOD-2A-XFER-PMP	FUEL OIL TRANSFER PUMP 2A	DG/T	000	EE Z/11D	0	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
05	2-FOD-2B-XFER-PMP	FUEL OIL TRANSFER PUMP 2B	DG/T	000	EE Y/11D	0	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes

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05	2-FOD-3A-XFER-PMP	FUEL OIL TRANSFER PUMP 3A	DG/T	000	SE Z/12D	0	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
05	2-FOD-3B-XFER-PMP	FUEL OIL TRANSFER PUMP 3B	DG/T	000	SE Y/12D	0	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
05	2-FOD-4A-XFER-PMP	FUEL OIL TRANSFER PUMP 4A	DG/T	000	SE Z/13D	0	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
05	2-FOD-4B-XFER-PMP	FUEL OIL TRANSFER PUMP 4B	DG/T	000	SE Y/13D	0	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
06	1-E21-C001A	CS PUMP 1A	RB	-017	NW CORNER	-17	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
06	1-SW-1A-NUC-PMP	NUCLEAR SERVICE WATER PUMP 1A	SWB	020	NW	20	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
06	1-SW-1B-NUC-PMP	NUCLEAR SERVICE WATER PUMP 1B	SWB	020	NW	20	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
06	2-E11-C002A	RHR PUMP-2A	RB	-015	NE T/19R	-17	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
06	2-E11-C002B	RHR PUMP-2B	RB	-015	SE T/23R	-17	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
06	2-E11-C002C	RHR PUMP-2C	RB	-015	NE T/19R	-15	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
06	2-E11-C002D	RHR PUMP-2D	RB	-015	SE T/23R	-17	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
06	2-E21-C001A	CORE SPRAY PUMP - 2A	RB	-009	NW CORNER	-17	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
06	2-E21-C001B	CORE SPRAY PUMP - 2B	RB	-009	SW CORNER	-17	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
06	2-SW-2A-NUC-PMP	NSW PUMP 2A	SWB	020	SW	20	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
06	2-SW-2B-NUC-PMP	NSW PUMP 2B	SWB	020	SW	20 FT	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
07	1-B21-F013A	SAFETY RELIEF VLV A & SOLENOID	RB/DW	044	DW AZ-030	044	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
07	1-B21-F013B	SAFETY RELIEF VLV B & SOLENOID	RB/DW	044	DW AZ-051	044	No	ABS	CRS	Yes	Yes	N/A	No	No
07	1-B21-F013C	SAFETY RELIEF VLV C & SOLENOID	RB/DW	044	DW AZ-060	044	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
07	1-B21-F013D	SAFETY RELIEF VLV D & SOLENOID	RB/DW	044	DW AZ-080	044	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
07	1-B21-F013E	SAFETY RELIEF VLV E & SOLENOID	RB/DW	044	DW AZ-095	044	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
07	1-B21-F013F	SAFETY RELIEF VLV F & SOLENOID	RB/DW	044	DW AZ-299	044	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
07	1-B21-F013G	SAFETY RELIEF VLV G & SOLENOID	RB/DW	044	DW AZ-281	044	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
07	1-B21-F013H	SAFETY RELIEF VLV H & SOLENOID	RB/DW	044	DW AZ-330	044	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
07	1-B21-F013J	SAFETY RELIEF VLV J & SOLENOID	RB/DW	044	DW AZ-280	044	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
07	1-B21-F013K	SAFETY RELIEF VLV K & SOLENOID	RB/DW	044	DW AZ-265	044	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
07	1-B21-F013L	SAFETY RELIEF VLV L & SOLENOID	RB/DW	044	DW AZ-097	044	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
07	1-B21-F022A	MAIN STEAM LINE INBOARD ISOL	RB/DW	017	DW AZ-006	22	Yes	ABS	CRS	Yes	No	N/A	Yes	No
07	1-B21-F022B	MAIN STEAM LINE INBOARD ISOL	RB/DW	017	DW AZ-020	22	Yes	ABS	CRS	Yes	No	N/A	Yes	No
07	1-B21-F022C	MAIN STEAM LINE INBOARD ISOL	RB/DW	017	DW AZ-340	22	Yes	ABS	CRS	Yes	No	N/A	No	No
07	1-B21-F022D	MAIN STEAM LINE INBOARD ISOL	RB/DW	017	DW AZ-354	22	Yes	ABS	CRS	Yes	No	N/A	Yes	No
07	1-B21-F028A	MAIN STEAM LINE OUTBOARD ISOL	RB/PIT	020	PITWW L/5R	22	Yes	ABS	CRS	Yes	No	N/A	Yes	No
07	1-B21-F028B	MAIN STEAM LINE OUTBOARD ISOL	RB/PIT	020	PITWW L/5R	22	Yes	ABS	CRS	Yes	No	N/A	Yes	No
07	1-B21-F028C	MAIN STEAM LINE OUTBOARD ISOL	RB/PIT	020	PITWW L/5R	22	Yes	ABS	CRS	Yes	No	N/A	Yes	No

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07	1-B21-F028D	MAIN STEAM LINE OUTBOARD ISOL	RB/PIT	020	PITWW L/5R	22	Yes	ABS	CRS	Yes	No	N/A	Yes	No
07	1-C11-CV-126	137 SCRAM INLET ISOLATION VALVE ASSEMBLIES	RB	020	HCU	20 ON RACK	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
07	1-C11-CV-127	137 SCRAM OUTLET ISOLATION VALVE ASSEMBLIES	RB	020	HCU	20 ON RACK	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
07	1-C11-CV-F010	CRD VENT VALVES	RB	051	SE R/8R	51 INLINE	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
07	1-C11-CV-F011	CRD DRAIN VALVES	RB	ABOVE RBEDIT ROOM	SE S/7R	7	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
07	1-C11-V139	CRD VENT VALVES	RB	051	SE R/8R	51	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
07	1-C11-V140	CRD DRAIN VALVES	RB	007	SE S/7R	7	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
07	1-CAC-V10	DW PURGE EXHAUST BACKUP	RB	061	SW M/6R	68	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
07	1-CAC-V7	SP PURGE EXHAUST	RB	008	SW L/7R	8	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
07	1-CAC-V8	SP PURGE EXHAUST BYPASS (rule of the box 1-E41-C001)	RB	008	SW L/7R	8	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
07	1-CAC-V9	DW PURGE EXHAUST (rule of the box 1-E41-C001)	RB	061	SW M/6R	68	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
07	1-E11-CV-F053A	RHR HX TORUS CONTROL VALVE	RB	006	NE S/3R	6	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
07	1-E11-F055A	RHR HX 1A INLET RELIEF VALVE	RB	020	NE T/2R	039'	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
07	1-E41-F025	HPCI COND PUMP DRAIN TO CRW ISOL VALVE	RB	-017	EE S/6R	-17	Yes	ABS	CRS	Yes	No	N/A	No	No
07	1-E41-F026	HPCI COND PUMP DRAIN TO CRW ISOL VALVE	RB	-017	EE S/6R	-17 ft.	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
07	1-E41-F050	L.O. COOLER LINE RELIEF VALVE	RB	-017	EES/5R	-16 FT.	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
07	1-E41-PCV-F035	HPCI LO CLR PRESS CONTROL VALVE	RB	-017	EE T/5R	17	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
07	1-E41-V8	TURBINE STOP VALVE	RB	-017	EE S/5R	HPCI SKID	Yes					N/A		Yes
07	1-E41-V9	TURBINE CONTROL VALVE	RB	-017	EE S/5R	HPCI SKID						N/A		Yes
07	1-G16-F003	DW DRAIN VALVES	RB	020		INLINE	Yes	ABS	CRS	Yes	No	N/A	Yes	No
07	1-G16-F004	DW DRAIN VALVES	RB	020		INLINE	Yes	ABS	CRS	Yes	No	N/A	Yes	No
07	1-G16-F019	DW DRAIN VALVES	RB	020		INLINE	Yes	ABS	CRS	Yes	No	N/A	Yes	No
07	1-G16-F020	DW DRAIN VALVES	RB	020		INLINE	Yes	ABS	CRS	Yes	No	N/A	Yes	No
07	1-RNA-PCV-5247	BACKUP N2 DISCHARGE PRESS CONTROL VALVE	RB	056	SW M/6R	56	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
07	1-RNA-PCV-5248	BACKUP N2 DISCHARGE PRESS CONTROL VALVE	RB	50 ft.	SS M/4R	56	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes

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07	1-RNA-PRV-5256	BACKUP N2 PRESSURE RELIEF VALVE	RB	057	SS M/6R	51 ft	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
07	1-RNA-PRV-5258	BACKUP N2 PRESSURE RELIEF VALVE	RB	057	NN N/3R	Yes	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
07	1-RNA-PRV-5259	BACKUP PRESSURE RELIEF VALVE	RB	057	SS M/6R	51'	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
07	1-RNA-PRV-5260	BACKUP PRESSURE RELIEF VALVE	RB	50 FT	NN N/4R	56 FT.	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
07	1-SW-PV-138	AOV FOR STRAINER BACKWASH	SWB	021	NE	IN-LINE	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
07	1-SW-PV-140	AOV FOR STRAINER BACKWASH	SWB	020	NE	20	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
07	1-SW-V123AO	CS ROOM COOLER 1B OUTLET ISOLATION	RB	-010	SW M/8R	IN-LINE	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
07	1-SW-V124AO	RHR ROOM COOLER 1B OUTLET ISOLATION	RB	-009	SE T/7R	IN-LINE	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
07	1-SW-V125AO	RHR 1D SEAL COOLER DISCHARGE	RB	-012	SE T/7R	IN-LINE	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
07	1-SW-V126AO	RHR 1B SEAL COOLER DISCHARGE	RB	-012	SE T/7R	IN-LINE	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
07	1-SW-V128AO	CS ROOM COOLER RETURN ISOLATION	RB	-017	NW M/2R	-10	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
07	1-SW-V129AO	RHR ROOM COOLER RETURN ISOLATION	RB	-005	NE T/3R	IN-LINE	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
07	1-SW-V136	RHRSW PUMP HX AOV VALVE & SOLENOID	RB	050	SE T/7R	IN-LINE	No	ABS	CRS	Yes	Yes	N/A	Yes	No
07	1-SW-V137	RHRSW PUMP HX AOV VALVE & SOLENOID	RB	050	SE S/7R	IN-LINE	No	ABS	CRS	Yes	:s	N/A	Yes	No
07	1-SW-V138	RHRSW PUMP HX AOV VALVE & SOLENOID	RB	050	SE T/8R	50	No	ABS	CRS	Yes	Yes	N/A	Yes	No
07	1-SW-V139	RHRSW PUMP HX AOV VALVE & SOLENOID	RB	050	SE T/8R	50	No	ABS	CRS	Yes	Yes	N/A	Yes	No
07	1-VA-FV-1026	DAMPER 1A-D OPERATOR	CB	070	NW LC/13	ON DUCT-85'	No			No	Yes	N/A	Yes	No
07	1-VA-FV-1027B	DAMPER 1H-D OPERATOR	CB	070	NW LC/13	ON DUCT-85'	No			No	Yes	N/A	Yes	No
07	1-VA-FV-936A	RHR DAMPER OPERATOR	RB	006	NE T/3R	5	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
07	1-VA-FV-936B	RHR DAMPER OPERATOR	RB	006	SE T/7R	006	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
07	1-VA-MC-1026-1	MOISTURE CONTROLLER/CONTROL VALVE	CB	080	MECH EQ RM	INLINE-80'	No		CRS	Yes	Yes	N/A	Yes	Yes
07	1-VA-V023	ISOL VALVE (For HX 1-VA-1D-HX-CB)	CB	070	NE NC/11C	74'	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
07	2-B21-F013A	SAFETY RELIEF VLV A & SOLENOID	RB/DW	044	DW AZ-030	044	No	ABS	CRS	Yes	Yes	N/A	No	No

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07	2-B21-F013B	SAFETY RELIEF VLV B & SOLENOID	RB/DW	044	DW AZ-051	044	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
07	2-B21-F013C	SAFETY RELIEF VLV C & SOLENOID	RB/DW	044	DW AZ-060	044	No	ABS	CRS	Yes	Yes	N/A	No	No
07	2-B21-F013D	SAFETY RELIEF VLV D & SOLENOID	RB/DW	044	DW AZ-080	044	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
07	2-B21-F013E	SAFETY RELIEF VLV E & SOLENOID	RB/DW	044	DW AZ-095	044	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
07	2-B21-F013F	SAFETY RELIEF VLV F & SOLENOID	RB/DW	044	DW AZ-299	044	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
07	2-B21-F013G	SAFETY RELIEF VLV G & SOLENOID	RB/DW	044	DW AZ-281	044	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
07	2-B21-F013H	SAFETY RELIEF VLV H & SOLENOID	RB/DW	044	DW AZ-330	044	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
07	2-B21-F013J	SAFETY RELIEF VLV J & SOLENOID	RB/DW	044	DW AZ-280	044	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
07	2-B21-F013K	SAFETY RELIEF VLV K & SOLENOID	RB/DW	044	DW AZ-265	044	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
07	2-B21-F013L	SAFETY RELIEF VLV L & SOLENOID	RB/DW	044	DW AZ-097	044	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
07	2-B21-F022A	MAIN STEAM LINE INBOARD ISOL	RB/DW	022	DW AZ-006	022	Yes	ABS	CRS	Yes	No	N/A	No	No
07	2-B21-F022B	MAIN STEAM LINE INBOARD ISOL	RB/DW	022	DW AZ-020	022	Yes	ABS	CRS	Yes	No	N/A	Yes	No
07	2-B21-F022C	MAIN STEAM LINE INBOARD ISOL	RB/DW	022	DW AZ-340	022	Yes	ABS	CRS	Yes	No	N/A	Yes	No
07	2-B21-F022D	MAIN STEAM LINE INBOARD ISOL	RB/DW	022	DW AZ-354	022	Yes	ABS	CRS	Yes	No	N/A	Yes	No
07	2-B21-F028A	MAIN STEAM LINE OUTBOARD ISOL	RB/PIT	020	WW L/21R	022	Yes	ABS	CRS	Yes	No	N/A	No	No
07	2-B21-F028B	MAIN STEAM LINE OUTBOARD ISOL	RB/PIT	020	WW L/21R	022	Yes	ABS	CRS	Yes	No	N/A	No	No
07	2-B21-F028C	MAIN STEAM LINE OUTBOARD ISOL	RB/PIT	020	WW L/21R	022	Yes	ABS	CRS	Yes	No	N/A	No	No
07	2-B21-F028D	MAIN STEAM LINE OUTBOARD ISOL	RB/PIT	020	WW L/21R	022	Yes	ABS	CRS	Yes	No	N/A	No	No
07	2-C12-CV-126	137 SCRAM INLET ISOLATION VALVES	RB	020	HCU	20	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
07	2-C12-CV-127	137 SCRAM OUTLET ISOLATION VALVES	RB	020	HCU	20	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
07	2-C12-CV-F010	CRD VENT VALVES	RB	051	NE P/18R	51	Yes	ABS	CRS	Yes	No	N/A	No	No
07	2-C12-CV-F011	CRD DRAIN VALVES	RB	004	NE S/19R	IN-LINE	Yes	ABS	CRS	Yes	No	N/A	Yes	No
07	2-C12-V139	CRD VENT VALVES	RB	051	NE P/18R	51	No	ABS	CRS	Yes	No	N/A	No	No
07	2-C12-V140AO	SCRAM DISCHARGE VOLUME DRAIN VALVE	RB	008	NE S/19R	IN-LINE	Yes	ABS	CRS	Yes	Yes	N/A	No	No
07	2-CAC-V10	DW PURGE EXHAUST BACKUP	RB	069	SS N/22R	INLINE-69'	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
07	2-CAC-V7	SP PURGE EXHAUST	RB	000	SW L/23R	008	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
07	2-CAC-V8	SP PURGE EXHAUST BYPASS	RB	008	SW L/23R	008	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
07	2-CAC-V9	DW PURGE EXHAUST	RB	069	SW M/22R	INLINE-69'	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
07	2-E11-CV-F053A	RHR HX 2A/TORUS CONTROL VALVE	RB	006	NE S/19R	IN LINE	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
07	2-E11-CV-F053B	RHR HX 2B/TORUS CONTROL VALVE	RB	006	SE T/23R	IN-LINE	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes

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07	2-E11-F055A	RHR HX 2A RELIEF VALVE	RB	039	NE T/18R	039	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
07	2-E11-F055B	RHR HX 2B RELIEF VALVE	RB	036	SE S/24R	IN-LINE	Yes	AB[illegible]	CRS	Yes	Yes	N/A	Yes	Yes
07	2-E41-F025	HPCI COND PUMP DRAIN TO CRW ISOL VALVE	RB	-017	EE S/22R	-17	Yes	[illegible]	CRS	Yes	Yes	N/A	Yes	Yes
07	2-E41-F026	HPCI COND PUMP DRAIN TO CRW ISOL VALVE	RB	-017	EE S/22R	-17	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
07	2-E41-F050	L.O. COOLER LINE RELIEF VALVE	RB	-017	EE S/21R	-017	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
07	2-E41-PCV-F035	HPCI LO CLR PRESS CONTROL VALVE	RB	-009	EE T/21R	In-Line	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
07	2-E41-V8	TURBINE STOP VALVE (rule of the box 2-E41-C001)	RB	-017	EE S/21R	-17		ABS				N/A		Yes
07	2-E41-V9	TURBINE CONTROL VALVE	RB	-017	EE S/21R	-17	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
07	2-G16-F003	DW DRAIN VALVE	RB	020	RB AZ-90	IN LINE	Yes	ABS	CRS	Yes	No	N/A	Yes	No
07	2-G16-F004	DW DRAIN VALVE	RB	020	RB AZ-90	IN LINE	Yes	ABS	CRS	Yes	No	N/A	Yes	No
07	2-G16-F019	DW DRAIN VALVE	RB	020	RB AZ-90	INLINE	Yes	ABS	CRS	Yes	No	N/A	Yes	No
07	2-G16-F020	DW DRAIN VALVE	RB	020	RB AZ-090	IN LINE	Yes	ABS	CRS	Yes	No	N/A	Yes	No
07	2-MUD-TCV-2112	DG1 JACKET WATER TCV ENGINE OUTLET (rule of the box 2-DG1-GEN)	DG	023	NW V/9D	DG1 SKID						N/A		Yes
07	2-MUD-TCV-2129	DG1 JACKET WATER TCV COOLER OUTLET (rule of the box 2-DG1-GEN)	DG	023	NW V/9D	DG1 SKID						N/A		Yes
07	2-MUD-TCV-2139	DG2 JACKET WATER TCV ENGINE OUTLET (rule of the box 2-DG2-GEN)	DG	023	WW V/10D	DG2 SKID						N/A	Yes	Yes
07	2-MUD-TCV-2155	DG2 JACKET WATER TCV COOLER OUTLET (rule of the box 2-DG2-GEN)	DG	023	WW V/10D	DG2 SKID						N/A		Yes
07	2-MUD-TCV-2166	DG3 JACKET WATER TCV ENGINE OUTLET (rule of the box 2-DG3-GEN)	DG	023	WW V/11D	DG3 SKID						N/A		Yes
07	2-MUD-TCV-2183	DG3 JACKET WATER TCV COOLER OUTLET (rule of the box 2-DG3-GEN)	DG	023	WW V/11D	DG3 SKID						N/A		Yes
07	2-MUD-TCV-2193	DG4 JACKET WATER TCV ENGINE OUTLET (rule of the box 2-DG4-GEN)	DG	023	SW V/12D	DG4 SKID						N/A		Yes
07	2-MUD-TCV-2210	DG4 JACKET WATER TCV COOLER OUTLET (rule of the box 2-DG4-GEN)	DG	023	SW V/12D	DG4 SKID						N/A		Yes
07	2-RNA-PCV-5247	BACKUP N2 DISCHARGE PRESS CONTROL VALVE	RB	056	SS M/22R	5O	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
07	2-RNA-PCV-5248	BACKUP N2 DISCHARGE PRESS CONTROL VALVE	RB	056	EE S/21R	56	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes

Equip Class	Equipment ID No.	System/Equipment Description	Bldg.	Floor Elev.	Room or Row/Col	Elev. of Seismic Input	Below 40' above grade?	Seismic Capacity based on?	Seismic Demand based on?	Capacity greater than Demand?	Bounding Spectrum Caveats OK?	Anchor-age OK?	Inter-actions OK?	Overall OK?
07	2-RNA-PRV-5256	BACKUP N2 PRESSURE RELIEF VALVE	RB	056	SS M/22R	056	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
07	2-RNA-PRV-5258	BACKUP N2 PRESSURE RELIEF VALVE	RB	056	EE R/21R	056	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
07	2-RNA-PRV-5259	BACKUP PRESSURE RELIEF VALVE	RB	057	SS M/22R	056	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
07	2-RNA-PRV-5260	BACKUP PRESSURE RELIEF VALVE	RB	056	EE S/22R	056	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
07	2-SW-PV-138	AOV FOR STRAINER BACKWASH	SWB	021	SE	LINE MOUNT	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
07	2-SW-PV-140	AOV FOR STRAINER BACKWASH	SWB	021	SE	IN LINE	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
07	2-SW-V123-AO	CS PUMP ROOM 2D ISO	RB	-010	SS M/24R	-011	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
07	2-SW-V124-AO	RHR ROOM COOLER 2B ISO	RB	-008	SE T/23R	IN LINE	Yes	ABS	CRS	Yes	Yes	N/A	No	No
07	2-SW-V125-AO	RHR PUMP 2D SEAL COOLER OUTLET	RB	-012	SE T/23R	-17	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
07	2-SW-V126-AO	RHR PUMP 2B SEAL COOLER OUTLET	RB	-012	SE T/23R	IN LINE	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
07	2-SW-V128-AO	CS ROOM COOLER NSW OUT ISO	RB	-010	NN M/18R	-010	Yes	ABS	CRS	Yes	Yes	N/A	No	No
07	2-SW-V129-AO	RHR PUMP 2A ROOM COOLER OUT ISO	RB	001	NE T/19R	IN LINE	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
07	2-SW-V130-AO	RHRP 2A SEAL COOLING DISCHARGE	RB	-012	NE T/19R	-012	Yes	ABS	CRS	Yes	Yes	N/A	No	No
07	2-SW-V131-AO	RHRP 2C SEAL COOLING DISCHARGE	RB	-012	NE T/19R	-17 INLINE	Yes	ABS	CRS	Yes	No	N/A	No	No
07	2-SW-V136	RHRSW PUMP HX AOV VALVE & SOLENOID	RB	053	EE R/20R	IN LINE	No	ABS	CRS	No	No	N/A	Yes	No
07	2-SW-V137	RHRSW PUMP HX AOV VALVE & SOLENOID	RB	053	EE R/21R	IN LINE	No	ABS	CRS	No	No	N/A	Yes	No
07	2-SW-V138	RHRSW PUMP HX AOV VALVE & SOLENOID	RB	053	EE R/22R	IN LINE	No	ABS	CRS	No	No	N/A	Yes	No
07	2-SW-V139	RHRSW PUMP HX AOV VALVE & SOLENOID	RB	053	SE R/23R	IN LINE	No	ABS	CRS	No	No	N/A	Yes	No
07	2-VA-FV-1027A	DAMPER 2I-D OPERATOR	CB	070	SW MC/13	ON DUCT-85'	No			No	Yes	N/A	Yes	No
07	2-VA-FV-1028	DAMPER 2A-D OPERATOR	CB	070	SW MC/13	ON DUCT-85'	No			No	Yes	N/A	Yes	No
07	2-VA-FV-936A	RHR DAMPER OPERATOR	RB	006	NE T/19R	05'	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
07	2-VA-FV-936B	RHR DAMPER OPERATOR	RB	006	SE T/23R	05'	Yes	ABS	CRS	Yes		N/A		Yes
07	2-VA-MC-1028-1	MOISTURE CONTROLLER/CONTROL VALVE	CB	070	MECH EQ RM	IN LINE	No		CRS	Yes	Yes	N/A	Yes	Yes
07	2-VA-V023	ISOL VALVE (For HX 2-VA-HX-2D-CB)	CB	070	NW NC/11C	74	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes

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07	2-VA-V024	ISOL VALVE (For HX 2-VA-2E-HX-CB)	CB	070	NW NC/11C	75'	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08A	1-E11-F002AMO	RHR HT EXCH 1A OUT ISO	RB	023	NE T/2R	23	Yes	ABS	CRS	Yes	Nc	N/A	Yes	No
08A	1-E11-F002BMO	RHR HT EXCH OUT ISO	RB	023	SE S/8R	23	Yes	ABS	CRS	Yes	No	N/A	Yes	No
08A	1-E11-F003A	RHR HX ' \ OUTLET VALVE	RB	-003	NE S/2R	-3	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08A	1-E11-F006B	SHUTDOWN COOLING SUCTION VALVE	RB	-015	SE T/7R	-15	Yes	ABS	CRS	Yes	Yes	N/A	Yes	No
08A	1-E11-F006D	SHUTDOWN COOLING SUCTION VALVE	RB	-015	SE S/7R	-15	Yes	ABS	CRS	Yes	Yes	N/A	Yes	No
08A	1-E11-F007A	MIN FLOW BYPASS VALVE	RB	-003	NE S/4R	-3	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08A	1-E11-F008	SHUTDWN CLG OUTBOARD SUCTION ISOL VALVE	RB	024	EE R/5R	24	Yes	ABS	CRS	Yes	No	N/A	Yes	No
08A	1-E11-F009	SHUTDWN CLG INBOARD SUCTION THROTTLE VLV	RB/DW	034	DW AZ-180	34	No	ABS	CRS	Yes	No	N/A	Yes	No
08A	1-E11-F015A	LPCI INBOARD INJECTION VALVE	RB	024	EE R/5R	24	Yes	ABS	CRS	Yes	No	N/A	Yes	No
08A	1-E11-F016A	DRYWELL SPRAY OUTBOARD ISOLATION VALVE	RB	006	EE S/4R	6	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08A	1-E11-F017A	LPCI OUTBOARD INJECTION VALVE	RB	024	EE S/5R	IN-LINE	Yes	ABS	CRS	Yes	No	N/A	Yes	No
08A	1-E11-F020A	SP SUCTION VALVE	RB	-009	NE R/3R	-9	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08A	1-E11-F024A	SP COOLING ISOLATION VALVE	RB	002	NE S/3R	2	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08A	1-E11-F027A	SP SPRAY ISOLATION VALVE	RB	002	NE S/4R	2	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08A	1-E11-F028A	SP DISCHARGE ISOLATION VALVE	RB	002	NE S/3R	2	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08A	1-E11-F047A	RHR HX 1A INLET VALVE	RB	-003	NE T/3R	-3	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08A	1-E11-F048A	RHR HX 1A BYPASS VALVE	RB	-003	NE S/3R	-3	Yes	ABS	CRS	Yes	No	N/A	Yes	No
08A	1-E11-F073	ISOLATION VALVE (MOV)	RB	027	SE T/7R	27	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08A	1-E11-PDV-F068A-MO	RHR HT EXCH A OUT ISO	RB	050	SW L/2R	62	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08A	1-E11-PDV-F068B-MO	RHR HT EXCH 1B DISCH ISOL	RB	042	SW L/7R	42	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08A	1-E21-F001A	CSP-1A SP SUCTION VALVE	RB	-009	NW L/3R	-9	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08A	1-E21-F004A	CS OUTBOARD INJECTION VALVE	RB	050	NN N/4R	63	No	ABS	CRS	No	Yes	N/A	Yes	No
08A	1-E21-F005A	CS INBOARD INJECTION VALVE	RB	050	NN N/4R	63	No	ABS	CRS	No	Yes	N/A	Yes	No
08A	1-E21-F015A	CS FULL FLOW TEST BYPASS VALVE	RB	-003	N CS RM	-3	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08A	1-E21-F031A	CS MIN. FLOW BYPASS VALVE - TRAIN A	RB	-008	N CS RM	-8	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08A	1-E41-F001	HPCI TURBINE STEAM SUPPLY VALVE	RB	-017	EE S/5R	-17	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes

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08A	1-E41-F002	STEAM SUPPLY INBOARD ISOLATION VALVE	RB/DW	028	DW AZ-135	40	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08A	1-E41-F003	STEAM SUPPLY OUTBOARD ISOLATION VALVE	RB	020	EE R/5R	20	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08A	1-E41-F004	HPCI/CST SUCTION VALVE	RB	-017	EE S/6R	-17	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08A	1-E41-F006	HPCI INJECTION VALVE	RB	042	SW LANDING	IN-LINE	No	ABS	CRS	Yes	Yes	N/A	Yes	No
08A	1-E41-F007	HPCI DISCHARGE VALVE	RB	-017	NE S/4R	-17	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08A	1-E41-F008	HPCI TEST LINE/CST RETURN VALVE	RB	-017	NE S/4R	-17	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08A	1-E41-F011	HPCI TEST LINE/CST RETURN VALVE	RB	-017	SE T/8R	-17	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08A	1-E41-F012	HPCI MIN FLOW BYPASS VALVE	RB	-017	EE S/6R	-17	Yes	ABS	CRS	Yes	No	N/A	Yes	No
08A	1-E41-F041	HPCI/SP SUCTION VALVE	RB	-017	EE S/6R	-17	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08A	1-E41-F042	HPCI/SP SUCTION VALVE	RB	-017	EE S/5R	-17	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08A	1-E41-F059	HPCI LO COOLING WATER VALVE	RB	-017	EE S/5R	-17	Yes	ABS	CRS	Yes	No	N/A	Yes	No
08A	1-E41-F075	TURBINE VACUUM BREAKER VALVE	RB	-017	NE S/4R	-17	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08A	1-E41-F079	TURBINE VACUUM BREAKER VALVE	RB	-017	NE S/3R	-17	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08A	1-G31-F001	RWCU INLET LINE INBOARD ISOLATION VALVE	RB/DW	059	DW AZ-243	63	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08A	1-G31-F004	RWCU INLET LINE OUTBOARD ISOLATION VALVE	RB	063		IN-LINE	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08A	1-SW-V101	CSW TO RHRSW SUPPLY	RB	050	EE R/4R	61	No	ABS	CRS	Yes	Yes	N/A	Yes	No
08A	1-SW-V102MO	RHRSW PUMP SUCTION XTIE	RB	050	EE S/6R	61	No	ABS	CRS	Yes	Yes	N/A	Yes	No
08A	1-SW-V103MO	NSW TO RRCCW TRAIN B	RB	050	SE R/7R	61	No	ABS	CRS	Yes	Yes	N/A	Yes	No
08A	1-SW-V105	RHRSW PUMP SUPPLY	RB	050	SE R/7R	61	No	ABS	CRS	Yes	Yes	N/A	Yes	No
08A	1-SW-V106MO	RBCCW SUPPLY ISO	RB	061	SE S/7R	61	No	ABS	CRS	Yes	Yes	N/A	Yes	No
08A	1-SW-V111MO	CSW TO RHR PUMPS ISOLATION	RB	-004	NE R/2R	-4	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08A	1-SW-V117MO	ROOM COOLING SW ISOLATION	RB	009	SE T/7R	009	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08A	1-SW-V118	NSW ROOM COOLER CROSS CONNECT	RB	-001	NE T/4R	INLINE	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08A	1-SW-V14MO	CSW PUMP 1A NSW DISCHARGE	SWB	009	NW	9	Yes	ABS	CRS	Yes	No	N/A	Yes	No
08A	1-SW-V16MO	CSW PUMP 1B NSW DISCHARGE	SWB	004	NW	IN-LINE	Yes	ABS	CRS	Yes	No	N/A	Yes	No
08A	1-SW-V18MO	CSW PUMP 1C NSW DISCHARGE	SWB	004	NW	IN-LINE	Yes	ABS	CRS	Yes	No	N/A	Yes	No
08A	1-SW-V19MO	NSW 1A DISCHARGE VALVE	SWB	009	NW	INLINE	Yes	ABS	CRS	Yes	No	N/A	Yes	No
08A	1-SW-V20MO	NSW 1B DISCHARGE VALVE	SWB	004	NW	4	Yes	ABS	CRS	Yes	No	N/A	Yes	No
08A	1-SW-V210	DG1 NSW UNIT 1 SUPPLY	DG	024	NE X/9D	24	Yes	BS	GRS	Yes	No	N/A	Yes	No

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08A	1-SW-V211	DG2 NSW UNIT 1 SUPPLY	DG	024	EE X/10D	24	Yes	BS	GRS	Yes	No	N/A	Yes	No
08A	1-SW-V212	DG3 NSW UNIT 1 SUPPLY	DG	024	EE X/11D	27	Yes	BS	GRS	Yes	No	N/A	Yes	No
08A	1-SW-V213	DG4 NSW UNIT 1 SUPPLY	DG	024	SE X/12D	27	Yes	BS	GRS	Yes	No	N/A	Yes	No
08A	1-SW-V255MO	NSW DG SUPPLY VALVE	SWB	002	EE Z/11D	INLINE-6'	Yes	ABS	CRS	Yes	No	N/A	Yes	No
08A	2-E11-F002A	RHR HT EXCH 2A OUT ISO	RB	023	NE T/18R	IN LINE	Yes	ABS	CRS	Yes	No	N/A	Yes	No
08A	2-E11-F002B	RHR HX 2B NSW OUT FLOW CTL	RB	023	SE T/23R	IN-LINE	Yes	ABS	CRS	Yes	No	N/A	Yes	No
08A	2-E11-F003A	RHR HX 2A OUTLET VALVE	RB	-003	NE S/18R	IN LINE	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08A	2-E11-F003B	RHR HX 2B OUTLET VALVE	RB	-003	SE S/24R	IN-LINE	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08A	2-E11-F004A	RHR PUMP-2A SP SUCTION VALVE	RB	-015	NE T/18R	-17	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08A	2-E11-F004B	RHR PUMP-2B SP SUCTION VALVE	RB	-015	SE T/24R	IN LINE	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08A	2-E11-F004C	RHR PUMP-2C SP SUCTION VALVE	RB	-015	NE T/18R	-15	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08A	2-E11-F004D	RHR PUMP-2D SP SUCTION VALVE	RB	-015	SE T/24R	IN LINE	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08A	2-E11-F006A	SHUTDOWN COOLING SUCTION VALVE	RB	-015	NE T/19R	-17	Yes	ABS	CRS	Yes	No	N/A	Yes	No
08A	2-E11-F006B	SHUTDOWN COOLING SUCTION VALVE	RB	-015	SE T/23R	IN LINE	Yes	ABS	CRS	Yes	No	N/A	Yes	No
08A	2-E11-F006C	SHUTDOWN COOLING SUCTION VALVE	RB	-015	NE S/19R	-15	Yes	ABS	CRS	Yes	No	N/A	Yes	No
08A	2-E11-F006D	SHUTDOWN COOLING SUCTION VALVE	RB	-015	SE S/7R	-15	Yes	ABS	CRS	Yes	No	N/A	Yes	No
08A	2-E11-F007A	MIN FLOW BYPASS VALVE	RB	-003	NE S/20R	-7	Yes	ABS	CRS	Yes	Yes	N/A	No	No
08A	2-E11-F007B	MIN FLOW BYPASS VALVE	RB	-003	SE S/22R	IN-LINE	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08A	2-E11-F008	SHUTDWN CLG OUTBOARD SUCTION ISOL VALVE	RB	024	EE R/21R	IN LINE	Yes	ABS	CRS	Yes	Yes	N/A	Yes	No
08A	2-E11-F009	SHUTDWN CLG INBOARD SUCTION THROTTLE VLV	RB/DW	018	DW AZ-180	34	Yes	ABS	CRS	Yes	No	N/A	No	No
08A	2-E11-F015A	LPCI INBOARD INJECTION VALVE	RB	024	EE R/21R	IN LINE	Yes	ABS	CRS	Yes	No	N/A	Yes	No
08A	2-E11-F015B	LPCI INBOARD INJECTION VALVE	RB	024	EE R/21R	IN-LINE	Yes	ABS	CRS	Yes	No	N/A	Yes	No
08A	2-E11-F016A	DRYWELL SPRAY OUTBOARD ISOLATION VALVE	RB	006	EE S/20R	IN LINE	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08A	2-E11-F016B	DRYWELL SPRAY OUTBOARD ISOLATION VALVE	RB	006	EE S/22R	IN-LINE	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08A	2-E11-F017A	LPCI OUTBOARD INJECTION VALVE	RB	024	EE S/21R	IN LINE	Yes	ABS	CRS	Yes	No	N/A	Yes	No
08A	2-E11-F017B	LPCI OUTBOARD INJECTION VALVE	RB	024	EE S/21R	IN LINE					No	N/A	Yes	No
08A	2-E11-F020A	SP SUCTION VALVE	RB	-009	NE R/19R	-9	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes

