ATTACHMENT 2

USI A-46 RELAY EVALUATION REPORT

for

Beaver Valley Power Station Unit No. 1 (BVPS-1)

January, 1996

CONTENTS

GLOSSARY OF ACRONYMS

AFW	Auxiliary Feedwater
ARS	Amplified Response Spectrum
ATWS	Anticipated Transient Without Scram
BAT	Boric Acid Tank
BVPS-1	Beaver Valley Power Station Unit No. 1
CAPCO	Central Area Power Coordination Group
CVCS	Chemical and Volume Control System
DBE	Design Basis Earthquake
DLC	Duquesne Light Company
EDG	Emergency Diesel Generator
EPRI	Electric Power Research Institute
FRS	Floor Response Spectrum
GERS	Generic Equipment Ruggedness Spectra
GIP	Generic Implementation Procedure for the Seismic Verification of Nuclear Plant Equipment
GL	Generic Letter
GRS	Ground Response Spectrum
HAD	Heat Actuated Device
HVAC	Heating, Ventilation & Air Conditioning
ICRS	In-Cabinet Response Spectrum
IRS	In-structure Response Spectra (also ARS)
LAR	Limited Analytical Review
LOCA	Loss of Coolant Accident
MCC	Motor Control Center
MSIV	Main Steam Isolation Valves
NOP/NC	Non-Operating/Normally Closed
NOP/NO	Non-Operating/Normally Open
NRC	Nuclear Regulatory Commission
OP/NC	Operating/Normally Closed
OP/NO	Operating/Normally Open
OSVS	Outlier Seismic Verification Sheet
PORV	Power Operated Relief Valve
PRT	Pressurizer Relief Tank
PSA	Peak Spectral Acceleration
QTR	Qualification Test Report
RCP	Reactor Coolant Pump
RCS	Reactor Coolant System
RPI	Rod Position Indication
RWST	Refueling Water Storage Tank
SCE	Seismic Capability Engineer
SER	Safety Evaluation Report
SEWS	Screening Evaluation Work Sheet
SI	Safety Injection
SLC&RS	Supplemental Leak Collection & Recirculation System
SQUG	Seismic Qualification Utility Group
SRT	Seismic Review Team

GLOSSARY OF ACRONYMS (Continued)

SSI	Soil-Structure Interaction
SSE	Safe Shutdown Earthquake
SSEL	Safe Shutdown Equipment List
SSER	Supplemental Safety Evaluation Report
SQURTS	Seismic Qualification Reporting and Testing Standardization
SVDS	Screening Verification Data Sheet
T. S.	Technical Specification
T_c	Cold Leg Temperature
Th	Hot Leg Temperature
USI	Unresolved Safety Issue
VCT	Volume Control Tank
ZPA	Zero Period Acceleration

Section 1

INTRODUCTION

1.1 PURPOSE

This report documents the USI A-46 relay seismic functionality review for Beaver Valley Power Station Unit No. 1 (BVPS-1) of Duquesne Light Company. This work was performed by Duquesne Light Company assisted by EQE International in order to address NRC Generic Letter 87-02, "Verification of Seismic Adequacy of Mechanical and Electrical Equipment in Operating Reactors, Unresolved Safety Issue (USI), A-46" (Reference 1) for BVPS-1.

A review of relays associated with safe shutdown equipment is required as part of the resolution of NRC Unresolved Safety Issue (USI) A-46, "Seismic Qualification of Equipment in Operating Plants." The purpose of the relay functionality review is to verify that safe shutdown systems would not be prevented from performing their safe shutdown functions because of relay (contact) chatter during the period of strong ground motion associated with a Design Basis Earthquake (DBE), also known as the Safe Shutdown Earthquake (SSE).

1.2 BACKGROUND

In December 1980, the Nuclear Regulatory Commission (NRC) Staff identified an unresolved safety issue, USI A-46, "Seismic Qualification of Equipment in Operating Plants," related to the seismic adequacy of mechanical and electrical equipment in older nuclear plants. In response to this concern, a number of nuclear plant owners formed the Seismic Qualification Utility Group (SQUG) to investigate the issue and develop a cost effective approach for its resolution. Initial investigations indicated that the application of current seismic qualification standards, i.e., testing equipment on shake tables, would not be practical because many equipment types and models are no longer available and the use of installed equipment for testing is, in general, not possible. After further consideration of the problem and alternative resolution approaches, SQUG undertook a pilot program to determine if actual experience in fossil power plants and other industrial facilities which have undergone significant earthquakes could be used as a basis for evaluating the seismic adequacy of similar equipment in nuclear plants.

The results of the SQUG pilot program showed the feasibility of using earthquake experience data as a means of assessing the seismic ruggedness of a large cross section of standard power plant equipment used in nuclear plants (see Reference 2). The SQUG effort also demonstrated that, with a few exceptions, nuclear plant equipment is generally similar to that installed in conventional plants and, when properly anchored, has inherent seismic ruggedness and a demonstrated capability to withstand substantial seismic motion without structural damage or loss of functionality. The pilot program results were subsequently confirmed by additional data collection and analysis.

After substantial technical research by both the SQUG and the NRC, the NRC Staff published, on February 19, 1987, a detailed approach for resolving the issue in Generic Letter 87-02 (Reference 1). Implementation guidance for generic and plant-specific resolution of USI A-46 was provided in an enclosure to the Generic Letter, entitled "Seismic Adequacy Verification Procedure." The Generic Letter Procedure sets forth an approach for verifying seismic adequacy of equipment using earthquake experience data supplemented by test results and analyses, as necessary. Licensees subject to USI A-46 were encouraged to participate in a generic program to accomplish seismic verification of equipment. As a result, SQUG developed the "Generic Implementation Procedure (GIP) for Seismic Verification of Nuclear Plant Equipment" (Reference 3).

The GIP provides the detailed technical approach, generic procedures and documentation guidance which USI A-46 licensees should use to verify the seismic adequacy of mechanical and electrical safe shutdown equipment. In this regard, the GIP also contains all of the activities necessary for resolution of USI A-46. A Safety Evaluation Report on Revision 2 of the GIP was prepared by the NRC and is documented in Reference 4. In its response to Supplement 1 of Generic Letter 87-02 Duquesne Light Company committed to the NRC that the SQUG methodology would be used to resolve USI A-46 for BVPS-1 (see Reference 5). The NRC evaluation and acceptance of this approach for BVPS-1 is documented in Reference 6.

1.3 USI A-46 RELAY EVALUATION

For most equipment required to function for safe shutdown in nuclear plants, demonstration of seismic adequacy under USI A-46 will be accomplished by verifying that the equipment is comparable to that in the conventional plants which have successfully withstood significant earthquakes and by assuring that the equipment is properly anchored. In the case of electrical relays, this approach is not sufficient. First, the types of relays used in power plants are diverse and not easily grouped in generic equipment classes. Second, there have been instances of relay malfunction in earthquakes and in seismic shake-table tests at acceleration levels which may be near nuclear plant design levels. For these reasons, the Electric Power Research Institute (EPRI) established a project to develop a methodology for evaluating relay seismic functionality in operating nuclear power plants. The project developed EPRI Reports NP-7148-SL (Reference 7) and NP-7148-SL Volume 2: Addendum (Reference 10), which provide the methodology and procedures for evaluating relay seismic functionality.

Section II.6 of the GIP provides an overview of the USI A-46 relay review criteria and methodology. Section II.9 of the GIP defines the information which should be included in the relay evaluation report. The content of the GIP concerning relay evaluations is based on the detailed criteria, methodology and procedure documented in EPRI Report NP-7148-SL. Accordingly, the review of the relays associated with the USI A-46 safe shutdown equipment for BVPS-1 was performed and documented in accordance with the requirements of the GIP, the NRC SSER on the GIP, and EPRI Report NP-7148-SL.

1.4 REPORT ORGANIZATION

Section 2 of this report contains a summary of the USI A-46 relay review for BVPS-1. Section 3 describes the overall technical approach and assumptions used in the review. A summary of the safe shutdown systems and the list of safe shutdown equipment included in the relay review is contained in Section 4. Section 5 documents the relay screening and evaluation results. The references used to support the evaluation documented by this report are listed in Section 6. Tables and figures are numbered according to the report section which references them.

Appendix A contains floor spectra used in the evaluation. Appendix B contains seismic demand (Demand) level curves using ARS and GIP amplification factors for various electrical enclosure locations and types. Appendix C includes discussions of plant systems and associated circuit evaluations. Appendix D contains a list of essential relays screened as seismically rugged using the switchgear GERS. Appendix E contains a list of essential relays, including the relay identification numbers, the manufacturers' model numbers, and the enclosure where the relay is mounted. The enclosures containing essential relays are listed separately in Appendix F. This list was used as the basis for the list of enclosures housing essential relays included on the Safe Shutdown Equipment List for seismic verification. Appendix G contains individual seismic capacity (Capacity) versus Demand assessment sheets for the essential relay types and relay panels. Appendix H contains the resumes of the relay reviewers.

Section 2

RESULTS AND PLANNED ACTIONS

2.1 SUMMARY OF RESULTS

The BVPS-1 Safe Shutdown Equipment List (SSEL) components requiring a relay review are included in Section 4. Relay reviews were performed for each of these items to determine which relays must not chatter during seismic strong motion (30 sec. duration). The relays selected are considered "essential" for safe shutdown of the plant. The reviews are documented in Section 5 of this report. The following sections generally describe the approach used to evaluate relays determined to be essential. (Note: the term "relay" represents a larger group of contactors, which includes switches, thermostats, relays, motor starters.)

2.1.1

The BVPS-1 safe shutdown earthquake (SSE) ground response spectrum is bounded by the SQUG Bounding Spectrum (BS). The peak horizontal ground motion or zero period acceleration (ZPA) is 0.125 g. Additional discussion of the BVPS-1 Demand levels can be found in Section 5.2.1.

2.1.2

The SSEL components for which relay (contactor) evaluation was performed are listed in Section 4, Table 4.2. Relay screening followed the guidance of the GIP and EPRI Report NP-7148-SL. Screening and circuit analysis led to each relay being assigned a status of non-vulnerable, chatter acceptable, or essential function. Such assignments and clarifying notes can be found on the G.4 forms of Section 5.

2.1.3

For essential relays, a determination of the relay enclosure's amplification was made to establish a Demand level for the relay. The GIP amplification factors were used for MCC, Switchgear and Control Boards. Original qualification test report documentation (QTR) was reviewed to establish relay panel response characteristics, but generally, the guidance of EPRI Report NP-7146-SL R1 was followed for panel amplification. It typically yielded higher amplifications than those found in the QTRs. Wall and column mounted enclosures were considered separately, and found to be non-amplifying. Conservatively, an amplification factor of seven (7) was still used for such enclosures. The determination of relay panel amplification and essential relay Capacity versus Demand, can be found in Appendix G.

2.1.4

Relay and contactor Capacity was established using EPRI Report NP-7147-SL, whenever the relay could be categorized as being included in the EPRI test groups. Model similarity and setting issues were specifically identified on the relay assessment sheets - Appendix G. When relays could not be found in the GERS groupings, the original QTR was reviewed to determine the nature and level of seismic testing previously performed. Generally, BVPS-1 relays were originally tested to biaxial, sine and sine-beat, and scan and dwell requirements. Such testing, although convertible to some extent to current criteria, was not considered sufficient to assume qualification. More recently procured new and replacement relays were tested to IEEE 344-75 requirements, and such QTRs were considered acceptable if SQUG Demand levels were satisfied. A final source of qualification basis was the EPRI Seismic Qualification Reporting and Testing Standardization (SQURTS) library, to which Duquesne Light Company belongs. SQURTS testing is fragility testing which meets the requirements of ANSI/IEEE C37.98, and was considered an acceptable basis if relay models were the same and SQUG Demand levels were satisfied.

2.1.5

The SSE ground response spectrum and horizontal floor response spectra (FRS) are discussed in Section 5.2. They form the basis for the Demand level curves displayed in Appendix B. The curves were derived by applying GIP amplification factors for various electrical enclosure types to the FRS at the enclosures' locations. For non-GIP enclosures such as relay panels, the peak spectral acceleration (PSA) and zero period acceleration (ZPA) values were taken from the FRS and factored as suggested by EPRI Report NP-7146-SL R1 (Reference 11).

2.1.6

Relay chatter was deemed acceptable primarily when the consequences involved alarm functions or temporary activation of a component. Such situations as an air compressor starting and stopping for the 30 second strong motion duration, or a heater cycling, are examples of such acceptable chatter consequences. No operator actions to reset relays were assumed, but alternate means involving qualified equipment to accomplish actions interrupted or aborted by relay chatter were included. Relays having only original IEEE 344-71 qualification, and two (2) SQUG bad actor (GE HGA) relays, have G.4 form memos explaining alternate actions.

2.1.7

Relay enclosures were generally of common design and construction. No significant, separate, internal structures were found to exist that would be exceptions to the SQUG database (e.g., cantilevered panels or wingwalls). Original qualification documentation and recent in-situ testing indicate that overall structural responses of the various enclosure types are comparable to SQUG guidelines regarding amplification of floor motion. Load-path and anchorage for enclosures containing essential relays were adequate although certain cabinets were found to have several missing or loosened bolts connecting them to a subsystem of steel channels. These were

immediately corrected and a problem report issued. Sufficient fasteners were always present in the subject base connection or in the panels' side-to-side connections (panels were bolted together) to assure structural integrity and avoid impact forces. The base channels do not experience significant weak-way bending since the enclosure's side panels apply virtually all of the horizontal shear forces and load the front-to-back members directly.

2.1.8

No essential relays were found to be improperly located or mounted. However, several instances of missing or broken fasteners on non-essential relays were identified. While their attachment remained secure, the installation was considered degraded. These were immediately corrected and a problem report issued.

2.1.9

Table 2.1-1 summarizes the status of the essential relay/contactors reviewed. Three (3) SQUG bad actor relay types were found to be essential - the General Electric HGA and the Westinghouse COM-5 and SG. The relays are listed by SQUG because of low level seismic motion chatter. However, none of the three fault electrically due to seismic excitation. Five (5) relay types were found that are not in the SQUG database, all of which were originally qualified using scan and dwell testing to IEEE 344-71. Eight (8) contactors and relay types were identified in the fire protection system that have no seismic qualification. All of the noted relays/contactors have been classified as outliers and are discussed in further detail in Section 2.2.

2.1.10

No programmatic deviations from the GIP were endorsed nor are they known to exist. The SQUG process is considered to be ongoing as identified outliers are resolved. Should errors or new data alter earlier conclusions regarding an essential relay, appropriate corrective action will be taken and the change documented in the final completion letter.

2.2 RELAY OUTLIERS

2.2.1 Relay outliers are of four (4) general types:

(1) Bad actors, but which are not configured in the manner that produces vulnerability - e.g., non-operating/normally closed (NOP/NC) contacts are not used. These relays are identified as outliers in accordance with GIP guidance, with resolution through "refined screening", GIP Section 6.6.

(2) Bad actors which have vulnerable configurations (2 occasions), but whose spurious action can be accepted. The consequences of their improper action exceeds that which could be attributed to a non-essential relay. However, plant control is maintained.

(3) Relays for which no SQUG database criteria exist, but which were tested and accepted to the current license basis, IEEE-344-71. At both low and full scale motion levels, the existing testing

was generally sine and sine-beat, and scan and dwell testing. Contact chatter was generally monitored to criteria ranging from microseconds to 2 ms.

(4) Fire protection system contactors and relays for which seismic qualification was not a design basis requirement.

2.2.1.1

The Westinghouse COM-5 relay is a SQUG bad actor because of its ITH component (the relay is a grouping of separate devices) in a NOP/NC configuration. As identified on the COM-5 assessment sheet, the BVPS-1 COM-5 relays are not configured this way. They are used as NOP/NO (normally opened), for which Capacity exceeds the Demand of their switchgear application. Therefore, the essential COM-5 relays are considered to be acceptable. The COM-5 relays are being evaluated for upgrade to a more seismically rugged version apart from the SQUG review.

2.2.1.2

The Westinghouse SG relay is a SQUG bad actor because of its NOP/NC configuration Capacity level. As identified on the SG assessment sheet, the BVPS-1 relay's configuration is NOP/NO and its Capacity exceeds the Demand level of its relay panel application. Therefore, the essential SG relays are considered to be acceptable.