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08A	2-E11-F020B	SP SUCTION VALVE	RB	-009	SE R/23R	IN LINE	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08A	2-E11-F024A	SP COOLING ISOLATION VALVE	RB	002	NE S/19R	IN LINE	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08A	2-E11-F024B	SP COOLING ISOLATION VALVE	RB	002	SE S/23R	IN LINE	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08A	2-E11-F027A	SP SPRAY ISOLATION VALVE	RB	002	NE S/20R	IN LINE	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08A	2-E11-F027B	SP SPRAY ISOLATION VALVE	RB	002	SE S/23R	IN LINE	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08A	2-E11-F028A	SP DISCHARGE ISOLATION VALVE	RB	002	NE S/19R	IN LLNE	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08A	2-E11-F028B	SP DISCHARGE ISOLATION VALVE	RB	002	SE S/23R	IN LINE	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08A	2-E11-F047A	RHR HX 2A INLET VALVE	RB	-003	NE T/19R	IN LINE	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08A	2-E11-F047B	RHR HX 2B INLET VALVE	RB	-003	SE T/23R	IN-LINE	Yes	ABS	CRS	Yes	Yes	N/A	Yes	No
08A	2-E11-F048A	RHR HX 2A BYPASS VALVE	RB	-003	NE S/19R	IN LINE	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08A	2-E11-F048B	RHR HX 2B BYPASS VALVE	RB	-003	SE S/23R	IN-LINE	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08A	2-E11-F073	ISOLATION VALVE (MOV)	RB	027	SE T/23R	IN LINE	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08A	2-E11-PDV-F068A	RHRSW HEAT EXCHANGER DISCH ISOLATION	RB	058	NW L/18R	60	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08A	2-E11-PDV-F068B-MO	RHR HX 2B NSW OUT ISO	RB	042	SW L/23R	IN-LINE	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08A	2-E21-F001A	CSP-2A SP SUCTION VALVE	RB	-009	NW L/19R	-9	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08A	2-E21-F001B	VALVE FOO1B SUPPRESSION POOL SUCTION VALVE	RB	-009'	NW L/19R	-11 Ft.	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08A	2-E21-F004A	CS OUTBOARD INJECTION VALVE	RB	063	NN N/20R	63	No	ABS	CRS	No	Yes	N/A	Yes	No
08A	2-E21-F004B	CS OUTBOARD INJECTION VALVE	RB	063	SS N/22R	INLINE-63'	No	ABS	CRS	Yes	Yes	N/A	Yes	No
08A	2-E21-F005A	CS INBOARD INJECTION VALVE	RB	063	NN N/20R	IN LINE	No	ABS	CRS	No	Yes	N/A	Yes	No
08A	2-E21-F005B	CS INBOARD INJECTION VALVE	RB	063	SS N/22R	INLINE-63'	No	ABS	CRS	Yes	Yes	N/A	Yes	No
08A	2-E21-F015A	CS FULL FLOW TEST BYPASS VALVE	RB	-003	N CS RM L	0FT	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08A	2-E21-F015B	CORE SPRAY FULL FLOW TEST BYPASS VALVE	RB	000	NW L/18R	-3 Ft.	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08A	2-E21-F031A	CS MIN FLOW BYPASS VALVE - TR A	RB	-008	N CS RM L	-10	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08A	2-E21-F031B	CS MIN FLOW BYPASS VALVE - TR B	RB	-017 Ft.	S CS RM L	-7 Ft.	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08A	2-E41-F001	TURBINE STEAM SUPPLY VALVE	RB	-008	EE S/21R	-17	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08A	2-E41-F002	STEAM SUPPLY INBOARD ISOLATION VALVE	RB/DW	038	DW AZ-162	40	No	ABS	CRS	Yes	Yes	N/A	No	No
08A	2-E41-F003	STEAM SUPPLY OUTBOARD ISOLATION VALVE	RB	026	EE R/21	IN LINE	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08A	2-E41-F004	HPCI/CST SUCTION VALVE	RB	-011	EE S/22R	-17	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08A	2-E41-F006	HPCI INJECTION VALVE	RB	020	WW L/20R	41	Yes	BS	GRS	Yes	No	N/A	Yes	No

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08A	2-E41-F007	HPCI DISCHARGE VALVE	RB	-007	NE S/20R	-7	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08A	2-E41-F008	HPCI TEST LINE/CST RETURN VALVE	RB	-017	NE S/20R	-017	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08A	2-E41-F011	HPCI TEST LINE/CST RETURN VALVE	RB	-003	NE T/19R	in line	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08A	2-E41-F012	MIN FLOW BYPASS VALVE	RB	-002	EE S/22R	-5	Yes	ABS	CRS	Yes	No	N/A	Yes	No
08A	2-E41-F041	HPCI/SP SUCTION VALVE	RB	-017	EE S/22R	-9	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08A	2-E41-F042	HPCI/SP SUCTION VALVE	RB	-017	EE S/21R	-17	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08A	2-E41-F059	HPCI LO COOLING WATER VALVE	RB	-017	EE T/21R	-17	Yes	ABS	CRS	Yes	Yes	N/A	Yes	No
08A	2-E41-F075	TURBINE VACUUM BREAKER VALVE	RB	-017	NE S/20R	0	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08A	2-E41-F079	TURBINE VACUUM BREAKER VALVE	RB	-017	NE S/19R	O	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08A	2-G31-F001	RHR/RWCU MOV (INBOARD)	RB/DW	059	DW AZ-243	059	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08A	2-G31-F004	RWCU SUPPLY LINE	RB	060	SS N/22R	INLINE-63'	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08A	2-SW-V101-MO	RHRSW PUMP SUCTION ISO	RB	061	EE R/20R	INLINE-61'	No	ABS	CRS	No	No	N/A	Yes	No
08A	2-SW-V102-MO	RHRSW PUMP SUCT XTIE	RB	061	EE S/22R	INLINE 61'	No	ABS	CRS	No	Yes	N/A	Yes	No
08A	2-SW-V103	NSW TO RBCCW	RB	061	SE R/23R	INLINE-61'	No	ABS	CRS	No	No	N/A	Yes	No
08A	2-SW-V105MO	RHRSW PUMP SUCTION ISO	RB	061	SE R/23R	INLINE-61'	No	ABS	CRS	No	No	N/A	Yes	No
08A	2-SW-V106	RBCCW XTIE, TR A	RB	060	SE S/23R	IN LINE	No	ABS	CRS	No	No	N/A	Yes	No
08A	2-SW-V111-MO	ROOM COOLING NSW ISO	RB	-003	NE R/18R	IN LINE	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08A	2-SW-V117-MO	ROOM COOLING NSW ISO	RB	009	SE T/23R	IN LINE	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08A	2-SW-V118-MO	ROOM COOLING NSW XTIE	RB	-001	SE T/22R	0'	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08A	2-SW-V14-MO	CONV SW PUMP 2A N HDR ISO	SWB	004	SW	LINE MOUNT	Yes	ABS	CRS	Yes	No	N/A	Yes	No
08A	2-SW-V16	CONV SW PUMP 2B N HDR ISO	SWB	007	SW	9	Yes	ABS	CRS	Yes	No	N/A	Yes	No
08A	2-SW-V18-MO	CONV SW PUMP 2C N HDR ISO	SWB	004	SW	LINE MOUNT	Yes	ABS	CRS	Yes	No	N/A	Yes	No
08A	2-SW-V19	NSWP 2A DISCH ISOL	SWB	004	SW	LINE MOUNT	Yes	ABS	CRS	Yes	No	N/A	Yes	No
08A	2-SW-V20	NSWP 2B DISCH ISOL	SWB	007	SW	9	Yes	ABS	CRS	Yes	No	N/A	Yes	No
08A	2-SW-V210	DG1 NSW UNIT 2 SUPPLY	DG	027	NE X/9D	24	Yes	BS	GRS	Yes	No	N/A	Yes	No
08A	2-SW-V211	DG2 NSW UNIT 2 SUPPLY	DG	027	EE X/10D	24	Yes	BS	GRS	Yes	Yes	N/A	Yes	No
08A	2-SW-V212	DG3 NSW UNIT 2 SUPPLY	DG	027	EE X/11D	27	Yes	BS	GRS	Yes	No	N/A	Yes	No
08A	2-SW-V213	DG4 NSW UNIT 2 SUPPLY	DG	027	SE X/12D	27	Yes	BS	GRS	Yes	No	N/A	Yes	No
08A	2-SW-V255	DG3&4 JKT WTR CLR SW SUPPLY VALVE	SW VALVE PIT	002	YARD	IN-LINE	Yes	ABS	CRS	Yes	No	N/A	Yes	No

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08B	1-C11-SV-117	137 HEADER SCRAM VALVES	RB	020	HCU	20 ON RACK	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08B	1-C11-SV-118	137 HEADER SCRAM VALVES	RB	020	HCU	20 ON RACK	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08B	1-C11-SV-F009A	SCRAM SOLENOID VALVE	RB	020	EE S/2R	24	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08B	1-C11-SV-F009B	SCRAM SOLENOID VALVE	RB	020	EE S/21R	24	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08B	1-CAC-SV-1219B	SP SOLENOID VALVE	RB	007	NE R/2R	7	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08B	1-CAC-SV-1225C	DRYWELL SOLENOID VALVE	RB	028	SS N/7R	28	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08B	1-CAC-SV-1230C	SOLENOID VALVE TO DRYWELL INST	RB	088	CC N/6R	INLINE-86'	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08B	1-CAC-SV-4222	CONTAINMENT ATMOSPHERE SOLENOID VALVE	RB	002	NE R/3R	2	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08B	1-CAC-SV-4223	CONTAINMENT ATMOSPHERE SOLENOID VALVE	RB	002	NE R/3R	2	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08B	1-CAC-SV-4345	SP SOLENOID VALVE	RB	-017	SE R/7R	-10 INLINE	Yes	ABS	CRS	Yes	No	N/A	Yes	No
08B	1-E11-SV-F053A	PILOT SOLENOID VALVE FOR CVF053A (ROB)	RB	006	NE S/3R	2O	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08B	1-E41-SV-1218D	SP SOLENOID VALVE FOR LSHN015A	RB	008	SE R/8R	8	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08B	1-E41-SV-1219D	SP SOLENOID VALVE FOR LSHN015B	RB	007	NE P/2R	7	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08B	1-E41-SV-1220D	SP SOLENOID VALVE FOR LSHN015A	RB	-008	SE R/8R	-8	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08B	1-E41-SV-1221D	SP SOLENOID VALVE FOR LSHN015B	RB	-008	NE P/2R	-8	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08B	1-RNA-SV-5251	BACKUP N2 SOLENOID VALVE	RB	056	CC P/6R	56	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08B	1-RNA-SV-5253	BACKUP N2 SOLENOID VALVE	RB	057	CC P/4R	57 FT.	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08B	1-RNA-SV-5481	BACKUP N2 DISCHARGE SOLENOID VALVE	RB	056	SW H/6R	51 FT.	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08B	1-RNA-SV-5482	BACKUP N2 DISCHARGE SOLENOID VALVE	RB	056	NN N/4R	56	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08B	1-SW-PY-138	SOLENOID VALVE (SV)	SWB	020	NE	IN-LINE	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08B	1-SW-PY-140	SOLENOID VALVE (SV)	SWB	020	NE	20	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08B	1-VA-SV-1026	PNL 2-VA-M1-CB - SUPPLY FAN SOL VALVES	CB	070	SW LC/13	76'	No			No	Yes	N/A	Yes	No
08B	1-VA-SV-1026A	PNL 2-VA-M1-CB - SOL VALVE FOR KS 1026	CB	070	SW LC/13	76'	No			No	Yes	N/A	Yes	No
08B	1-VA-SV-936A	SOLENOID VALVE	RB	006	NE T/3R	005	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08B	1-VA-SV-936B	SOLENOID VALVE	RB	006	SE T/7R	006	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08B	2-C12-SV-F009A	SCRAM SOLENOID VALVE	RB	020	EE S/21R	020	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes

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08B	2-C12-SV-F009B	SCRAM SOLENOID VALVE	RB	020	EE S/21R	020	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08B	2-C12-SV117	137 SCRAM VALVES	RB	020	HCU	20	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08B	2-C12-SV118	137 SCRAM VALVES	RB	020	HCU	20	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08B	2-CAC-SV-1219B	SP SOLENOID VALVE	RB	-017	NE R/18R	7	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08B	2-CAC-SV-1225C	DRYWELL SOLENOID VALVE	RB	020	SS N/23R	28	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08B	2-CAC-SV-1230B	SOLENOID VALVE FOR DRYWELL INST	RB	086	CC N/22R	INLINE-86'	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08B	2-CAC-SV-4222	CONTAINMENT ATMOSPHERE SOLENOID VALVE FOR CAC-V16	RB	002	NE /R19R	IN LINE	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08B	2-CAC-SV-4223	CONTAINMENT ATMOSPHERE SOLENOID VALVE FOR CAC-V17	RB	002	NE R/19R	IN LINE	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08B	2-CAC-SV-4345	SP SOLENOID VALVE	RB	-008	SE R/23R	-10	Yes	ABS	CRS	Yes	No	N/A	Yes	No
08B	2-DG1-SV-6553-1	DG1 START AIR SOLENOID (rule of the box - 2-DG1-GEN)	DG	023	NW V/9D	ON DG SKID								
08B	2-DG1-SV-6554-1	DG1 START AIR SOLENOID (rule of the box - 2-DG1-GEN)	DG	023	NW V/9D	ON DG SKID								
08B	2-DG2-SV-6553-2	DG2 START AIR SOLENOID (rule of the box - 2-DG2-GEN)	DG	023	WW V/10D	DG2 SKID						N/A		Yes
08B	2-DG2-SV-6554-2	DG2 START AIR SOLENOID (rule of the box - 2-DG2-GEN)	DG	023	WW V/10D	DG2 SKID						N/A		Yes
08B	2-DG3-SV-6553-3	DG3 START AIR SOLENOID (rule of the box - 2-DG3-GEN)	DG	023	WW V/11D	ON SKID						N/A		Yes
08B	2-DG3-SV-6554-3	DG3 START AIR SOLENOID (rule of the box - 2-DG3-GEN)	DG	023	WW V/11D	ON SKID						N/A		Yes
08B	2-DG4-SV-6553-4	DG4 START AIR SOLENOID (rule of the box - 2-DG4-GEN)	DG	023	SW V/12D	ON SKID						N/A		Yes
08B	2-DG4-SV-6554-4	DG4 START AIR SOLENOID (rule of the box - 2-DG4-GEN)	DG	023	SW V/12D	ON SKID						N/A		Yes
08B	2-E11-SVF053A	PILOT SOLENOID VALVE FOR CVF053A	RB	007	NE T/19R	INLINE-6'	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08B	2-E11-SVF053B	PILOT SOLENOID VALVE FOR CVF053B	RB	007	SE T/23R	IN LINE	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08B	2-E41-SV-1218D	SP SOLENOID VALVE FOR LSHN015A	RB	-017	SE R/21R	-9	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08B	2-E41-SV-1219D	SP SOLENOID VALVE FOR LSHN015B	RB	-017	NE P/18R	7	Yes	ABS	CRS	Yes	No	N/A	No	No
08B	2-E41-SV-1220D	SP SOLENOID VALVE FOR LSHN015A	RB	-008	SE R/24R	IN-LINE	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08B	2-E41-SV-1221D	SP SOLENOID VALVE FOR LSHN015B	RB	-017	NE P/18R	-7	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes

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08B	2-FO-SV-2000	DG2 4-DAY TK FUEL OIL INLET SV	DG/T	014	EE Z/11D	ON DG TANK	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
08B	2-FO-SV-2012	DG1 4-DAY TK FUEL OIL INLET SV	DG/T	014	EE Z/11D	ONTANK-20'	Yes	BS	GRS	Yes	Yes	N/A	No	No
08B	2-FO-SV-2024	DG4 4-DAY TK FUEL OIL INLET SV	DG/T	014	SE Z/13D	17'	Yes	BS	GRS	Yes	Yes	N/A	Yes	No
08B	2-FO-SV-2036	DG3 4-DAY TK FUEL OIL INLET SV	DG/T	014	EE Z/12D	14	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
08B	2-RNA-SV-5251	BACKUP N2 SOLENOID VALVE	RB	061 AZ 218	CC P/22R	INLINE-61'	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08B	2-RNA-SV-5253	BACKUP N2 SOLENOID VALVE	RB	058	NE P/20R	56	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08B	2-RNA-SV-5481	BACKUP N2 DISCHARGE SOLENOID VALVE	RB	056	SW M/22R	50	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08B	2-RNA-SV-5482	BACKUP N2 DISCHARGE SOLENOID VALVE	RB	055	EE S/22R	56	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08B	2-SW-PY-138	SOLENOID VALVE (SV)	SWB	021	SE	LINE MOUNT	Yes	ABS	CRS	Yes	No	N/A	Yes	No
08B	2-SW-PY-140	SOLENOID VALVE (SV)	SWB	021	SE	ON VALVE	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08B	2-VA-SV-1027	PNL 2-VA-M1-CB - SUPPLY FAN SOL VALVES	CB	070	SW LC/13	75	No			No	Yes	N/A	Yes	No
08B	2-VA-SV-1027A	PNL 2-VA-M1-CB - SOL VALVE FOR KS 1027	CB	070	SW LC/13	75	No			No	Yes	N/A	Yes	No
08B	2-VA-SV-1028	PNL 2-VA-M1-CB - SUPPLY FAN SOL VALVES	CB	070	SW LC/13	75	No			No	Yes	N/A	Yes	No
08B	2-VA-SV-1028A	PNL 2-VA-M1-CB - SOL VALVE FOR KS 1028	CB	070	SW LC/13	75	No			No	Yes	N/A	Yes	No
08B	2-VA-SV-916-1	SOLENOID FOR FV916B	CB	070	MECH EQ RM	OFF DUCT	No			No	Yes	N/A	Yes	No
08B	2-VA-SV-936A	SOLENOID VALVE	RB	006	NE T/19R	9'	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
08B	2-VA-SV-936B	SOLENOID VALVE	RB	006	SE T/23R	006	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
09	1-VA-1D-SF-CB	AC SUPPLY FAN - UNIT 1	CB	070	MECH EQ RM	70	No	ABS	CRS	No	No	No	Yes	No
09	2-DG1-VAC-BL	DG1 CRANKCASE VACUUM BLOWER (rule of the box - 2-DG1-GEN)	DG	023	NW V/9D	ON DG SKID								Yes
09	2-DG2-VAC-BL	DG2 CRANKCASE VACUUM BLOWER	DG	023	WW V/10D	23	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
09	2-DC3-VAC-BL	DG3 CRANKCASE VACUUM BLOWER	DG	023	WW V/11D	ON DG SKID	Yes	BS	GRS	Yes	Yes	Yes	No	No

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09	2-DG4-VAC-BL	DG4 CRANKCASE VACUUM BLOWER	DG	023	SW V/12D	ON DG SKID	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
09	2-VA-2A-FCU-RB	FAN FOR RHR FAN COOLING UNIT A	RB	000	NE T/18R	0	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
09	2-VA-2B-FCU-RB	FAN FOR RHR FAN COOLING UNIT B	RB	000	SE T/24R	O	Yes	ABS	CRS	Yes	No	Yes	Yes	No
09	2-VA-2C-FCU-RB	FAN FOR CS FAN COOLING UNIT A	RB	-007	NW L/18R	-5FT	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
09	2-VA-2D-SF-CB	AC SUPPLY FAN - UNIT 2	CB	070	MECH EQ RM	70'	No	ABS	CRS	No	No	No	Yes	No
09	2-VA-2E-SF-CB	AC SUPPLY FAN - UNIT 1 & 2	CB	070	MECH EQ RM	70'	No	ABS	CRS	No	No	No	Yes	No
09	2-VA-A-SF-DG	DG SUPPLY FAN	DG	055	NN W/10D	50	Yes	BS	GRS	No	No	No	Yes	No
09	2-VA-B-SF-DG	DG SUPPLY FAN	DG	055	CC W/11D	50	Yes	BS	GRS	No	No	No	Yes	No
09	2-VA-C-SF-DG	DG SUPPLY FAN	DG	055	CC W/12D	50 FT	Yes	BS	GRS	No	No	No	Yes	No
09	2-VA-D-SF-DG	DG SUPPLY FAN	DG	055	SS W/13D	50 FT	Yes	BS	GRS	No	No	No	Yes	No
09	2-VA-E-EF-DG	DG CELL EXHAUST FAN	DG	050	NE X/9D	50	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
09	2-VA-F-EF-DG	DG CELL EXHAUST FAN	DG	050	EE X/10D	50'	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
09	2-VA-G-EF-DG	DG CELL EXHAUST FAN	DG	050	EE X/11D	50 FT	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
09	2-VA-H-EF-DG	DG CELL EXHAUST FAN	DG	050	SE X/12D	50'	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
09	2-VC-2D-FCU-RB	FAN FOR CS FAN COOLING UNIT B	RB	-007	SW L/24R	-7 ft.	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
10	1-VA-1A-CC-CB	COOLING COIL - UNIT 1	CB	070	MECH EQ RM	70'	No	ABS	CRS	No	No	No	Yes	No
10	1-VA-1A-D-CB	AO DAMPER	CB	070	MECH EQ RM	82'	No	ABS	CRS	No	Yes	Yes	Yes	No
10	1-VA-1A-FCU-RB	COIL FOR RHR FAN COOLING UNIT A	RB	000	NE T/2R	-005	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
10	1-VA-1B-FCU-RB	COIL FOR RHR FAN COOLING UNIT B (INCLUDING AXIAL FAN UNIT)	RB	-017	SE T/8R	~0	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
10	1-VA-1C-FCU-RB	COIL FOR CS FAN COOLING UNIT A (ALSO ADDRESSES FAN)	RB	-007	NW L/2R	-10	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
10	1-VA-1D-CU-CB	AIR COOLED CONDENSER	CB	070	MECH EQ RM	70'	No	ABS	CRS	No	No	No	Yes	No
10	1-VA-1D-FCU-RB	COIL FOR CS FAN COOLING UNIT B (ALSO ADDRESSES FAN UNIT)	RB	-017	SW L/8R	-7	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
10	1-VA-1H-D-CB	AO DAMPER - UNIT 1	CB	070	MECH EQ	82'	No	ABS	CRS	No	Yes	Yes	Yes	No
10	1-VA-ISOL-DMP-CB	SUPPLY ISOL DAMPER	CB	070	MECH EQ RM	70'	No	ABS	CRS	No	Yes	Yes	Yes	No

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10	2-VA-2A-CC-CB	COOLING COIL - UNIT 2	CB	070	MECH EQ RM	70 FT	No	ABS	CRS	No	No	No	Yes	No
10	2-VA-2A-D-CB	AO DAMPER	CB	082	MECH EQ RM	82'	No	ABS	CRS	No	Yes	Yes	Yes	No
10	2-VA-2A-FC-RB	COIL FOR RHR FAN COOLING UNIT A	RB	000	NE T/18R	0	Yes	ABS	CRS	Yes	No	Yes	Yes	No
10	2-VA-2A-RAF-CB	ROLL TYPE FILTER	CB	070	MECH EQ RM	70	No	ABS	CRS	No	No	No	Yes	No
10	2-VA-2A-UH-CB	ELECTRIC HTR	CB	070	MECH EQ RM	82'	No	ABS	CRS	No	Yes	Yes	Yes	No
10	2-VA-2B-CC-CB	COOLING COIL - UNITS 1 & 2	CB	070	MECH EQ RM	70	No	ABS	CRS	No	No	No	Yes	No
10	2-VA-2B-FC-RB	COIL FOR RHR FAN COOLING UNIT B	RB	000	SE T/24R	~0'	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
10	2-VA-2C-FC-RB	COIL FOR CS FAN COOLING UNIT A	RB	-007	NW L/18R	0 FT	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
10	2-VA-2D-CU-CB	AIR COOLED CONDENSER	CB	070	MECH EQ RM	70'	No	ABS	CRS	No	No	No	Yes	No
10	2-VA-2E-CU-CB	AIR COOLED CONDENSER	CB	070	MECH EQ RM	70'	No	ABS	CRS	No	No	No	Yes	No
10	2-VA-2I-D-CB	AO DAMPER - UNIT 2	CB	082	MECH EQ	82	No	ABS	CRS	No	Yes	Yes	Yes	No
10	2-VA-ISOL-DMP-CB	SUPPLY ISOL DAMPER	CB	070	MECH EQ RM	70	No	ABS	CRS	No	Yes	Yes	Yes	No
10	2-VC-2D-FC-RB	COIL FOR CS FAN COOLING UNIT B	RB	-007	SW L/24R	-10 ft.	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
11	1-VA-1D-SCDU-CB	SUBCOOLING CONDENSER	CB	070	MECH EQ RM	70'	No	ABS	CRS	No	No	No	Yes	No
11	2-VA-2D-SCDU-CB	SUBCOOLING CONDENSER	CB	070	ROOF	70	No	ABS	CRS	No	No	No	Yes	No
11	2-VA-2E-SCDU-CB	SUBCOOLING CONDENSER	CB	070	MECH EQ RM	70'	No	ABS	CRS	No	No	No	Yes	No
12	2-VA-2A-AC-CB	AIR COMPRESSOR	CB	070	MECH EQ RM	74FT	No	ABS	CRS	No	No	No	Yes	No
12	2-VA-2B-AC-CB	AIR COMPRESSOR	CB	070	MECH EQ RM	74	No	ABS	CRS	No	No	No	Yes	No
13	1-C71-S001A	MOTOR GENERATOR SET A	CB	023	BATTERY RM	23	Yes	ABS	CRS	Yes	No	No	Yes	No
13	1-C71-S001B	MOTOR GENERATOR SET B	CB	023	BATTERY RM	23 FT.	Yes	ABS	CRS	Yes	No	No	Yes	No
13	2-C72-S001A	MOTOR GENERATOR SET A	CB	023	BATTERY RM	23	Yes	ABS	CRS	Yes	No	No	Yes	No
13	2-C72-S001B	MOTOR GENERATOR SET B	CB	023	BATTERY RM	23	Yes	ABS	CRS	Yes	No	No	Yes	No
14	1-11A	DISTRIBUTION PANEL 11A	CB	049	NW LC/9C	053	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
14	1-11B	DISTRIBUTION PANEL 11B	CB	049	NE NC/10C	53	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
14	1-1A-120V	CB PANEL - 120VAC EMERG PWR	CB	023	E WALL 11C	27	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
14	1-1A-125VDC	DISTRIBUTION PANEL 1A	DG	050	NW U/9D	54	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
14	1-1A-480V	480-120/208VAC PANEL	CB	023	MC/10C	28	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
14	1-1A-RX	RB PANEL - 120VAC EMERG PWR	RB	020	P/2R	24 ft.	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
14	1-1A-SW	SW PANEL - 120VAC EMERG PWR	SWB	020	N WALL	24	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes

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14	1-1A-UPS	120/208VAC MAIN UPS DP	CB	023	CABLE SPRD	23	Yes	ABS	CRS	Yes	Yes	No	No	No
14	1-1AB	CB PANEL - 120VAC EMERG PWR	CB	023	E WALL 10C	29	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
14	1-1AB-RX	RB PANEL - 120VAC EMERG PWR	RB	020	P/3R	24 FT.	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
14	1-1B-120V	CB PANEL - 120VAC EMERG PWR	CB	023	E WALL 9C	27	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
14	1-1B-125VDC	DISTRIBUTION PANEL 1B	DG	054	NW U/10D	54 FT.	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
14	1-1B-480V	480-120/208VAC PANEL	RB	020	M/2R	24	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
14	1-1B-RX	RB PANEL - 120VAC EMERG PWR	RB	020	P/2R	24	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
14	1-1B-SW	SW PANEL - 120VAC EMERG PWR	SWB	020	N WALL	24	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
14	1-1C-120V	CB PANEL - 120VAC EMERG PWR	CB	023	E WALL 11C	28	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
14	1-1D-120V	CB PANEL - 120VAC EMERG PWR	CB	023	W WALL 9C	28	Yes	ABS	CRS	Yes	Yes	es	No	No
14	1-1E5	DISTRIBUTION PANEL 1E5	CB	023	MC/10C	27	Yes	ABS	CRS	Yes	Yes	Yes	No	No
14	1-1E6	DISTRIBUTION PANEL 1E6	CB	023	NC/10C	27	Yes	ABS	CRS	Yes	Yes	Yes	No	No
14	1-31A	CB PANEL - 120VAC EMERG PWR	CB	023	NC/11C	29	Yes	ABS	CRS	Yes	No	No	Yes	No
14	1-31AB	CB PANEL - 120VAC EMERG PWR	CB	049	N WALL	49	No	ABS	CRS	Yes	Yes	Yes	Yes	Yes
14	1-31B	CB PANEL - 120VAC EMERG PWR	CB	049	N WALL	49	No	ABS	CRS	Yes	Yes	Yes	Yes	Yes
14	1-3A	DISTRIBUTION PANEL 3A	CB	049	NE NC/10C	053	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
14	1-3AB	DISTRIBUTION PANEL 3AB	CB	049	NE NC/10C	053	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
14	1-3B	DISTRIBUTION PANEL 3B	CB	049	NW LC/8	053	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
14	1-7A	125VDC DISTRIBUTION PANEL 7A	SWYD RE-LAY HSE	020	SWITCH-YARD	0'	Yes	ABS	AGRS	Yes	Yes	Yes	Yes	Yes
14	1-7B	125VDC DISTRIBUTION PANEL 7B	SWYD RE-LAY HSE	020	SWITCH-YARD	0'	Yes	ABS	AGRS	Yes	Yes	Yes	Yes	Yes
14	1-C71-P001	RPS POWER DIST. PNL W/BUS A&B	CB	023	CABLE SPRD	28	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
14	2-12A	DISTRIBUTION PANEL 12A	CB	049	SW LC/16C	49'	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
14	2-12B-HZ5	DISTRIBUTION PANEL 12B	CB	049	SE NC/15C	49'	Yes	ABS	CRS	Yes	Yes	Yes	No	No
14	2-2A-120V	CB PANEL - 120VAC EMERG PWR	CB	023	NC/15C	29'	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
14	2-2A-125VDC	DISTRIBUTION PANEL 2A	DG	050	WW U/12D	54	Yes	DOC	GRS	Yes	No	Yes	Yes	No
14	2-2A-480V	480-120/208VAC PANEL	CB	023	MC/15C	28	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
14	2-2A-RX	RB PANEL - 120VAC EMERG PWR	RB	020	P/18R	24	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
14	2-2A-SW	SW PANEL - 120VAC EMERG PWR	SWB	020	EAST WALL	24	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
14	2-2A-UPS	120/208VAC MAIN UPS DP	CB	023	CABLE SPRD	023	Yes	ABS	CRS	Yes	No	No	No	No
14	2-2AB	CB PANEL - 120VAC EMERG PWR	CB	023	NC/16C	28'	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
14	2-2AB-RX	RB PANEL - 120VAC EMERG PWR	RB	020	P/18R	24	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes

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14	2-2B-120V	CB PANEL - 120VAC EMERG PWR	CB	023	NC/16C	28'	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
14	2-2B-125VDC	DISTRIBUTION PANEL 2B	DG	050	SW U/13D	54	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
14	2-2B-480V	480-120/208VAC PANEL	RB	020	NW M/18R	25	Yes	ABS	CRS	Yes	No	No	Yes	No
14	2-2B-RX	RB PANEL - 120VAC EMERG PWR	RB	020	P/24R	25	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
14	2-2B-SW	SW PANEL - 120VAC EMERG PWR	SWB	020	W WALL	24	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
14	2-2C-120V	CB PANEL - 120VAC EMERG PWR	CB	023	NC/15C	28'	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
14	2-2D-120V	CB PANEL - 120VAC EMERG PWR	CB	023	NC/16C	28FT	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
14	2-2E7	DISTRIBUTION PANEL 2E7	CB	023	NC/15C	28FT	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
14	2-2E8	DISTRIBUTION PANEL 2E8	CB	023	NC/16C	28'	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
14	2-32A	CB PANEL - 120VAC EMERG PWR	CB	023	NC/14C	28FT	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
14	2-32AB-HXO	CB PANEL - 120VAC EMERG PWR	CB	049	NC/18C	049	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
14	2-32B-HW9	CB PANEL - 120VAC EMERG PWR	CB	049	NC/18C	55	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
14	2-4A-H23	125VDC DISTRIBUTION PANEL 4A	CB	049	SE NC/15C	49'	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
14	2-4AB-H37	125VDC DISTRIBUTION PANEL 4AB	CB	049	SE NC/16C	49'	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
14	2-4B-H24	125VDC DISTRIBUTION PANEL 4B	CB	049	SW LC/18	49'	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
14	2-8A	DISTRIBUTION PANEL 8A	SWYD RE-LAY HSE	023	SWITCH-YARD	0'	Yes	ABS	AGRS	Yes	Yes	Yes	Yes	Yes
14	2-8B	DISTRIBUTION PANEL 8B	SWYD RE-LAY HSE	023	SWITCH-YARD	0'	Yes	ABS	AGRS	Yes	Yes	Yes	Yes	Yes
14	2-C72-P001 (RPS BUS A&B)	RPS POWER DISTRIBUTION PANEL	CB	023	BATTERY RM	23'	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
15	1-1A-1-125VDC-BAT	BATTERY 1A-1	CB	023	CABLE SPRD	23	Yes	ABS	CRS	Yes	No	Yes	Yes	Yes
15	1-1A-2-125VDC-BAT	BATTERY 1A-2	CB	023	CABLE SPRD	23 FT.	Yes	ABS	CRS	Yes	No	Yes	Yes	Yes
15	1-1B-1-125VDC-BAT	BATTERY 1B-1	CB	023	CABLE SPRD	23 FT.	Yes	ABS	CRS	Yes	No	Yes	Yes	Yes
15	1-1B-2-125VDC-BAT	BATTERY 1B-2	CB	023	CABLE SPRD	23 FT.	Yes	ABS	CRS	Yes	No	Yes	Yes	Yes
15	2-2A-1-125VDC-BAT	BATTERY 2A-1	CB	023	CABLE SPRD	23	Yes	ABS	CRS	Yes	No	Yes	Yes	Yes
15	2-2A-2-125VDC-BAT	BATTERY 2A-2	CB	023	CABLE SPRD	23	Yes	ABS	CRS	Yes	No	Yes	Yes	Yes
15	2-2B-1-125VDC-BAT	BATTERY 2B-1	CB	023	CABLE SPRD	23	Yes	ABS	CRS	Yes	No	Yes	Yes	Yes
15	2-2B-2-125VDC-BAT	BATTERY 2B-2	CB	023	CABLE SPRD	23	Yes	ABS	CRS	Yes	No	Yes	Yes	Yes
16	1-1A-1-125VDC-CHGR	BATTERY CHARGER 1A-1	CB	023	CABLE SPRD	023	Yes	ABS	CRS	Yes	Yes	Yes	No	No
16	1-1A-2-125VDC-CHGR	BATTERY CHARGER 1A-2	CB	023	CABLE SPRD	023	Yes	ABS	CRS	Yes	Yes	Yes	No	No
16	1-1B-1-125VDC-CHGR	BATTERY CHARGER 1B-1	CB	023	CABLE SPRD	023	Yes	ABS	CRS	Yes	Yes	Yes	No	No
16	1-1B-2-125VDC-CHGR	BATTERY CHARGER 1B-2	CB	023	CABLE SPRD	023	Yes	ABS	CRS	Yes	Yes	Yes	No	No