2.2.1.3

The GE HGA is a SQUG bad actor because of its NOP/NC configuration Capacity level. As identified on the HGA assessment sheet, the BVPS-1 HGA configuration is both NOP/NO and NOP/NC - the latter for two (2) relays. The HGA NOP/NO Capacity exceeds the Demand level of relays configured in that manner and such essential relays are considered acceptable, but the NOP/NC types are assumed to malfunction. The two instances of malfunction can be accepted based upon the fact that chatter will only delay, but not prevent the emergency bus stripping and emergency diesel generator (EDG) starting. This delayed reenergization of the emergency electrical busses is deemed acceptable because there is no accident in progress.

2.2.1.4

The essential relays that are outliers because they are not found in the SQUG database, but which were tested to BVPS-1's license basis - IEEE 344-71 - are as follows:

1) General Electric IAC60 - Controls trip and lockout of the EDG.

2) Honeywell RP403 - Controls dampers in the control room ventilation system.

3) Westinghouse ARS - Controls trip and lockout of the EDG.

4) Westinghouse IRV - Controls trip and lockout of the EDG.

5) Square-D 7001 - Controls the EDG start, output breaker, and start lockout circuits.

6) Square-D EQ2423 - Are used as permissives in the EDG start circuits.

7) Square-D EQ19335 - Are used in the EDG start circuits and in the field flash circuit.

8) Square-D EQ1965 - Controls the excitation field flash from the station batteries.

9) Vapor Corp. Type 12 - Controls the EDG air start solenoid and the motor driven fuel pump.

10) Vapor Corp. (Unmarked) - Controls the governor power and control circuits.

11) Syncro Start Products ESS-B-4AT - Controls EDG field flash and shutdown circuits.

2.2.1.5

The essential relays that are in the fire protection systems for the auxiliary feedwater (AFW) pumps, EDG and charcoal bed filters, are neither seismically qualified, nor included in the SQUG database. The relay/contactor types are listed in Table 2.1-1, as "FIRE PROT. - NO QTR." The consequences of their inadvertent activation due to an earthquake involve activation of fire suppression systems protecting the SSEL components. The devices are discussed here as to their effect on SSEL equipment:

1) AFW Pumps - Fire protection is by way of a water spray sprinkler system activated by a heat actuated device (HAD). The effect of water spray is indeterminate. Although the pumps are not qualified to a harsh environment, the pump drivers are motors without ventilation openings, and the electrical power supply and control cables are insulated and make use of NEMA connections. The penetration of water would require some period of time during which an operator could be expected to recognize the fire system activation and terminate the activity. A period of 30 min. is estimated to be required to achieve operator action.

2) Charcoal Bed Filters - Fire protection is by way of a water spray sprinkler system activated by a HAD. The effect of water spray is to saturate the charcoal bed and essentially eliminate air flow. In this event, a bypass is available which is controlled by radiation monitors which may spuriously activate due to motion or particulates, and close HVAC dampers. The bypass would then be re-established by way of operator action.

3) EDG - Fire protection is by way of a carbon dioxide blanket system activated by an HAD. The effect of the carbon dioxide blanket would be to prevent or abort EDG operation until such time as the blanket is removed by ventilating the EDG building. Ventilation would possibly require an operator to set up portable gasoline powered fans and block open doors. A period of 30 minutes is estimated to be required to set up and purge the air in the diesel generator room(s)

before diesel restart could be accomplished. Sufficient power to proceed with plant shutdown can be obtained by establishing the cross-tie to BVPS-2 within one (1) hour.

2.3 COMPLETION ACTIVITIES

Resolution of the outliers shown in Table 2.1-1 will follow the indicated path. Note that essential bad actor relays are acceptable as they are configured at BVPS-1, except for two (2) of the GE HGA relays. Chatter of these can be tolerated. The COM-5 relays, while acceptable, are currently being considered for upgrading to a more rugged model. The SGs are considered fully acceptable as configured.

The relays which are outside of the current SQUG database were originally tested to IEEE 344-71. These relays have been evaluated and are judged acceptable based on their applications.

The fire protection relays for which no seismic qualification is documented will be qualified by test or experience basis. The latter would be derived from the larger database which is maintained by EQE and from which the SQUG database is drawn. It may be supplemented by available vendor information. Discussion with other utilities indicates that these types of devices have been found in the past to tolerate shaking.

The outliers which remain unresolved will be prioritized according to their safety significance and scope. If any modifications are required for these outliers, it is planned to schedule them for implementation during one of the next three BVPS-1 refueling cutages.

Table 2.1-1

RELAY REVIEW SUMMARY

Relay Type	Acceptance Basis	Outlier Basis	Resolution
ABB RXME-1	QTR - ABB*		N/A
ABB RXMH-2	QTR - ABB*		N/A
AGASTAT 2412, 2422 & 7022	GERS-RLY-PNT.7		N/A
ALLIS TY2 CONTACTOR	GERS-RLY-CON.3		N/A
ALLIS TY3 CONTACTOR	GERS-RLY-CON.3		N/A
BARKSDALE B2T P.S.	GERS-RLY-PS.5		N/A
BARTON 288A I.S.	GERS-RLY-PS.5		N/A
BI-METALLIC SWITCH	GERS-RLY-PS.5		N/A
C.P.Clare GP1	Test Group 13		N/A
CURTIS RS8		FIRE PROT. - NO QTR	Qualify or Modify
GE HEA	GERS-RLY-ALO.2		N/A
GE HGA		**BAD ACTOR**	GERS-RLY-ARH.5 for NOP/NO contacts; **AFFECT ACCEPTABLE** for NOP/NC (See Assessment Sheet for HGA & G.4 Report).
GE IAC53	GERS-RLY-PP1.5		N/A
GE IAC60	(Original Licensing Basis)	NOT IN SQUG DATABASE	Perform further review
T.S. (HAD)		FIRE PROT. - NO QTR	Qualify or Modify
HOLD RELAY		FIRE PROT. - NO QTR	Qualify or Modify
HONEYWELL RP403	(Original Licensing Basis)	NOT IN SQUG DATABASE	Perform further review
ITE 47H	QTR - ABB*		N/A
(K1)		FIRE PROT. - NO QTR	Qualify or Modify
ELECTRO-PNUEMATIC		FIRE PROT. - NO QTR	Qualify or Modify
MASTER VALVE RELAY		FIRE PROT. - NO QTR	Qualify or Modify
MASTER VALVE AUX		FIRE PROT. - NO QTR	Qualify or Modify
Midtex/AEMCO 156	Test Group 17		N/A
Potter Brumfield KHU17	Test Group 14		N/A
Potter Brumfield MDR	GERS-RLY-ARR.3		N/A
RAD MONITOR READOUT	QTR - Victoreen/F&H**		N/A
SQ-D 7001	(Original Licensing Basis)	NOT IN SQUG DATABASE	Perform further review
SQ-D 8504 (EQ1965G13)	(Original Licensing Basis)	NOT IN SQUG DATABASE	Perform further review
SQ-D 9050 (EQ1933G2)	Test Group 20		N/A
SQ-D 9050 (EQ19335G2 & EQ2423G1)	(Original Licensing Basis)	NOT IN SQUG DATABASE	Perform further review

Table 2.1-1

RELAY REVIEW SUMMARY

SYNCRO START Speed Switch	(Original Licensing Basis)	NOT IN SQUG DATABASE	Perform further review
TIMING RELAY		FIRE PROT. - NO QTR	Qualify or Modify
VAPOR (2 models)	(Original Licensing Basis)	NOT IN SQUG DATABASE	Perform further review
W AR440	GERS-RLY-AI1.4		N/A
W ARS	(Original Licensing Basis)	NOT IN SQUG DATABASE	Perform further review
W AV	Test Group 20		N/A
W CO-11	GERS-GRP-7 & 12		N/A
W COM-5		**BAD ACTOR**	GERS-GRP-7 for NOP/NO
W IRV	(Original Licensing Basis)	NOT IN SQUG DATABASE	Perform further review
W MG-6	GERS-RLY-ARH.5		N/A
W SG		**BAD ACTOR**	GERS-RLY-ARH.5 for NOP/NO
W TD-5	QTR - EPRI/SQURTS*		N/A
W WL	GERS-RLY-ALO.2		N/A

Original Licensing Basis = IEEE 344-1971
* - Denotes testing to ANSI C37.98
** - Denotes testing to IEEE 344-1975

Section 3

TECHNICAL APPROACH

3.1 INTRODUCTION

The relay evaluation methodology used at BVPS-1 consists of a step-by-step procedure to screen and evaluate relays. Systems, associated circuits, and relays which must remain functional during and immediately after an earthquake were first identified. Nonessential relays, e.g., those that, by temporary malfunction (contact chatter or change of state), would not prevent safe shutdown of the plant or cause other unacceptable actions, were screened out utilizing systems and circuit evaluation techniques. Seismic capacity data were then used to assess the seismic adequacy of the remaining essential relays. The seismic ruggedness data are based on the Generic Equipment Ruggedness Spectra (GERS) prepared for relays.

3.2 METHODOLOGY

The methodology for evaluating the seismic functionality of relays was based on a three-part screening and evaluation process. The first part of the screening process identified a set of plant systems which are required to function to maintain the plant in a safe condition during and immediately after an earthquake. This screening process resulted in a subset of plant systems and associated electrical relays which were considered essential to plant safety in an earthquake. Therefore, it reduced the number of relays whose seismic functionality had to be demonstrated. The second part of the evaluation process utilized system and circuit evaluations to further reduce the number of relays which were considered essential. The third part of the screening and evaluation process was to assess the seismic ruggedness of the remaining essential relays.

3.3 CRITERIA AND GOVERNING ASSUMPTIONS

For resolution of USI A-46 it is not necessary to verify the seismic adequacy of all plant equipment defined as Seismic Class 1 in NRC Regulatory Guide 1.29. Instead, only those systems, subsystems, and components required to bring the plant to a safe shutdown condition and to maintain it in that condition for 72 hours are included in the scope of USI A-46. As a result, the scope of the seismic verification review is limited to equipment which provides functions necessary for achieving and maintaining safe shutdown. Other important assumptions which define systems and equipment which are considered essential under USI A-46 are defined in NUREG-1211 and include: (1) the seismic event does not cause a loss of coolant accident (LOCA) and a LOCA will not be postulated to occur simultaneously with or during the seismic event, (2) off-site power may be lost during or following a seismic event, and (3) random, single-active-failures are assumed for systems counted on to achieve and maintain hot, safe shutdown. In addition, other specific criteria and assumptions involved in the evaluation of relays along with the detailed relay evaluation procedure used for BVPS-1 are provided in References 7 and 10.

3.4 IDENTIFICATION OF ESSENTIAL FUNCTIONS AND SYSTEMS

Four functions were considered for achieving and maintaining a safe shutdown condition following design basis earthquake. These functions are as follows:

- Reactivity control
- Reactor coolant pressure control
- Reactor coolant inventory control
- Decay heat removal

The systems best suited to perform these safe shutdown functions at BVPS-1 are identified in Section 4.

The supporting systems that are necessary to operate the safe shutdown equipment were also identified. A Safe Shutdown Equipment List (SSEL) was developed for each system identified for safe shutdown. These SSELs were then compiled into one composite SSEL. Separate SSELs were then generated, one for seismic walkdowns and another for relay review. The basis for the SSEL selection is discussed further in Section 4, which includes the relay review SSEL. Items for relay review are identified in that list.

3.5 RELAY SCREENING AND EVALUATION

An overview of the relay screening and evaluation procedure is provided in the flow chart of Figure 3.5 taken from Figure 5-1 of Reference 7. This chart identifies the steps followed in the BVPS-1 evaluation. Specific choices were made during the procedure to take advantage of plant-specific conditions.

In summary, the process used to identify and evaluate the relays required to safely shut down BVPS-1 in the event of a design basis earthquake is as follows:

- Safe shutdown systems were identified, including those specific components which must operate for the systems to meet their functional requirements, or whose malfunction could interfere with meeting system functional requirements. Section 4 summarizes the identification of BVPS-1 safe shutdown equipment.

- The relays/circuits which affect the safe shutdown system equipment were evaluated. A simplified failure modes and effects analysis was used to examine the consequences of relay malfunction. This step screened from further consideration those relays, or complete circuits of relays, whose malfunction would not prevent system/component functioning or cause other unacceptable conditions. Checks were also made for generically rugged devices (solid state relays and mechanically actuated contacts) and for a small group of relays and devices considered vulnerable to minor impact. Also, some relays were screened from further evaluation where operator actions to address malfunction are acceptable, i.e., adequate indication, time, access and procedures. Those relays which could not be screened from

RELAY SCREENING AND EVALUATION PROCEDURE

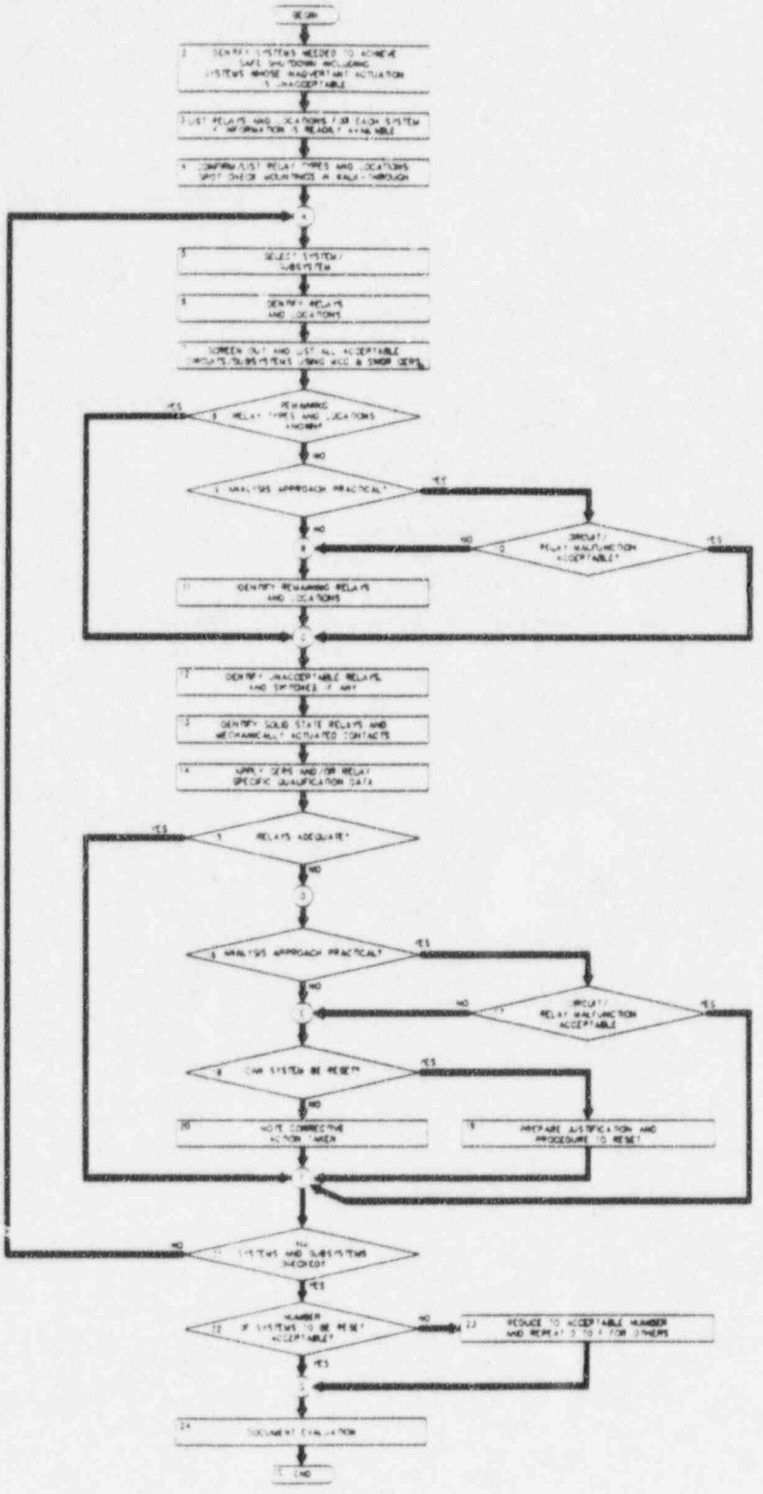

Figure 3.5

further evaluation were designated "essential" and required evaluation to determine if they had adequate seismic ruggedness for their specific application. Appendix C discusses the system/circuit evaluation.

- The seismic adequacy of those relays which were identified as essential was evaluated by comparing the seismic capacity of specific relay types with the plant-specific seismic demand. A data base (References 8 and 9) of seismic generic equipment ruggedness spectrum (GERS) data for various types and classes of relays was used. When specific relays were not included in the GERS groups, seismic qualification performed to IEEE 344-75 or ANSI/IEEE C37.98 was considered an acceptable alternative. Section 5 documents the seismic adequacy evaluations.