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16	1-UPS-1A	50 KVA POWER SUPPLY	CB	023	BATTERY RO	23	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
16	1-UPS-1B	50 KVA POWER SUPPLY	CB	023	BATTERY RO	23	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
16	2-2A-1-125VDC-CHGR	BATTERY CHARGER 2A-1	CB	023	CABLE SPRD	23'	Yes	ABS	CRS	Yes	Yes	Yes	No	No
16	2-2A-2-125VDC-CHGR	BATTERY CHARGER 2A-2	CB	023	CABLE SPRD	23	Yes	ABS	CRS	Yes	Yes	Yes	No	No
16	2-2B-1-125VDC-CHGR	BATTERY CHARGER 2B-1	CB	023	CABLE SPRD	23	Yes	ABS	CRS	Yes	Yes	Yes	No	No
16	2-2B-2-125VDC-CHGR	BATTERY CHARGER 2B-2	CB	023	CABLE SPRD	23	Yes	ABS	CRS	Yes	Yes	Yes	No	No
16	2-UPS-2A	50 KVA POWER SUPPLY (PRIMARY)	CB	023	BATTERY RO	23'	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
16	2-UPS-2B	50 KVA POWER SUPPLY	CB	023	BATTERY RO	23'	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
17	2-DG1-GEN	EMERGENCY DIESEL GENERATOR 1	DG	023	NW V/9D	23-PED	Yes	BS	GRS	Yes	No	Yes	Yes	No
17	2-DG2-GEN	EMERGENCY DIESEL GENERATOR 2	DG	023	WW V/10D	23'	Yes	BS	GRS	Yes	No	Yes	Yes	No
17	2-DG3-GEN	EMERGENCY DIESEL GENERATOR 3	DG	023	WW V/11D	23 FT	Yes	BS	GRS	Yes	No	Yes	Yes	No
17	2-DG4-GEN	EMERGENCY DIESEL GENERATOR 4	DG	023	SW V/12D	ON DG SKID	Yes	BS	GRS	Yes	No	Yes	Yes	No
18	1-C11-LDSH-129	137 HCU ACCUMULATOR HIGH LEVEL SWITCHES	RB	020	HCU	20	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	1-C11-PSL-130	137 HCU ACCUMULATOR PRESSURE SWITCH	RB	020	HCU	20 ON RACK	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	1-CAC-PT-1230	DRYWELL PRESSURE TRANSMITTER	RB	088		88'	No	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	1-E11-CY-K001A	SIGNAL CONVERTER FOR SVF053A	RB	009	NE T/3R	20	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	1-E11-PDIS-N021A	RHR HX 1A PRESS DIFF SWITCH	RB	-017		-17	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	1-E11-PSL-2746	RHR HX 1A LO PRESSURE SWITCH	RB	-017	NE S/2R	-17	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	1-E41-LSH-N015A	SUPP POOL HI WTR LEVEL ACTUATION OF HPCI	RB	-017	SE S/6R	-7	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	1-E41-LSH-N015B	SUPP POOL HI WTR LEVEL ACTUATION OF HPCI	RB	-002	NE P/2R	-2	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	1-E41-LSL-N002	CST LO WATER LEVEL ACTUATION OF HPCI	AT CST	024	AT CST	23	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	1-E41-LSL-N003	CST LO WATER LEVEL ACTUATION OF HPCI	AT CST	024	AT CST	23	Yes	ABS	CRS	Yes	Yes	Yes	Yes	No
18	1-H21-P001	CORE SPRAY SYS A INSTR RACK	RB	-017	N CS RM	-14	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	1-H21-P004	RX PROT AND NSSS INSTR RACK	RB	050	CC P/4R	50	No	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	1-H21-P005	RX PROT AND NSSS INSTR RACK	RB	050	EE P/6R	50	No	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	1-H21-P009	JET PUMP INSTRUMENT RACK	RB	020	NN N/3R	20	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	1-H21-P010	JET PUMP INSTRUMENT RACK	RB	020	SS P/6R	20	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes

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18	1-H21-P014	HPCI INSTRUMENT RACK	RB	-017	NE S/4R	-017	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	1-H21-P016	CS/HPCI LEAK DETECTION RACK	RB	020	NN P/3R	20 FT.	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	1-H21-P021	RHR CHANNEL B INSTR RACK	RB	-017	NE T/2R	-17	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	1-H21-P022	RECIRC PUMP B INSTR RACK	RB	-017	SE R/7R	-13	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	1-H21-P034	HPCI LEAK DET SYS A INSTR RACK	RB	-017	EE T/6R	-13	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	1-H21-P036	CS/HPCI LEAK DETECTION RACK	RB	020	SS P/6R	20 FT.	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	1-IA-PSL-3596	RNA/BACK' ' N2 LO PRESSURE SWITCH	RB	024	NW K/3R	20 FT.	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	1-IA-PSL-3597	RNA/BACKUP N2 LO PRESSURE SWITCH	RB	024	SE R/7R	20 FT.	Yes	ABS	CRS	Yes	Yes	Yes	No	No
18	1-PNS-PSL-5843A	PNS/BACKUP N2 LO PRESSURE SWITCH	RB	020	DIV I PNL	23	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	1-PNS-PSL-5843B	PNS/BACKUP N2 LO PRESSURE SWITCH	RB	020	DIV II PNL	23	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	1-RNA-PT-5267	BACKUP N2 PRESSURE TRANSMITTER	RB	050	SS M/6R	53 FT.	No	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	1-RNA-PT-5268	BACKUP N2 PRESSURE TRANSMITTER	RB	050	SS M/6R	53 FT.	No	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	1-RNA-PT-5269	BACKUP N2 PRESSURE TRANSMITTER	RB	050	NN N/4R	54 FT.	No	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	1-RNA-PT-5270	BACKUP N2 PRESSURE TRANSMITTER	RB	050	NN N/4R	54 FT.	No	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	1-SW-FSL-825	SEAL COOLER LOW FLOW SWITCH	RB	-012	SE T/7R	-17	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	1-SW-FSL-834	SEAL COOLER LOW FLOW SWITCH	RB	-012	NE T/3R	IN-LINE	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	1-SW-FSL-835	SEAL COOLER LOW FLOW SWITCH	RB	-012	SE T/7R	-17	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	1-SW-FSL-836	SEAL COOLER LOW FLOW SWITCH	RB	-012	NE T/3R	IN-LINE	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	1-SW-FT-1158	NSW TO RBCCW FLOW TRANSMITTER	RB	050	EE R/6R	52	No	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	1-SW-FT-5114	CSP RM COOLER DISCHARGE FLOW INDICATOR	RB	003	NW M/2R	002	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	1-SW-FT-5115	CR FLOW INDICATION OF TRAIN B ROOM CLG	RB	003	SW M/8R	8	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	1-SW-PDIC-138	DIFFERENTIAL PRESSURE CONTROLLER	SWB	025	NW	20	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	1-SW-PDIC-140	DIFFERENTIAL PRESSURE CONTROLLER	SWB	020	NW	20	Yes	ABS	CRS	Yes	Yes	Yes	No	No

Equip Class	Equipment ID No.	System/Equipment Description	Bldg.	Floor Elev.	Room or Row/Col	Elev. of Seismic Input	Below 40' above grade?	Seismic Capacity based on?	Seismic Demand based on?	Capacity greater than Demand?	Bounding Spectrum Caveats OK?	Anchor-age OK?	Inter-actions OK?	Overall OK?
18	1-SW-PDSH-139	NSW PUMP 1A STRAINER PRESS SWITCH	SWB	025	NW	20	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	1-SW-PDSH-141	NSW PUMP 1B STRAINER PRESS SWITCH	SWB	020	NW	20	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	1-SW-PS-1175A	RHR SW PUMPS INLET PRESSURE	RB	050	EE S/5R	050	No	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	1-SW-PS-1175C	RHR SW PUMPS INLET PRESSURE	RB	050	EE R/5R	50	No	ABS	CRS	Yes	Yes	Yes	No	No
18	1-SW-PS-1176B	RHR SW PUMPS INLET PRESSURE	RB	050	EE R/6R	50	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	1-SW-PS-1176D	RHR SW PUMPS INLET PRESSURE	RB	050	SE R/7R	50	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	1-SW-PS-1315	LUBE WATER PUMP PRESSURE SWITCH	SWB	010	NW	4	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	1-SW-PS-1316	LUBE WATER PUMP PRESSURE SWITCH	SWB	004	NW	4	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	1-SW-PS-271	NUCLEAR HDR PRESSURE SWITCH	SWB	020	NW	26	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	1-SW-PSL-1178	PRESSURE SWITCH	RB	-008	SE T/7R	-17	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	1-SW-PT-1154	RHRSWP DISCHARGE PRESSURE TRANSMITTER	RB	050	EE R/5R	50	No	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	1-SW-PT-1155	RHRSWP DISCHARGE PRESSURE TRANSMITTER	RB	058	SE R/6R	50	No	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	1-SW-PT-1156	RHRSWP DISCHARGE PRESSURE TRANSMITTER	RB	050	EE R/5R	50	No	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	1-SW-PT-1157	RHRSWP DISCHARGE PRESSURE TRANSMITTER	RB	058	SE R/6R	50	No	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	1-SW-PT-143	NUCLEAR HDR PRESSURE TRANSMITTER	SWB	020	NW	24	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	1-TCR-1-HOLLYWOOD	TRANSFER CONTACTOR RACK FOR L6E, L6F AND L6G	RB	020	EE T/5R	020	Yes	ABS	CRS	Yes	Yes	Yes	No	No
18	1-TCR-2-HOLLYWOOD	TRANSFER CONTACTOR RACK FOR L6C	RB	020	EE S/6R	020	Yes	ABS	CRS	Yes	Yes	Yes	No	No
18	1-VA-FS-1026	SUPPLY FAN DSCH FLOW SWITCH	CB	073	NW LC/13	70'	No			No	Yes	Yes	Yes	No
18	1-VA-KS-1026	HEATING COIL TIMER	CB	070	NW LC/11C	82	No			No	Yes	Yes	Yes	No
18	1-VA-PS-1026	PNL 2-VA-M1-CB - COOLING UNIT PRESSURE SWITCH	CB	070	SW LC/13	75'	No			No	Yes	Yes	Yes	No
18	1-VA-PS-1026A	PNL 2-VA-M1-CB - COOLING UNIT PRESSURE SWITCH	CB	070	SW LC/13	75'	No			No	No	No	Yes	No
18	1-VA-TC-1026	PNL 2-VA-M1-CB - TEMP CONTROLLER	CB	070	SW LC/13	75'	No			No	Yes	Yes	Yes	No

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18	1-VA-ZS-1026	SUPPLY FAN LIMIT SWITCH	CB	070	NW LC/13	ON DUCT-85'	No			No	Yes	Yes	Yes	No
18	1-VA-ZS-936A	FAN/DAMPER LIMIT SWITCH	RB	006	NE T/3R	008	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	1-VA-ZS-936B	FAN/DAMPER LIMIT SWITCH	RB	006	SE T/7R	006	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	2-C12-LDSH-129	137 N2 ACCUMULATOR LEVEL SWITCHES	RB	020	HCU	20	Yes	ABS	CRS	Yes	No	No	Yes	No
18	2-C12-PSL-130	137 N2 ACCUMULATOR PRESSURE SWITCHES	RB	020	HCU	IN LINE	Yes	ABS	CRS	Yes	No	No	Yes	No
18	2-CAC-PT-1230	DRYWELL PRESSURE TRANSMITTER	RB	088	EE P/22R	88'	No	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	2-E11-CY-K001A	SIGNAL CONVERTER FOR SVF053A	RB	009	NE T/19R	9	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	2-E11-CY-K001B	SIGNAL CONVERTER FOR SVF053B	RB	009	SE T/23R	9 FT	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	2-E11-PDIS-N021A	RHR HX 2A PRESS DIFF SWITCH	RB	-012	NE S/18R	-17	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	2-E11-PDIS-N021B	RHR HX 2B PRESS DIFF SWITCH	RB	-017	SE S/24R	-17	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	2-E41-LSH-N015A	SUPP POOL HI WATER LVL ACTUATION OF HPCI	RB	-017	SE R/24R	-2	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	2-E41-LSH-N015B	SUPP POOL HI WATER LVL ACTUATION OF HPCI	RB	-017	NE R/18R	-2	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	2-E41-LSL-N002	CST LO WATER LEVEL ACTUATION OF HPCI	AT CST	023	AT CST	20	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
18	2-E41-LSL-N003	CST LO WATER LEVEL ACTUATION OF HPCI	AT CST	023	AT CST	23	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
18	2-FO-LS-2285	DG1 FUEL OIL 4-DAY TK LO LVL SW	DG/T	012	EE Y/11D	INLINE-20'	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
18	2-FO-LS-2286	DG2 FUEL OIL 4-DAY TK LO LVL SW	DG/T	012	EE Y/11D	IN LINE	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
18	2-FO-LS-2287	DG3 FUEL OIL 4-DAY TK LO LVL SW	DG/T	012	SE Y/12D	12	Yes	BS	GRS	Yes	Yes	Yes	Yes	No
18	2-FO-LS-2288	DG4 FUEL OIL 4-DAY TK LO LVL SW	DG/T	012	SE Y/12D	14'	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
18	2-H21-P001	CORE SPRAY SYSTEM A INSTR RACK	RB	-017	N CS RM	-017	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	2-H21-P004	RX PROTECTION AND NSSS INSTR RACK	RB	050	NE P/20R	50	Yes	ABS	CRS	Yes	Yes	Yes	No	No
18	2-H21-P005	RX PROTECTION AND NSSS INSTR RACK	RB	050	EE P/21R	50'	No	ABS	CRS	Yes	Yes	Yes	No	No
18	2-H21-P009	JET PUMP INSTRUMENT RACK	RB	020	NN N/19R	020	Yes	ABS	CRS	Yes	Yes	Yes	No	No
18	2-H21-P010	JET PUMP INSTRUMENT RACK	RB	020	SS P/22R	020	Yes	ABS	CRS	Yes	Yes	Yes	No	No
18	2-H21-P014	HPCI INSTRUMENT RACK	RB	-017		-017	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	2-H21-P016	CORE SPRAY/HPCI LEAK DETECTION RACK	RB	020	NN P/20R	20	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes

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18	2-H21-P018	RHR CHANNEL "A" INSTRUMENT RACK	RB	-017	NE S/18R	-017	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	2-H21-P019	CORE SPRAY SYSTEM B INSTR RACK	RB	-017	S CS RM	-017	Yes	ABS	CRS	Yes	No	Yes	No	No
18	2-H21-P021	RHR CHANNEL "B" INSTRUMENT RACK	RB	-017	SE T/23R	-17	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	2-H21-P022	RECIRC PUMP A INSTRUMENT RACK	RB	-017	SE R/23R	-17	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	2-H21-P034	HPCI LEAK DET SYS A INSTRUMENT RACK	RB	-017	T/22R	-12	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	2-H21-P036	CORE SPRAY/HPCI LEAK DETECTION INSTR RK	RB	020		020	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	2-IA-PSL-3596	RNA/BACKUP N2 LO PRESSURE SWITCH	RB	020	NE R/18R	020	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	2-IA-PSL-3597	RNA/BACKUP N2 LO PRESSURE SWITCH	RB	020	SW J/22R	020	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	2-PNS-PSL-5843A	PNS/BACKUP N2 LO PRESSURE SWITCH	RB	054	NN N/20R	054	No	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	2-PNS-PSL-5843B	PNS/BACKUP N2 LO PRESSURE SWITCH	RB	054	SS P/22R	054	No	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	2-RNA-PT-5267	BACKUP N2 PRESSURE TRANSMITTER	RB	054	SS M/22R	054	No	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	2-RNA-PT-5268	BACKUP N2 PRESSURE TRANSMITTER	RB	054	SS M/22R	054	No	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	2-RNA-PT-5269	BACKUP N2 PRESSURE TRANSMITTER	RB	053	SE S/23R	054	No	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	2-RNA-PT-5270	BACKUP N2 PRESSURE TRANSMITTER	RB	054	SE S/23R	054	No	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	2-SW-FSL-825	SEAL COOLER LOW FLOW SWITCH	RB	-012	SE T/23R	IN LINE	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	2-SW-FSL-834	SEAL COOLER LOW FLOW SWITCH	RB	-012	NE T/19R	-012	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	2-SW-FSL-835	SEAL COOLER LOW FLOW SWITCH	RB	-012	SE T/23R	IN LINE	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	2-SW-FSL-836	SEAL COOLER LOW FLOW SWITCH	RB	-012	NE T/19R	-012	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	2-SW-FT-1158	NSW TO RBCCW FLOW TRANSMITTER	RB	061	EE S/22R	53'	No	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	2-SW-FT-5115	ROOM COOLER FLOW TRANSMITTER	RB	003	SW M/24R	003	Yes	ABS	CRS	Yes	No	No	No	No
18	2-SW-PDIC-138	DIFFERENTIAL PRESSURE CONTROLLER	SWB	025	SW	025	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	2-SW-PDIC-140	DIFFERENTIAL PRESSURE CONTROLLER	SWB	025	SW	020	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes

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18	2-SW-PDSH-139	SW STRAINER 2A DP SWITCH	SWB	025	SE	20'	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	2-SW-PDSH-141	SW STRAINER 2B DP SWITCH	SWB	025	SW	20 ft	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	2-SW-PS-1175A	RHRSW PUMP INLET PRESSURE	RB	050	EE R/21R	050	No	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	2-SW-PS-1175C	RHRSW PUMP INLET PRESSURE	RB	050	EE R/21R	050	No	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	2-SW-PS-1176B	RHRSW PUMP INLET PRESSURE	RB	050	SE R/22R	050	No	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	2-SW-PS-1176D	RHRSW PUMP INLET PRESSURE	RB	050	SW R/23R	050	No	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	2-SW-PS-1315	LUBE WATER PUMP PRESSURE SWITCH	SWB	010		4 FT	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	2-SW-PS-1316	LUBE WATER PUMP PRESSURE SWITCH	SWB	010		4	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	2-SW-PS-1995	DG4 NSW PRESSURE SWITCH	DG	023	EE W/11D	23	Yes	ABS	CRS	No	Yes	Yes	Yes	No
18	2-SW-PS-1996	DG3 NSW PRESSURE SWITCH	DG	023	SE W/12D	24	Yes	BS	GRS	No	Yes	Yes	Yes	No
18	2-SW-PS-1998	DG2 NSW PRESSURE SWITCH	DG	023	SE W/12D	24	Yes			No	No	Yes	Yes	No
18	2-SW-PS-1999	DG1 NSW JW PRESSURE	DG	023	NE W/9D	23	Yes	BS	GRS	No	No	Yes	Yes	No
18	2-SW-PS-271	NUCLEAR HDR PRESSURE SWITCH	SWB	007	SOUTH WALL	2O	Yes	BS	CRS	Yes	Yes	Yes	Yes	Yes
18	2-SW-PSL-1174	LOW PRESSURE SWITCH	RB	-002	NE R/18R	-14	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	2-SW-PSL-1178	PRESSURE SWITCH	RB	-008	SE T/23R	-13	Yes	ABS	CRS	Yes	No	No	Yes	No
18	2-SW-PT-1154	RHRSWP DISCHARGE PRESSURE TRANSMITTER	RB	050	EE R/21R	50	No	ABS	CRS	Yes	No	Yes	Yes	No
18	2-SW-PT-1155	RHRSWP DISCHARGE PRESSURE TRANSMITTER	RB	050	SE R/22R	050	No	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	2-SW-PT-1156	RHPSWP DISCHARGE PRESSURE TRANSMITTER	RB	050	EE R/21R	058	No	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	2-SW-PT-1157	RHRSWP DISCHARGE PRESSURE TRANSMITTER	RB	050	SE R/22R	058	No	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	2-SW-PT-143	NUCLEAR HDR PRESSURE TRANSMITTER	SWB	020	SW	20	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	2-TCR-1-HOLLYWOOD	TRANSFER CONTACTOR RACK FOR L6E, L6F AND L6G	RB	020	EE T/22R	020	Yes	ABS	CRS	Yes	Yes	Yes	No	No
18	2-TCR-2-HOLLYWOOD	TRANSFER CONTACTOR RACK FOR 2-E11-F008-L6C	RB	020	EE S/22R	020	Yes	ABS	CRS	Yes	Yes	Yes	No	No
18	2-VA-FS-1027	SUPPLY FAN DSCH FLOW SWITCH	CB	073	NW MC/13	70'	No			No	Yes	Yes	Yes	No
18	2-VA-FS-1028	SUPPLY FAN DSCH FLOW SWITCH	CB	073	NE NC/13	70'	No			No	Yes	Yes	Yes	No
18	2-VA-KS-1027	HEATING COIL TIMER	CB	070	NE NC/11C	82'	No			No	Yes	Yes	Yes	No
18	2-VA-KS-1028	HEATING COIL TIMER	CB	070	NE NC/11C	82	No			No	Yes	Yes	Yes	No

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18	2-VA-M1-CB	CONTROL RM. HVAC PNEMATIC CONTROL PANEL	CB	070	SW LC/13	75'	No			No	Yes	Yes	Yes	No
18	2-VA-PS-1027	PNL 2-VA-M1-CB - COOLING UNIT PRESSURE SWITCH	CB	070	SW LC/13	74	No			No	Yes	Yes	Yes	No
18	2-VA-PS-1027A	PNL 2-VA-M1-CB - COOLING UNIT PRESSURE SWITCH	CB	070	SW LC/13	75'	No			No	Yes	Yes	Yes	No
18	2-VA-PS-1028	PNL 2-VA-M1-CB - COOLING UNIT PRESSURE SWITCH	CB	070	SW LC/13	74	No			No	Yes	Yes	Yes	No
18	2-VA-PS-1028A	PNL 2-VA-M1-CB - COOLING UNIT PRESSURE SWITCH	CB	070	SW LC/13	75'	No			No	Yes	Yes	Yes	No
18	2-VA-PS-1632	'A' AIR COMPRESSOR PRESS SWITCH	CB	070	MECH EQ RM	75'	No			No	Yes	Yes	Yes	No
18	2-VA-PS-1633	'B' AIR COMPRESSOR PRESS SWITCH	CB	070	MECH EQ RM	75'	No			No	Yes	Yes	Yes	No
18	2-VA-PSL-1646	INSTRUMENT AIR LOW PRESS	CB	070	MECH EQ RM	75	No			No	Yes	Yes	Yes	No
18	2-VA-TC-1028	PNL 2-VA-M1-CB - TEMP CONTROLLER	CB	070	SW LC/13	75	No			No	Yes	Yes	Yes	No
18	2-VA-ZS-1027-A	SUPPLY FAN LIMIT SWITCH	CB	083	SW MC/13	ON DUCT-85'	No			No	Yes	Yes	Yes	No
18	2-VA-ZS-1027-B	SUPPLY FAN LIMIT SWITCH	CB	070	SW LC/13	ON DUCT-85'	No			No	Yes	Yes	Yes	No
18	2-VA-ZS-1028	SUPPLY FAN LIMIT SWITCH	CB	070	SW MC/13	ON DUCT-85'	No			No	Yes	Yes	Yes	No
18	2-VA-ZS-936A	FAN/DAMPER LIMIT SWITCH	RB	006	NE T/19R	006	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	2-VA-ZS-936B	FAN/DAMPER LIMIT SWITCH	RB	006	SE T/23R	006	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	2-X-LSH-3116	DG1 TANK ROOM HIGH FLOOD LEVEL SWITCH	DG/T	000	DG1 TNK RM	4'	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
18	2-X-LSH-3117	DG2 TANK ROOM HIGH FLOOD LEVEL SWITCH	DG/T	000	DG2 TNK RM	3'	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
18	2-X-LSH-3118	DG3 TANK ROOM HIGH FLOOD LEVEL SWITCH	DG/T	000	DG3 TNK RM	0	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
18	2-X-LSH-3119	DG4 TANK ROOM HIGH FLOOD LEVEL SWITCH	DG/T	000	DG4 TNK RM	4'	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
18	2-X-LSH-3120	DG1 PIPE TRENCH HIGH WATER LEVEL SWITCH	DG	023	NN W/9D	23	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
18	2-X-LSH-3123	DG2 PIPE TRENCH HIGH WATER LEVEL SWITCH	DG	023	CC W/10D	23	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
18	2-X-LSH-3126	DG3 PIPE TRENCH HIGH WATER LEVEL SWITCH	DG	023	WW W/11D	23	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes

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18	2-X-LSH-3129	DG4 PIPE TRENCH HIGH WATER LEVEL SWITCH	DG	023	SS W/12D	23	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
18	2-X-LSH-3135	DG B DELAY VALVE PIT FLOOD SWITCH	DG	000	VALVE PIT	10	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
18	2-X-LSHH-3121	DG1 PIPE TRENCH HIGH WATER LEVEL SWITCH	DG	023	NN W/9D	23'	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
18	2-X-LSHH-3122	DG1 PIPE TRENCH HIGH WATER LEVEL SWITCH	DG	023	NN W/9D	23	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
18	2-X-LSHH-3124	DG2 PIPE TRENCH HIGH WATER LEVEL SWITCH	DG	023	CC W/10D	23	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
18	2-X-LSHH-3125	DG2 PIPE TRENCH HIGH WATER LEVEL SWITCH	DG	023	CC W/10D	23	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
18	2-X-LSHH-3127	DG3 PIPE TRENCH HIGH WATER LEVEL SWITCH	DG	023	WW W/11D	23	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
18	2-X-LSHH-3128	DG3 PIPE TRENCH HIGH WATER LEVEL SWITCH	DG	023	WW W/11D	23	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
18	2-X-LSHH-3130	DG4 PIPE TRENCH HIGH WATER LEVEL SWITCH	DG	023	SS W/12D	23	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
18	2-X-LSHH-3131	DG4 PIPE TRENCH HIGH WATER LEVEL SWITCH	DG	023	SS W/12D	23	Yes	BS	GRS	Yes	Yes	Yes	Yes	Yes
19	1-B21-FT-4157	SRV A FLOW TRANSMITTER	RB/DW	044	DW AZ-030	044	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	1-B21-FT-4158	SRV B FLOW TRANSMITTER	RB/DW	044	DW AZ-051	044	No	ABS	RRS	Yes	Yes	N/A	Yes	Yes
19	1-B21-FT-4159	SRV C FLOW TRANSMITTER	RB/DW	044	DW AZ-060	044	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	1-B21-FT-4160	SRV D FLOW TRANSMITTER	RB/DW	044	DW AZ-080	044	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	1-B21-FT-4161	SRV E FLOW TRANSMITTER	RB/DW	044	DW AZ-095	044	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	1-B21-FT-4162	SRV F FLOW TRANSMITTER	RB/DW	044	DW AZ-299	044	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	1-B21-FT-4163	SRV G FLOW TRANSMITTER	RB/DW	044	DW AZ-281	044	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	1-B21-FT-4164	SRV H FLOW TRANSMITTER	RB/DW	044	DW AZ-330	044	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	1-B21-FT-4165	SRV J FLOW TRANSMITTER	RB/DW	044	DW AZ-280	044	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	1-B21-FT-4166	SRV K FLOW TRANSMITTER	RB/DW	044	DW AZ-265	044	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	1-B21-FT-4167	SRV L FLOW TRANSMITTER	RB/DW	044	DW AZ-097	044	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	1-B21-TE-N004A	TEMPERATURE SENSOR - SRV A	RB/DW	038	DW AZ-030	44	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	1-B21-TE-N004B	TEMPERATURE SENSOR - SRV B	RB/DW	038	DW AZ-051	44	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	1-B21-TE-N004C	TEMPERATURE SENSOR - SRV C	RB/DW	038	DW AZ-060	44	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	1-B21-TE-N004D	TEMPERATURE SENSOR - SRV D	RB/DW	038	DW AZ-080	44	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes

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19	1-B21-TE-N004E	TEMPERATURE SENSOR - SRV E	RB/DW	038	DW AZ-095	44	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	1-B21-TE-N004F	TEMPERATURE SENSOR - SRV F	RB/DW	038	DW AZ-299	44	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	1-B21-TE-N004G	TEMPERATURE SENSOR - SRV G	RB/DW	038	DW AZ-281	44	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	1-B21-TE-N004H	TEMPERATURE SENSOR - SRV H	RB/DW	038	DW AZ-330	44	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	1-B21-TE-N004J	TEMPERATURE SENSOR - SRV J	RB/DW	038	DW AZ-280	44	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	1-B21-TE-N004K	TEMPERATURE SENSOR - SRV K	RB/DW	038	DW AZ-265	44	No	ABS	CRS	Yes	Yes	N/A	No	No
19	1-B21-TE-N004L	TEMPERATURE SENSOR - SRV L	RB/DW	038	DW AZ-097	44	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	1-CAC-TE-1258-1	DRYWELL TEMPERATURE ELEMENTS	RB/DW	078	DW AZ-330	87	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	1-CAC-TE-1258-10	DRYWELL TEMPERATURE ELEMENTS	RB/DW	017	DW AZ-315	18	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	1-CAC-TE-1258-11	DRYWELL TEMPERATURE ELEMENTS	RB/DW	005	DW AZ-135	15	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	1-CAC-TE-1258-12	DRYWELL TEMPERATURE ELEMENT	RB/DW	013	DW AZ-055	13	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	1-CAC-TE-1258-13	DRYWELL TEMPERATURE ELEMENT	RB/DW	005	DW AZ-300	10	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	1-CAC-TE-1258-17	SP TEMPERATURE ELEMENT	RB/SP	004	SU-AZ040	004	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	1-CAC-TE-1258-18	SP TEMPERATURE ELEMENT	RB/SP	004	SU-AZ145	004	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	1-CAC-TE-1258-19	SP TEMPERATURE ELEMENT	RB/SP	004	SU-AZ215	004	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	1-CAC-TE-1258-2	DRYWELL TEMPERATURE ELEMENTS	RB/DW	078	DW AZ-260	80	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	1-CAC-TE-1258-20	SP TEMPERATURE ELEMENT	RB/SP	004	SU-AZ320	004	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	1-CAC-TE-1258-22	DRYWELL AIR TEMPERATURE ELEMENT	RB/DW	093	DW AZ-105	093	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	1-CAC-TE-1258-23	DRYWELL TEMPERATURE ELEMENTS	RB/DW	078	DW AZ-225	93	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	1-CAC-TE-1258-24	DRYWELL TEMPERATURE ELEMENTS	RB/DW	078	DW AZ-345	93	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	1-CAC-TE-1258-3	DRYWELL TEMPERATURE ELEMENTS	RB/DW	066	DW AZ-090	75	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	1-CAC-TE-1258-4	DRYWELL TEMPERATURE ELEMENTS	RB/DW	066	DW AZ-270	70	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	1-CAC-TE-1258-5	DRYWELL TEMPERATURE ELEMENTS	RB/DW	038	DW AZ-080	45	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	1-CAC-TE-1258-6	DRYWELL TEMPERATURE ELEMENTS	RB/DW	038	DW AZ-260	44	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	1-CAC-TE-1258-7	DRYWELL TEMPERATURE ELEMENTS	RB/DW	017	DW AZ-100	35	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	1-CAC-TE-1258-8	DRYWELL TEMPERATURE ELEMENTS	RB/DW	005	DW AZ-335	28	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	1-CAC-TE-1258-9	DRYWELL TEMPERATURE ELEMENTS	RB/DW	005	DW AZ-135	23	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	1-E11-TE-N004A	RHR HX TEMPERATURE ELEMENT	RB	032	NE T/2R	32	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	1-SW-TSH-1109	RHRSW PUMP DISCHARGE TEMP	RB	050	EE R/4R	50	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	1-SW-TSH-1110	RHRSW PUMP DISCHARGE TEMP	RB	058	EE R/6R	50	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	1-SW-TSH-1111	RHRSW PUMP DISCHARGE TEMP	RB	050	EE R/4R	50	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	1-SW-TSH-1112	RHRSW PUMP DISCHARGE TEMP	RB	058	SE R/78	50	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes

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19	1-VA-TE-1299-1	TEMPERATURE ELEMENT	CB	070	SW L/C13	ON DUCT-85'	No			No	Yes	N/A	Yes	No
19	1-VA-TS-936A	RHR RM TEMPERATURE SWITCH	RB	015	NE S/4R	-11	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	1-VA-TS-936B	RHR RM TEMPERATURE SWITCH	RB	015	NE S/4R	-11	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	1-VA-TS-936C	RHR RM TEMPERATURE SWITCH	RB	-017	SE S/6R	-11	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	1-VA-TS-936D	RHR RM TEMPERATURE SWITCH	RB	-017	SE S/6R	-11	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	1-VA-TS-936E	HPCI RM TEMPERATURE SWITCH	RB	-017	EE S/6R	-10	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	1-VA-TS-936F	HPCI RM TEMPERATURE SWITCH	RB	-017	EE S/4R	-10	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	1-VA-TT-1026	TEMPERATURE TRANSMITTER	CB	070	SW LL/13	ON DUCT 85'	No			No	Yes	N/A	Yes	No
19	1-VA-TT-1299-1	TEMPERATURE TRANSMITTER	CB	070	SW L/C13	ON DUCT-80'	No			No	Yes	N/A	Yes	No
19	1-VA-TT-1601	TEMPERATURE SENSOR	RB	-017	SE T/6R	-10	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	1-VA-TT-1601A	INDICATOR BRIDGE	RB	-017	SE T/6R	-10	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	1-VA-TT-1603	CS ROOM TEMPERATURE SENSOR	RB	-017	CSP ROOM A	8	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	1-VA-TT-1603A	CS ROOM INDICATING BRIDGE	RB	-017	CSP ROOM A	008	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	1-VA-TT-1604	CS ROOM TEMPERATURE SENSOR	RB	-017	CSP ROOM B	010	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	1-VA-TT-1604A	CS ROOM INDICATING BRIDGE	RB	-017	CSP ROOM B	010	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	2-B21-FT-4157	SRV A FLOW TRANSMITTER	RB/DW	044	DW AZ-030	44	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	2-B21-FT-4158	SRV B FLOW TRANSMITTER	RB/DW	044	DW AZ-051	44	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	2-B21-FT-4159	SRV C FLOW TRANSMITTER	RB/DW	044	DW AZ-060	44	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	2-B21-FT-4160	SRV D FLOW TRANSMITTER	RB/DW	044	DW AZ-080	44	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	2-B21-FT-4161	SRV E FLOW TRANSMITTER	RB/DW	044	DW AZ-095	44	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	2-B21-FT-4162	SRV F FLOW TRANSMITTER	RB/DW	044	DW AZ-299	44	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	2-B21-FT-4163	SRV G FLOW TRANSMITTER	RB/DW	044	DW AZ-281	44	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	2-B21-FT-4164	SRV H FLOW TRANSMITTER	RB/DW	044	DW AZ-330	44	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	2-B21-FT-4165	SRV J FLOW TRANSMITTER	RB/DW	044	DW AZ-280	44	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	2-B21-FT-4166	SRV K FLOW TRANSMITTER	RB/DW	044	DW AZ-265	44	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	2-B21-FT-4167	SRV L FLOW TRANSMITTER	RB/DW	044	DW AZ-097	44	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	2-B21-TE-N004A	TEMPERATURE SENSOR - SRV A	RB/DW	044	DW AZ-030	44	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	2-B21-TE-N004B	TEMPERATURE SENSOR - SRV B	RB/DW	044	DW AZ-051	44	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	2-B21-TE-N004C	TEMPERATURE SENSOR - SRV C	RB/DW	044	DW AZ-060	44	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	2-B21-TE-N004D	TEMPERATURE SENSOR - SRV D	RB/DW	044	DW AZ-080	44	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes

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19	2-B21-TE-N004E	TEMPERATURE SENSOR - SRV E	RB/DW	044	DW AZ-095	44	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	2-B21-TE-N004F	TEMPERATURE SENSOR - SRV F	RB/DW	044	DW AZ-299	44	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	2-B21-TE-N004G	TEMPERATURE SENSOR - SRV G	RB/DW	044	DW AZ-284	44	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	2-B21-TE-N004H	TEMPERATURE SENSOR - SRV H	RB/DW	044	DW AZ-330	44	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	2-B21-TE-N004J	TEMPERATURE SENSOR - SRV J	RB/DW	044	DW AZ-280	44	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	2-B21-TE-N004K	TEMPERATURE SENSOR - SRV K	RB/DW	044	DW AZ-265	44	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	2-B21-TE-N004L	TEMPERATURE SENSOR - SRV L	RB/DW	044	DW AZ-097	44	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	2-CAC-TE-1258-1	DRYWELL TEMPERATURE ELEMENT	RB/DW	086	DW AZ-019	86'-6"	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	2-CAC-TE-1258-10	DRYWELL TEMPERATURE ELEMENT	RB/DW	018	DW AZ-315	018	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	2-CAC-TE-1258-11	DRYWELL TEMPERATURE ELEMENT	RB/DW	015	DW AZ-135	018	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	2-CAC-TE-1258-12	DRYWELL TEMPERATURE ELEMENT	RB/DW	013	DW AZ-055	018	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	2-CAC-TE-1258-13	DRYWELL TEMPERATURE ELEMENT	RB/DW	010	DW AZ-300	005	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	2-CAC-TE-1258-17	SP TEMPERATURE ELEMENT	RB/SP	000	SU AZ-040	0'	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
19	2-CAC-TE-1258-18	SP TEMPERATURE ELEMENT	RB/SP	000	SU AZ-145	0'	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
19	2-CAC-TE-1258-19	SP TEMPERATURE ELEMENT	RB/SP	000	SU AZ-215	0'	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
19	2-CAC-TE-1258-2	DRYWELL TEMPERATURE ELEMENT	RB/DW	080	DW AZ-270	080	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	2-CAC-TE-1258-20	SP TEMPERATURE ELEMENT	RB/SP	000	SU AZ320	0'	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
19	2-CAC-TE-1258-22	DRYWELL TEMPERATURE ELEMENT	RB/DW	092	DW AZ-105	093	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	2-CAC-TE-1258-23	DRYWELL TEMPERATURE ELEMENT	RB/DW	092	DW AZ-225	093	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	2-CAC-TE-1258-24	DRYWELL TEMPERATURE ELEMENT	RB/DW	092	DW AZ-345	093	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	2-CAC-TE-1258-3	DRYWELL TEMPERATURE ELEMENT	RB/DW	075	DW AZ-090	075	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	2-CAC-TE-1258-4	DRYWELL TEMPERATURE ELEMENT	RB/DW	070	DW AZ-270	068	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	2-CAC-TE-1258-5	DRYWELL TEMPERATURE ELEMENT	RB/DW	045	DW AZ-080	045	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	2-CAC-TE-1258-6	DRYWELL TEMPERATURE ELEMENT	RB/DW	040	DW AZ-260	040	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	2-CAC-TE-1258-7	DRYWELL TEMPERATURE ELEMENT	RB/DW	035	DW AZ-100	055	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	2-CAC-TE-1258-8	DRYWELL TEMPERATURE ELEMENT	RB/DW	028	DW AZ-335	028	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	2-CAC-TE-1258-9	DRYWELL TEMPERATURE ELEMENT	RB/DW	023	DW AZ-135	018	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	2-E11-TE-N004A	RHR HX 2A INLET TEMPERATURE ELEMENT	RB	032	NE T/18R	032	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	2-E11-TE-N004B	RHR HX 2B INLET TEMPERATURE ELEMENT	RB	032	SE T/24R	032	Yes	ABS	CRS	Yes	Yes	N/A	No	No
19	2-SW-TSH-1109	RHRSW PUMP DISCHARGE TEMP	RB	050	EE R/20R	50	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	2-SW-TSH-1110	RHRSW PUMP DISCHARGE TEMP	RB	050	SE R/22R	50	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes

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19	2-SW-TSH-1111	RHRSW PUMP DISCHARGE TEMP	RB	050	EE R/21R	50	No	ABS	CRS	Yes	Yes	N/A	Yes	No
19	2-SW-TSH-1112	RHRSW PUMP DISCHARGE TEMP	RB	050	EE R/22R	50	No	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	2-VA-TE-1299-2	TEMPERATURE ELEMENT	CB	070	SW LC/13	ON DUCT-85'	No			No	Yes	N/A	Yes	No
19	2-VA-TS-1606A	START TEMP SWITCH FOR SUPPLY FAN	DG	023	CC W/10D	31	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
19	2-VA-TS-1606B	START TEMP SWITCH FOR SUPPLY FAN	DG	023	CC W/10D	31	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
19	2-VA-TS-1607A	START TEMP SWITCH FOR SUPPLY FAN	DG	023	CC W/11D	31	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
19	2-VA-TS-1607B	START TEMP SWITCH FOR SUPPLY FAN	DG	023	CC W/11D	31	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
19	2-VA-TS-1608A	START TEMP SWITCH FOR SUPPLY FAN	DG	023	CC W/12D	31	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
19	2-VA-TS-1608B	START TEMP SWITCH FOR SUPPLY FAN	DG	023	CC W/12D	31	Yes	BS	GRS	Yes	Yes	N/A	Yes	Yes
19	2-VA-TS-1609A	START TEMP SWITCH FOR SUPPLY FAN	DG	023	CC W/13D	30'	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	2-VA-TS-1609B	START TEMP SWITCH FOR SUPPLY FAN	DG	023	CC W/13D	30'	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	2-VA-TS-936A	RHR RM TEMPERATURE SWITCH	RB	-008	NE T/20R	-10'	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	2-VA-TS-936B	RHR RM TEMPERATURE SWITCH	RB	-017	SE S/22R	-9	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	2-VA-TS-936C	RHR RM TEMPERATURE SWITCH	RB	-017	NE S/20R	-2	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	2-VA-TS-936D	RHR RM TEMPERATURE SWITCH (SOUTH)	RB	-010	SE T/22R	-10	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	2-VA-TS-936E	HPCI RM TEMPERATURE SWITCH	RB	-017	SE T/22R	-7	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	2-VA-TS-936F	HPCI RM TEMPERATURE SWITCH	RB	-017	SE S/22R	3	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	2-VA-TT-1028	TEMPERATURE TRANSMITTER	CB	070	SW LL/13	ON DUCT 85'	No			No	Yes	N/A	Yes	No
19	2-VA-TT-1299-2	TEMPERATURE TRANSMITTER	CB	070	SW LC/13	ON DUCT-85'	No			No	Yes	N/A	Yes	No
19	2-VA-TT-1601	TEMPERATURE SENSOR	RB	-017	NE T/20R	-012	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	2-VA-TT-1601A	INDICATION BRIDGE	RB	-017	NE T/20R	-11	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	2-VA-TT-1602	TEMPERATURE SENSOR	RB	017	SE T/22R	-11	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	2-VA-TT-1602A	INDICATION BRIDGE	RB	-017	SE T/22R	-11	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	2-VA-TT-1603	CS RM TEMPERATURE SENSOR	RB	-017	CSP RM A	-12 FT.	Yes	ABS	CRS	Yes	Yes	N/A	No	No

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19	2-VA-TT-1603A	CS RM INDICATING BRIDGE	RB	-012	CSP RM A	-12	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	2-VA-TT-1604	CS RM TEMPERATURE SENSOR	RB	-012 FT	CSP RM B	-12 Ft	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
19	2-VA-TT-1604A	CS RM INDICATING BRIDGE	RB	-017 Ft	CSP RM B	-12 FT	Yes	ABS	CRS	Yes	Yes	N/A	Yes	Yes
20	1-B21-PNL-QV9	MAIN STEAM LEAK DETECTION CABINET	CB	049	C RM	49	Yes	ABS	CRS	Yes	Yes	No	No	No
20	1-CAC-TY-4426-1	DRYWELL/SUPP POOL SIGNAL CONVERTER - DIV II	CB	049	C RM	49	Yes	ABS	CRS	Yes	Yes	No	Yes	No
20	1-CAC-TY-4426-2	DRYWELL/SUPP POOL SIGNAL CONVERTER - DIV II	CB	049	C RM	49	Yes	ABS	CRS	Yes	Yes	No	No	No
20	1-E11-F008-L1F	E11-F008-MO ALTERNATOR STARTER PANEL	RB	020	NE P/3R	020	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
20	1-E41-C002-EGM	CONTROLLER	CB	049	C RM	054	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
20	1-H12-P601	ENGINEERED SAFEGUARDS VERTICAL BOARD	CB	049	C RM	49	Yes	ABS	CRS	Yes	No	No	Yes	No
20	1-H12-P603	REACTOR CONTROL PANEL	CB	049	C RM	49	Yes	ABS	CRS	Yes	No	No	Yes	No
20	1-H12-P606	RADIATION MONITORING CABINET	CB	049	C RM	49	Yes	ABS	CRS	Yes	Yes	No	Yes	No
20	1-H12-P608	POWER RANGE NEUTRON MONITORING PANELAPRM/LPRM CIRCUITS	CB	049	C RM	49	Yes	ABS	CRS	Yes	Yes	No	Yes	No
20	1-H12-P609	RPS TRIP SYSTEM A	CB	049	C RM	49	Yes	ABS	CRS	Yes	No	No	No	No
20	1-H12-P610	RPS TEST & MONITOR PANEL	CB	049	C RM	49	Yes	ABS	CRS	Yes	No	No	No	No
20	1-H12-P611	RPS TRIP SYSTEM B	CB	049	C RM	49	Yes	ABS	CRS	Yes	No	No	No	No
20	1-H12-P612	FEEDWATER AND REACTOR RECIRC INSTR PANEL	CB	049	C RM	49	Yes	ABS	CRS	Yes	No	No	No	No
20	1-H12-P613	PROCESS INSTRUMENTATION CABINET	CB	049	C RM	49	Yes	ABS	CRS	Yes	No	No	No	No
20	1-H12-P614	NSSS TEMP REC & LEAK DET VERTICAL BOARD	CB	049	C RM	49	Yes	ABS	CRS	Yes	No	No	No	No
20	1-H12-P615	RPIS TRANSLATING ELECTRONICS	CB	049	C RM	49	No	ABS	CRS	Yes	No	No	No	No
20	1-H12-P616	ROD MANUAL CONTROL PANEL	CB	049	C RM	49	Yes	ABS	CRS	Yes	Yes	No	No	No
20	1-H12-P617	RHR A RELAY VERTICAL BOARD	CB	049	C RM	49	Yes	ABS	CRS	Yes	No	No	No	No
20	1-H12-P618	RELAY VERTICAL BOARD	CB	049	C RM	49	Yes	ABS	CRS	Yes	No	No	No	No
20	1-H12-P620	HPCI VERTICAL BOARD RELAY	CB	049	C RM	49	Yes	ABS	CRS	Yes	No	No	No	No
20	1-H12-P622	NSSS INBOARD VALVE RELAY BOARD	CB	049	C RM	49	Yes	ABS	CRS	Yes	No	No	No	No

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20	1-H12-P623	NSSS OUTBOARD VALVE RELAY BOARD	CB	049	C RM	49	Yes	ABS	CRS	Yes	No	No	No	No
20	1-H12-P624	BENCHBOARD AUXILARY RELAY CABINET	CB	049	C RM	49	Yes	ABS	CRS	Yes	No	No	No	No
20	1-H12-P626	CORE SPRAY "A" RELAY VERTICAL BOARD	CB	049	C RM	49	Yes	ABS	CRS	Yes	No	No	No	No
20	1-H12-P627	CORE SPRAY "B" RELAY VERTICAL BOARD	CB	049	C RM	49	Yes	ABS	CRS	Yes	No	No	No	No
20	1-H12-P628	AUTO DEPRESSURIZATION RELAY VERTICAL BOARD	CB	049	C RM	49	Yes	ABS	CRS	Yes	No	No	No	No
20	1-H12-P630	ANNUNCIATOR REMOTE ELECTRONICS	CB	049	C RM	49	Yes	ABS	CRS	Yes	No	No	No	No
20	1-H21-P003	CRD ACCUM MON PNL BANKS 1&2	RB	020	NN M/3R	20	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
20	1-H21-P012	CRD ACCUM MON PNL BANKS 3&4	RB	020	SS M/7R	20	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
20	1-IR-RB-4	REMOTE SHUTDOWN PANEL	RB	020		20 FT	Yes	ABS	CRS	Yes	No	Yes	Yes	No
20	1-PNL-M01	PANEL FOR 1-SW-V255	DG	023	SE X/13D	023	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
20	1-SW-PNL-VW8	PARTIAL WINDING HTR CAB FOR MCC 1PA	SWB	020	NW	20	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
20	1-SW-PNL-VX0	PARTIAL WINDING HTR CAB FOR MCC 1PB	SWB	020	NW	20	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
20	1-SW-TY-4887	RHRSW PUMP DISCHARGE TEMP	DG	050	WW V/11D	54	Yes	BS	GRS	Yes	No	Yes	Yes	No
20	1-SW-TY-4888	RHRSW PUMP DISCHARGE TEMP	DG	050	SW U/13D	54	Yes	BS	GRS	Yes	No	Yes	Yes	No
20	1-SW-TY-4889	RHRSW PUMP DISCHARGE TEMP	DG	050	NW V/9D	54	Yes	BS	GRS	Yes	No	Yes	Yes	No
20	1-SW-TY-4890	RHRSW PUMP DISCHARGE TEMP	DG	050	WW U/10D	54	Yes	BS	GRS	Yes	No	No	Yes	No
20	1-VA-TY-1026A	C RM THERMOSTAT	CB	049	C RM	53	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
20	1-XU-13	TERM CABINET FOR SYSTEMS SW, EB, RCC & BAT	CB	049	C RM	49	Yes	ABS	CRS	Yes	No	No	No	No
20	1-XU-2	MAIN CONTROL ROOM RTG BOARD	CB	049	C RM	49	Yes	ABS	CRS	Yes	No	No	No	No
20	1-XU-24	DG2 ESS LOGIC CABINET	CB	049	C RM	49	Yes	ABS	CRS	Yes	No	No	No	No
20	1-XU-25	TERM CABINET FOR SYSTEMS SW, EB, RCC & BAT	CB	049	C RM	49	Yes	ABS	CRS	Yes	No	No	No	No
20	1-XU-27	RB 1 & 2 & CTB HVAC TERMINAL CAB DIV-I	CB	049	C RM	49	Yes	ABS	CRS	Yes	No	No	No	No
20	1-XU-28	RB 1 & 2 & CTB HVAC TERMINAL CAB DIV-II	CB	049	C RM	49	Yes	ABS	CRS	Yes	No	No	No	No

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20	1-XU-3	RX,CTRL, & TURB BLDG HVAC & TURB AUX CTRL PNL	CB	049	C RM	49	Yes	ABS	CRS	Yes	No	No	No	No
20	1-XU-39	DIV-I TERM CAB FOR XU-2 FOR SYSTEMS EB & ED	CB	049	C RM	49	Yes	ABS	CRS	Yes	No	No	No	No
20	1-XU-40	DIV-II TERMINAL CABINET FOR XU-2	CB	049	C RM	49	Yes	ABS	CRS	Yes	No	No	No	No
20	1-XU-4168	FLUID FLOW DETECTION	RB	020	ELEC EQUIP	20	Yes	ABS	CRS	Yes	Yes	Yes	Yes	No
20	1-XU-50	RIP TERMINAL CABINET	CB	049	C RM	49	Yes	ABS	CRS	Yes	No	No	No	No
20	1-XU-51	BOP RTG BOARD	CB	049	C RM	49	Yes	ABS	CRS	Yes	No	No	No	No
20	1-XU-53	TERMINATING CABINET DIV-I	CB	049	C RM	49	Yes	ABS	CRS	Yes	No	No	No	No
20	1-XU-56	TERMINATING CABINET DIV II	CB	049	C RM	49	Yes	ABS	CRS	Yes	No	No	No	No
20	1-XU-57	RIP TERMINAL CABINET DIV-II	CB	049	C RM	49	Yes	ABS	CRS	Yes	Yes	No	No	No
20	1-XU-58	RIP TERMINAL CABINET DIV-I	CB	049	C RM	49	Yes	ABS	CRS	Yes	No	No	No	No
20	1-XU-63	TRIP CALIBRATION CABINET-ECCS DIVISION I	CB	049	C RM	49	Yes	ABS	CRS	Yes	No	No	No	No
20	1-XU-64	TRIP CALIBRATION CABINET-ECCS DIVISION II	CB	049	C RM	49	Yes	ABS	CRS	Yes	No	No	No	No
20	1-XU-65	RPS TRIP CALIBRATION CABINET, CHANNEL A1	CB	049	C RM	49	Yes	ABS	CRS	Yes	No	No	No	No
20	1-XU-66	RPS TRIP CALIBRATION CABINET, CHANNEL A2	CB	049	C RM	49	Yes	ABS	CRS	Yes	No	No	No	No
20	1-XU-67	RPS TRIP CALIBRATION CABINET, CHANNEL B1	CB	049	C RM	49	Yes	ABS	CRS	Yes	No	No	No	No
20	1-XU-68	RPS TRIP CALIBRATION CABINET, CHANNEL B2	CB	049	C RM	49	Yes	ABS	CRS	Yes	No	No	No	No
20	1-XU-7	DG1 ESS LOGIC CABINET	CB	049	C RM	49	Yes	ABS	CRS	Yes	No	No	No	No
20	1-XU-73	FLUID FLOW DETECTION CABINET FOR SRV POSITION IND	CB	049	C RM	49	Yes	ABS	CRS	Yes	No	No	No	No
20	1-XU-75	POST-ACCIDENT MISC INSTRUMENT CAB DIV-I	CB	049	C RM	49	Yes	ABS	CRS	Yes	No	No	Yes	No
20	1-XU-76	TSC/EOF COMPUTER ISOLATOR CABINET	CB	049	C RM	49	Yes	ABS	CRS	Yes	Yes	No	Yes	No
20	1-XU-77	TSC/EOR COMPUTER ISOLATOR CABINET	CB	049	C RM	49	Yes	ABS	CRS	Yes	Yes	No	Yes	No
20	1-XU-79	POST-ACCIDENT MISC INSTRUMENT CABINET	CB	049	C RM	49	Yes	ABS	CRS	Yes	No	No	No	No
20	1-XU-9	BOP POWER SUPPLY CABINET	CB	049	C RM	49	Yes	ABS	CRS	Yes	No	No	No	No

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20	2-B21-PNL-QV9	MAIN STEAM LEAK DETECTION CABINET	CB	049	C RM	049	Yes	ABS	CRS	Yes	No	No	No	No
20	2-CAC-TY-4426-1	SUPP POOL TEMP MONITOR MICROPROCESSOR	CB	049	C RM	49'	Yes	ABS	CRS	Yes	No	No	No	No
20	2-CAC-TY-4426-2	SUPP POOL TEMP MONITOR MICROPROCESSOR	CB	049	C RM	49'	Yes	ABS	CRS	Yes	No	No	No	No
20	2-DG1-ENG-CTRL-PNL	DG1 ENGINE CONTROL PANEL	DG	023	NW V/10	23 FT.	Yes	ABS	CRS	No	Yes	No	No	No
20	2-DG1-EXCIT-PNL	EXCITATION PANEL	DG	023	NW V/10D	23 FT.	Yes	ABS	CRS	No	No	No	No	No
20	2-DG1-GEN-CTRL-PNL	DG1 ENGINE CONTROL PANEL	DG	023	NW V/10D	23 FT.	Yes	ABS	CRS	No	No	No	No	No
20	2-DG2-ENG-CTRL-PNL	DG2 ENGINE CONTROL PANEL	DG	023	WW V/11	23 FT.	Yes	ABS	CRS	No	Yes	No	No	No
20	2-DG2-EXCIT-PNL	EXCITATION PANEL	DG	023	WW V/11D	23 FT.	Yes	ABS	CRS	No	No	No	No	No
20	2-DG2-GEN-CTRL-PNL	DG2 GENERATOR CONTROL PANEL	DG	023	WW V/11D	23 FT.	Yes	ABS	CRS	No	No	No	No	No
20	2-DG3-ENG-CTRL-PNL	DG3 ENGINE CONTROL PANEL	DG	023	WW V/12	23	Yes	ABS	CRS	No	No	No	No	No
20	2-DG3-EXCIT-PNL	EXCITATION PANEL	DG	023	WW V/12D	23	Yes	ABS	CRS	No	No	No	No	No
20	2-DG3-GEN-CTRL-PNL	DG3 GENERATOR CONTROL PANEL	DG	023	WW V/12D	23	Yes	ABS	CRS	No	No	No	No	No
20	2-DG4-ENG-CTRL-PNL	DG4 ENGINE CONTROL PANEL	DG	023	SW V/13	23	Yes	ABS	CRS	No	No	No	No	No
20	2-DG4-EXCIT-PNL	EXCITATION PANEL	DG	023	SW V/13D	23	Yes	ABS	CRS	No	No	No	Yes	No
20	2-DG4-GEN-CTRL-PNL	DG4 GENERATOR CONTROL PANEL	DG	023	SW V/13D	23	Yes	ABS	CRS	No	No	No	Yes	No
20	2-DGB-PNL-NU6	DG SUMP PMP DGB-2G-1&2 ALTERNATOR PANEL	DG	000	WW U/10D	0	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
20	2-DGB-PNL-SQ4	CONTROL PANEL F-9776(17)	DG	000	WW U/10D	0	Yes	ABS	CRS	Yes	No	No	Yes	No
20	2-E11-F008-L1F	RHR SUCT OUTBD ISV ASSD STARTER PANEL	RB	020		020	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
20	2-E41-C002-EGM	TURBINE CONTROLLER	CB	049		054	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
20	2-H12-P601	ENGINEERED SAFEGUARDS VERTICAL BOARD	CB	049	C RM	049	Yes	ABS	CRS	Yes	No	No	No	No
20	2-H12-P603	REACTOR CONTROL PANEL	CB	049	C RM	49	Yes	ABS	CRS	Yes	No	No	No	No
20	2-H12-P606	RADIATION MONITORING CABINET	CB	049	C RM	49	Yes	ABS	CRS	Yes	No	No	No	No
20	2-H12-P608	POWER RANGE NEUTRON MONITORING PANEL	CB	049	SE MC/16C	49	Yes	ABS	CRS	Yes	No	No	No	No
20	2-H12-P609	RPS TRIP SYSTEM A, MAIN CONTROL ROOM PANEL	CB	049	SE MC/15C	49	Yes	ABS	CRS	Yes	No	No	No	No
20	2-H12-P610	RPS TEST AND MONITOR PANEL	CB	049	SE NC/13	49	Yes	ABS	CRS	Yes	No	No	No	No
20	2-H12-P611	RPS TRIP SYSTEM B, MAIN CONTROL ROOM PANEL	CB	049	SE MC/16C	049	Yes	ABS	CRS	Yes	No	No	No	No

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20	2-H12-P6..2	FEEDWATER AND REACTOR RECIRC INSTR PANEL	CB	049	C RM	49	Yes	ABS	CRS	Yes	No	No	No	No
20	2-H12-P613	PROCESS INSTRUMENT CABINET	CB	049	C RM	49	Yes	ABS	CRS	Yes	No	No	No	No
20	2-H12-P614	NSSS TEMP REC AND LEAK DETECT VERT BOARD	CB	049	ELEC EQUIP	049	Yes	ABS	CRS	Yes	No	No	No	No
20	2-H12-P615	ROD POSITION INFORMATION SYSTEM CABINET	CB	049	SE NC/16C	49	Yes	ABS	CRS	Yes	No	No	No	No
20	2-H12-P616	ROD MANUAL CONTROL PANEL	CB	049	SE NC/15C	049	Yes	ABS	CRS	Yes	No	No	No	No
20	2-H12-P617	RHR A RELAY VERTICAL BOARD	CB	049	SE NC/14C	49	Yes	ABS	CRS	Yes	No	No	No	No
20	2-H12-P618	RHR RELAY VERTICAL BOARD	CB	049	SW MC/14C	49	Yes	ABS	CRS	Yes	No	No	No	No
20	2-H12-P620	HPCI VERTICAL RELAY PANEL	CB	049	SE NC/14C	049 FT.	Yes	ABS	CRS	Yes	No	No	No	No
20	2-H12-P622	NSSS INBOARD VALVE RELAY BOARD	CB	049	SE NC/15C	049	Yes	ABS	CRS	Yes	No	No	No	No
20	2-H12-P623	NSSS OUTBOARD VALVE RELAY BOARD	CB	049	SW MC/15C	049	Yes	ABS	CRS	Yes	No	No	No	No
20	2-H12-P624	BENCHBOARD AUXILIARY RELAY CABINET	CB	049	SE NC/16C	49'	Yes	ABS	CRS	Yes	No	No	No	No
20	2-H12-P626	CORE SPRAY A RELAY VERTICAL BOARD	CB	049	SE NC/14C	049	Yes	ABS	CRS	Yes	No	No	No	No
20	2-H12-P627	CORE SPRAY B RELAY VERTICAL BOARD	CB	049	SW MC/15C	049	Yes	ABS	CRS	Yes	No	No	No	No
20	2-H12-P628	AUTO DEPRESSURIZATION SYS RELAY VERTICAL BRD	CB	049	SW MC/14C	49	Yes	ABS	CRS	Yes	No	No	No	No
20	2-H12-P630	REACTOR ANNUNCIATOR CABINET	CB	049	NE NC/15	049	Yes	ABS	CRS	Yes	No	No	No	No
20	2-H21-P003	CRD ACCUMULATOR MONITOR PANEL BANK 1 & 2	RB	020	NN M/19R	20'	Yes	ABS	CRS	Yes	Yes	Yes	No	No
20	2-H21-P012	CRD ACCUMULATOR MONITOR PANLE BANK 3 & 4	RB	020	SS M/23R	20'	Yes	ABS	CRS	Yes	Yes	Yes	No	No
20	2-IR-RB-4	REMOTE SHUTDOWN PANEL	RB	020		020	Yes	ABS	CRS	Yes	No	Yes	No	No
20	2-PNL-M00	PANEL FOR 2-SW-V255	DG	023	SE X/10D	023	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
20	2-SW-PNL-VW7	PARTIAL WINDING HTR CAB FOR MCC 2PB	SWB	020		20	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
20	2-SW-PNL-VW8	PARTIAL WINDING HTR CAB FOR MCC 2PA	SWB	020		20 FT.	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
20	2-SW-TY-4887	RHRSW PUMP DISCHARGE TEMP	DG	050	WW V/11D	053	Yes	BS	GRS	Nc	No	Yes	Yes	No
20	2-SW-TY-4888	RHRSW PUMP DISCHARGE TEMP	DG	050	SW U/13D	053	Yes	BS	GRS	No	No	Yes	Yes	No

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20	2-SW-TY-4889	RHRSW PUMP DISCHARGE TEMP	DG	050	NW V/9D	053	Yes	ABS	CRS	No	No	Yes	Yes	No
20	2-SW-TY-4890	RHRSW PUMP DISCHARGE TEMP	DG	050	WW U/10D	053	Yes	ABS	CRS	No	No	Yes	Yes	No
20	2-VA-TY-1028A	C RM THERMOSTAT	CB	049	C RM	54	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
20	2-XU-13	TERMINAL CAB FOR SYSTEMS SW,EB,RCC & BAT	CB	049	SE NC/16C	49	Yes	ABS	CRS	Yes	No	No	No	No
20	2-XU-2	MAIN CONTROL ROOM RTG BOARD	CB	049	C RM	049	Yes	ABS	CRS	Yes	No	No	Yes	No
20	2-XU-25	TERMINAL CAB FOR SYSTEMS SW,EB,RCC & BAT	CB	049	SW MC/16C	49	Yes	ABS	CRS	Yes	No	No	No	No
20	2-XU-27	RX,DG & CTRL BLDGS HVAC DIV-I TERMINAL CABINET	CB	049	SE NC/16C	49	Yes	ABS	CRS	Yes	No	No	No	No
20	2-XU-28	RX,DG & CTRL BLDGS HVAC DIV-II TERMINAL CAB	CB	049	SE NC/15C	49	Yes	ABS	CRS	Yes	No	No	No	No
20	2-XU-29	DG3 ESS LOGIC CABINET	CB	049	SE NC/16C	049	Yes	ABS	CRS	Yes	No	No	No	No
20	2-XU-3	RX,CONT & TURB BLDG HVAC & TURB AUX CONT PNL	CB	049	C RM	49	Yes	ABS	CRS	Yes	No	No	Yes	No
20	2-XU-30	DG4 ESS LOGIC CABINET	CB	049	SW MC/16C	49 FT.	Yes	ABS	CRS	Yes	No	No	No	No
20	2-XU-41	DIV-I TERM CAB FOR EB & ED SYSTEMS	CB	049	SE NC/16C	49'	Yes	ABS	CRS	Yes	No	No	No	No
20	2-XU-4168	FLUID FLOW DET PREAMP CAB FOR SRV POSITION	RB	020	ELEC EQUIP	020	Yes	ABS	CRS	Yes	Yes	Yes	Yes	Yes
20	2-XU-42	DIV-II TERM CAB FOR RTGB XU-2	CB	049	SW MC/16C	49	Yes	ABS	CRS	Yes	No	No	No	No
20	2-XU-50	RIP TERMINAL CABINET	CB	049	SE NC/16C	49	Yes	ABS	CRS	Yes	No	[illegible]	No	No
20	2-XU-51	BOP RTG BOARD	CB	049	C RM	49	Yes	ABS	CRS	Yes	No	No	Yes	No
20	2-XU-53	TERMINATING CABINET DIV-I	CB	049	SE NC/15C	49	Yes	ABS	CRS	Yes	No	No	No	No
20	2-XU-56	TERMINATING CABINET DIV-II	CB	049	SE NC/15C	49	Yes	ABS	CRS	Yes	No	No	No	No
20	2-XU-57	RIP TERMINAL CABINET DIV-II	CB	049	SE NC/15C	49	Yes	ABS	CRS	Yes	No	No	No	No
20	2-XU-58	RIP TERMINAL CABINET DIV-I	CB	049	SE NC/16C	49	Yes	ABS	CRS	Yes	No	No	No	No
20	2-XU-63	TRIP CALIBRATION CABINET-ECCS DIV I	CB	049	C RM	049	Yes	ABS	CRS	Yes	No	No	No	No
20	2-XU-64	TRIP CALIBRATION CABINET-ECCS DIV II	CB	049	C RM	49	Yes	ABS	CRS	Yes	No	No	No	No
20	2-XU-65	RPS TRIP CALIBRATION CABINET, CHANNEL A1	CB	049	C RM AREA	049	Yes	ABS	CRS	Yes	No	No	No	No
20	2-XU-66	RPS TRIP CALIBRATION CABINET, CHANNEL A2	CB	049	C RM AREA	49	Yes	ABS	CRS	Yes	No	No	No	No

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20	2-XU-67	RPS TRIP CALIBRATION CABINET, CHANNEL B1	CB	049	C RM AREA	49	Yes	ABS	CRS	Yes	No	No	No	No
20	2-XU-68	RPS TRIP CALIBRATION CABINET, CHANNEL B2	CB	049	C RM AREA	49	Yes	ABS	CRS	Yes	No	No	No	No
20	2-XU-73	FLUID FLOW DET CAB FOR SRV POSITION IND	CB	049	ELEC EQUIP	49	Yes	ABS	CRS	Yes	No	No	No	No
20	2-XU-75	POST-ACCIDENT MISC INSTRUMENT CAB, DIV-I	CB	049	SW LC/16C	49	Yes	ABS	CRS	Yes	No	No	No	No
20	2-XU-76	TSC/EOF COMPUTER ISOLATOR CABINET	CB	049	C RM	49	Yes	ABS	CRS	Yes	Yes	No	No	No
20	2-XU-77	TSC/EOF COMPUTER ISOLATION CABINET	CB	049	C RM	49	Yes	ABS	CRS	Yes	No	No	No	No
20	2-XU-79	POST ACCIDENT MISC INSTRUMENT CABINET	CB	049	SW LC-16C	49	Yes	ABS	CRS	Yes	No	No	No	No
20	2-XU-9	BOP PROCESS INSTR POWER SUPPLY CABINET	CB	049	SE NC/16C	49	Yes	ABS	CRS	Yes	No	No	No	No
21	1-B21-A003A	SRV ACCUMULATOR A	RB/DW	055	DW AZ-031	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Yes
21	1-B21-A003B	SRV ACCUMULATOR B	RB/DW	055	DW AZ-051	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Yes
21	1-B21-A003C	SRV ACCUMULATOR C	RB/DW	055	DW AZ-055	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Yes
21	1-B21-A003D	SRV ACCUMULATOR D	RB/DW	055	DW AZ-059	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Yes
21	1-B21-A003E	SRV ACCUMULATOR E	RB/DW	055	DW AZ-095	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Yes
21	1-B21-A003F	SRV ACCUMULATOR F	RB/DW	055	DW AZ-299	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Yes
21	1-B21-A003G	SRV ACCUMULATOR G	RB/DW	055	DW AZ-281	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Yes
21	1-B21-A003H	SRV ACCUMULATOR H	RB/DW	055	DW AZ-328	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Yes
21	1-B21-A003J	SRV ACCUMULATOR J	RB/DW	055	DW AZ-325	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Yes
21	1-B21-A003K	SRV ACCUMULATOR K	RB/DW	055	DW AZ-297	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Yes
21	1-B21-A003L	SRV ACCUMULATOR L	RB/DW	055	DW AZ-062	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Yes
21	1-C11-125	137 NITROGEN/WATER ACCUMULATORS AND SUPPORTING RACK	RB	020	HCU	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No
21	1-E11-B001A	RHR HX 1A	RB	020	NE T/3R	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No
21	1-E41-C002-LUBE-OIL-CLR	HPCI TURBINE LUBE OIL COOLER	RB	-017	EE T/5R	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Yes
21	1-VA-1D-HX-CB	HX - SUBCOOLING CONDENSER	CB	070	MECH EQ RM	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Yes
21	2-B21-A003A	SRV A ACCUMULATOR	RB/DW	055	DW AZ-030	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Yes
21	2-B21-A003B	SRV B ACCUMULATOR	RB/DW	055	DW AZ-051	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Yes

Equip Class	Equipment ID No.	System/Equipment Description	Bldg.	Floor Elev.	Room or Row/Col	Elev. of Seismic Input	Below 40' above grade?	Seismic Capacity based on?	Seismic Demand based on?	Capacity greater than Demand?	Bounding Spectrum Caveats OK?	Anchor-age OK?	Inter-actions OK?	Overall OK?
21	2-B21-A003C	SRV C ACCUMULATOR	RB/DW	055	DW AZ-055	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Yes
21	2-B21-A003D	SRV D ACCUMULATOR	RB/DW	055	DW AZ-060	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Yes
21	2-B21-A003E	SRV E ACCUMULATOR	RB/DW	055	DW AZ-095	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Yes
21	2-B21-A003F	SRV F ACCUMULATOR	RB/DW	055	DW AZ-299	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No
21	2-B21-A003G	SRV G ACCUMULATOR	RB/DW	055	DW AZ-281	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No
21	2-B21-A003H	SRV H ACCUMULATOR	RB/DW	055	DW AZ-331	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Yes
21	2-B21-A003J	SRV J ACCUMULATOR	RB/DW	055	DW AZ-325	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Yes
21	2-B21-A003K	SRV K ACCUMULATOR	RB/DW	055	DW AZ-297	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Yes
21	2-B21-A003L	SRV L ACCUMULATOR	RB/DW	055	DW AZ-062	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Yes
21	2-C12-125	137 SCRAM ACCUMULATORS	RB	020	HCU	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No
21	2-DSA-DG1-TK-1	DG1 AIR START TANKS & FILTER	DG	023	NW V/9D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Yes
21	2-DSA-DG1-TK-2	DG1 AIR START TANKS & FILTER	DG	023	NW V/9D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Yes
21	2-DSA-DG2-TK-1	DG2 AIR START TANK & FILTER	DG	023	WW V/10D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Yes
21	2-DSA-DG2-TK-2	DG2 AIR START TANK & FILTER	DG	023	WW V/10D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Yes
21	2-DSA-DG3-TK-1	DG3 START AIR TANK & FILTER	DG	023	WW V/11D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Yes
21	2-DSA-DG3-TK-2	DG3 START AIR TANK & FILTER	DG	023	WW V/11D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Yes
21	2-DSA-DG4-TK-1	DG4 START AIR TANK & FILTER	DG	023	SW V/11D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Yes
21	2-DSA-DG4-TK-2	DG4 START AIR TANK & FILTER	DG	023	SW V/11D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Yes
21	2-E11-B001A	RHR HEAT EXCHANGER 2A	RB	020	NE T/19R	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No
21	2-E11-B001B	RHR HEAT EXCHANGER 2B	RB	020	SE T/24R	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No
21	2-E41-C002-LUB-OIL-CLR	HPCI TURB LUBE OIL COOLER	RB	-017	EE T/21R	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Yes
21	2-FOD-4-DAY-TK-1	DG1 FUEL OIL 4-DAY STORAGE TANK	DG/T	000	NW V/9D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No
21	2-FOD-4-DAY-TK-2	DG2 FUEL OIL 4-DAY STORAGE TANK	DG/T	000	WW V/10D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No
21	2-FOD-4-DAY-TK-3	DG3 FUEL OIL 4-DAY STORAGE TANK	DG/T	000	WW V/11D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No
21	2-FOD-4-DAY-TK-4	DG4 FUEL OIL 4-DAY STORAGE TANK	DG/T	000		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No
21	2-LO-COOLER-1	DG1 LUBE OIL COOLER	DG	023	NW V/9D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Yes
21	2-LO-COOLER-2	DG2 LUBE OIL COOLER	DG	023	WW V/10D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Yes
21	2-LO-COOLER-3	DG3 LUBE OIL COOLER	DG	023	WW V/11D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Yes
21	2-LO-COOLER-4	DG4 LUBE OIL COOLER	DG	023	SW V/12D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Yes
21	2-MUD-EXP-TK-1	DG1 JACKET WATER EXP TANK	DG	039	NE W/9D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Yes
21	2-MUD-EXP-TK-2	DG2 JACKET WATER EXP TANK	DG	039	EE W/10D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Yes
21	2-MUD-EXP-TK-3	DG3 JACKET WATER EXP TANK	DG	039	EE W/11D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Yes
21	2-MUD-EXP-TK-4	DG4 JACKET WATER EXP TANK	DG	039	SE W/12D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Yes

Equip Class	Equipment ID No.	System/Equipment Description	Bldg.	Floor Elev.	Room or Row/Col	Elev. of Seismic Input	Below 40' above grade?	Seismic Capacity based on?	Seismic Demand based on?	Capacity greater than Demand?	Bounding Spectrum Caveats OK?	Anchor-age OK?	Inter-actions OK?	Overall OK?
21	2-MUD-JKT-WTR-CLR-1	DG1 JACKET WATER COOLER	DG	023	NW V/9D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Yes
21	2-MUD-JKT-WTR-CLR-2	DG2 JACKET WATER COOLER	DG	023	WW V/10D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Yes
21	2-MUD-JKT-WTR-CLR-3	DG3 JACKET WATER COOLER	DG	023	WW V/11D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Yes
21	2-MUD-JKT-WTR-CLR-4	DG4 JACKET WATER COOLER	DG	023	SW V/12D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Yes
21	2-VA-2A-AC-CB-TK	INSTRUMENT AIR TANK A	CB	070	MECH EQUIP	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Yes
21	2-VA-2B-AC-CB-TK	INSTRUMENT AIR TANK B	CB	070	MECH EQUIP	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Yes
21	2-VA-2D-HX-CB	HX	CB	070	NE NC/11C	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Yes
21	2-VA-2E-HX-CB	HX	CB	070	NE NC/11C	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Yes

CERTIFICATION:
All the information contained on these Screening Verification Data Sheets (SVDS) is , to the best of our knowledge and belief, correct and accurate. This includes each entry and conclusion (whether verified to be seismically adequate or not).