- The need for corrective actions or further analysis was identified for those relays which did not satisfy the screening and evaluations described above. These relays and actions/analysis are identified in Section 2.

The results of this process of identifying and evaluating the relays required to safely shutdown BVPS-1 in the event of a design basis earthquake are documented in this report. This report provides a traceable record that all relays (including contact devices) or groups of relays which affect the operation of the safe shutdown components have been evaluated.

3.6 RELAY WALKDOWN

The GIP requires, in part, a plant walkdown of relays and their enclosures. The purpose of this walkdown is to:

1. Obtain, as necessary, information needed to determine cabinet types and cabinet-specific in-cabinet amplification factors for seismic capacity screening;

2. Verify the seismic adequacy of cabinets or enclosures which contain essential relays;

3. Spot-check mounting of essential relays to determine if they are in accordance with manufacturers' recommendations; and

4. Confirm that relay types and locations are consistent with the documentation which was used to establish relay types and locations during the relay circuit analysis.

Under the USI A-46 program, relay mountings are assumed to be in accordance with manufacturers' recommendations, and plant documentation of relay types and locations is assumed to be accurate. The objective of the spot checks made during the relay walkdown was to confirm these assumptions on a sample basis. Other plant walkdowns, performed by the seismic capability engineers, collected the information needed for cabinet evaluations used in seismic capacity screening of relays and to verify the seismic adequacy of the cabinets and enclosures which

support essential relays. No essential relays were found to be improperly mounted or identified. Mounting deficiencies were identified and corrected for non-essential relays (see Section 2.1.8).

Section 4

SAFE SHUTDOWN EQUIPMENT

4.1 SAFE SHUTDOWN FUNCTIONS

Resolution of USI A-46 requires verification of the seismic adequacy of the equipment necessary to achieve and maintain a safe shutdown condition for BVPS-1 during the first 72 hours following a Safe Shutdown Earthquake (SSE). The key assumptions used in the USI A-46 review are:

1. The unit will be operating normally, with the reactor coolant system at or near normal operating pressure and temperature, prior to the SSE;

2. The earthquake will not cause a loss of coolant accident (LOCA);

3. No other extraordinary event or accident, e.g., fire, flood, or LOCA will occur simultaneously with the SSE;

4. Loss of off-site power may occur as a result of the SSE; and

5. There should be sufficient redundancy such that the failure of the active function of a single component will not prevent safe shutdown.

The four basic functions necessary to achieve and maintain safe shutdown are:

1. Reactivity Control;

2. Reactor Coolant Pressure Control;

3. Reactor Inventory Control;

4. Decay Heat Removal

Briefly, the systems selected for controlling the four safe shutdown functions and other optional systems are as follows:

4.1.1 Reactivity Control Function

Initial reactivity control is achieved by control rod insertion initiated by either an automatic or manual reactor trip. The rods gravity fall into the core if either Reactor trip breaker opens resulting in an interruption of power to the gripper coils. The operators will be able to verify that the reactor is subcritical by checking the power or intermediate range nuclear instruments (NI). The source range nuclear instruments will become available within 30 minutes following the reactor trip/shutdown. Once energized the source range instruments can also be used to monitor

subcriticality. The GIP does not require the NI system to be listed on the SSEL. In the unlikely event that the reactor could not be tripped the operators would follow Emergency Operating Procedure FR-S.1 "Response to an ATWS." The Rod Position Indication (RPI) System was not chosen because the control rod drive system is NSSS supplied and all accident analysis assumes only one rod remains out of the core.

Boric acid addition is then used for long term reactivity control to compensate for the positive reactivity added by xenon decay and RCS cooldown (positive reactivity is added due to a cooldown of the fuel - doppler coefficient - and the cooldown of reactor coolant - moderator temperature coefficient). When the unit is at power, the quantity of boric acid retained in the RWST and boric acid storage tanks by technical specifications greatly exceeds the quantity required to compensate for xenon decay and RCS cooldown. For the plant shutdown, charging and boration will be accomplished by operating a minimum of one charging pump. The source of borated water could be from the RWST or the boric acid tanks, and which one will be used will depend upon whether other non-SQUG equipment is available (primarily the letdown subsystem). Two separate and independent flow paths can be used for RCS makeup and boration: the seal injection lines to the seals of the RCPs and the normal charging line to the loop B cold leg. The boration will probably have to be done without any CVCS letdown because the letdown line is assumed to be isolated due to a loss of containment instrument air.

Portions of the reactor plant sampling system are included so that the operators will be able to confirm boration to the value required by Operating Surveillance Test OST 1.49.2 (Cold Shutdown Xenon Free Condition) prior to blocking the automatic SI signals.

The safe shutdown equipment in these flowpaths are itemized on the SSEL (items 1101 through 1248).

4.1.2 Pressure Control Function

The RCS is the primary system used to achieve pressure control. Control is achieved by using the pressurizer heaters and the PORVs/Safeties.

The pressurizer has three power-operated relief valves (PORVs) in parallel that provide overpressure protection during normal operations. The PORVs may not be available because the air supply to the valves cannot be guaranteed. Instead, the three pressurizer safeties are utilized for overpressure protection. The PORVs will operate, if instrument air is available, or will be available for a limited quantity of strokes because accumulator tanks GN-TK-1A and B are normally pressurized. Pressure reduction (control) is accomplished by natural circulation RCS cooldown or intermittent use of the PORVs.

Based on the premise that failure of a Pressurizer Relief Tank (PRT) rupture disk will not negate the ability to maintain a safe shutdown, no PRT associated equipment was selected.

Wide range RCS pressure instruments were selected to monitor the pressure control function.

The flowpaths used for the pressure control function and the non-passive equipment in these flowpaths are itemized on the SSEL (Items 2101 through 2230B).

4.1.3 Inventory Control Function

The charging portion of the CVCS accomplishes RCS inventory control by providing makeup water. Charging flow, to compensate for coolant contraction due to the RCS cooldown and any inventory losses due to leakage, will be accomplished by operating a minimum of one charging pump. The pump will take its suction from the RWST or the boric acid tanks and inject borated water to the B cold leg via the charging header and/or into the RCS via the reactor coolant pump (RCP) seal injection lines. Charging Flow Control Valve (FCV-CH-122) fails open on a loss of air. If this occurs, charging flow could be manually controlled using Valves CH-28, 29 and 30.

If it becomes necessary to remove inventory from the RCS due to minimal charging flow with no letdown, two options are available: 1) reestablish RCS letdown and swap the charging pump suction back to the VCT or 2) cool the RCS to shrink the inventory thus reducing volume. The RCS can be borated to maintain adequate shutdown margin during the cooldown. If it is reestablished, letdown will prevent RCS overfilling. The CVCS letdown lines including the VCT are not on the SSEL and may not be available because there are many air operated valves in the flowpath.

The availability of seal return flow is not required to achieve a safe shutdown and may be locally or remotely isolated. When isolated, RV-CH-382A lifts and diverts RCP seal return flow to the PRT.

RWST and pressurizer level indication, and charging and RCP seal injection flow indication will serve to monitor the inventory control function. The equipment utilized in these flowpaths are itemized on the SSEL (Items 3101A through 3321).

4.1.4 Decay Heat Removal Function

The decay heat removal function is satisfied by the RCS, main steam and auxiliary feedwater (AFW) systems. Heat is transferred by natural circulation of the reactor coolant from the core to the steam generators; heat is released from the secondary side of the steam generators (SGs) by releasing steam to the atmosphere via the residual heat release valve and/or an atmospheric steam dump valve(s).

The RCS is a Westinghouse three-loop design capable of natural circulation heat transfer. This provides a means of heat removal when the RCPs are unavailable. Adequate SG level is required to maintain natural circulation.

Confirmation of flow while in natural circulation is accomplished through the monitoring of: SG levels and pressures, RCS pressure and loop temperature indications, Tcold (Tc) and Thot (Th) or thermocouples. Subcooling within the RCS is maintained by keeping system pressure greater than

the saturation pressure, which coincides with the hottest RCS temperature, and continuous removal of heat from the steam generators.

The main steam (MS) system is used to remove decay and sensible heat from the RCS. The secondary system could be isolated by operation of the main steam trip valves if the condenser or the condenser steam dumps become unavailable. The trip bypass valves are assumed to be closed at power but could be closed if required. Steam will be released to atmosphere via the residual heat removal (RHR) valve or an atmospheric steam dump. The RHR and atmospheric steam dumps require instrument air for operation. However, they can be manually opened/throttled if the air system is unavailable. The MS components required for a safe shutdown are listed on the SSEL. A non-rugged pressure switch may cause the atmospheric steam dumps to open during the seismic event. If this would occur, the steam released would lessen the demand on the condenser steam dumps or, if offsite power is lost, the atmospheric steam dumps would already be open.

The AFW system is required to remove decay heat. SG inventory control is provided by the AFW system. The AFW system consists of one turbine driven AFW pump and two motor driven AFW pumps. All AFW pumps receive their water supply from the 140,000 gallon primary demineralized water storage tank (WT-TK-10). WT-TK-10 does not contain enough water to remove decay heat for 72 hours. If needed, the AFW pumps could be supplied with river water by manually repositioning a few valves. It is not expected that river water would have to be used because there are sufficient quantities of water available in other tanks which could be utilized in the 8-10 hours available before WT-TK-10 is depleted. The AFW pump recirculation flow control valves are air operated and fail closed. In the event that closure of these valves becomes a problem late in the scenario, the pump(s) could be run intermittently to prevent pump damage due to low flow.

The decay heat removal components required for a safe shutdown are included on the SSEL (Items 4101A through 4217).

4.1.5 Supporting Systems

The following sections describe the supporting systems necessary to ensure that the basic safe shutdown functions described above will be achieved. These systems do not directly perform a safe shutdown function but must operate in order to support the safe shutdown systems.

4.1.6 River Water

The river water system is required to supply cooling water to several components required for a safe shutdown - among them are the diesel generators, the charging pumps and components in the control room ventilation system. The system has sufficient capability to also supply water to the steam generators if needed. Seal water and motor cooling water will be self-supplied from the river water pump discharge lines (SSEL Items 5101 thru 5112).

4.1.7 Emergency Power

The diesel generators, station batteries, inverters and emergency electrical distribution systems are required to support all the required shutdown functions. Operability of the diesel generators also requires the support of the air start tanks, the fuel oil system including the day tanks and the underground tanks, the remote excitation cabinet and the load sequencer. Other electrical support includes the 4 KV, 480VAC, 120 VAC and 125 VDC emergency busses and distribution systems (transformers, MCCs, inverters and battery chargers).

4.1.8 HVAC

Several areas of the plant require ventilation during safe shutdown operations to protect electrical equipment from heat damage and allow access for operator actions. These areas are:

(1) Control Room
(2) Emergency Switchgear/Battery Rooms
(3) Charging Pump Cubicles (using SLC & RS)
(4) The AFW Pump Room (using SLC & RS)
(5) The Diesel Generator Rooms
(6) The River Water Pump Cubicles

Note: SLC & RS - Supplemental Leak Collection & Release System

Containment cooling would be lost during the shutdown due to the loss of cooling water. Recirculation operating experience and calculations show that containment internal temperatures do not exceed 120 degrees during a worst case loss of containment cooling. No operator action in containment is anticipated. If required, operators could make containment entries using ice vests.

4.1.9 Heat Trace

Heat Trace required to maintain the RWST flow path is included to assure cold weather availability. Review of BAT piping resulted in a determination that its flowpath will experience ambient indoor temperatures only and maintain a 68°F minimum temperature.

4.1.10 Fire Protection

Fire protection systems are included where their seismically-induced activation could affect SSEL component function. These SSEL components include the AFW pumps, EDGs and the charcoal bed filters. The AFW pumps and charcoal bed filters are each protected by an HAD that activates a deluge valve upon sensing a fire, releasing water to the system. The EDGs are each protected by a carbon dioxide blanket system triggered by an HAD. All three systems are automatic in actuation. None of the control circuitry makes use of seismically qualified devices.

4.1.11 General

Emergency lighting is provided throughout the plant. If it should fail during a seismic event, flashlights or portable lanterns will be used to support operator actions.

Communication is usually done by phone or plant page; should these fail, communication would be by walkie-talkie.

Decay heat will need to be removed from the spent fuel pool during the 72 hour period. No fuel pool cooling equipment is on the SSEL because decay heat removal or makeup to the fuel pool could be accomplished using existing procedures utilizing river water as the heat sink.

Equipment that is required to remain inactive during plant shutdown -- including that which could load the Diesel Generators -- is included for purposes of relay review to assure that no seismic-induced activation occurs.

4.2 RELAY REVIEW SAFE SHUTDOWN EQUIPMENT LIST

Section II.3 and Appendix A of the GIP describe in detail the overall method for identifying the mechanical and electrical equipment required to address USI A-46 safe shutdown criteria. The SSEL contains the plant equipment necessary to achieve and maintain safe shutdown under the USI A-46 governing assumptions and ground rules for identifying equipment. The SSEL is a composite list of both mechanical and electrical equipment. Not all of the equipment items included on the SSEL are affected by relays or other contact devices. As a result, only a subset of the SSEL components require a USI A-46 relay review.

The SSEL equipment items requiring a relay review are those items which are electrically powered or controlled and:

1. Must operate or change state to accomplish a safe shutdown function (active equipment); or

2. Do not need to operate to accomplish safe shutdown (passive equipment) but whose inadvertent operation due to relay chatter could adversely affect the accomplishment of safe shutdown.

Table 4.2 lists the SSEL equipment items requiring a relay review for BVPS-1. The relay evaluation of each of these items is contained in Section 5 of this report.

Table 4.2

Relay Review Safe Shutdown Equipment List
(15 Pages)