Approved: (Signatures of all Seismic Capability Engineers on the Seismic Review Team (SRT) are required; there should be at least two on the SRT. All signatories should agree with all the entries and conclusions. One signatory should be a licensed professional engineer).

Print or type name	Signature	Date
Leo J BRAGAGNOLO		9.12.95
BRANTLEY BUERGER		9.13.95
JAMES R. DISSER		9/13/95
RONALD L. KNOTT		9.14.95

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Print or type name	Signature	Date

Print or type name	Signature	Date

APPENDIX D

INSTANCES OF MEETING THE INTENT BUT NOT THE LETTER OF THE CAVEAT

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INSTANCES OF MEETING THE INTENT BUT NOT THE LETTER OF THE CAVEAT

E.C.	Equipment ID No.	Description	Deviation and Acceptability
01	2-2PA 2-2PB	MCC 2PA MCC 2PB	Bounding Spectrum Caveat 3 (Adjacent Cabinets Bolted): Though not bolted together each cabinet is anchored at the bottom and bolted at the top.
01	2-2XA 2-2XA-2 2-2XB	MCC 2XA MCC 2XA-2 MCC 2XB	Bounding Spectrum Caveat 7 (Cutouts): Cutouts exist but have plates screwed over the openings.
04	2-2A-SW-XFMR 2-2B-SW-XFMR	DISTR PNL XFMR MCC 2PA DISTR PNL XFMR MCC 2PB	Bounding Spectrum Caveat 7 (Coil Attachment): This model of transformer has been subjected to high levels of acceleration during seismic tests. Reference CP&L Calculation Number 01534A-281.
07	1-C11-CV-F010 2-C12-CV-F010	CRD VENT VALVES CRD VENT VALVES	Bounding Spectrum Caveat 3 (Cast Iron Yoke): The acutator yoke material is ASTM A-636 Gr. 65-45 nickel oxide sinter. It is a ferroalloy casting. It is considered brittle but is not a concern since this valve is not piston operated.
07	1-C11-CV-F011	CRD DRAIN VALVES	Bounding Spectrum Caveat 3 (Cast Iron Yoke): The acutator yoke material is ASTM A-636 Gr. 65-45 nickel oxide sinter. It is a ferroalloy casting. It is considered brittle but is not a concern since this valve is not piston operated. Bounding Spectrum Caveat 5 (Operator Height): Since the operator is top braced, this caveat does not apply. Bounding Spectrum Caveat 7 (Independent Bracing): Since both are braced to the same structure differential motion is not a concern.
07	1-C11-V139	CRD VENT VALVES	Bounding Spectrum Caveat 1 (Database Representation): Attached limit switches are judged not to affect the adequacy of the valve.
07	1-E41-F025 1-E41-F026	HPCI COND PUMP DRAIN TO CRW ISOL VALVE HPCI COND PUMP DRAIN TO CRW ISOL VALVE	Bounding Spectrum Caveat 7 (Independent Bracing): The valve operator and the pipe are independently supported. However, both the operator and the pipe are rigidly mounted to the floor.

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E.C.	Equipment ID No.	Description	Deviation and Acceptability
07	1-RNA-PCV-5247 1-RNA-PCV-5248 2-RNA-PCV-5247 2-RNA-PCV-5248 1-RNA-SV-5482 1-RNA-SV-5251	BACKUP N2 DISCHARGE PCV BACKUP N2 DISCHARGE PCV BACKUP N2 DISCHARGE PCV BACKUP N2 DISCHARGE PCV BACKUP N2 DISCHARGE SOV BACKUP N2 SOV	Bounding Spectrum Caveat 4 (Pipe size): Though the pipe size is 3/4" diameter, the intent is to ensure that no heavy operators are mounted on small lines. The total valve weighs is only 23 lb.
07	1-RNA-PRV-5256 1-RNA-PRV-5258 1-RNA-PRV-5259 1-RNA-PRV-5260	BACKUP N2 PRESSURE RELIEF VALVE BACKUP N2 PRESSURE RELIEF VALVE BACKUP N2 PRESSURE RELIEF VALVE BACKUP N2 PRESSURE RELIEF VALVE	Bounding Spectrum Caveat 4 (Pipe size): The valve is line mounted on 3/4" diameter, well supported, piping. The valve is lightweight and only 7" tall.
07	1-VA-FV-1026 1-VA-FV-1027B 2-VA-FV-1028	DAMPER 1A-D OPERATOR DAMPER 1H-D OPERATOR DAMPER 2A-D OPERATOR	Bounding Spectrum Caveat 1 (Database Representation): The valve is securely mounted on a duct. The duct is well supported close to the valve attachment point.
07	1-VA-FV-936B	RHR DAMPER OPERATOR	Bounding Spectrum Caveat 4 (Pipe size): The damper operator is mounted to sheet metal framing attached to the side of the duct with machine screws.

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E.C.	Equipment ID No.	Description	Deviation and Acceptability
07	1-VA-MC-1026-1 2-VA-MC-1028-1	MOISTURE CONTROLLER/CTRL VALVE MOISTURE CONTROLLER/CTRL VALVE	Bounding Spectrum Caveat 1 (Database Representation): The assembly is mounted on 3/4" diameter socket welded piping, but the assembly has threaded connections. Though not typical for among valves in the database, it is considered to meet the intent of the caveat for size, type and orientation. Bounding Spectrum Caveat 2 (Cast Iron Body): Though this may be cast iron it is considered acceptable due to its rugged and heavy construction (similar to a steam trap). Bounding Spectrum Caveat 4 (Pipe size): Though mounted on 3/4" diameter pipe, it is attached top and bottom to the steam humidifier. Also, the body is attached to the HVAC which provides deadload support. Bounding Spectrum Caveat 5 (Operator Height): Operator height is 14" and the GIP allows 45" for a 1" line. Though this is a 3/4" line, the intent of the caveat is considered to be met.
07	2-C12-CV-127	137 SCRAM OUTLET ISOLATION VALVES	Bounding Spectrum Caveat 4 (Pipe size): The valve is supported at the top by a bracket and at the bottom by a stiff pipe.
07	2-C12-CV-F011	CRD DRAIN VALVES	Bounding Spectrum Caveat 7 (Independent Bracing): The bumper-type restraint of the actuator is not considered independent bracing.
07	2-E41-V9	TURBINE CONTROL VALVE	Bounding Spectrum Caveat 1 (Database Representation): Control valves are included in the database. This one is unique because of its mechanical linkage. It appears ruugged. Bounding Spectrum Caveat 5 (Operator Height): Since this valve has a unique mechanical linkage, height and weight requirements aren't meaningful. The installation height isn't excessive.

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E.C.	Equipment ID No.	Description	Deviation and Acceptability
07	2-MUD-TCV-2193	DG4 JACKET WATER TCV ENGINE OUTLET	Bounding Spectrum Caveat 3 (Cast Iron Yoke): Though the material is indeterminate, the intent is met since the operator height and weight are very low.
07	2-RNA-PRV-5256 2-RNA-PRV-5258 2-RNA-PRV-5259 2-RNA-PRV-5260	BACKUP N2 PRV BACKUP N2 PRV BACKUP N2 PRV BACKUP N2 PRV	Bounding Spectrum Caveat 4 (Pipe size): The inlet pipe is 3/4" diameter but the valve is only about 9 lb. and will not overstress the pipe. Bounding Spectrum Caveat 5 (Operator Height): The GIP allows 45" for a 1" and for this 3/4" valve, the height is less than 20".
07	2-SW-V129-AO 2-SW-V124-AO	RHR PUMP 2A ROOM COOLER OUT ISO RHR ROOM COOLER 2B ISO	Bounding Spectrum Caveat 2 (Cast Iron Body): The body is ASME SB-148 Gr-954 Al-Bronze. Per 1991 ASTM Standards, this has properties similar to carbon steel and is therefore considered ductile.
07	2-VA-V023	ISOL VALVE (For HX 2-VA-HX-2D-CB)	Bounding Spectrum Caveat 4 (Pipe size): The copper line is about 1/2" diameter but the operator is only about 1 lb.
08A	1-E11-F016A 1-E11-F024A	DRYWELL SPRAY OUTBOARD ISOLATION VALVE SP COOLING ISOLATION VALVE	Bounding Spectrum Caveat 5 (Operator Height): Operator weight exceeds GIP allowable by 5 lb or 1/2% which is acceptable based on the low seismic demand compared to the SQUG Bounding Spectrum at this elevation.
08A	1-E21-F031A	CS MIN. FLOW BYPASS VALVE - TRAIN A	Bounding Spectrum Caveat 5 (Operator Height): The operator height and weight meet GIP guidelines. Including the valve weight is deemed inappropriate.
08B	2-CAC-SV-1225C	DRYWELL SOLENOID VALVE	Bounding Spectrum Caveat 5 (Operator Height): The GIP allows 45" for a 1" valve, this 3/4" valve is 14" tall. The piping is well supported and overstress is not a concern.
08B	2-CAC-SV-1230B	SOLENOID VALVE FOR DRYWELL INST	Bounding Spectrum Caveat 5 (Operator Height The GIP allows 45" for a 1" valve, this 3/4" valve is 15" tall and weighs 38 lb. Judged accptable.
08B	2-VA-SV-916-1	SOLENOID FOR FV916B	Bounding Spectrum Caveat 4 (Pipe size): The valve is mounted on 1/4" tubing but the weight is less than 1 lb.

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E.C.	Equipment ID No.	Description	Deviation and Acceptability
10	1-VA-1A-D-CB 2-VA-2I-D-CB	AO DAMPER AO DAMPER - UNIT 2	Bounding Spectrum Caveat 1 (Database Representation): The damper is mounted in-line but it is attached to a stiff support and is at least as well supported as it would be if attached to an air handler.
10	2-VA-ISOL-DMP-CB	SUPPLY ISOL DAMPER	Bounding Spectrum Caveat 1 (Database Representation): The damper is mounted in-line but it is well attached and has a low mass.
18	1-VA-ZS-1026 2-VA-ZS-1027-A 2-VA-ZS-1027-B 2-VA-ZS-1028	SUPPLY FAN LIMIT SWITCH SUPPLY FAN LIMIT SWITCH SUPPLY FAN LIMIT SWITCH SUPPLY FAN LIMIT SWITCH	Bounding Spectrum Caveat 1 (Database Representation): The switch is mounted on a duct which is rigidly supported within 2 ft. of the attachment.
19	2-VA-TT-1299-2	TEMPERATURE TRANSMITTER	Bounding Spectrum Caveat 1 (Database Representation): The switch is mounted on a duct which is well supported.
20	1-H12-P601	ENGINEERED SAFEGUARDS VERT BRD	Bounding Spectrum Caveat 3 (Adjacent Cabinets Bolted): One hp bolt is missing and the panel butts against the control room wall but the latera. gidity of the panel and the location of essential relays within the panel make this ac. ate e.
20	1-H12-P617	RHR A RELAY VERTICAL BOARD	Bounding Spectrum Caveat 5 (Adjacent Cabinets Bolted): The entire line-up is bolted except at the far south, which is attached through the rigid wireway on top, and the far north, which has a large enough gap and enough stiffness to preclude pounding.
20	1-XU-51 1-XU-75 1-XU-79 2-XU-51 2-XU-75	BOP RTG BOARD POST-ACCIDENT MISC INSTRUMENT CAB DIV-I POST-ACCIDENT MISC INSTRUMENT CABINET BOP RTG BOARD POST-ACCIDENT MISC INSTRUMENT CAB, DIV-I	Bounding Spectrum Caveat 3 (Strip Chart Recorders): All cantilevered devices are well supported.

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E.C.	Equipment ID No.	Description	Deviation and Acceptability
20	1-XU-53	TERMINATING CABINET DIV-I	Bounding Spectrum Caveat 5 (Adjacent Cabinets Bolted): Missing lower bolt is acceptable since the upper bolts are adequate. The entire line-up is bolted except at the far south, which is attached through the rigid wireway on top, and the far north, which has a large enough gap and enough stiffness to preclude pounding.
20	2-H12-P601 2-H12-P603	ENGINEERED SAFEGUARDS VERT BRD	Bounding Spectrum Caveat 5 (Adjacent Cabinets Bolted): The entire line-up is bolted except 2-XU-80 at the far end. The distance from the cabinets containing essential relays, and the stiffness of the intervening cabinets make this condition acceptable.
20	2-XU-25	TERMINAL CAB FOR SYSTEMS SW,EB,RCC & BAT	Bounding Spectrum Caveat 5 (Adjacent Cabinets Bolted): 2-CAC-TY-4426-2 is not bolted to XU-25 but the clearance and the stiffness of the cabinets is considered adequate to prevent pounding.
21	1,2-B21-A003A 1,2-B21-A003B 1,2-B21-A003C 1,2-B21-A003D 1,2-B21-A003E 1,2-B21-A003F 1,2-B21-A003G 1,2-B21-A003H 1,2-B21-A003J 1,2-B21-A003K 1,2-B21-A003L	SRV ACCUMULATOR A SRV ACCUMULATOR B SRV ACCUMULATOR C SRV ACCUMULATOR D SRV ACCUMULATOR E SRV ACCUMULATOR F SRV ACCUMULATOR G SRV ACCUMULATOR H SRV ACCUMULATOR J SRV ACCUMULATOR K SRV ACCUMULATOR L	Shell Capcity Vs. Demand: The tanks are 1-1/2' long sections of 4" pipe, with pipe caps and nipples welded to each end. These passive devices are judged to be inherently rugged.

APPENDIX E1

SUMMARY OF OUTLIERS: MECHANICAL AND ELECTRICAL EQUIPMENT

Appendix E1
OUTLIER SEISMIC VERIFICATION SHEET (OSVS)
Outlier 01

1. OUTLIER IDENTIFICATION, DESCRIPTION, AND LOCATION

Equipment ID Number- 1-D12-RE-N006A,B,C,D 2-D12-RE-N006A,B,C,D	Equipment Class- 00
Equipment Location:	
Building - Reactor Building (MSIV Pit)	Floor Elevation - 50'
Room or Row/Column - MSIV Pit	Base Elevation - 50'
Equipment Description: Ion Detectors suspended in MSIV Pit.	

2. OUTLIER ISSUE DEFINITION

a. Identify all the screening guidelines which are not met. (Check more than one if several guidelines could not be satisfied.)

Mechanical and Electrical Equipment		Tanks and Heat Exchangers	
Capacity vs. Demand	X	Shell Buckling[1]	
Caveats		Anchor Bolts and Embedment	
Anchorage		Anchorage Connections	
Seismic Interaction	X	Flexibility of Attached Piping[1]	
Other		Other	
Essential Relays		Cable and Conduit Raceway	
Capacity vs. Demand		Inclusion Rules	
Mounting, Type, Location		Other Seismic Performance Concerns	
Other		Limited Analytical Review	
		Other	

[1] Shell Buckling and flexibility of attached piping only apply to large, flat-bottom, vertical tanks.

b. Describe all the reasons for the outlier (i.e., if all the listed outlier issues were resolved, then the signatories would consider this item of equipment to be verified for seismic adequacy):

Ion detectors are not represented in the database and evaluation of the anchorage may be required. The detector wells were disassembled at the time of inspection and complete assessment could not be performed. Unit 1 inspections of the assembled units were performed and their anchorage was determined to be acceptable. This should be verified for the Unit 2 items.

Appendix E1
OUTLIER SEISMIC VERIFICATION SHEET (OSVS)
Outlier 01

3. PROPOSED METHOD OF OUTLIER RESOLUTION (OPTIONAL)

a. Define proposed method(s) for resolving outlier.

Existing plant documentation and available industry information will be reviewed for possible acceptance of ion detectors as is.

b. Provide information needed to implement proposed method(s) for resolving outlier (e.g., estimate of fundamental frequency).

4. CERTIFICATION:

The information on this OSVS is, to the best of out knowledge and belief, correct and accurate, and resolution of the outlier issues listed on the previous page will satisfy the requirements for this item of equipment to be verified for seismic adequacy:

Approved by: (For Equipment Classes #0 - #22, all the Seismic Capability Engineers on the Seismic Review Team (SRT) should sign; there should be at least two on the SRT. One signatory should be a licensed professional engineer. For Relays, the Lead Relay Reviewer should sign.)

Leo Reiniholdt Print or Type Name	Leo Reiniholdt Signature	4-17-95 Date
Ronald L. Knott Print or Type Name	Ronald L. Knott Signature	4-14-95 Date
Print or Type Name	Signature	Date

Appendix E1
OUTLIER SEISMIC VERIFICATION SHEET (OSVS)
Outlier 02

1. OUTLIER IDENTIFICATION, DESCRIPTION, AND LOCATION

Equipment ID Number- 1-VA-1A-BFIV-RB 2-VA-2A-BFIV-RB 1-VA-1B-BFIV-RB 2-VA-2B-BFIV-RB 1-VA-1C-BFIV-RB 2-VA-2C-BFIV-RB 1-VA-1D-BFIV-RB 2-VA-2D-BFIV-RB	Equipment Class - 00
Equipment Location:	
Building - Reactor Building	Floor Elevation - 80' & 170'
Room or Row/Column - Fuel Pool Area	Base Elevation
Equipment Description: RB DAMPERS	

2. OUTLIER ISSUE DEFINITION

a. Identify all the screening guidelines which are not met. (Check more than one if several guidelines could not be satisfied.)

Mechanical and Electrical Equipment Capacity vs. Demand Caveats Anchorage Seismic Interaction Other	X	Tanks and Heat Exchangers Shell Buckling[1] Anchor Bolts and Embedment Anchorage Connections Flexibility of Attached Piping[1] Other	
Essential Relays Capacity vs. Demand Mounting, Type, Location Other		Cable and Conduit Raceway Inclusion Rules Other Seismic Performance Concerns Limited Analytical Review Other	

[1] Shell Buckling and flexibility of attached piping only apply to large, flat-bottom, vertical tanks.

b. Describe all the reasons for the outlier (i.e., if all the listed outlier issues were resolved, then the signatories would consider this item of equipment to be verified for seismic adequacy):

1.5 times Bounding Spectra is exceeded for this elevation which is above 40' above grade. Additional evaluation is required to assess Capacity vs. Demand.

Appendix E1
OUTLIER SEISMIC VERIFICATION SHEET (OSVS)
Outlier 02

3. PROPOSED METHOD OF OUTLIER RESOLUTION (OPTIONAL)

a. Define proposed method(s) for resolving outlier.

Additional evaluation is required to assess the ruggedness of these Butterfly Valves.

b. Provide information needed to implement proposed method(s) for resolving outlier (e.g., estimate of fundamental frequency).

4. CERTIFICATION:

The information on this OSVS is, to the best of out knowledge and belief, correct and accurate, and resolution of the outlier issues listed on the previous page will satisfy the requirements for this item of equipment to be verified for seismic adequacy:

Approved by: (For Equipment Classes #0 - #22, all the Seismic Capability Engineers on the Seismic Review Team (SRT) should sign; there should be at least two on the SRT. One signatory should be a licensed professional engineer. For Relays, the Lead Relay Reviewer should sign.)

LEO BRAGANZA Print or Type Name	Leo J. Bragan Signature	9-12-95 Date
RONALD L. KNIFF Print or Type Name	Ronald L. Kniff Signature	9-14-95 Date
Print or Type Name	Signature	Date

Appendix E1
OUTLIER SEISMIC VERIFICATION SHEET (OSVS)
Outlier 03

1. OUTLIER IDENTIFICATION, DESCRIPTION, AND LOCATION

Equipment ID Number- 2-DGA, 2-DGB, 2-DGC, 2-DGD & 1-1PA, 1-1PB, 2-2PA, 2-2PB	Equipment Class 01 - Motor Control Centers
Equipment Location:	
Building - Diesel Generator & Service Water Buildings	Floor Elevation - 23' & 20'
Room or Row/Column	Base Elevation
Equipment Description: Diesel Generator and Service Water Building MCCs (MCC DGA, MCC DGB, MCC DGC, MCC DGD, MCC 1PA, MCC 1PB, MCC 2PA & MCC 2PB)	

2. OUTLIER ISSUE DEFINITION

a. Identify all the screening guidelines which are not met. (Check more than one if several guidelines could not be satisfied.)

Mechanical and Electrical Equipment Capacity vs. Demand Caveats Anchorage Seismic Interaction Other	X	Tanks and Heat Exchangers Shell Buckling[1] Anchor Bolts and Embedment Anchorage Connections Flexibility of Attached Piping[1] Other	
Essential Relays Capacity vs. Demand Mounting, Type, Location Other		Cable and Conduit Raceway Inclusion Rules Other Seismic Performance Concerns Limited Analytical Review Other	

[1] Shell Buckling and flexibility of attached piping only apply to large, flat-bottom, vertical tanks.

b. Describe all the reasons for the outlier (i.e., if all the listed outlier issues were resolved, then the signatories would consider this item of equipment to be verified for seismic adequacy):

Consideration of edge distance is required. Edge distance is less than four bolt diameters.

Appendix E1
OUTLIER SEISMIC VERIFICATION SHEET (OSVS)
Outlier 03

3. PROPOSED METHOD OF OUTLIER RESOLUTION (OPTIONAL)

a. Define proposed method(s) for resolving outlier.

Additional evaluation is required to consider acceptability of edge distance less than four bolt diameters.

b. Provide information needed to implement proposed method(s) for resolving outlier (e.g., estimate of fundamental frequency).

HCLPF calculation 52213-C-045 addresses the anchorage and operability of these MCCs. Also calculation 0SEIS-0004 provides weight and frequency estimate.

4. CERTIFICATION:

The information on this OSVS is, to the best of out knowledge and belief, correct and accurate, and resolution of the outlier issues listed on the previous page will satisfy the requirements for this item of equipment to be verified for seismic adequacy:

Approved by: (For Equipment Classes #0 - #22, all the Seismic Capability Engineers on the Seismic Review Team (SRT) should sign; there should be at least two on the SRT. One signatory should be a licensed professional engineer. For Relays, the Lead Relay Reviewer should sign.)

LEO BRAGAGNOLO Print or Type Name	Leo J Bragagnolo Signature	9-13-95 Date
RONALD L. KNOTT Print or Type Name	Ronald L. Knott Signature	9-14-95 Date
Print or Type Name	Signature	Date

Appendix E1
OUTLIER SEISMIC VERIFICATION SHEET (OSVS)
Outlier 04

1. OUTLIER IDENTIFICATION, DESCRIPTION, AND LOCATION

Equipment ID Number- 1-1XM	Equipment Class - 01 - Motor Control Centers
Equipment Location:	
Building - Reactor Building	Floor Elevation - 20'
Room or Row/Column - EE S/6R	Base Elevation
Equipment Description: MCC 1XM impact to wall	

2. OUTLIER ISSUE DEFINITION

a. Identify all the screening guidelines which are not met. (Check more than one if several guidelines could not be satisfied.)

Mechanical and Electrical Equipment Capacity vs. Demand Caveats Anchorage Seismic Interaction Other	X	Tanks and Heat Exchangers Shell Buckling[1] Anchor Bolts and Embedment Anchorage Connections Flexibility of Attached Piping[1] Other	
Essential Relays Capacity vs. Demand Mounting, Type, Location Other		Cable and Conduit Raceway Inclusion Rules Other Seismic Performance Concerns Limited Analytical Review Other	

[1] Shell Buckling and flexibility of attached piping only apply to large, flat-bottom, vertical tanks.

b. Describe all the reasons for the outlier (i.e., if all the listed outlier issues were resolved, then the signatories would consider this item of equipment to be verified for seismic adequacy):

MCC is located 5/8" from adjacent concrete wall on its west end. Concern exists for potential pounding of cabinet against wall.

Appendix E1
OUTLIER SEISMIC VERIFICATION SHEET (OSVS)
Outlier 04

3. PROPOSED METHOD OF OUTLIER RESOLUTION (OPTIONAL)

a. Define proposed method(s) for resolving outlier.

Additional analysis is required to show that the gap is adequate to prevent impact or that the impact will be non-damaging.

b. Provide information needed to implement proposed method(s) for resolving outlier (e.g., estimate of fundamental frequency).

HCLPF calculation 52213-C-045 addresses the anchorage and operability of the MCC. Also calculation 0SEIS-0004 provides weight and frequency estimate.

4. CERTIFICATION:

The information on this OSVS is, to the best of out knowledge and belief, correct and accurate, and resolution of the outlier issues listed on the previous page will satisfy the requirements for this item of equipment to be verified for seismic adequacy:

Approved by: (For Equipment Classes #0 - #22, all the Seismic Capability Engineers on the Seismic Review Team (SRT) should sign; there should be at least two on the SRT. One signatory should be a licensed professional engineer. For Relays, the Lead Relay Reviewer should sign.)

LEO BRAGG HOLD Print or Type Name	Signature	9-13-95 Date
RONALD L. KNOTT Print or Type Name	Signature	9-19-95 Date
Print or Type Name	Signature	Date

Appendix E1
OUTLIER SEISMIC VERIFICATION SHEET (OSVS)
Outlier 05A

1. OUTLIER IDENTIFICATION, DESCRIPTION, AND LOCATION

Equipment ID Number- Control Building 49' Cabinets (See attached list)	Equipment Class - 20 - Instr. & Control Panels & Cabinets
Equipment Location:	
Building - Control Building	Floor Elevation - 49'
Room or Row/Column	Base Elevation
Equipment Description: Anchorage for Cabinets in Control Building Elevation 49'	

2. OUTLIER ISSUE DEFINITION

a. Identify all the screening guidelines which are not met. (Check more than one if several guidelines could not be satisfied.)

Mechanical and Electrical Equipment		Tanks and Heat Exchangers	
Capacity vs. Demand		Shell Buckling[1]	
Caveats		Anchor Bolts and Embedment	
Anchorage	X	Anchorage Connections	
Seismic Interaction	X	Flexibility of Attached Piping[1]	
Other		Other	
Essential Relays		Cable and Conduit Raceway	
Capacity vs. Demand		Inclusion Rules	
Mounting, Type, Location		Other Seismic Performance Concerns	
Other		Limited Analytical Review	
		Other	

[1] Shell Buckling and flexibility of attached piping only apply to large, flat-bottom, vertical tanks.

b. Describe all the reasons for the outlier (i.e., if all the listed outlier issues were resolved, then the signatories would consider this item of equipment to be verified for seismic adequacy):

Anchorage details for 108 cabinets in the control room require review. In some cases, the curbs have been chipped and the plug welds to the channels require evaluation. Potential loading from the overhead cable and conduit raceway should be considered also. Outliers 24 and 25 also address these cabinets. Evaluation of outlier 24 and 25 does not impact evaluation for outlier 5.

Appendix E1
OUTLIER SEISMIC VERIFICATION SHEET (OSVS)
Outlier 05A

3. PROPOSED METHOD OF OUTLIER RESOLUTION (OPTIONAL)

a. Define proposed method(s) for resolving outlier.

Further anchorage analysis is required.

b. Provide information needed to implement proposed method(s) for resolving outlier (e.g., estimate of fundamental frequency).

HCLPF calculation 52213-C-047 has been performed to address anchorage of these panels.

4. CERTIFICATION:

The information on this OSVS is, to the best of out knowledge and belief, correct and accurate, and resolution of the outlier issues listed on the previous page will satisfy the requirements for this item of equipment to be verified for seismic adequacy:

Approved by: (For Equipment Classes #0 - #22, all the Seismic Capability Engineers on the Seismic Review Team (SRT) should sign; there should be at least two on the SRT. One signatory should be a licensed professional engineer. For Relays, the Lead Relay Reviewer should sign.)

LEO BRAGANZA Print or Type Name	Signature	9.13.95 Date
RINALD L. KNOTT Print or Type Name	Signature	9-14-95 Date
Print or Type Name	Signature	Date

Appendix E1
OUTLIER SEISMIC VERIFICATION SHEET (OSVS)
Outlier 05A

E.C.	Equipment ID Number	Equipment Description
20	1,2-B21-PNL-QV9	MAIN STEAM LEAK DETECTION CABINETS
20	1,2-CAC-TY-4426-1,2	SUPP POOL TEMP MONITOR MICROPROCESSORS
20	1,2-H12-P601	ENGINEERED SAFEGUARDS VERTICAL BOARDS
20	1,2-H12-P612	FEEDWATER AND REACTOR RECIRC INST PANELS
20	1,2-H12-P614	NSSS TEMP REC AND LEAK DETECT VERT BOARDS
20	1,2-H12-P613	PROCESS INSTRUMENT CABINETS
20	1,2-H12-P603	REACTOR CONTROL PANELS
20	1,2-H12-P628	AUTO DEPRESSURIZATION SYS RELAY VERT BOARDS
20	1,2-H12-P624	BENCHBOARD AUXILLIARY RELAY CABINETS
20	1,2-H12-P626, P627	CORE SPRAY A AND B RELAY VERTICAL BOARDS
20	1,2-H12-P620	HPCI VERTICAL RELAY PANELS
20	1,2-H12-P622, P623	NSSS INBOARD, OUTBOARD VALVE RELAY BOARDS
20	1,2-XU-75, 79	POST ACCIDENT MISC INSTRUMENT CABINETS
20	1,2-H12-P608	POWER RANGE NEUTRON MONITORING PANELS
20	1,2-H12-P606	RADIATION MONITORING CABINETS
20	1,2-H12-P630	REACTOR ANNUNCIATOR CABINETS
20	1,2-H12-P617, P618	PHR A AND B RELAY VERTICAL BOARDS
20	1,2-H12-P616	ROD MANUAL CONTROL PANELS
20	1,2-H12-P615	ROD POSITION SYSTEM INFORMATION CABINETS
20	1,2-H12-P610	RPS TEST AND MONITOR PANELS
20	1,2-H12-P609, P611	RPS TRIP SYS A & B MAIN CONTROL ROOM PANELS
20	1,2-IR-RB-4	REMOTE SHUTDOWN PANEL
20	1,2-XU-02	MAIN CONTROL ROOM RTG BOARDS
20	1,2-XU-03	RX, CONT & TURB BLDG HVAC & TURB AUX CONT PNLS
20	1,2-XU-09	BOP PROCESS INSTR POWER SUPPLY CABINETS
20	1-XU-07, 24; 2-XU-29, 30	ESS LOGIC CABINET - DG1, DG2, DG3, DG4
20	1,2-XU-13, 25	TERMINAL CABS FOR SYSTEMS SW, EB, RCC & BAT
20	1,2-XU-27, 28	RX, DG & CB HVAC DIV I, DIV II TERMINAL CABINETS
20	1-XU-39; 2-XU-41	DIV-I TERM CAB FOR EB & ED SYSTEMS
20	1-XU-40; 2-XU-42	DIV-II TERM CAB FOR RTGB XU-2
20	1,2-XU-50	RIP TERMINAL CABINETS
20	1,2-XU-51	BOP RTG BOARD
20	1,2-XU-53;1,2-XU-56	TERMINATING CABINETS DIV I, DIV II - IPEEE
20	1,2-XU-58, 57	RIP TERMINAL CABINETS DIV I, DIV II - IPEEE
20	1,2-XU-63, 64	TRIP CALIBRATION CABINETS-ECCS DIV I, DIV II
20	1,2-XU-65, 66, 67, 68	RPS TRIP CALIBRATION CABS, CHANNEL A1, A2, B1, B2
20	1,2-XU-73	FLUID FLOW DET CABS FOR SRV POSITION IND
20	1,2-XU-76, 77	TSC/EOF COMPUTER ISOLATOR CABINETS

Appendix E1
OUTLIER SEISMIC VERIFICATION SHEET (OSVS)
Outlier 05B

1. OUTLIER IDENTIFICATION, DESCRIPTION, AND LOCATION

Equipment ID Number- 1-1A-UPS 2-2A-UPS	Equipment Class - 14 - Distribution Panels
Equipment Location:	
Building - Control Building	Floor Elevation - 49'
Room or Row/Column	Base Elevation
Equipment Description: Anchorage for Main UPS Distribution Panels	

2. OUTLIER ISSUE DEFINITION

a. Identify all the screening guidelines which are not met. (Check more than one if several guidelines could not be satisfied.)

Mechanical and Electrical Equipment Capacity vs. Demand Caveats Anchorage Seismic Interaction Other	X	Tanks and Heat Exchangers Shell Buckling[1] Anchor Bolts and Embedment Anchorage Connections Flexibility of Attached Piping[1] Other	
Essential Relays Capacity vs. Demand Mounting, Type, Location Other		Cable and Conduit Raceway Inclusion Rules Other Seismic Performance Concerns Limited Analytical Review Other	

[1] Shell Buckling and flexibility of attached piping only apply to large, flat-bottom, vertical tanks.

b. Describe all the reasons for the outlier (i.e., if all the listed outlier issues were resolved, then the signatories would consider this item of equipment to be verified for seismic adequacy):

Anchorage details and load path for the main UPS distribution panels requires review.

Appendix E1
OUTLIER SEISMIC VERIFICATION SHEET (OSVS)
Outlier 05B

3. PROPOSED METHOD OF OUTLIER RESOLUTION (OPTIONAL)

a. Define proposed method(s) for resolving outlier.

Further anchorage analysis is required.

b. Provide information needed to implement proposed method(s) for resolving outlier (e.g., estimate of fundamental frequency).

HCLPF calculation 52213-C-049 has been performed to address anchorage of these panels.

4. CERTIFICATION:

The information on this OSVS is, to the best of out knowledge and belief, correct and accurate, and resolution of the outlier issues listed on the previous page will satisfy the requirements for this item of equipment to be verified for seismic adequacy:

Approved by: (For Equipment Classes #0 - #22, all the Seismic Capability Engineers on the Seismic Review Team (SRT) should sign; there should be at least two on the SRT. One signatory should be a licensed professional engineer. For Relays, the Lead Relay Reviewer should sign.)

LEO BRAGAGNOLO Print or Type Name	Leo J Bragagnolo Signature	9.13.95 Date
RONALD L. KNOTT Print or Type Name	Ronald L. Knott Signature	9-14-95 Date
Print or Type Name	Signature	Date

Appendix E1
OUTLIER SEISMIC VERIFICATION SHEET (OSVS)
Outlier 06

1. OUTLIER IDENTIFICATION, DESCRIPTION, AND LOCATION

Equipment ID Number- 1-E5, 1-E6, 2-E7, 2-E8 2-E7-FB2-XFMR, 2-E8-FB1-XFMR	Equipment Class- 02 - Low Voltage Switchgear 04 - Transformers
Equipment Location:	
Building - Diesel Generator Building	Floor Elevation - 23'
Room or Row/Column	Base Elevation
Equipment Description: Transformer support for: SWITCHGEAR ASSEMBLY E5, E6, E7 and E8 TRANSFORMER SUPPLY MCC E7 and E8	

2. OUTLIER ISSUE DEFINITION

a. Identify all the screening guidelines which are not met. (Check more than one if several guidelines could not be satisfied.)

Mechanical and Electrical Equipment Capacity vs. Demand Caveats Anchorage Seismic Interaction Other	 X X X	Tanks and Heat Exchangers Shell Buckling[1] Anchor Bolts and Embedment Anchorage Connections Flexibility of Attached Piping[1] Other	
Essential Relays Capacity vs. Demand Mounting, Type, Location Other		Cable and Conduit Raceway Inclusion Rules Other Seismic Performance Concerns Limited Analytical Review Other	

[1] Shell Buckling and flexibility of attached piping only apply to large, flat-bottom, vertical tanks.

b. Describe all the reasons for the outlier (i.e., if all the listed outlier issues were resolved, then the signatories would consider this item of equipment to be verified for seismic adequacy):

Load path evaluation for transformer is required. Embedded steel is adequate but will be included in load path evaluation. Fundamental frequency for transformer is not provided in calculation 0480VDS-0002. Therefore capacity vs. demand to be evaluated also due to bounding spectra exceedences on DGB 23'. The lack of lateral support violates the bounding spectra caveats also.

Appendix E1
OUTLIER SEISMIC VERIFICATION SHEET (OSVS)
Outlier 06

3. PROPOSED METHOD OF OUTLIER RESOLUTION (OPTIONAL)

a. Define proposed method(s) for resolving outlier.

Additional evaluation of load path is required. Analysis to include embedded steel, bounding spectra caveats, and bounding spectra exceedences for the DGB 23' (i.e. frequency determination required for transformer).

b. Provide information needed to implement proposed method(s) for resolving outlier (e.g., estimate of fundamental frequency).

See hard copy as-built anchorage sketch in A-46 file. Photos are Polaroid. See calculation 0480VDS-0002 for additional information.

4. CERTIFICATION:

The information on this OSVS is, to the best of out knowledge and belief, correct and accurate, and resolution of the outlier issues listed on the previous page will satisfy the requirements for this item of equipment to be verified for seismic adequacy:

Approved by: (For Equipment Classes #0 - #22, all the Seismic Capability Engineers on the Seismic Review Team (SRT) should sign; there should be at least two on the SRT. One signatory should be a licensed professional engineer. For Relays, the Lead Relay Reviewer should sign.)

LEO BRAGANZA Print or Type Name	Signature	4-13-95 Date
RONALD L. KNOTT Print or Type Name	Signature	4-18-95 Date
Print or Type Name	Signature	Date

Appendix E1
OUTLIER SEISMIC VERIFICATION SHEET (OSVS)
Outlier 07

1. OUTLIER IDENTIFICATION, DESCRIPTION, AND LOCATION

Equipment ID Number-		Equipment Class-
1-VA-1A-D-CB	2-VA-2A-D-CB	10 - Air Handlers
1-VA-1H-D-CB	2-VA-2I-D-CB	10 - Air Handlers
1-VA-FV-1026	2-VA-FV-1027A	07 - Fluid-Operated Valves
1-VA-FV-1027B	2-VA-FV-1028	07 - Fluid-Operated Valves
Equipment Location:		
Building - Control Building		Floor Elevation - 70'
Room or Row/Column		Base Elevation
Equipment Description:	Control Building HVAC Dampers and AOVs	
AO DAMPER	AO DAMPER	
AO DAMPER - UNIT 1	AO DAMPER - UNIT 2	
DAMPER 1A-D OPERATOR	DAMPER 2I-D OPERATOR	
DAMPER 1H-D OPERATOR	DAMPER 2A-D OPERATOR	

2. OUTLIER ISSUE DEFINITION

a. Identify all the screening guidelines which are not met. (Check more than one if several guidelines could not be satisfied.)

Mechanical and Electrical Equipment		Tanks and Heat Exchangers	
Capacity vs. Demand	X	Shell Buckling[1]	
Caveats		Anchor Bolts and Embedment	
Anchorage		Anchorage Connections	
Seismic Interaction		Flexibility of Attached Piping[1]	
Other		Other	
Essential Relays		Cable and Conduit Raceway	
Capacity vs. Demand		Inclusion Rules	
Mounting, Type, Location		Other Seismic Performance Concerns	
Other		Limited Analytical Review	
		Other	

[1] Shell Buckling and flexibility of attached piping only apply to large, flat-bottom, vertical tanks.

b. Describe all the reasons for the outlier (i.e., if all the listed outlier issues were resolved, then the signatories would consider this item of equipment to be verified for seismic adequacy):

The dampers and damper operators are located more than 40' above grade. Therefore capacity vs. demand must be evaluated with respect to the bounding spectra exceedences for the Control Building elevation 70'.

Appendix E1
OUTLIER SEISMIC VERIFICATION SHEET (OSVS)
Outlier 07

3. PROPOSED METHOD OF OUTLIER RESOLUTION (OPTIONAL)

a. Define proposed method(s) for resolving outlier.

A frequency analysis may show that the fundamental frequency is outside the range of bounding spectra exceedances. Otherwise the inherent ruggedness of these items will be assessed.

b. Provide information needed to implement proposed method(s) for resolving outlier (e.g., estimate of fundamental frequency).

These are Hytork valves and are duct mounted. These items can be considered at least as well supported as when attached to an air handler.

4. CERTIFICATION:

The information on this OSVS is, to the best of out knowledge and belief, correct and accurate, and resolution of the outlier issues listed on the previous page will satisfy the requirements for this item of equipment to be verified for seismic adequacy:

Approved by: (For Equipment Classes #0 - #22, all the Seismic Capability Engineers on the Seismic Review Team (SRT) should sign; there should be at least two on the SRT. One signatory should be a licensed professional engineer. For Relays, the Lead Relay Reviewer should sign.)

LEO BRAGNOLO Print or Type Name	Leo Bragnolo Signature	9.13.95 Date
RONALD L. KNOTT Print or Type Name	Ronald L. Knott Signature	9-14-95 Date
Print or Type Name	Signature	Date

Appendix E1
OUTLIER SEISMIC VERIFICATION SHEET (OSVS)
Outlier 08

1. OUTLIER IDENTIFICATION, DESCRIPTION, AND LOCATION

Equipment ID Number- 1,2-B21-F022A,F022B,F022C,F022D 1,2-B21-F028A,F028B,F028C,F028D 1,2-G16-F003, F004, F019, F020	Equipment Class- 07 - Fluid-Operated Valves
Equipment Location:	
Building - Reactor Building	Floor Elevation - 20'
Room or Row/Column - Drywell, MSIV Pit, Reactor Building Az 90	Base Elevation
Equipment Description: Database representation of valves: MAIN STEAM LINE INBOARD AND OUTBOARD ISOLATION VALVES DW DRAIN VALVES	

2. OUTLIER ISSUE DEFINITION

a. Identify all the screening guidelines which are not met. (Check more than one if several guidelines could not be satisfied.)

Mechanical and Electrical Equipment Capacity vs. Demand Caveats Anchorage Seismic Interaction Other	X	Tanks and Heat Exchangers Shell Buckling[1] Anchor Bolts and Embedment Anchorage Connections Flexibility of Attached Piping[1] Other	
Essential Relays Capacity vs. Demand Mounting, Type, Location Other		Cable and Conduit Raceway Inclusion Rules Other Seismic Performance Concerns Limited Analytical Review Other	

[1] Shell Buckling and flexibility of attached piping only apply to large, flat-bottom, vertical tanks.

b. Describe all the reasons for the outlier (i.e., if all the listed outlier issues were resolved, then the signatories would consider this item of equipment to be verified for seismic adequacy):

MSIVs - Large fast closing valves such as the MSIVs are not well represented in the experience database. The Yoke-Cylinder Assembly Weight is 2800 LBS based on Page 11 of Calculation OMSIV-001. The GIP guidelines specify a maximum weight of 750 LBS. DW Drain Valves - Operator design is not represented in database.

Appendix E1
OUTLIER SEISMIC VERIFICATION SHEET (OSVS)
Outlier 08

3. PROPOSED METHOD OF OUTLIER RESOLUTION (OPTIONAL)

a. Define proposed method(s) for resolving outlier.

Review of existing qualification data is recommended to augment earthquake experience data

b. Provide information needed to implement proposed method(s) for resolving outlier (e.g., estimate of fundamental frequency).

HCLPF Cal. No. 52213-C-048 was performed. Calculation OMSIV-001 demonstrates that the yoke assembly is adequate to resist seismic loads postulated by the piping analysis (0.65g vertical and 2.18g combined horizontal).

4. CERTIFICATION:

The information on this OSVS is, to the best of out knowledge and belief, correct and accurate, and resolution of the outlier issues listed on the previous page will satisfy the requirements for this item of equipment to be verified for seismic adequacy:

Approved by: (For Equipment Classes #0 - #22, all the Seismic Capability Engineers on the Seismic Review Team (SRT) should sign; there should be at least two on the SRT. One signatory should be a licensed professional engineer. For Relays, the Lead Relay Reviewer should sign.)

LEO BRAGAGNOLO Print or Type Name	Leo G. Bragagnolo Signature	4-13-95 Date
RONALD L. KNOTT Print or Type Name	Ronald L. Knott Signature	9-14-95 Date
Print or Type Name	Signature	Date

Appendix E1
OUTLIER SEISMIC VERIFICATION SHEET (OSVS)
Outlier 09

1. OUTLIER IDENTIFICATION, DESCRIPTION, AND LOCATION

Equipment ID Number- 1,2-SW-V136, V137, V138, V139 1-E21-F004A 2-21-F004A,B 1-E21-F005A 2-21-F005A,B	Equipment Class- 07 - Fluid-Operated Valves 08A - Motor Operated Valves 08A - Motor Operated Valves
Equipment Location:	
Building -	Floor Elevation
Room or Row/Column	Base Elevation
Equipment Description: Valves with Capacity versus Demand Concerns	

2. OUTLIER ISSUE DEFINITION

a. Identify all the screening guidelines which are not met. (Check more than one if several guidelines could not be satisfied.)

Mechanical and Electrical Equipment Capacity vs. Demand Caveats Anchorage Seismic Interaction Other	X	Tanks and Heat Exchangers Shell Buckling[1] Anchor Bolts and Embedment Anchorage Connections Flexibility of Attached Piping[1] Other	
Essential Relays Capacity vs. Demand Mounting, Type, Location Other		Cable and Conduit Raceway Inclusion Rules Other Seismic Performance Concerns Limited Analytical Review Other	

[1] Shell Buckling and flexibility of attached piping only apply to large, flat-bottom, vertical tanks.

b. Describe all the reasons for the outlier (i.e., if all the listed outlier issues were resolved, then the signatories would consider this item of equipment to be verified for seismic adequacy):

These valves are mounted more than 40' above grade. Capacity vs. demand may be violated if frequency is not outside the range of exceedences. Also, the treaded connections on the FOVs require review.

Appendix E1
OUTLIER SEISMIC VERIFICATION SHEET (OSVS)
Outlier 09

3. PROPOSED METHOD OF OUTLIER RESOLUTION (OPTIONAL)

a. Define proposed method(s) for resolving outlier.

A frequency analysis may demonstrate the bounding spectra to be enveloping for frequencies of interest. Otherwise, the inherent ruggedness of these items will be assessed. Stresses on the threaded connections must also be evaluated for the FOVs.

b. Provide information needed to implement proposed method(s) for resolving outlier (e.g., estimate of fundamental frequency).

4. CERTIFICATION:

The information on this OSVS is, to the best of out knowledge and belief, correct and accurate, and resolution of the outlier issues listed on the previous page will satisfy the requirements for this item of equipment to be verified for seismic adequacy:

Approved by: (For Equipment Classes #0 - #22, all the Seismic Capability Engineers on the Seismic Review Team (SRT) should sign; there should be at least two on the SRT. One signatory should be a licensed professional engineer. For Relays, the Lead Relay Reviewer should sign.)

LEO BRAGAGNOLO Print or Type Name	Leo Bragagnolo Signature	4.13.95 Date
RONALD L. KNOTT Print or Type Name	Ronald L. Knott Signature	9-14-95 Date
Print or Type Name	Signature	Date

Appendix E1
OUTLIER SEISMIC VERIFICATION SHEET (OSVS)
Outlier 10

1. OUTLIER IDENTIFICATION, DESCRIPTION, AND LOCATION

Equipment ID Number- (See attached list)	Equipment Class - 08A - Motor-Operated Valves
Equipment Location:	
Building - RB, DGB, SWB	Floor Elevation - Various
Room or Row/Column	Base Elevation
Equipment Description: Motor Operated Valve Cast Iron Yokes	

2. OUTLIER ISSUE DEFINITION

a. Identify all the screening guidelines which are not met. (Check more than one if several guidelines could not be satisfied.)

Mechanical and Electrical Equipment Capacity vs. Demand Caveats Anchorage Seismic Interaction Other	 X X	Tanks and Heat Exchangers Shell Buckling[1] Anchor Bolts and Embedment Anchorage Connections Flexibility of Attached Piping[1] Other	
Essential Relays Capacity vs. Demand Mounting, Type, Location Other		Cable and Conduit Raceway Inclusion Rules Other Seismic Performance Concerns Limited Analytical Review Other	

[1] Shell Buckling and flexibility of attached piping only apply to large, flat-bottom, vertical tanks.

b. Describe all the reasons for the outlier (i.e., if all the listed outlier issues were resolved, then the signatories would consider this item of equipment to be verified for seismic adequacy):

There are six different types of valve operators listed. All have concerns with potentially brittle material. Further analysis is required for confirmation of seismic adequacy with regard to yoke capacity. Also, the SW-V101, V102, V103, V105 and V106 valves are mounted more than 40' above grade and require a capacity versus demand evaluation.

Appendix E1
OUTLIER SEISMIC VERIFICATION SHEET (OSVS)
Outlier 10

3. PROPOSED METHOD OF OUTLIER RESOLUTION (OPTIONAL)

a. Define proposed method(s) for resolving outlier.

Analysis of yoke capacity considering the as-built information is required. Evaluation of the frequency for the valves mentioned is required to show that they are outside the range of exceedances.

b. Provide information needed to implement proposed method(s) for resolving outlier (e.g., estimate of fundamental frequency).

Several of the yokes were as-built to facilitate this analysis. See 2-E11-F002A and 1-SW-V20MO as examples.

4. CERTIFICATION:

The information on this OSVS is, to the best of out knowledge and belief, correct and accurate, and resolution of the outlier issues listed on the previous page will satisfy the requirements for this item of equipment to be verified for seismic adequacy:

Approved by: (For Equipment Classes #0 - #22, all the Seismic Capability Engineers on the Seismic Review Team (SRT) should sign; there should be at least two on the SRT. One signatory should be a licensed professional engineer. For Relays, the Lead Relay Reviewer should sign.)

LEO BRAGAGNOLO Print or Type Name	Signature	9 13 95 Date
RONALD L. KNOTT Print or Type Name	Signature	9-14-95 Date
Print or Type Name	Signature	Date

Appendix E1
OUTLIER SEISMIC VERIFICATION SHEET (OSVS)
Outlier 10

E.C.	Equipment ID Number	Equipment Description
08A	1, 2-E11-F002AMO	RHR HX OUT ISO-1A, 2A
08A	1, 2-E11-F002BMO	RHR HX OUT ISO-1B, 2B
08A	1, 2-E41-F012	HPCI MIN FLOW BYPASS VALVES
08A	1-SW-V14, V16, V18MO	CSW PUMP 1A, 1B and 1C NSW DISCHARGE
08A	2-SW-V14, V16, V18MO	CSW PUMP 2A, 2B and 2C NSW DISCHARGE
08A	1-SW-V19MO, V20MO	NSW 1A and 1B DISCHARGE VALVE
08A	2-SW-V19, V20	NSW 2A and 2B DISCHARGE ISOLATION
08A	1, 2-SW-V101	RHRSW PUMP SUCTION ISO
08A	1, 2-SW-V102MO	RHRSW PUMP SUCTION XTIE
08A	1, 2-SW-V103	NSW TO RBCCW
08A	1, 2-SW-V105	RHRSW PUMP SUCTION ISO
08A	1, 2-SW-V106MO	RBCCW XTIE
08A	1, 2-SW-V210	DG1 NSW UNIT 1 and 2 SUPPLY
08A	1, 2-SW-V211	DG2 NSW UNIT 1 and 2 SUPPLY
08A	1, 2-SW-V212	DG3 NSW UNIT 1 and 2 SUPPLY
08A	1, 2-SW-V213	DG4 NSW UNIT 1 and 2 SUPPLY
08A	1, 2-SW-V255MO	JKT WTR CLR SW SUPP VLV-DG1 & 2, 3 & 4

Appendix E1
OUTLIER SEISMIC VERIFICATION SHEET (OSVS)
Outlier 11

1. OUTLIER IDENTIFICATION, DESCRIPTION, AND LOCATION

Equipment ID Number- (See attached list)	Equipment Class - 08A - Motor-Operated Valves
Equipment Location:	
Building -Reactor Building (1,2-E11-F009 -Shutdwn Clg Inboard Suction Throttle Vlvs in Drywell)	Floor Elevation - Various
Room or Row/Column	Base Elevation
Equipment Description: MOV height and weight evaluation	

2. OUTLIER ISSUE DEFINITION

a. Identify all the screening guidelines which are not met. (Check more than one if several guidelines could not be satisfied.)

Mechanical and Electrical Equipment Capacity vs. Demand Caveats Anchorage Seismic Interaction Other	X	Tanks and Heat Exchangers Shell Buckling[1] Anchor Bolts and Embedment Anchorage Connections Flexibility of Attached Piping[1] Other	
Essential Relays Capacity vs. Demand Mounting, Type, Location Other		Cable and Conduit Raceway Inclusion Rules Other Seismic Performance Concerns Limited Analytical Review Other	

[1] Shell Buckling and flexibility of attached piping only apply to large, flat-bottom, vertical tanks.

b. Describe all the reasons for the outlier (i.e., if all the listed outlier issues were resolved, then the signatories would consider this item of equipment to be verified for seismic adequacy):

GIP restrictions for centerline of pipe to operator require further evaluation.

Appendix E1
OUTLIER SEISMIC VERIFICATION SHEET (OSVS)
Outlier 11

3. PROPOSED METHOD OF OUTLIER RESOLUTION (OPTIONAL)

a. Define proposed method(s) for resolving outlier.

Static analysis of operator height and weight.

b. Provide information needed to implement proposed method(s) for resolving outlier (e.g., estimate of fundamental frequency).

As-built properties for the valve yoke / operator have been included with walkdown information. Several of these valves were evaluated on the walkdown as acceptable and are included in this list because of similarity with others. Reference to walkdown evaluations will resolve some.

4. CERTIFICATION:

The information on this OSVS is, to the best of out knowledge and belief, correct and accurate, and resolution of the outlier issues listed on the previous page will satisfy the requirements for this item of equipment to be verified for seismic adequacy:

Approved by: (For Equipment Classes #0 - #22, all the Seismic Capability Engineers on the Seismic Review Team (SRT) should sign; there should be at least two on the SRT. One signatory should be a licensed professional engineer. For Relays, the Lead Relay Reviewer should sign.)

LEO BERAGNOLO Print or Type Name	[signature] Signature	9.13.95 Date
RONALD L. KNOTT Print or Type Name	Ronald L. Knott Signature	9-14-95 Date
Print or Type Name	Signature	Date

Appendix E1
OUTLIER SEISMIC VERIFICATION SHEET (OSVS)
Outlier 11

E.C.	Equipment ID Number	Equipment Description
08A	1-E11-F006B, F006D	SHUTDOWN COOLING SUCTION VALVE
08A	2-E11-F006A, B, C, D	SHUTDOWN COOLING SUCTION VALVE
08A	1,2-E11-F009	SHUTDOWN COOLING INBOARD SUCT THROTTLE VLV
08A	1,2-E11-F008	SHUTDOWN COOLING OUTBOARD SUCT ISOL VALVE
08A	1,2-E11-F015A	LPCI INBOARD INJECTION VALVE
08A	2-E11-F015B	LPCI INBOARD INJECTION VALVE
08A	1,2-E11-F017A	LPCI OUTBOARD INJECTION VALVE
08A	2-E11-F017B	LPCI OUTBOARD INJECTION VALVE
08A	1,2-E41-F006	HPCI INJECTION VALVE
08A	1,2-E41-F059	HPCI LOW COOLING WATER VALVE

Appendix E1
OUTLIER SEISMIC VERIFICATION SHEET (OSVS)
Outlier 12

1. OUTLIER IDENTIFICATION, DESCRIPTION, AND LOCATION

Equipment ID Number- 1-CAC-SV-4345 2-CAC-SV-4345	Equipment Class - 08B - Solenoid-Operated Valves
Equipment Location:	
Building - Reactor Building	Floor Elevation - -017', -008'
Room or Row/Column	Base Elevation
Equipment Description: SOVs with pipe stress concerns SP SOLENOID VALVE	

2. OUTLIER ISSUE DEFINITION

a. Identify all the screening guidelines which are not met. (Check more than one if several guidelines could not be satisfied.)

Mechanical and Electrical Equipment Capacity vs. Demand Caveats Anchorage Seismic Interaction Other	X	Tanks and Heat Exchangers Shell Buckling[1] Anchor Bolts and Embedment Anchorage Connections Flexibility of Attached Piping[1] Other	
Essential Relays Capacity vs. Demand Mounting, Type, Location Other		Cable and Conduit Raceway Inclusion Rules Other Seismic Performance Concerns Limited Analytical Review Other	

[1] Shell Buckling and flexibility of attached piping only apply to large, flat-bottom, vertical tanks.

b. Describe all the reasons for the outlier (i.e., if all the listed outlier issues were resolved, then the signatories would consider this item of equipment to be verified for seismic adequacy):

Evaluation for valve functionality based on pipe size less than database pipe size (1") is required.

Appendix E1
OUTLIER SEISMIC VERIFICATION SHEET (OSVS)
Outlier 12

3. PROPOSED METHOD OF OUTLIER RESOLUTION (OPTIONAL)

a. Define proposed method(s) for resolving outlier.

Evaluation of pipe stress due to eccentricity of operator will resolve this outlier.

b. Provide information needed to implement proposed method(s) for resolving outlier (e.g., estimate of fundamental frequency).

4. CERTIFICATION:

The information on this OSVS is, to the best of out knowledge and belief, correct and accurate, and resolution of the outlier issues listed on the previous page will satisfy the requirements for this item of equipment to be verified for seismic adequacy:

Approved by: (For Equipment Classes #0 - #22, all the Seismic Capability Engineers on the Seismic Review Team (SRT) should sign; there should be at least two on the SRT. One signatory should be a licensed professional engineer. For Relays, the Lead Relay Reviewer should sign.)

LEO BRAGAGNOLO Print or Type Name	Signature	9 13 95 Date
RONALD L. KNOTT Print or Type Name	Signature	9-18-95 Date
Print or Type Name	Signature	Date

Appendix E1
OUTLIER SEISMIC VERIFICATION SHEET (OSVS)
Outlier 13

1. OUTLIER IDENTIFICATION, DESCRIPTION, AND LOCATION

Equipment ID Number- (See attached list)	Equipment Class - 18 - Instruments on Racks 08B - Solenoid-Operated Valves 10 - Air Handlers
Equipment Location:	
Building - Control Building	Floor Elevation - 70'
Room or Row/Column	Base Elevation
Equipment Description: Mechanical Equipment Room Components	

2. OUTLIER ISSUE DEFINITION

a. Identify all the screening guidelines which are not met. (Check more than one if several guidelines could not be satisfied.)

Mechanical and Electrical Equipment Capacity vs. Demand Caveats Anchorage Seismic Interaction Other	X	Tanks and Heat Exchangers Shell Buckling[1] Anchor Bolts and Embedment Anchorage Connections Flexibility of Attached Piping[1] Other	
Essential Relays Capacity vs. Demand Mounting, Type, Location Other		Cable and Conduit Raceway Inclusion Rules Other Seismic Performance Concerns Limited Analytical Review Other	

[1] Shell Buckling and flexibility of attached piping only apply to large, flat-bottom, vertical tanks.

b. Describe all the reasons for the outlier (i.e., if all the listed outlier issues were resolved, then the signatories would consider this item of equipment to be verified for seismic adequacy):

These items are located in the Mechanical Equipment Room in the Control Building and are more that 40' above grade. Bounding spectra may be exceeded in certain frequency ranges. The isolation dampers have a unique mechanical linkage which requires a capacity versus demand evaluation.

Appendix E1
OUTLIER SEISMIC VERIFICATION SHEET (OSVS)
Outlier 13

3. PROPOSED METHOD OF OUTLIER RESOLUTION (OPTIONAL)

a. Define proposed method(s) for resolving outlier.

Frequency evaluations are needed to demonstrate that they do not fall within the Bounding Spectrum exceedance range. Otherwise, the inherent ruggedness of these components will be assessed.

b. Provide information needed to implement proposed method(s) for resolving outlier (e.g., estimate of fundamental frequency).

4. CERTIFICATION:

The information on this OSVS is, to the best of out knowledge and belief, correct and accurate, and resolution of the outlier issues listed on the previous page will satisfy the requirements for this item of equipment to be verified for seismic adequacy:

Approved by: (For Equipment Classes #0 - #22, all the Seismic Capability Engineers on the Seismic Review Team (SRT) should sign; there should be at least two on the SRT. One signatory should be a licensed professional engineer. For Relays, the Lead Relay Reviewer should sign.)

LEO BRADY Print or Type Name	Signature	9.13.95 Date
RONALD L. KNOTT Print or Type Name	Signature	9-14-95 Date
Print or Type Name	Signature	Date

Appendix E1
OUTLIER SEISMIC VERIFICATION SHEET (OSVS)
Outlier 13

E.C.	Equipment ID Number	Equipment Description
08B	1-VA-SV-1026	PNL 2-VA-M1-CB - SUPPLY FAN SOL VALVES
08B	1-VA-SV-1026A	PNL 2-VA-M1-CB - SOV FOR KS 1026
08B	2-VA-SV-1027, 1028	PNL 2-VA-M1-CB - SUPPLY FAN SOL VALVES
08B	2-VA-SV-1027A, 1028A	PNL 2-VA-M1-CB - SOV FOR KS 1027, 1028
08B	2-VA-SV-916-1	SOLENOID FOR FV916B
10	2-VA-2A-UH-CB	ELECTRIC HTR
10	1-VA-ISOL-DMP-CB	ISOLATION DAMPER
10	2-VA-ISOL-DMP-CB	ISOLATION DAMPER
18	2-VA-M1-CB	CONTROL ROOM HVAC PNEUATIC CONTROL PANEL
18	1-VA-PS-1026, 1026A	PNL 2-VA-M1-CB - COOLING UNIT PRESSURE SWITCH
18	2-VA-PS-1027, 1027A	PNL 2-VA-M1-CB - COOLING UNIT PRESSURE SWITCH
18	2-VA-PS-1028, 1028A	PNL 2-VA-M1-CB - COOLING UNIT PRESSURE SWITCH
18	1-VA-TC-1026	PNL 2-VA-M1-CB - TEMP CONTROLLER
18	2-VA-TC-1028	PNL 2-VA-M1-CB - TEMP CONTROLLER

Appendix E1
OUTLIER SEISMIC VERIFICATION SHEET (OSVS)
Outlier 14

1. OUTLIER IDENTIFICATION, DESCRIPTION, AND LOCATION

Equipment ID Number -	Equipment Class -
1-VA-1D-SF-CB 2-VA-2D-SF-CB 2-VA-2E-SF-CB 2-VA-A-SF-DG 2-VA-B-SF-DG 2-VA-C-SF-DG 2-VA-D-SF-DG	09 - Fans
Equipment Location:	
Building - Control and Diesel Buildings	Floor Elevation - 70' and 50'
Room or Row/Column	Base Elevation
Equipment Description: Anchorage for AC SUPPLY Fans and DG SUPPLY Fans	

2. OUTLIER ISSUE DEFINITION

a. Identify all the screening guidelines which are not met. (Check more than one if several guidelines could not be satisfied.)

Mechanical and Electrical Equipment		Tanks and Heat Exchangers	
Capacity vs. Demand	X	Shell Buckling[1]	
Caveats	X	Anchor Bolts and Embedment	
Anchorage	X	Anchorage Connections	
Seismic Interaction	X	Flexibility of Attached Piping[1]	
Other		Other	
Essential Relays		Cable and Conduit Raceway	
Capacity vs. Demand		Inclusion Rules	
Mounting, Type, Location		Other Seismic Performance Concerns	
Other		Limited Analytical Review	
		Other	

[1] Shell Buckling and flexibility of attached piping only apply to large, flat-bottom, vertical tanks.

b. Describe all the reasons for the outlier (i.e., if all the listed outlier issues were resolved, then the signatories would consider this item of equipment to be verified for seismic adequacy):

Fans are mounted more that 40' above grade and could have natural frequencies in the range of exceedances for the respective building. The control building fans also require evaluation for corrosion at the anchors. The DG fans require further anchorage evaluation including anchorage tightness check.

Appendix E1
OUTLIER SEISMIC VERIFICATION SHEET (OSVS)
Outlier 14

3. PROPOSED METHOD OF OUTLIER RESOLUTION (OPTIONAL)

a. Define proposed method(s) for resolving outlier.

Evaluation for frequency to assess capacity vs. demand and anchorage evaluation should be performed.

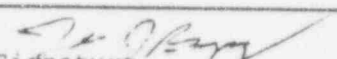
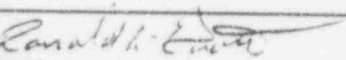
b. Provide information needed to implement proposed method(s) for resolving outlier (e.g., estimate of fundamental frequency).

Anchorage has been as-built in the SEWS forms. Additional anchorage information is also available for DG fans in MOD 88-018, specifically sketch SK-S-88-018-77.

4. CERTIFICATION:

The information on this OSVS is, to the best of out knowledge and belief, correct and accurate, and resolution of the outlier issues listed on the previous page will satisfy the requirements for this item of equipment to be verified for seismic adequacy:

Approved by: (For Equipment Classes #0 - #22, all the Seismic Capability Engineers on the Seismic Review Team (SRT) should sign; there should be at least two on the SRT. One signatory should be a licensed professional engineer. For Relays, the Lead Relay Reviewer should sign.)

LEO FRAGNOLI Print or Type Name	 Signature	9.13.95 Date
RONALD L. KNOTT Print or Type Name	 Signature	9-10-95 Date
Print or Type Name	Signature	Date

Appendix E1
OUTLIER SEISMIC VERIFICATION SHEET (OSVS)
Outlier 16

1. OUTLIER IDENTIFICATION, DESCRIPTION, AND LOCATION

Equipment ID Number- 2-VA-2A-AC-CB 2-VA-2B-AC-CB	Equipment Class - 12 - Air Compressors
Equipment Location:	
Building - Control Building	Floor Elevation - 70'
Room or Row/Column	Base Elevation
Equipment Description: Isolators for Air Compressors for HVAC Instrument Air	

2. OUTLIER ISSUE DEFINITION

a. Identify all the screening guidelines which are not met. (Check more than one if several guidelines could not be satisfied.)

Mechanical and Electrical Equipment		Tanks and Heat Exchangers	
Capacity vs. Demand	X	Shell Buckling[1]	
Caveats	X	Anchor Bolts and Embedment	
Anchorage	X	Anchorage Connections	
Seismic Interaction	X	Flexibility of Attached Piping[1]	
Other		Other	
Essential Relays		Cable and Conduit Raceway	
Capacity vs. Demand		Inclusion Rules	
Mounting, Type, Location		Other Seismic Performance Concerns	
Other		Limited Analytical Review	
		Other	

[1] Shell Buckling and flexibility of attached piping only apply to large, flat-bottom, vertical tanks.

b. Describe all the reasons for the outlier (i.e., if all the listed outlier issues were resolved, then the signatories would consider this item of equipment to be verified for seismic adequacy):

Bolted connection at vibration isolator requires evaluation for impact to capacity vs. demand, caveats and anchorage capacity

Appendix E1
OUTLIER SEISMIC VERIFICATION SHEET (OSVS)
Outlier 16

3. PROPOSED METHOD OF OUTLIER RESOLUTION (OPTIONAL)

a. Define proposed method(s) for resolving outlier.