BEAVER VALLEY POWER STATION UNIT 1
RELAY REVIEW
SAFE SHUTDOWN EQUIPMENT LIST (SSEL)
332 INDIVIDUAL PLANT COMPONENTS

LINE NO.	TRAIN	EQUIP CLASS	MARK NO.	SYSTEM/EQUIPMENT DESCRIPTION	Dwg. No./Rev./Zone	<--- Building	EQUIPMENT Flr.Elv.	LOCATION ----> Rm. or Row/Col.	SORT	NOTES	<-- OP. Normal	ST. --> Desired	POWER REQD?	SUPPORTING SYS. DWG. NO./REV.	REQ'D INTERCONNECTIONS & SUPPORTING COMPONENTS	REG. ISSUE
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
1101	A	02	52-RTA	01/REACTOR TRIP BREAKER 'A'	DWG RE-27B	SRVB	713	ROD M/G	R	1	CLOSED	OPEN	NO	RE-21TZ	DC-SWBD-1 BK 8-7	A
1102	B	02	52-RTB	01/REACTOR TRIP BREAKER 'B'	DWG RE-27B	SRVB	713	ROD M/G	R	1	CLOSED	OPEN	NO	RE-21TZ	DC-SWBD-2 BK 8-7	A
8007	A	02	BAT-BKR-1	39/MAIN DC BUS #1 BATTERY CIRCUIT BREAKER	DWG RE-27B	SRVB	713	AE SWGR	S R		CLOSED	CLOSED	NO	RE-21DJ	N/A	A
8008	B	02	BAT-BKR-2	39/MAIN DC BUS #2 BATTERY CIRCUIT BREAKER	DWG RE-27B	SRVB	713	DF SWGR	S R		CLOSED	CLOSED	NO	RE-21DJ	N/A	A
8009	A	02	BAT-BKR-3	39/MAIN DC BUS #3 BATTERY CIRCUIT BREAKER	DWG RE-27B	SRVB	713	AE SWGR	S R		CLOSED	CLOSED	NO	RE-21DJ	N/A	A
8010	B	02	BAT-BKR-4	39/MAIN DC BUS #4 BATTERY CIRCUIT BREAKER	DWG RE-27B	SRVB	713	DF SWGR	S R		CLOSED	CLOSED	NO	RE-21DJ	N/A	A
5343	A	16	BAT-CHG-1	39/BATTERY CHARGER #1	DWG RE-27B	SRVB	713	AE SWGR	S R	14	ON	ON	YES	RE-1Z	MCC1-E9	A
5344	B	16	BAT-CHG-2	39/BATTERY CHARGER #2	DWG RE-1V, 27B	SRVB	713	DF SWGR	S R	14	ON	ON	YES	RE-1Z	MCC1-E10	A
5345	A	16	BAT-CHG-3	39/BATTERY CHARGER #3	DWG RE-27B	SRVB	713	AE SWGR	S R	14	ON	ON	YES	RE-1V	MCC1-E9	A
5346	B	16	BAT-CHG-4	39/BATTERY CHARGER #4	DWG RE-1V, 27B	SRVB	713	DF SWGR	S R	14	ON	ON	YES	RE-1V	MCC1-E10	A
1212	A	05	CH-P-1A	CH/CHARGING PUMP	DWG RM-2A	AXLB	722	CH-P-1A CUBICLE	S R		RUN	RUN	YES	RE-21FN	BUS AE BK E11	A
2213	B	05	CH-P-1B	CH/CHARGING PUMP	DWG RM-2A	AXLB	722	CH-P-1B CUBICLE	S R		OFF	OFF	YES	RE-21FN	BUS DF BK F11	A
1214	A/B	05	CH-P-1C	CH/CHARGING PUMP	DWG RM-2A	AXLB	722	CH-P-1C CUBICLE	S R		OFF	OFF	YES	RE-21FP	BUS AE/DF BK E15	A
1246	A	05	CH-P-2A	CH/BORIC ACID TRANSFER PUMP	VTI 2.32-001	AXLB	752	BA PUMP CUBICLE	S R		OFF	ON	YES	RE-21FQ	MCC1-E11 BK B	A
1247	B	05	CH-P-2B	CH/BORIC ACID TRANSFER PUMP	VTI 2.32-001	AXLB	752	BA PUMP CUBICLE	S R		OFF	ON	YES	RE-21FQ	MCC1-E12 BK B	A
4108E	A/B	08B	DV-FP-12	FP/AUX FEED WATER PUMP DELUGE VLV	RB-16C	SFGB	722	NE	R		CLOSED	CLOSED	NO	10.1-474	PNL-DC-4	A
5231C	A/B	08B	DV-FP-8	FP/UPPER CHARCOAL VENT FILTER DELUGE VALVE	RB-16C	STOR	735	LUNCH ROOM	R		CLOSED	CLOSED	NO	RE-21GW	PNL-DC-4	A
5133C	A/B	08B	DV-FP-9	FP/LOWER CHARCOAL VENT FILTER DELUGE VALVE	RB-16C	STOR	735	LUNCH ROOM	R		CLOSED	CLOSED	NO	RE-21GV	PNL-DC-4	A
5300C	A	12	EE-C-1A	EE/DIESEL GENERATOR START AIR COMPRESSOR	VTI 2.19-13, RM-10A	DGBX	735	DIESEL GEN #1	S R		ON	ON	YES	RE-21BX	MCC1-E7 BK N	A
5300E	B	12	EE-C-1B	EE/DIESEL GENERATOR START AIR COMPRESSOR	VTI 2.19-13, RM-10A	DGBX	735	DIESEL GEN #2	S R		ON	ON	YES	RE-21BX	MCC1-E7 BK T	A
5300D	A	12	EE-C-2A	EE/DIESEL GENERATOR START AIR COMPRESSOR	VTI 2.19-10, RM-10A	DGBX	735	DIESEL GEN #1	S R		ON	ON	YES	RE-21BX	MCC1-E8 BK N	A
5300F	B	12	EE-C-2B	EE/DIESEL GENERATOR START AIR COMPRESSOR	VTI 2.19-10, RM-10A	DGBX	735	DIESEL GEN #2	S R		ON	ON	YES	RE-21BX	MCC1-E8 BK T	A
5301	A	17	EE-EG-1	EE/#1 DIESEL GENERATOR	DWG RM-10A	DGBX	735	DIESEL GEN #1	S R		OFF	ON	YES	N/A	N/A	A

BEAVER VALLEY POWER STATION UNIT 1
RELAY REVIEW
SAFE SHUTDOWN EQUIPMENT LIST (SSEL)
332 INDIVIDUAL PLANT COMPONENTS

LINE NO.	TRAIN	EQUIP CLASS	MARK NO.	SYSTEM/EQUIPMENT DESCRIPTION	Dwg. No./Rev./Zone	<---------- Building	EQUIPMENT Flr.Elv.	LOCATION -----> Rm. or Row/Col.	SORT	NOTES	<-- OP. Normal	ST. --> Desired	POWER REQD?	SUPPORTING SYS. DWG. NO./REV.	REQ'D INTERCONNECTIONS & SUPPORTING COMPONENTS	REG. ISSUE
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
5302	B	17	EE-EG-2	EE/#2 DIESEL GENERATOR	DWG RM-10A	DGBX	735	DIESEL GEN #2	S R		OFF	ON	YES	N/A	N/A	A
5303	A	05	EE-P-1A	EE/FUEL OIL TRANSFER PUMP	DWG RM-10A	DGBX	735	DIESEL GEN #2	S R		OFF	ON	YES	RE-21BX	MCC1-E7 BK Q	A
5304	A	05	EE-P-1B	EE/FUEL OIL TRANSFER PUMP	DWG RM-10A	DGBX	735	DIESEL GEN #2	S R		OFF	ON	YES	RE-21BX	MCC1-E7 BK R	A
5305	B	05	EE-P-1C	EE/FUEL OIL TRANSFER PUMP	DWG RM-10A	DGBX	735	DIESEL GEN #1	S R		OFF	ON	YES	RE-21BX	MCC1-E7 BK Q	A
5306	B	05	EE-P-1D	EE/FUEL OIL TRANSFER PUMP	DWG RM-10A	DGBX	735	DIESEL GEN #1	S R		OFF	ON	YES	RE-21BX	MCC1-E8 BK R	A
1224	A	07 *	FCV-CH-160	CH/CHARGING FILL HEADER FLOW CONTROL VALVE	ISO 6.24-273	SFGB	722	PENT A	R	16	CLOSED	CLOSED	NO	RE-22P	VITAL BUS 2	A
4107C	A	07	FCV-FW-103A	FW/3A AFW PUMP RECIRCULATION VALVE	ISO 6.24-774	SFGB	735	AUX FEED PUMP	S R		CLOSED	OPEN	YES	RE-21HD	PNL-DC-3 BK 8-53	A
4108C	B	07	FCV-FW-103B	FW/3B AFW PUMP RECIRCULATION VALVE	ISO 6.24-774	SFGB	735	AUX FEED PUMP	S R		CLOSED	OPEN	YES	RE-21HE	PNL-DC-3 BK 8-53	A
8133		20	FE-CDL-1A	FP/CO2 SYSTEM #1 PNL FOR THE DIESEL GEN ROOM WEST	DWG RM-10A	DGBX	735	DIESEL GEN #1	S R		CLOSED	CLOSED	NO	RE-21GX	PNL-DC-3 BK 8-3	A
8134		20	FE-CDL-1B	FP/CO2 SYSTEM #1 PNL FOR THE DIESEL GEN ROOM EAST	DWG RM-10A	DGBX	735	DIESEL GEN #2	S R		CLOSED	CLOSED	NO	RE-21GX	PNL-DC-2 BK 8-3	A
1205B	A	20	FI-CH-122A	CH/CHARGING HEADER FLOW INDICATOR	VTI 1.12-75	SRVB	735	CONT RM BB-A	S R		ON	ON	YES	RE-22L	VITAL BUS 2	A
2228B	A	20	FI-CH-124	CH/RCP-1C SEAL INJECTION FLOW INDICATOR	VTI 1.12-22, 23	SRVB	735	CONT RM VB-A	S R		ON	ON	YES	RE-22G	PRI-PROC 20 VB3	A
2229B	B	20	FI-CH-127	CH/RCP-1B SEAL INJECTION FLOW INDICATOR	VTI 1.12-22, 23	SRVB	735	CONT RM VB-A	S R		ON	ON	YES	RE-22G	PRI-PROC 9 VB2	A
2230B	A	20	FI-CH-130	CH/RCP-1A SEAL INJECTION FLOW INDICATOR	VTI 1.12-22, 23	SRVB	735	CONT RM VB-A	S R		ON	ON	YES	RE-22G	PRI-PROC 6 VB1	A
3212B	B	20	FI-CH-150	CH/LETDOWN FLOW INDICATION	VTI 1.12-75	SRVB	735	CONT RM BB-A	S R		ON	ON	YES	RE-22J	VITAL BUS 2	A
4103B	A	20	FI-FW-100A	FW/AUX FEED TO SGA INDIC	VTI 1.12-25	SRVB	735	CONT RM VB-C	S R		ON	ON	YES	RE-22DZ	VITAL BUS 1	A
4104B	B	20	FI-FW-100B	FW/AUX FEED TO SGB INDIC	VTI 1.12-25	SRVB	735	CONT RM VB-C	S R		ON	ON	YES	RE-22DZ	VITAL BUS 4	A
4105B	A	20	FI-FW-100C	FW/AUX FEED TO SGC INDIC	VTI 1.12-25	SRVB	735	CONT RM VB-C	S R		ON	ON	YES	RE-22DZ	VITAL BUS 1	A
4118	N/A	20	FR-MS-478	FW/RC-E-1A LEVEL RECORDER	VTI 1.12-25	SRVB	735	CONT RM BB-C	S R		ON	ON	YES	RE-22Z	VITAL BUS 2	A
4119	N/A	20	FR-MS-488	FW/RC-E-1B LEVEL RECORDER	VTI 1.12-25	SRVB	735	CONT RM BB-C	S R		ON	ON	YES	RE-22AA	VITAL BUS 2	A
4120	N/A	20	FR-MS-498	FW/RC-E-1C LEVEL RECORDER	VTI 1.12-25	SRVB	735	CONT RM BB-C	S R		ON	ON	YES	RE-22AB	VITAL BUS 3	A
1205A	A	18	FT-CH-122	CH/CHARGING HEADER FLOW TRANSMITTER	ISO 6.24-268 & 3875	AXLB	722	COL 10-1/4 & J	S R		ON	ON	YES	RE-22L	VITAL BUS 2	A
2228A	A	18	FT-CH-124	CH/RCP-1C SEAL INJECTION FLOW TRANSMITTER	ISO 6.24-3952, RK-3E	SFGB	722	PENT A	S R		ON	ON	YES	RE-22G	PRI-PROC 20 VB3	A