Evaluation of ⅛" bolt and ¼ inch thick pad will resolve outlier. Also, a frequency evaluation is required to resolve the capacity versus demand concerns.

b. Provide information needed to implement proposed method(s) for resolving outlier (e.g., estimate of fundamental frequency).

4. CERTIFICATION:

The information on this OSVS is, to the best of out knowledge and belief, correct and accurate, and resolution of the outlier issues listed on the previous page will satisfy the requirements for this item of equipment to be verified for seismic adequacy:

Approved by: (For Equipment Classes #0 - #22, all the Seismic Capability Engineers on the Seismic Review Team (SRT) should sign; there should be at least two on the SRT. One signatory should be a licensed professional engineer. For Relays, the Lead Relay Reviewer should sign.)

LEO DRAGAGNOLO Print or Type Name	Signature	9.13.95 Date
RONALD L. KNOTT Print or Type Name	Signature	9-14-95 Date
Print or Type Name	Signature	Date

Appendix E1
OUTLIER SEISMIC VERIFICATION SHEET (OSVS)
Outlier 17

1. OUTLIER IDENTIFICATION, DESCRIPTION, AND LOCATION

Equipment ID Number- 1-31A 2-2B-480V	Equipment Class - 14 - Distribution Panels
Equipment Location:	
Building - Control and Reactor Building	Floor Elevation - 23' and 20'
Room or Row/Column	Base Elevation
Equipment Description: Distribution Panel anchorage CB PANEL - 120VAC EMERG PWR 480-120/208VAC PANEL	

2. OUTLIER ISSUE DEFINITION

a. Identify all the screening guidelines which are not met. (Check more than one if several guidelines could not be satisfied.)

Mechanical and Electrical Equipment		Tanks and Heat Exchangers	
Capacity vs. Demand		Shell Buckling[1]	
Caveats		Anchor Bolts and Embedment	
Anchorage	X	Anchorage Connections	
Seismic Interaction	X	Flexibility of Attached Piping[1]	
Other		Other	
Essential Relays		Cable and Conduit Raceway	
Capacity vs. Demand		Inclusion Rules	
Mounting, Type, Location		Other Seismic Performance Concerns	
Other		Limited Analytical Review	
		Other	

[1] Shell Buckling and flexibility of attached piping only apply to large, flat-bottom, vertical tanks.

b. Describe all the reasons for the outlier (i.e., if all the listed outlier issues were resolved, then the signatories would consider this item of equipment to be verified for seismic adequacy):

Saw cut unistrut and damaged concrete require further evaluation for 1-31A. Shell anchor projection beyond face of concrete requires further evaluation for 2-2B-480V.

Appendix E1
OUTLIER SEISMIC VERIFICATION SHEET (OSVS)
Outlier 17

3. PROPOSED METHOD OF OUTLIER RESOLUTION (OPTIONAL)

a. Define proposed method(s) for resolving outlier.

Further anchorage evaluation is required to resolve outlier.

b. Provide information needed to implement proposed method(s) for resolving outlier (e.g., estimate of fundamental frequency).

Sketches are provided in SEWS form. Additionally, both passed a tug test.

4. CERTIFICATION:

The information on this OSVS is, to the best of out knowledge and belief, correct and accurate, and resolution of the outlier issues listed on the previous page will satisfy the requirements for this item of equipment to be verified for seismic adequacy:

Approved by: (For Equipment Classes #0 - #22, all the Seismic Capability Engineers on the Seismic Review Team (SRT) should sign; there should be at least two on the SRT. One signatory should be a licensed professional engineer. For Relays, the Lead Relay Reviewer should sign.)

LEO BRAGAGNOLO Print or Type Name	Leo J. Bragagnolo Signature	9-13-95 Date
RONALD L. KNOTT Print or Type Name	Ronald L. Knott Signature	9-14-95 Date
Print or Type Name	Signature	Date

Appendix E1
OUTLIER SEISMIC VERIFICATION SHEET (OSVS)
Outlier 18

1. OUTLIER IDENTIFICATION, DESCRIPTION, AND LOCATION

Equipment ID Number- 2-DG1-GEN 2-DG2-GEN 2-DG3-GEN 2-DG4-GEN	Equipment Class - 17 - Engine-Generators
Equipment Location:	
Building - Diesel Generator Building	Floor Elevation - 23'
Room or Row/Column	Base Elevation
Equipment Description: Diesel Generator Saddle Tank Evaluation	

2. OUTLIER ISSUE DEFINITION

a. Identify all the screening guidelines which are not met. (Check more than one if several guidelines could not be satisfied.)

Mechanical and Electrical Equipment Capacity vs. Demand Caveats Anchorage Seismic Interaction Other	X	Tanks and Heat Exchangers Shell Buckling[1] Anchor Bolts and Embedment Anchorage Connections Flexibility of Attached Piping[1] Other	
Essential Relays Capacity vs. Demand Mounting, Type, Location Other		Cable and Conduit Raceway Inclusion Rules Other Seismic Performance Concerns Limited Analytical Review Other	

[1] Shell Buckling and flexibility of attached piping only apply to large, flat-bottom, vertical tanks.

b. Describe all the reasons for the outlier (i.e., if all the listed outlier issues were resolved, then the signatories would consider this item of equipment to be verified for seismic adequacy):

DG saddle tanks have atypical installations using traps. Their adequacy requires review.

Appendix E1
OUTLIER SEISMIC VERIFICATION SHEET (OSVS)
Outlier 18

3. PROPOSED METHOD OF OUTLIER RESOLUTION (OPTIONAL)

a. Define proposed method(s) for resolving outlier.

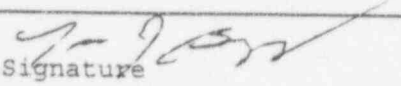
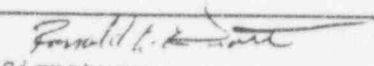
Evaluate the straps for the saddle tanks.

b. Provide information needed to implement proposed method(s) for resolving outlier (e.g., estimate of fundamental frequency).

4. CERTIFICATION:

The information on this OSVS is, to the best of out knowledge and belief, correct and accurate, and resolution of the outlier issues listed on the previous page will satisfy the requirements for this item of equipment to be verified for seismic adequacy:

Approved by: (For Equipment Classes #0 - #22, all the Seismic Capability Engineers on the Seismic Review Team (SRT) should sign; there should be at least two on the SRT. One signatory should be a licensed professional engineer. For Relays, the Lead Relay Reviewer should sign.)

LEO BRAGAGNOLO Print or Type Name	 Signature	9.13.95 Date
RONALD L. KNOTT Print or Type Name	 Signature	9-14-95 Date
Print or Type Name	Signature	Date

Appendix E1
OUTLIER SEISMIC VERIFICATION SHEET (OSVS)
Outlier 19

1. OUTLIER IDENTIFICATION, DESCRIPTION, AND LOCATION

Equipment ID Number- (See attached list)	Equipment Class - 18 - Instruments on Racks 19 - Temperature Sensors 20 - I&C Panels & Cabinets
Equipment Location:	
Building - Control Building (All VA items) Diesel Generator Building (All SW items)	Floor Elevation - 70' 23' (Diesel items) 50' (RHRSW items)
Room or Row/Column	Base Elevation
Equipment Description: Instrumentation Capacity vs. Demand	

2. OUTLIER ISSUE DEFINITION

a. Identify all the screening guidelines which are not met. (Check more than one if several guidelines could not be satisfied.)

Mechanical and Electrical Equipment		Tanks and Heat Exchangers	
Capacity vs. Demand	X	Shell Buckling[1]	
Caveats	X	Anchor Bolts and Embedment	
Anchorage	X	Anchorage Connections	
Seismic Interaction		Flexibility of Attached Piping[1]	
Other		Other	
Essential Relays		Cable and Conduit Raceway	
Capacity vs. Demand	X	Inclusion Rules	
Mounting, Type, Location		Other Seismic Performance Concerns	
Other		Limited Analytical Review	
		Other	

[1] Shell Buckling and flexibility of attached piping only apply to large, flat-bottom, vertical tanks.

b. Describe all the reasons for the outlier (i.e., if all the listed outlier issues were resolved, then the signatories would consider this item of equipment to be verified for seismic adequacy):

Components are mounted more than 40' above grade and 1.5 times bounding spectra is exceeded for the respective elevation for certain frequency ranges. Additional evaluation for frequency is required. Eight of these items are relays. An evaluation for the impact of a missing anchor for relay 1-SW-TY-4790 is required.

Appendix E1
OUTLIER SEISMIC VERIFICATION SHEET (OSVS)
Outlier 19

3. PROPOSED METHOD OF OUTLIER RESOLUTION (OPTIONAL)

a. Define proposed method(s) for resolving outlier.

Outlier resolution to address the frequency of the support with respect to the bounding spectra exceedances. An evaluation of the anchorage for 1-SW-TY-4790 is also required.

b. Provide information needed to implement proposed method(s) for resolving outlier (e.g., estimate of fundamental frequency).

Many of these were judged to be well supported by the SRT. An anchorage evaluation of 2-SW-PS-1995 through 1999 is included in calculation 52213-C-031.

4. CERTIFICATION:

The information on this OSVS is, to the best of out knowledge and belief, correct and accurate, and resolution of the outlier issues listed on the previous page will satisfy the requirements for this item of equipment to be verified for seismic adequacy:

Approved by: (For Equipment Classes #0 - #22, all the Seismic Capability Engineers on the Seismic Review Team (SRT) should sign; there should be at least two on the SRT. One signatory should be a licensed professional engineer. For Relays, the Lead Relay Reviewer should sign.)

LEO BRAGAGNOLO Print or Type Name	Signature	9.13.95 Date
RONALD L. KNOTT Print or Type Name	Signature	9-14-95 Date
Print or Type Name	Signature	Date

Appendix E1
OUTLIER SEISMIC VERIFICATION SHEET (OSVS)
Outlier 19

E.C.	Equipment ID Number	Equipment Description
18	2-SW-PS-1995 to 1999	NSW PRESS SWITCH - DG1, DG2, DG3 & DG4
18	1-VA-FS-1026	SUPPLY FAN DSCH FLOW SWITCH
18	2-VA-FS-1027, 1028	SUPPLY FAN DSCH FLOW SWITCH
18	1-VA-KS-1026	HEATING COIL TIMER
18	2-VA-KS-1027, 1028	HEATING COIL TIMER
18	2-VA-PS-1632, 1633	'A' and 'B' AIR COMP PRESS SWITCHES
18	2-VA-PSL-1646	INSTRUMENT AIR LOW PRESS
18	1-VA-ZS-1026	SUPPLY FAN LIMIT SWITCH
18	2-VA-ZS-1027-A, B	SUPPLY FAN LIMIT SWITCH
18	2-VA-ZS-1028	SUPPLY FAN LIMIT SWITCH
19	1-VA-TE-1299-1	TEMPERATURE ELEMENT
19	2-VA-TE-1299-2	TEMPERATURE ELEMENT
19	1-VA-TT-1026, 1299-1	TEMPERATURE TRANSMITTER
19	2-VA-TT-1028, 1299-2	TEMPERATURE TRANSMITTER
20	1,2-SW-TY-4887 to 90	RHRSW PUMP DISCHARGE TEMP

Appendix E1
OUTLIER SEISMIC VERIFICATION SHEET (OSVS)
Outlier 21

1. OUTLIER IDENTIFICATION, DESCRIPTION, AND LOCATION

Equipment ID Number- 2-H21-P019	Equipment Class - 18 - Instruments on Racks
Equipment Location:	
Building - Reactor Building	Floor Elevation - -017'
Room or Row/Column	Base Elevation
Equipment Description: CORE SPRAY SYSTEM B INSTR RACK	

2. OUTLIER ISSUE DEFINITION

a. Identify all the screening guidelines which are not met. (Check more than one if several guidelines could not be satisfied.)

Mechanical and Electrical Equipment Capacity vs. Demand Caveats Anchorage Seismic Interaction Other	 X X	Tanks and Heat Exchangers Shell Buckling[1] Anchor Bolts and Embedment Anchorage Connections Flexibility of Attached Piping[1] Other	
Essential Relays Capacity vs. Demand Mounting, Type, Location Other		Cable and Conduit Raceway Inclusion Rules Other Seismic Performance Concerns Limited Analytical Review Other	

[1] Shell Buckling and flexibility of attached piping only apply to large, flat-bottom, vertical tanks.

b. Describe all the reasons for the outlier (i.e., if all the listed outlier issues were resolved, then the signatories would consider this item of equipment to be verified for seismic adequacy):

Overhead unistrut frame for incoming conduit is flexible while the rack is rigidly braced. Due to the lack of flex conduit, differential motion between the conduit support and the rack is a concern.

Appendix E1
OUTLIER SEISMIC VERIFICATION SHEET (OSVS)
Outlier 21

3. PROPOSED METHOD OF OUTLIER RESOLUTION (OPTIONAL)

a. Define proposed method(s) for resolving outlier.

Evaluation for differential movement is required.

b. Provide information needed to implement proposed method(s) for resolving outlier (e.g., estimate of fundamental frequency).

Modification for rack and conduit support upgrade has been performed. Refer to the evaluation for this modification. Additionally, note that this rack is included in the walkdown as optional equipment.

4. CERTIFICATION:

The information on this OSVS is, to the best of out knowledge and belief, correct and accurate, and resolution of the outlier issues listed on the previous page will satisfy the requirements for this item of equipment to be verified for seismic adequacy:

Approved by: (For Equipment Classes #0 - #22, all the Seismic Capability Engineers on the Seismic Review Team (SRT) should sign; there should be at least two on the SRT. One signatory should be a licensed professional engineer. For Relays, the Lead Relay Reviewer should sign.)

LEO BRAGANZLO Print or Type Name	for Signature	9.13.95 Date
RONALD L. KNOTT Print or Type Name	Ronald L. Knott Signature	9-14-95 Date
Print or Type Name	Signature	Date

Appendix E1
OUTLIER SEISMIC VERIFICATION SHEET (OSVS)
Outlier 22/23

1. OUTLIER IDENTIFICATION, DESCRIPTION, AND LOCATION

Equipment ID Number- 2-DG1-ENG-CTRL-PNL 2-DG1-EXCIT-PNL 2-DG1-GEN-CTRL-PNL (same for 2-DG2, 2-DG3, 2-DG4)	Equipment Class - 20 - Instr. & Control Panels & Cabinets
Equipment Location:	
Building - Diesel Generator Building	Floor Elevation - 23'
Room or Row/Column	Base Elevation
Equipment Description: Engine, Exciter and Generator Panels for Diesels	

2. OUTLIER ISSUE DEFINITION

a. Identify all the screening guidelines which are not met. (Check more than one if several guidelines could not be satisfied.)

<u>Mechanical and Electrical Equipment</u> Capacity vs. Demand Caveats Anchorage Seismic Interaction Other	 X X X 	<u>Tanks and Heat Exchangers</u> Shell Buckling[1] Anchor Bolts and Embedment Anchorage Connections Flexibility of Attached Piping[1] Other	
<u>Essential Relays</u> Capacity vs. Demand Mounting, Type, Location Other		<u>Cable and Conduit Raceway</u> Inclusion Rules Other Seismic Performance Concerns Limited Analytical Review Other	

[1] Shell Buckling and flexibility of attached piping only apply to large, flat-bottom, vertical tanks.

b. Describe all the reasons for the outlier (i.e., if all the listed outlier issues were resolved, then the signatories would consider this item of equipment to be verified for seismic adequacy):

<u>Frequency determination is required to satisfy capacity vs. demand. Concrete curbs require further evaluation for cracking and capacity.</u>

Appendix E1
OUTLIER SEISMIC VERIFICATION SHEET (OSVS)
Outlier 22/23

3. PROPOSED METHOD OF OUTLIER RESOLUTION (OPTIONAL)

a. Define proposed method(s) for resolving outlier.

Evaluation of conditions addressed above.

b. Provide information needed to implement proposed method(s) for resolving outlier (e.g., estimate of fundamental frequency).

HCLPF calculation 52213-C-050 was performed for anchorage.

4. CERTIFICATION:

The information on this OSVS is, to the best of out knowledge and belief, correct and accurate, and resolution of the outlier issues listed on the previous page will satisfy the requirements for this item of equipment to be verified for seismic adequacy:

Approved by: (For Equipment Classes #0 - #22, all the Seismic Capability Engineers on the Seismic Review Team (SRT) should sign; there should be at least two on the SRT. One signatory should be a licensed professional engineer. For Relays, the Lead Relay Reviewer should sign.)

LEO BRAGAGNOLO Print or Type Name	Leo J. Bragagnolo Signature	9.13.95 Date
RONALD L. KNOTT Print or Type Name	Ronald L. Knott Signature	9-14-95 Date
Print or Type Name	Signature	Date

Appendix E1
OUTLIER SEISMIC VERIFICATION SHEET (OSVS)
Outlier 24

1. OUTLIER IDENTIFICATION, DESCRIPTION, AND LOCATION

Equipment ID Number- 1,2-H12-P601, P603, P612, P614 1,2-XU-2 1,2-XU-3 1-IR-RB-4 2-IR-RB-4	Equipment Class - 20 - Instr. & Control Panels & Cabinets
Equipment Location:	
Building - Control Building Reactor Building	Floor Elevation - 49' 20'
Room or Row/Column	Base Elevation
Equipment Description: Strip Chart Recorder Evaluations	

2. OUTLIER ISSUE DEFINITION

a. Identify all the screening guidelines which are not met. (Check more than one if several guidelines could not be satisfied.)

Mechanical and Electrical Equipment Capacity vs. Demand Caveats Anchorage Seismic Interaction Other	X	Tanks and Heat Exchangers Shell Buckling[1] Anchor Bolts and Embedment Anchorage Connections Flexibility of Attached Piping[1] Other	
Essential Relays Capacity vs. Demand Mounting, Type, Location Other		Cable and Conduit Raceway Inclusion Rules Other Seismic Performance Concerns Limited Analytical Review Other	

[1] Shell Buckling and flexibility of attached piping only apply to large, flat-bottom, vertical tanks.

b. Describe all the reasons for the outlier (i.e., if all the listed outlier issues were resolved, then the signatories would consider this item of equipment to be verified for seismic adequacy):

In addition to requiring evaluation for anchorage under outlier 05, these cabinets contain strip chart recorders or other cantilevered devices that require evaluation to satisfy Bounding Spectra caveats. Note also that numerous maintenance items are identified in SEWS that require repair.

Appendix E1
OUTLIER SEISMIC VERIFICATION SHEET (OSVS)
Outlier 24

3. PROPOSED METHOD OF OUTLIER RESOLUTION (OPTIONAL)

a. Define proposed method(s) for resolving outlier.

Evaluation of strip chart recorders to satisfy Bounding Spectra caveats.

b. Provide information needed to implement proposed method(s) for resolving outlier (e.g., estimate of fundamental frequency).

4. CERTIFICATION:

The information on this OSVS is, to the best of out knowledge and belief, correct and accurate, and resolution of the outlier issues listed on the previous page will satisfy the requirements for this item of equipment to be verified for seismic adequacy:

Approved by: (For Equipment Classes #0 - #22, all the Seismic Capability Engineers on the Seismic Review Team (SRT) should sign; there should be at least two on the SRT. One signatory should be a licensed professional engineer. For Relays, the Lead Relay Reviewer should sign.)

LEO BRAGANZA Print or Type Name	Signature	9.13.95 Date
RONALD L KNOTT Print or Type Name	Signature	9-10-95 Date
Print or Type Name	Signature	Date

Appendix E1
OUTLIER SEISMIC VERIFICATION SHEET (OSVS)
Outlier 25

1. OUTLIER IDENTIFICATION, DESCRIPTION, AND LOCATION

Equipment ID Number- 1-CAC-TY-4426-1 1-CAC-TY-4426-2 2-CAC-TY-4426-1 2-CAC-TY-4426-2	Equipment Class - 20 - Instr. & Control Panels & Cabinets
Equipment Location:	
Building - Control Building	Floor Elevation - 49'
Room or Row/Column	Base Elevation
Equipment Description: Programmable Controller Evaluation for DRYWELL/SUPP POOL SIGNAL CONVERTER - DIV II DRYWELL/SUPP POOL SIGNAL CONVERTER - DIV II SUPP POOL TEMP MONITOR MICROPROCESSOR SUPP POOL TEMP MONITOR MICROPROCESSOR	

2. OUTLIER ISSUE DEFINITION

a. Identify all the screening guidelines which are not met. (Check more than one if several guidelines could not be satisfied.)

Mechanical and Electrical Equipment Capacity vs. Demand Caveats Anchorage Seismic Interaction Other	X	Tanks and Heat Exchangers Shell Buckling[1] Anchor Bolts and Embedment Anchorage Connections Flexibility of Attached Piping[1] Other	
Essential Relays Capacity vs. Demand Mounting, Type, Location Other		Cable and Conduit Raceway Inclusion Rules Other Seismic Performance Concerns Limited Analytical Review Other	

[1] Shell Buckling and flexibility of attached piping only apply to large, flat-bottom, vertical tanks.

b. Describe all the reasons for the outlier (i.e., if all the listed outlier issues were resolved, then the signatories would consider this item of equipment to be verified for seismic adequacy):

Programmable controllers require further evaluation to satisfy Bounding Spectra caveats.

Appendix E1
OUTLIER SEISMIC VERIFICATION SHEET (OSVS)
Outlier 25

3. PROPOSED METHOD OF OUTLIER RESOLUTION (OPTIONAL)

a. Define proposed method(s) for resolving outlier.

b. Provide information needed to implement proposed method(s) for resolving outlier (e.g., estimate of fundamental frequency).

4. CERTIFICATION:

The information on this OSVS is, to the best of out knowledge and belief, correct and accurate, and resolution of the outlier issues listed on the previous page will satisfy the requirements for this item of equipment to be verified for seismic adequacy:

Approved by: (For Equipment Classes #0 - #22, all the Seismic Capability Engineers on the Seismic Review Team (SRT) should sign; there should be at least two on the SRT. One signatory should be a licensed professional engineer. For Relays, the Lead Relay Reviewer should sign.)

LEE BRAGANZA Print or Type Name	Signature	9.13.95 Date
RONALD L KNOTT Print or Type Name	Ronald L. Knott Signature	9-14-95 Date
Print or Type Name	Signature	Date

APPENDIX E2

SUMMARY OF OPEN ITEMS: MECHANICAL AND ELECTRICAL EQUIPMENT

APPENDIX E2
SUMMARY OF OPEN ITEMS: MECHANICAL AND ELECTRICAL EQUIPMENT

E.C.	Equipment I.D. Number	Description	Resolution		
			House-keeping	WR/JO	ESR
00	1-C11-A001A-N2 2-C12-A001A-N2	N2 tanks are mounted to unrestrained handcarts, these will have to be modified to provide restraint via an ESR.			•
00	1-VA-1A-EHE-CB 2-VA-2A-EHE-CB 2-VA-2B-EHE-CB	The anchorage is unknown. These items share the same housing as the cooling coils (e.g., 1-VA-1A-CC-CB). An ESR is required to determine the anchorage, verify its adequacy and resolve capacity versus demand concerns.			•
00	1-VA-1B-BFIV-RB	A trolley which can impact an attached conduit needs to be restrained or removed via an ESR.			•
01	1-1A-250VDC 1-1B-250VDC	A WR/JO is needed to bolt the two shipping sections together.		•	
01	1-1CA 1-1CB 2-2CA 2-2CB	There is a spray concern with a nearby fire protection sprinkler to be resolved via an ESR. The Unit 2 items have an interaction concern with nearby fire extinguishers to be resolved via housekeeping.	•		•
01	1-1PA	A WR/JO is required to tighten conduit support anchors .		•	
01	1-1XA	A WR/JO is needed to bolt the two shipping sections together. Potential impact between attached conduit and overhead cable tray can be resolved via an ESR to attach the conduit to the cable tray.		•	•
01	1-1XB 1-1XB-2	There are missing connection bolts between the MCC panels and a pounding concern with 1-1XB-2, both of which will be resolved via a WR/JO.		•	

APPENDIX E2
SUMMARY OF OPEN ITEMS: MECHANICAL AND ELECTRICAL EQUIPMENT

E.C.	Equipment I.D. Number	Description	Resolution		
			House-keeping	WR/JO	ESR
01	1-1XA-2 1-1XF 2-2XA 2-2XA-2 2-2XB 2-2XB-2 2-2XC 2-2XD 2-2XDA 2-2XDB	The interaction concern relates to unanchored carts stationed nearby and will be resolved by housekeeping.	•		
01	1-1XC	An unrestrained cart nearby poses an impact hazard and will be resolved by housekeeping. A WR/JO is needed to repair the door hinge.	•	•	
01	1-1XD	Pendulum lights present an impact concern and should be raised via a WR/JO.		•	
01	1-1XDA	A WR/JO should be initiated to replace a panel connection bolt.		•	
01	1-1XDB	An ESR will resolve the following concerns: potential pounding with the cabinet to the east, and a rigidly attached conduit exiting the top poses an impact hazard with overhead items. There are several maintenance items which need to be resolved via a WR/JO.		•	•
01	1-1XG	A WR/JO is needed to install panel connection bolts to prevent pounding.		•	
01	1-1XL	An ESR will address the impact hazard between a rigid conduit exiting the top and overhead items.			•
01	1-1XM	The potential impact of a nearby trash can will be addressed by housekeeping.	•		

APPENDIX E2
SUMMARY OF OPEN ITEMS: MECHANICAL AND ELECTRICAL EQUIPMENT

E.C.	Equipment I.D. Number	Description	Resolution		
			House-keeping	WR/JO	ESR
01	2-2PA	The interaction concern with a rolling ladder stationed nearby will be resolved by housekeeping.	•		
01	2-DGA	A WR/JO is needed for hardware repairs.		•	
03	1-E1 1-E2 2-E3 2-E4	Overhead light fixtures which may fall due to open 'S' hooks will be repaired via a WR/JO. Also, repairs to door hardware is required via a WR/JO to resolve door rattling concerns.		•	
04	1-VA-TZ-2	An ESR is needed to address the water spray concern.			•
04	2-E7-FB2-XFMR 2-E8-FB1-XFMR	An ESR is needed to address lateral support of the transformer coils and replacement of the vibration isolators for the coils to provide adequate load transfer.			•
07	1-B21-F013B	An ESR is needed to resolve the concern regarding the suspect conduit construction detail.			•
07	1-B21-F022C	1/4" clearance between the valve and a junction box will be resolved via an ESR.			•
07	1-E41-F025	Poorly supported 1/4" air tubing requires evaluation and modification via an ESR.			•
07	2-B21-F013A	An adjacent duct is in contact with the SRV operator and will be resolved via a WR/JO.		•	
07	2-B21-F013C	A WR/JO is required to restrain the loose conduit which may impact the SRV solenoid.		•	
07	2-B21-F022A	1/2" clearance between the valve and a pipe support will be resolved via an ESR.			•

APPENDIX E2
SUMMARY OF OPEN ITEMS: MECHANICAL AND ELECTRICAL EQUIPMENT

E.C.	Equipment I.D. Number	Description	Resolution		
			House-keeping	WR/JO	ESR
07	2-B21-F028A 2-B21-F028B 2-B21-F028C 2-B21-F028D	Air supply tubing is in contact with valve conduits. A WR/JO will resolve the tubing concern.		•	
07	2-C12-CV-F010	Piping attached through a flexible hose lacks adequate support and will be repaired via an ESR.			•
07	2-C12-CV-F011	An incoming air line is poorly supported and will be repaired via an ESR.			•
07	2-C12-V139	The attached 1" line and tubing have long spans that will be addressed via an ESR.			•
07	2-C12-V140AO	An incoming air line is poorly supported and will be resolved via a WR/JO.		•	
07	2-SW-V124-AO	An ESR is required to resolve the concern of impact between an adjacent light fixture and an incoming air line. A WR/JO is required to address corrosion on the yoke and limit switch.		•	•
07	2-SW-V128-AO	An attached conduit requires additional support. This will be accomplished through an ESR.			•
07	2-SW-V130-AO	An ESR is required to address additional support of an incoming air line and the potential impact of an adjacent conduit support cantilever.			•
07	2-SW-V131-AO	An ESR is required to resolve the concern for the air line that needs additional support. The light corrosion noted will be resolved via a WR/JO.		•	•
08A	2-E11-F007A	The 1/2" gap between the operator and structural steel will be addressed via an ESR.			•
08A	2-E11-F009	Potential contact between the operator and a structural steel member will be resolved via an ESR.			•

APPENDIX E2
SUMMARY OF OPEN ITEMS: MECHANICAL AND ELECTRICAL EQUIPMENT

E.C.	Equipment I.D. Number	Description	Resolution		
			House-keeping	WR/JO	ESR
08A	2-E11-F047B	A WR/JO is needed to address corrosion repair.		•	
08A	2-E41-F002	Potential impact with a very flexible pipe support, and a platform attachment that provides little torsional restraint will be addressed via an ESR.			•
08B	2-E41-SV-1219D	The valve is in contact with a vertical run of 3" pipe. This will be resolved via an ESR.			•
08B	2-FO-SV-2012	The valve is 1.1875" from a platform. An ESR is required to modify the platform handrail to eliminate this concern.			•
08B	2-FO-SV-2024	A WR/JO needed to tighten a flex conduit connection.		•	
08B	2-SW-PY-138	A WR/JO is required to replace the missing bolt attaching this valve to its support bracket.		•	
09	1-VA-1D-SF-CB 2-VA-2E-SF-CB 2-VA-2D-SF-CB	Severe anchorage corrosion should be resolved via a WR/JO.		•	
09	2-DG3-VAC-BL	Degraded hoses will be repaired via WR/JO.		•	
09	2-VA-2B-FCU-RB	A WR/JO is needed to repair the material condition and corrosion.		•	
10	1-VA-1D-CU-CB 2-VA-2D-CU-CB 2-VA-2E-CU-CB	An ESR is required to install anchorage for this item and to determine the frequency of the anchored item.			•
10	2-VA-2A-FC-RB	A WR/JO has been initiated to repair the corrosion but it hasn't been implemented.		•	

APPENDIX E2
SUMMARY OF OPEN ITEMS: MECHANICAL AND ELECTRICAL EQUIPMENT

E.C.	Equipment I.D. Number	Description	Resolution		
			House-keeping	WR/JO	ESR
10	1-VA-1A-CC-CB 2-VA-2A-CC-CB 2-VA-2B-CC-CB	These items are mounted more than 40' above grade, the frequency is unknown and the item is unanchored. An ESR is required to provide anchorage and determine the capacity versus demand of the anchored item.			•
10	2-VA-2A-RAF-CB	The item is mounted more than 40' above grade, the frequency is unknown and the anchorage and structural load path are severely corroded (estimated 50% reduced capacity). An ESR is required to address the anchorage adequacy and to determine the capacity versus demand ratio.			•
11	1-VA-1D-SCDU-CB 2-VA-2D-SCDU-CB 2-VA-2E-SCDU-CB	These items are mounted on vibration isolators more than 40' above grade and the frequency is unknown. An ESR is required to address the anchorage adequacy and to determine the capacity versus demand ratio.			•
13	1-C71-S001A 2-C72-S001A 1-C71-S001B 2-C72-S001B	An ESR is required to address the adequacy of the 1" thick vibration isolator pads. An ESR will also be required to address the mounting of fire extinguishers near 2-C72-S001A.			•
14	1-1A-UPS 2-2A-UPS	An ESR is required to resolve the 1/2" gap to a wall for these items by bolting to the wall or providing a bumper. Housekeeping will resolve the concern related to fire extinguishers near 2-2A-UPS.	•		•
14	1-1D-120V	An ESR is required to connect two, 3" conduits entering the top of the panel to a spacer.			•
14	1-1E5 1-1E6	Housekeeping will resolve the concern with fire protection equipment interaction. Missing Unistrut bolts should be replaced via a WR/JO.	•	•	
14	2-12B-HZ5	Four conduits exiting the panel are supported by a suspended system. Since the panel is wall mounted there is a differential displacement concern. An ESR will be required to resolve it.			•

APPENDIX E2
SUMMARY OF OPEN ITEMS: MECHANICAL AND ELECTRICAL EQUIPMENT

E.C.	Equipment I.D. Number	Description	Resolution		
			House-keeping	WR/JO	ESR
14	2-2A-125VDC	A WR/JO is required to resolve concerns about panel latches and hinges.		•	
15	1-1A-1-125VDC-BAT 1-1A-2-125VDC-BAT 1-1B-1-125VDC-BAT 1-1B-2-125VDC-BAT 2-2A-1-125VDC-BAT 2-2A-2-125VDC-BAT 2-2B-1-125VDC-BAT 2-2B-2-125VDC-BAT	A WR/JO is required to correct any gaps between the batteries and the end rails for these racks.		•	
16	1-1A-1-125VDC-CHGR 1-1A-2-125VDC-CHGR 1-1B-1-125VDC-CHGR 1-1B-2-125VDC-CHGR 2-2A-1-125VDC-CHGR 2-2A-2-125VDC-CHGR 2-2B-1-125VDC-CHGR 2-2B-2-125VDC-CHGR	An ESR is required to bolt adjacent chargers together to prevent pounding.			•
18	1-E41-LSL-N003	A WR/JO is needed to tighten the instruments in place.		•	
18	1-H21-P021	A spray concern exists with nearby fire protection head. This will be addressed via an ESR.			•
18	1-IA-PSL-3597	Housekeeping will relocate maintenance carts chained nearby that could impact and damage this item.	•		
18	1-SW-PDIC-140	A WR/JO is required to restrain tubing.		•	

APPENDIX E2
SUMMARY OF OPEN ITEMS: MECHANICAL AND ELECTRICAL EQUIPMENT

E.C.	Equipment I.D. Number	Description	Resolution		
			House-keeping	WR/JO	ESR
18	1-SW-PS-1175C	A WR/JO is needed to replace an open eye hook on a light fixture.		•	
18	1-TCR-1-HOLLYWOOD 1-TCR-2-HOLLYWOOD	Housekeeping will resolve the concern regarding several nearby items which pose impact concerns.	•		
18	1-VA-PS-1026A	A WR/JO is needed to have a mounting screw repaired.		•	
18	2-E41-LSL-N002	A WR/JO is needed to repair corrosion and to tighten loose connections.		•	
18	2-E41-LSL-N003	A WR/JO is needed to repair the grout pad.		•	
18	2-FO-LS-2287	The mounting is loose and requires tightening via a WR/JO.		•	
18	2-H21-P004	A WR/JO is needed to close open 'S' hooks on light fixtures and to install bulb keepers.		•	
18	2-H21-P005	A WR/JO is needed to install bulb keepers on light fixtures.		•	
18	2-H21-P009	An ESR is needed to resolve an interaction with the HCU backup cylinders. A WR/JO is required to restrain the test apparatus.		•	•
18	2-H21-P010	A WR/JO is needed to restrain the test apparatus.		•	
18	2-SW-FT-5115	A WR/JO is needed to resolve anchorage concerns.		•	
18	2-SW-PSL-1178	A WR/JO is needed to replace a missing mounting bolt.		•	
18	2-SW-PT-1154	A WR/JO is needed to repair corrosion on the top flange of the component.		•	

APPENDIX E2
SUMMARY OF OPEN ITEMS: MECHANICAL AND ELECTRICAL EQUIPMENT

E.C.	Equipment I.D. Number	Description	Resolution		
			House-keeping	WR/JO	ESR
18	2-TCR-1-HOLLYWOOD 2-TCR-2-HOLLYWOOD	The interaction concerns will be addressed by an ESR. The cart storage concern for 2-TCR-1-HOLLYWOOD will be resolved by housekeeping.	•		•
18	2-X-LSH-3118	An identification tag is needed and should be attached via a WR/JO.		•	
19	1-B21-TE-N004K	An ESR will address the potential impact with a spring can pipe support 3/4" above this item.			•
19	2-E11-TE-N004B	An ESR will address the interaction from an attached conduit anchored to a poorly restrained frame.			•
19	2-SW-TSH-1111	A WR/JO is needed to replace attachment bolts.		•	
19	2-VA-TT-1603	An ESR will address the potential impact with a poorly supported duct overhead.			•
20	1-B21-PNL-QV9	Housekeeping will resolve a wheeled cart chained nearby. An impact concern from a chain hung light fixture will be resolved via a WR/JO. The overhead interaction concerns will be resolved via an ESR.	•	•	•
20	1-CAC-TY-4426-2	A concern with the capacity of cable trays above the panel will be resolved via an ESR.			•
20	1-H12-P601 1-H12-P603	A WR/JO is required to repair loose doors and to install a missing top bolt between 1-H12-P601 and 1-H12-P603. Additionally, the doors for 1-H21-P603 require push rods.		•	
20	1-H12-P606 1-H12-P608 1-H12-P623	A WR/JO will resolve panels on this line-up that require shims and door repairs.		•	

APPENDIX E2
SUMMARY OF OPEN ITEMS: MECHANICAL AND ELECTRICAL EQUIPMENT

E.C.	Equipment I.D. Number	Description	Resolution		
			House-keeping	WR/JO	ESR
20	1-H12-P609 1-H12-P610 1-H12-P611	WR/JOs will repair overhead lights with open 'S' hooks and doors that don't latch tightly. The generic overloaded cable tray concern will be resolved via an ESR.		•	•
20	1-H12-P612	The generic overloaded cable tray concern will be resolved via an ESR.			•
20	1-H12-P613	Potential interaction with overhead items will be resolved via an ESR.			•
20	1-H12-P614	The generic overloaded cable tray concern will be resolved via an ESR. A WR/JO is needed to replace a missing hinge pin and install bolts between this cabinet and 1-XU-6. An ESR is needed to review the 3/8" gap to cabinet TSI-XY-637.		•	•
20	1-H12-P615	The generic overhead cable tray concern will be resolved via an ESR. The generic door concerns will be resolved via a WR/JO. An ESR is required to provide restraints for PC cards and card racks.		•	•
20	1-H12-P616	The generic overhead cable tray concern is to be resolved via an ESR. The generic door concerns will be resolved via a WR/JO.		•	•
20	1-H12-P617 1-H12-P620 1-H12-P622 1-H12-P626	The generic overloaded cable tray concern will be resolved via an ESR. The generic door concerns will be resolved via a WR/JO. Light fixtures with open 'S' hooks require a WR/JO for repair.		•	•
20	1-H12-P618 1-H12-P627 1-H12-P628	The generic overloaded cable tray concern will be resolved via an ESR. The generic door concerns will be resolved via a WR/JO. WR/JOs are also needed to install panel connection bolts on this line-up and resolve suspended light interaction concerns.		•	•

APPENDIX E2
SUMMARY OF OPEN ITEMS: MECHANICAL AND ELECTRICAL EQUIPMENT

E.C.	Equipment I.D. Number	Description	Resolution		
			House-keeping	WR/JO	ESR
20	1-H12-P624	The generic overloaded cable tray concern will be resolved via an ESR. A WR/JO is needed to repair open 'S' hooks on suspended lighting and replace a missing push rod on the panel door. An ESR is needed to install bolting between this panel and 1-CAC-TY-4426-2.		•	•
20	1-H12-P630	The generic overloaded cable tray concern will be resolved via an ESR. The generic door concerns will be resolved via a WR/JO. An ESR is required to resolve the concern with unrestrained circuit boards.		•	•
20	1-XU-02 1-XU-03 1-XU-51	An ESR will resolve concerns about unsecured carpet tiles above these panels.			•
20	1-XU-24 1-XU-09 1-XU-40 1-XU-25	The generic overloaded cable tray concern will be resolved via an ESR. Adjacent cabinets in this line-up may required bolting, an ESR should resolve this issue.			•
20	1-XU-27 1-XU-28	The generic overloaded cable tray concern will be resolved via an ESR. Suspended lighting could impact cabinet and should be restrained via a WR/JO. A WR/JO is also needed to install cabinet bolting on this line-up.		•	•
20	1-XU-7 1-XU-13 1-XU-39 1-XU-50 1-XU-56 1-XU-57 1-XU-73	The generic overloaded cable tray concern will be resolved via an ESR.			•

APPENDIX E2
SUMMARY OF OPEN ITEMS: MECHANICAL AND ELECTRICAL EQUIPMENT

E.C.	Equipment I.D. Number	Description	Resolution		
			House-keeping	WR/JO	ESR
20	1-XU-4168	A WR/JO is needed to tighten cabinet hardware.		•	
20	1-XU-53 1-XU-58	The generic overloaded cable tray concern will be resolved via an ESR. The panel doors require repair via a WR/JO.		•	•
20	1-XU-63 1-XU-64	A WR/JO is required to resolve suspended light impact concern. A WR/JO is needed to install bolts between these two cabinets. Housekeeping will address a nearby step ladder and wheeled cart.	•	•	
20	1-XU-65 1-XU-66 1-XU-67 1-XU-68	A WR/JO is needed to repair the open 'S' hooks on suspended lights and panel door problems (does not apply to XU-67 or 68). A WR/JO is needed to bolt panels on this line-up together. Housekeeping will resolve the concerns related to bookshelves and other unanchored items stored nearby.	•	•	
20	1-XU-75 1-XU-79	A WR/JO is needed to have the adjacent cabinets bolted together.		•	
20	2-B21-PNL-QV9	A WR/JO will repair open 'S' hooks on lighting and resolve a potential impact with a sign board.		•	
20	2-CAC-TY-4426-1 2-CAC-TY-4426-2	Rigidly attached conduit, overloaded ceiling embedded Unistrut, and bolting between 4426-1 and P624 will be addressed via an ESR.			•
20	2-DG1-ENG-CTRL-PNL 2-DG1-EXCIT-PNL 2-DG1-GEN-CTRL-PNL	Potential pounding in this line-up will be resolved via an ESR. WR/JOs are needed to raise light fixtures, tighten speaker bolts, repair door bolts and door latches.		•	•

APPENDIX E2
SUMMARY OF OPEN ITEMS: MECHANICAL AND ELECTRICAL EQUIPMENT

E.C.	Equipment I.D. Number	Description	Resolution		
			House-keeping	WR/JO	ESR
20	2-DG2-ENG-CTRL-PNL 2-DG2-EXCIT-PNL 2-DG2-GEN-CTRL-PNL	Potential pounding in this line-up will be resolved via an ESR. There are also maintenance items which require repair via a WR/JO.		•	•
20	2-DG3-ENG-CTRL-PNL 2-DG3-EXCIT-PNL 2-DG3-GEN-CTRL-PNL	Potential pounding in this line-up will be resolved via an ESR. WR/JOs are needed to raise a chain-hung light, replace door hardware and adjust rear door.		•	•
20	2-DG4-ENG-CTRL-PNL 2-DG4-EXCIT-PNL 2-DG4-GEN-CTRL-PNL	Potential pounding in this line-up will be resolved via an ESR. WR/JOs are needed to replace missing mounting screws, raise a chain-hung light, repair door bolts and doors.		•	•
20	2-DGB-PNL-SQ4	A WR/JO is needed to have grout packed under the baseplates to eliminate gaps.		•	
20	2-H12-P601 2-H12-P603	The falling book concern will be resolved by housekeeping. The suspended, acoustic ceiling concern will be resolved via a WR/JO.	•	•	
20	2-H12-P608 2-H12-P606	Suspect light fixture anchorage, generic ceiling embedded Unistrut overload, and impact between cable trays and attached conduit will be resolved via an ESR. A WR/JO will resolve the light fixtures with open 'S' hooks.		•	•
20	2-H12-P611 2-H12-P609 2-H12-P610	Suspect light fixture anchorage, impact between cable tray and attached Unistrut frame, and generic ceiling embedded Unistrut overload will be addressed via an ESR. A WR/JO is needed to repair the light fixtures with open 'S' hooks. Housekeeping will resolve a nearby unrestrained cart on wheels.	•	•	•

APPENDIX E2
SUMMARY OF OPEN ITEMS: MECHANICAL AND ELECTRICAL EQUIPMENT

E.C.	Equipment I.D. Number	Description	Resolution		
			House-keeping	WR/JO	ESR
20	2-H12-P612 2-H12-P613 2-H12-P614	Rigidly attached conduits, impact between cable trays and attached conduit, a Unistrut frame attached to 3 cabinet lineups, and generic ceiling embedded Unistrut overload will be addressed via an ESR.			•
20	2-H12-P616 2-H12-P615 2-XU-57 2-XU-58	A cable tray connected to both P615 and overhead trays, light fixtures with suspect anchorage, cable tray impact with attached Unistrut frame and various computer boards in P615 with restraint issues will be addressed via an ESR.			•
20	2-H12-P618 2-H12-P623 2-H12-P627 2-H12-P628 2-XU-73	Cabinet bolting, light fixtures with suspect anchorage, impact between overhead items and attached conduits and Unistrut frame, and generic ceiling embedded Unistrut overload will be addressed via an ESR. Unanchored items stored nearby will be resolved by housekeeping.	•		•
20	2-H12-P624	Rigidly attached conduits, impact with 2-CAC-TY-4426-1, impact between overhead items and attached conduits and Unistrut frames, and generic ceiling embedded Unistrut overload will be addressed via an ESR. Lights with open 'S' hooks will be resolved via a WR/JO.		•	•
20	2-H12-P630 2-XU-27 2-XU-28	Unlatched cards on slides, rigid, flex conduit, generic ceiling embedded conduit overload, and impact between the attached Unistrut frame and overhead conduit will be addressed via an ESR. A WR/JO will be used to repair the door that won't latch. Open 'S' hooks require repair for XU-27 and 28.		•	•
20	2-H21-P003 2-H21-P012	An ESR is required to review the impact between attached conduit and overhead ducting. A WR/JO is required to remove loose Unistrut from inside the cabinet and repair the door latch.		•	•
20	2-IR-RB-4	An ESR will address the potential impact between an HVAC duct and a conduit at the top of the panel.			•

APPENDIX E2
SUMMARY OF OPEN ITEMS: MECHANICAL AND ELECTRICAL EQUIPMENT

E.C.	Equipment I.D. Number	Description	Resolution		
			House-keeping	WR/JO	ESR
20	2-XU-09	The interaction concern for a rigidly attached 2" conduit will be resolved via an ESR.			•
20	2-XU-13 2-XU-41	A WR/JO is needed to install panel connection bolts and repair light fixtures with open 'S' hooks. Rigidly attached conduit and the impact between overhead items and the attached Unistrut frame will be addressed via an ESR.		•	•
20	2-XU-25 2-XU-42	Rigid conduit attachments, impact between overhead items and attached conduits and Unistrut frame, and generic ceiling embedded Unistrut overload will be addressed via an ESR. Open 'S' hooks on light fixtures will be resolved via a WR/JO.		•	•
20	2-XU-29	Inflexible attachments, impact between overhead items and attached conduits and Unistrut frame, poorly supported lights, and a generic ceiling embedded Unistrut overload will be addressed via an ESR. A WR/JO is needed to repair an duct that may slide off its support.		•	•
20	2-XU-30	Rigid conduit attachments, impact between overhead items and attached conduits and Unistrut frame, and generic ceiling embedded Unistrut overload will be addressed via an ESR. A WR/JO is required to repair light fixtures with open 'S' hooks. Nearby unanchored items will be resolved by housekeeping.	•	•	•
20	2-XU-50	Impact with 2-H12-P644, impact between overhead items and attached Unistrut frame, and generic ceiling embedded Unistrut overload will be addressed via an ESR.			•
20	2-XU-53 2-H12-P617 2-H12-P620 2-H12-P622 2-H12-P626	Rigid conduit attachments, impact between overhead items and attached conduits and Unistrut frame, suspect light fixture anchorage, and generic ceiling embedded Unistrut overload will be addressed via an ESR. Open 'S' hooks on light fixtures will be repaired via a WR/JO. Also, 2-XU-62 (non-SSEL) needs to be bolted to the line-up that includes 2-XU-53 to prevent pounding.		•	•

APPENDIX E2
SUMMARY OF OPEN ITEMS: MECHANICAL AND ELECTRICAL EQUIPMENT

E.C.	Equipment I.D. Number	Description	Resolution		
			House-keeping	WR/JO	ESR
20	2-XU-56	Rigid conduit attachments, impact between overhead items and attached conduits and Unistrut frame, a Unistrut frame attached to 3 cabinet lineups, suspect light fixture anchorage, and generic ceiling embedded Unistrut overload will be addressed via an ESR.			•
20	2-XU-63 2-XU-64	Cabinet bolting, and generic overhead embedded Unistrut overload will be addressed via an ESR. A light fixture with open 'S' hooks will be repaired via a WR/JO. Two unrestrained cabinets on wheels will be addressed by housekeeping.	•	•	•
20	2-XU-65 2-XU-66 2-XU-67 2-XU-68 2-XU-75 2-XU-79	Cabinet bolting on this line-up, and rigid conduit between XU-65 and XU-66 will be addressed via an ESR. A light with open 'S' hooks will be repaired via a WR/JO. Unrestrained items will be resolved by housekeeping.	•	•	•
20	2-XU-76 2-XU-77	The interaction concern is the generic ceiling embedded Unistrut overload that will be resolved via an ESR.			•

APPENDIX F1

SUMMARY OF OUTLIERS: TANKS AND HEAT EXCHANGERS

Appendix F1
OUTLIER SEISMIC VERIFICATION SHEET (OSVS)
Outlier 26

1. OUTLIER IDENTIFICATION, DESCRIPTION, AND LOCATION

Equipment ID Number- 1-C11-125 2-C12-125 1,2-C11-LDSH-129 1,2-PSL-130	Equipment Class - 21 - Tanks and Heat Exchangers 18 - Instruments on Racks
Equipment Location:	
Building - Reactor Building	Floor Elevation - 20'
Room or Row/Column	Base Elevation
Equipment Description: HCU Accumulator Support HCU NITROGEN/WATER ACCUMULATOR AND RACK HCU ACCUMULATOR HIGH LEVEL SWITCH and PRESSURE SWITCH	

2. OUTLIER ISSUE DEFINITION

a. Identify all the screening guidelines which are not met. (Check more than one if several guidelines could not be satisfied.)

Mechanical and Electrical Equipment		Tanks and Heat Exchangers	
Capacity vs. Demand		Shell Buckling[1]	
Caveats	X	Anchor Bolts and Embedment	X
Anchorage	X	Anchorage Connections	X
Seismic Interaction		Flexibility of Attached Piping[1]	
Other		Other	
Essential Relays		Cable and Conduit Raceway	
Capacity vs. Demand		Inclusion Rules	
Mounting, Type, Location		Other Seismic Performance Concerns	
Other		Limited Analytical Review	
		Other	

[1] Shell Buckling and flexibility of attached piping only apply to large, flat-bottom, vertical tanks.

b. Describe all the reasons for the outlier (i.e., if all the listed outlier issues were resolved, then the signatories would consider this item of equipment to be verified for seismic adequacy):

The base connection of the GE frames (blue) to the concrete pad utilizes embedded unistrut which is corroded. This has been evaluated as an ACR which should be reviewed during the anchorage evaluation for applicability to the shear capacity of the GE frame anchorage. Adequacy of the instruments is confirmed by adequacy of the connection of the accumulator to the rack. Note that the adequacy of the accumulator racks demonstrates the adequacy of the switches' load path.

Appendix F1
OUTLIER SEISMIC VERIFICATION SHEET (OSVS)
Outlier 26

3. PROPOSED METHOD OF OUTLIER RESOLUTION (OPTIONAL)

a. Define proposed method(s) for resolving outlier.

Evaluation of the accumulator connection to the frame is required. Calc 86-109-01 and -02 should be reviewed to ensure that the top connection of outer HCU row frames to the braced inner row frames has sufficient capacity. Additionally, the corrosion at the base of the frames should be addressed.

b. Provide information needed to implement proposed method(s) for resolving outlier (e.g., estimate of fundamental frequency).

The frame bracing has been evaluated per calculation 86-109-02. Total HCU weight is 785 lbs per FP-5096.

4. CERTIFICATION:

The information on this OSVS is, to the best of out knowledge and belief, correct and accurate, and resolution of the outlier issues listed on the previous page will satisfy the requirements for this item of equipment to be verified for seismic adequacy:

Approved by: (For Equipment Classes #0 - #22, all the Seismic Capability Engineers on the Seismic Review Team (SRT) should sign; there should be at least two on the SRT. One signatory should be a licensed professional engineer. For Relays, the Lead Relay Reviewer should sign.)

LEO BRAGAGNOLO Print or Type Name	Signature	4.13.95 Date
RONALD L. KNOTT Print or Type Name	Signature	9-14-95 Date
Print or Type Name	Signature	Date

Appendix F1
OUTLIER SEISMIC VERIFICATION SHEET (OSVS)
Outlier 27

1. OUTLIER IDENTIFICATION, DESCRIPTION, AND LOCATION

Equipment ID Number- 2-FOD-4-DAY-TK-1 2-FOD-4-DAY-TK-2 2-FOD-4-DAY-TK-3 2-FOD-4-DAY-TK-4	Equipment Class - 21 - Tanks and Heat Exchangers
Equipment Location:	
Building - Diesel Generator Tank Bldg	Floor Elevation - 0'
Room or Row/Column	Base Elevation
Equipment Description: DG FUEL OIL 4-DAY STORAGE TANK	

2. OUTLIER ISSUE DEFINITION

a. Identify all the screening guidelines which are not met. (Check more than one if several guidelines could not be satisfied.)

Mechanical and Electrical Equipment Capacity vs. Demand Caveats Anchorage Seismic Interaction Other		Tanks and Heat Exchangers Shell Buckling[1] Anchor Bolts and Embedment Anchorage Connections Flexibility of Attached Piping[1] Other	X
Essential Relays Capacity vs. Demand Mounting, Type, Location Other		Cable and Conduit Raceway Inclusion Rules Other Seismic Performance Concerns Limited Analytical Review Other	

[1] Shell Buckling and flexibility of attached piping only apply to large, flat-bottom, vertical tanks.

b. Describe all the reasons for the outlier (i.e., if all the listed outlier issues were resolved, then the signatories would consider this item of equipment to be verified for seismic adequacy):

Anchorage requires evaluation for multiple bolt spacing violations.

Appendix F1
OUTLIER SEISMIC VERIFICATION SHEET (OSVS)
Outlier 27

3. PROPOSED METHOD OF OUTLIER RESOLUTION (OPTIONAL)

a. Define proposed method(s) for resolving outlier.

b. Provide information needed to implement proposed method(s) for resolving outlier (e.g., estimate of fundamental frequency).

4. CERTIFICATION:

The information on this OSVS is, to the best of out knowledge and belief, correct and accurate, and resolution of the outlier issues listed on the previous page will satisfy the requirements for this item of equipment to be verified for seismic adequacy:

Approved by: (For Equipment Classes #0 - #22, all the Seismic Capability Engineers on the Seismic Review Team (SRT) should sign; there should be at least two on the SRT. One signatory should be a licensed professional engineer. For Relays, the Lead Relay Reviewer should sign.)

LEO BRAGAGNOLO Print or Type Name	Signature	9.13.95 Date
RONALD L KNOTT Print or Type Name	Signature	9-18-95 Date
Print or Type Name	Signature	Date

Appendix F1
OUTLIER SEISMIC VERIFICATION SHEET (OSVS)
Outlier 28

1. OUTLIER IDENTIFICATION, DESCRIPTION, AND LOCATION

Equipment ID Number- 1-E11-B001A 2-E11-B001A 2-E11-B001B	Equipment Class - 21 - Tanks and Heat Exchangers
Equipment Location:	
Building - Reactor Building	Floor Elevation - 20'
Room or Row/Column	Base Elevation
Equipment Description: RHR HEAT EXCHANGERS	

2. OUTLIER ISSUE DEFINITION

a. Identify all the screening guidelines which are not met. (Check more than one if several guidelines could not be satisfied.)

Mechanical and Electrical Equipment Capacity vs. Demand Caveats Anchorage Seismic Interaction Other		Tanks and Heat Exchangers Shell Buckling[1] Anchor Bolts and Embedment Anchorage Connections Flexibility of Attached Piping[1] Other	 X X
Essential Relays Capacity vs. Demand Mounting, Type, Location Other		Cable and Conduit Raceway Inclusion Rules Other Seismic Performance Concerns Limited Analytical Review Other	

[1] Shell Buckling and flexibility of attached piping only apply to large, flat-bottom, vertical tanks.

b. Describe all the reasons for the outlier (i.e., if all the listed outlier issues were resolved, then the signatories would consider this item of equipment to be verified for seismic adequacy):

Confirmation of anchorage adequacy is required.

Appendix F1
OUTLIER SEISMIC VERIFICATION SHEET (OSVS)
Outlier 28

3. PROPOSED METHOD OF OUTLIER RESOLUTION (OPTIONAL)

a. Define proposed method(s) for resolving outlier.

b. Provide information needed to implement proposed method(s) for resolving outlier (e.g., estimate of fundamental frequency).

HCLPF calculation 52213-C-053 was performed. Anchorage was being modified at time of inspection. The 2B HX was inspected as optional equipment.

4. CERTIFICATION:

The information on this OSVS is, to the best of out knowledge and belief, correct and accurate, and resolution of the outlier issues listed on the previous page will satisfy the requirements for this item of equipment to be verified for seismic adequacy:

Approved by: (For Equipment Classes #0 - #22, all the Seismic Capability Engineers on the Seismic Review Team (SRT) should sign; there should be at least two on the SRT. One signatory should be a licensed professional engineer. For Relays, the Lead Relay Reviewer should sign.)

LEO BRAGAGNOLO Print or Type Name	Leo J Bragagnolo Signature	9.13.95 Date
RONALD L. KNOTT Print or Type Name	Ronald L. Knott Signature	9-14-95 Date
Print or Type Name	Signature	Date

APPENDIX F2

SUMMARY OF OPEN ITEMS: TANKS AND HEAT EXCHANGERS

APPENDIX F2
SUMMARY OF OPEN ITEMS: TANKS AND HEAT EXCHANGERS

E.C.	Equipment I.D. Number	Description	Resolution		
			House-keeping	WR/JO	ESR
21	2-B21-A003F 2-B21-A003G	The top support is not welded to the drywell steel. This installation should be modified to conform to the installation of the other SRV Accumulators via an ESR.			•

APPENDIX G

SUMMARY OF OUTLIERS:
CABLE TRAY AND CONDUITS

APPENDIX G

SUMMARY OF OUTLIERS:CABLE TRAY AND CONDUITS

Outlier	Description	Resolution
RW-1	Unit 2 Reactor Building, 50' Elevation: A floor mounted conduit support frame near Col. 21R lacks support in the transverse direction and may be unstable.	Add lateral supports to the frame.
RW-3	Control Building, Unit 1 Cable Spreading Room: Floor mounted cable support frames with have occasional lateral braces require verification of both lateral and longitudinal capacity.	Analytical evaluation
RW-5	Unit 2 Reactor Building, 20' Elevation: A floor mounted conduit support frame on top of the mini steam tunnel is missing anchor bolts.	Analytical evaluation
RW-6	Unit 2 Reactor Building, 20' Elevation: A large Unistrut frame is suspended from a wide flange member using beam clamps. A vertical capacity concern exists for this installation.	Analytical evaluation

APPENDIX H

THIRD PARTY AUDIT REPORT

VECTRA

September 14, 1995
0132-00175.000-004

Carolina Power & Light Company
Nuclear Engineering Department
One Hanover Square, 8th Floor
Raleigh, NC 27602-1551

Attention: Mr. Ronald L. Knott
Principal Civil Engineer

Subject: Carolina Power & Light Company
Brunswick Nuclear Plant - A-46 & IPEEE Peer Reviews

Dear Mr. Knott:

This letter is intended to document our detailed comments and recommendations from the review of the Brunswick A-46/IPEEE program.

Attachment A contains the observations related to the seismic evaluations; these have been communicated to Mr. Jeff Bond during my visit to your offices earlier in May.

Attachment B consolidates comments and corresponding responses for the Success Path Development; these had been forwarded to Mr. Bond in early May and were also discussed with the systems engineer during my visit in mid May. Also included is a brief summary of the relay review; questions on relay reviews were forwarded to Mr. Dave Moore of EQE on September 1, 1995.

As discussed previously, the A-46 and IPEEE efforts for the two Brunswick Units were found to have been conducted in a thorough and competent manner. The Peer reviewers found that the program is being conducted in accordance with the guidance of the SQUG GIP and EPRI NP-6041; the seismic reviews meet the stated objectives of NUREG-1407. The results and findings from the program appear to be reasonable and are consistent with expectations for a plant of this vintage. The plant structures and piping were found to be rugged owing to original design and upgrades that have been performed in response to various IE Bulletins or self initiated reassessment studies. A number of equipment and general housekeeping upgrades were also noted during the plant walk-through which have resulted in improved seismic ruggedness.

VECTRA Technologies, Inc. · 600 Worcester Road · Framingham, MA 01701-5360 · Tel: (508) 370-3266 · Fax: (508) 370-3223

VECTRA

September 14, 1995
0132-00175.000-004

If you have any questions or comments, please do not hesitate to contact me at (508) 370-3391.

Very truly yours,

C. M. Abou-Jaoude

Charbel M. Abou-Jaoude, P.E.
Project Manager

Attachments

cc: Mr. W.R. Wilson
Mr. M.D. Engelman

Seismic Peer Review of the BNP A-46/IPEEE Program

This attachment provides a summary of the seismic reviews for the A-46/IPEEE program at the Brunswick Nuclear Plant.

A two day plant visit of all accessible areas of both units, excluding dry-well and high radiation or dress-out areas was conducted. The A-46 and IPEEE efforts were being coordinated, therefore this visit was intended to provide a review of the combined program. SEWS for each of the equipment classes and data packages were sampled subsequent to the walkdowns to compare the peer reviewer's field notes with the SRT recorded observations and conclusions; a brief review of a number of back-up evaluations and anchorage analyses was performed at the CP&L offices. In addition the SMA spectra report and the draft A-46 and IPEEE reports as well as other anchorage and HCLPF calculations were subsequently transmitted for peer evaluation.

The seismic reviews for A-46 and IPEEE have been well conducted, the findings appear to be consistent with the observations and expectations of the peer reviewer. The vast majority of the conditions that were identified by the reviewer, as requiring further evaluations or upgrades, had been previously noted by the SRT. The completed evaluations were adequately documented and the appropriate judgment and conclusions were recorded. During the SRT's screening walkdowns a number of items were noted as requiring further reviews or evaluations. CP&L has opted to report these items as outliers at this time and proceed with resolution subsequent to the submittal. The peer reviewer believes that a large number of these issues may be easily resolved by further evaluations.

During the plant visit a number of upgrades that had been implemented in the past five years were noted, specifically housekeeping and material conditions were found to be greatly improved. In addition a number of programs had been initiated prior to the start of the A-46/IPEEE effort, which had evaluated electrical equipment anchorage adequacy; a number of instrument racks and the HCU's frames were also upgraded to provide out of plane bracing. These and other changes that have been performed over the years have resulted in improved seismic ruggedness for the two Brunswick units, and were credited in the A-46 and IPEEE program.

The plant structures and piping were found to be rugged owing to conservative original design and to various upgrades discussed earlier. The peer reviewer found the large majority of the equipment he walked down to be seismically rugged. As indicated earlier the SRT had adequately captured those items that require upgrades to bring them into full compliance with the GIP screening criteria. With the exception of two general areas, these upgrades or any remaining analytical evaluations are judged to be simple in nature. In the control room area, the support configurations used for the transition of the top entry conduits or cables into various panels and cabinets have numerous interferences with the overhead distributed systems and commodities; The reviewer could not identify any simple fix that would alleviate this condition. Therefore, it was recommended that the relay system consequence reviews should strive to minimize the number of essential relays by showing that chatter is acceptable or that operator actions may be taken to recover from the consequences of inadvertent chatter. The second area of notable concern was the mechanical HVAC room. Condensations and environmental conditions in this area have resulted in extensive corrosion of the chiller units base supports. The peer reviewer recommends that systems engineers further review the need for the ventilation system and evaluate the

possibility of eliminating it from the required support system; this may be accomplished by crediting operator actions such as the opening of doors and the use of moveable fans or supplemental coolers as necessary. Resolution of these issues and the identified A-46 outliers will ensure that the plant HCLPF will be in excess of the 0.3g review level.

Based on the conducted reviews, it is evident that the A-46/IPEEE effort at Brunswick was conducted in a thorough and competent manner. The completed evaluations follow the guidance of the GIP and EPRI NP-6041. The SRT's have exercised appropriate judgments and the overall conclusions are reasonable.

The following is a listing of the areas and equipment that were covered during the plant visit; in addition a brief discussion of observations or comments is provided.

PLANT VISIT

The walk through of representative components in the accessible areas of the power block provided a good sampling of various equipment types, structural detailing, distributed systems, housekeeping practice, and II/I considerations. The areas and items reviewed included:

Reactor Building (Elev. -17' , 20' , 38' , 80', and fuel pool elevation.)

- RHR, HPCI, and Core Spray Pumps, and associated control and isolation valves, local instruments and room coolers
- RHR Heat Exchangers
- Hydraulic Control Units
- Miscellaneous Relay Racks, Distribution Panels, MCC's and Cabinets.

Service Water Intake Structure

- Service Water Pumps and Valves
- Instrument Racks and MCC's

Diesel Generator Building

- Diesel Generator sets, including control panels, MCC's, and associate support systems and components
- Fuel oil Storage Tanks
- Electrical power distribution components (MVSG, and LVSG)

Control Building

- Control Room boards and relay cabinets
- Cable spreading and battery rooms (batteries, chargers, inverters, and distribution panels)
- Mechanical equipment area (HVAC components)

Seismic Peer Review of the BNP A-46/IPEEE Program

OBSERVATIONS / COMMENTS:

At the time of the peer review the majority of the project documentation was still preliminary and in the process of being finalized. The following is a brief summary of the comments and observations that have been communicated to CP&L:

Battery Racks: Recommended that a note be added to the SEWS of 1A-1 stating that battery cell # 60 had a gap of approximately 1/2" to the end rail; this should be noted and recommended for adjustment to provide a tighter fitting restraint.

Static Inverters: The notes taken for these component were documented on SQUG class 3 SEWS (Medium Voltage SWGR); the class 16 SEWS should be used instead. These items (1-UPS-2A&2B, and 2-UPS-2A&2B) should be revisited to capture all the appropriate caveats. A note should also be added to state that the weak way bending of the C3X4.1 base channel was evaluated and is not a concern. The anchorage calculation for this cabinet (52213-C-049) originally used 500 lbs for estimated weight; this was later revised to use 1,000 lbs which is consistent with the peer review recommendation. Also the peer reviewer is of the opinion that adjacent cabinets should be bolted together even though no essential relays are present; the basis for this recommendation is the data presented in the EPRI GERS report (NP-5223-SL) for distribution panels. The report indicated that circuit breakers were more sensitive to high frequency input. Therefore bolting the cabinets together eliminates any pounding and any potential breaker trips would be precluded. Finally the gap between the end unit and the wall was measured as 7/8" which is sufficient to accommodate the cabinet displacement.

Distribution Panels: Similar to the static inverters above, the UPS distribution panel (2-2A-UPS) was tracked as a Low Voltage SWGR and should be revisited as a distribution panel class 14 instead. The drip shield for this panel has a clearance of 1/2" to the wall; this represents a similar concern for breaker trip as noted above. Also for 1-1A-125VDC the capacity versus demand comparison was based on the 40' rule, therefore the frequency check relative to 8 Hz should be noted as "Y" on the SEWS not "N/A".

Instrument Racks: Also, the Rx. NSSS instrument rack was tracked as a class 20 I&C cabinet and should be revised to a class 18 instead.

Medium Voltage Switchgear: The GE units reviewed had some gaps at the top of the access doors; this may result in some minor rattle that could be undesirable for the door mounted relays. A maintenance request should be initiated to ensure doors are tightly shut.

Other comments and recommendations had been discussed during the peer review exit meeting and have been addressed by CP&L and EQE.

REVIEW OF THE BRUNSWICK NUCLEAR PLANT IPEEE PROGRAM

The following documents were reviewed by Mr. Steve Reichle for the purposes of examining the Brunswick Nuclear Plant (BNP) A-46/IPEEE Program:

- Brunswick Nuclear Plant Units 1 & 2, "IPEEE Seismic Success Path Development" Revision 0, dated April 1995.
- CP&L Drawings (for flow diagrams see letter 0132-00175.002).

Since it is the plan of CP&L to coordinate the IPEEE and A-46 programs, this peer review was performed with both the GIP and EPRI-6041 in mind. The peer review of the safe shutdown equipment selection work completed for the BNP was performed against the guidance provided in the SQUG Generic Implementation Procedure (GIP), NUREG-1407 and EPRI NP-6041. The methodology utilized to select and document the safe shutdown paths and equipment selection, as documented in the safe shutdown final report, fully meets the intent of the GIP and EPRI methodology.

In addition to reviewing the above reports against the referenced guidance documents, a detailed check of the HPCI and RHR systems and component selection process was performed with their respective flow diagrams. This review was made to determine if all applicable components were identified, and whether the correct review types (i.e. seismic and/or relay) were specified.

As a result of these reviews, several observations and comments were made by VECTRA and were provided to CP&L in May of 1995. CP&L reviewed each specific comment provided by VECTRA and provided a detailed verbal response to each comment. These comments and resolutions were agreed upon by both parties and are documented in an internal correspondence. Based on follow-up conversations and CP&L's comment resolutions, all action items which were identified as a result of the peer review have been addressed.

The comments made by the VECTRA Peer Reviewer were mostly questions presented to the preparer of the documents, and do not necessarily indicate that an error or omission had been made. The majority of comments were concerning clarifications which VECTRA believed would make these documents more explicit and precise. Following the completion of the recommendations, the Peer Reviewer finds that the SSEL work followed the guidance of the GIP and NP-6041, and are complete and acceptable.

Some of the issues addressed by VECTRA in it's peer review include the following:

- Coordination of the IPEEE and A-46 programs
- HVAC requirements
- Indication requirements
- Consistency between Color-coded P&IDs and SSEL lists

Peer Review of the BNP SSEL and Relay Review for A-46/IPEEE

Two particular items, which were part of other plants' programs "lessons learned", were brought to the attention of CP&L. These issues concerned a systems unavailability study, which is recommended by EPRI-6041, and the need to perform a seismic review of testable check valves since these components could potentially have interaction concerns (even though check valves are typically considered inherently rugged). Both items were addressed by CP&L and clarified in the new revision to the report.

It should be noted that CP&L provided verbal clarifications and incorporated some of these directly into the SSEL report. This provided enhancements to the report without having to change the list of equipment.

Similarly, Mr. Reichle reviewed the following relay evaluation documentation:

Draft USI A-46 Relay Evaluation Report (dated August 1995) for Brunswick Units 1&2

Various relay evaluation sheets and schematic diagrams for relay SSEL items were also reviewed on a sampling basis (example: Relay evaluation Sheet #493, Relay evaluation Sheet #1056, Relay evaluation Sheet #2380).

Again, as a result of this review, observations and comments were made by VECTRA and were transmitted to Mr. Dave Moore for review. EQE and CP&L reviewed each specific comment provided by VECTRA and provided a detailed response to each comment. These comments and resolutions were agreed upon by both parties and are documented in an internal correspondence. The only item that requires follow-up action by CP&L is related to the screening of Swithchgear Relays. It was agreed that the report would be expanded to clearly define the approach that was adopted for evaluating those relays.

The relay review process performed by CP&L is consistent with the methodology and procedures prescribed in both the SQUG GIP and EPRI NP-7148.

In general, the results of the SSEL and relay peer review have indicated that individuals involved in this effort had a very thorough knowledge of the A-46 and IPEEE program, as well as a clear understanding of the safe shutdown methodology and the development of an essential relay listing.