BEAVER VALLEY POWER STATION UNIT 1
RELAY REVIEW
SAFE SHUTDOWN EQUIPMENT LIST (SSEL)
332 INDIVIDUAL PLANT COMPONENTS

LINE NO.	TRAIN	EQUIP CLASS	MARK NO.	SYSTEM/EQUIPMENT DESCRIPTION	Dwg. No./Rev./Zone	<---------- EQUIPMENT LOCATION -----> Building	Flr.Elv.	Rm. or Row/Col.	SORT	NOTES	<-- OP. ST. --> Normal	Desired	POWER REQD?	SUPPORTING SYS. DWG. NO./REV.	REQ'D INTERCONNECTIONS & SUPPORTING COMPONENTS	REG. ISSUE
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
2229A	B	18	FT-CH-127	CH/RCP-1B SEAL INJECTION FLOW TRANSMITTER	ISO 6.24-3953, RK-3E	SFGB	722	PENT A	S R		ON	ON	YES	RE-22G	PRI-PROC 5 VB2	A
2230A	A	18	FT-CH-130	CH/RCP-1A SEAL INJECTION FLOW TRANSMITTER	ISO 6.24-3630, RK-3E	SFGB	722	PENT A	S R		ON	ON	YES	RE-22G	PRI-PROC 6 VB1	A
3212A	B	18	FT-CH-150	CH/LETDOWN FLOW TRANSMITTER	VTI 7.050-0010	AXLB	722	COL 11-1/2 & G	S R		ON	ON	YES	RE-22J,DWG RK-3A	VITAL BUS 2	A
4103A	A	18	FT-FW-100A	FW/AUX FEED TO SGA TRANSMITTER	RK-8A, ISO 6.24-65	SFGB	735	AUX FEED PUMP	S R		ON	ON	YES	RE-22DZ	VITAL BUS 1	A
4104A	B	18	FT-FW-100B	FW/AUX FEED TO SGB TRANSMITTER	RK-8A, ISO 6.24-65	SFGB	735	AUX FEED PUMP	S R		ON	ON	YES	RE-22DZ	VITAL BUS 4	A
4105A	A	18	FT-FW-100C	FW/AUX FEED TO SGC TRANSMITTER	RK-8A, ISO 6.24-65	SFGB	735	AUX FEED PUMP	S R		ON	ON	YES	RE-22DZ	VITAL BUS 1	A
4107	A	05	FW-P-3A	FW/MOTOR DRIVEN AUX FEEDWATER PUMP	VTI 2.40-11,12	SFGB	735	AUX FEED PUMP	S R		OFF	ON	YES	RC-21C,M,RE-21H E,RM-1B,6.24-64	BUS AE BK E16	A
4108	B	05	FW-P-3B	FW/MOTOR DRIVEN AUX FEEDWATER PUMP	VTI 2.40-11,12	SFGB	735	AUX FEED PUMP	S R		OFF	ON	YES	RC-21C,M,RE-21H E,RM-1B,6.24-64	BUS DF BK F16	A
1229	B	07	HCV-CH-186	CH/RCP SEAL SUPPLY, HAND CONT	VTI-07.86-7	AXLB	722	BLENDER ROOM	S R		THROT	OPEN	NO	RE-22G	VITAL BUS 2	A
1233	A	07	HCV-CH-389	CH/EXCESS LETDOWN DRAIN DIVERT VALVE	VTI-07.88-9	RCBX	707	EXC LETD PLATF	S R	7	OPEN	OPEN	NO	RE-21FU	PNL-DC-3 BK 8-18	A
4204	A	07	HCV-MS-104	MS/RESIDUAL HEAT RELEASE	ISO 6.24-6	SFGB	752	MSVH	S R	10	CLOSED	OPEN	YES	RE-22DR	VITBUS 1 BK 1-7	A
5335	A	16	INV-VITBUS-1	UPS/VITAL BUS #1 INVERTER	DWG RE-27B	SRVB	713	AE SWGR	S R		ON	ON	YES	1.24-111	MCC1-E9	A
5336	B	16	INV-VITBUS-2	UPS/VITAL BUS #2 INVERTER	DWG RE-27B	SRVB	713	DF SWGR	S R		ON	ON	YES	1.24-111	MCC1-E10	A
5337	A	16	INV-VITBUS-3	UPS/VITAL BUS #3 INVERTER	DWG RE-27B	SRVB	713	AE SWGR	S R		ON	ON	YES	1.24-111	MCC1-E9	A
5338	B	16	INV-VITBUS-4	UPS/VITAL BUS #4 INVERTER	DWG RE-27B	SRVB	713	DF SWGR	S R		ON	ON	YES	1.24-196	MCC1-E10	A
3204	A	07	LCV-CH-460A	CH/LETDOWN ISOLATION VALVE	ISO 6.24-242	RCBX	718	A CUBICLE	S R	6	OPEN	CLOSED	YES	RE-21FU	PNL-DC-3 BK 8-18	A
3205	B	07	LCV-CH-460B	CH/LETDOWN ISOLATION VALVE	ISO 6.24-242	RCBX	718	A CUBICLE	S R	6	OPEN	CLOSED	YES	RE-21FU	PNL-DC-3 BK 8-18	A
4121B	A	20	LI-FW-474	FW/RC-E-1A NARROW RANGE LEVEL INDICATOR	VTI 1.12-25	SRVB	735	CONT RM VB-C	S R		ON	ON	YES	RE-22W	VITAL BUS 1	A
4122B	B	20	LI-FW-475	FW/RC-E-1A NARROW RANGE LEVEL INDICATOR	VTI 1.12-25	SRVB	735	CONT RM VB-C	S R		ON	ON	YES	RE-22W	VITAL BUS 2	A
4123B	A	20	LI-FW-476	FW/RC-E-1A NARROW RANGE LEVEL INDICATOR	VTI 1.12-25	SRVB	735	CONT RM VB-C	S R		ON	ON	YES	RE-22Z	VITAL BUS 3	A
4124B	A	20	LI-FW-484	FW/RC-E-1B NARROW RANGE LEVEL INDICATOR	VTI 1.12-25	SRVB	735	CONT RM VB-C	S R		ON	ON	YES	RE-22X	VITAL BUS 1	A
4125B	B	20	LI-FW-485	FW/RC-E-1B NARROW RANGE LEVEL INDICATOR	VTI 1.12-25	SRVB	735	CONT RM VB-C	S R		ON	ON	YES	RE-22X	VITAL BUS 2	A

BEAVER VALLEY POWER STATION UNIT 1
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332 INDIVIDUAL PLANT COMPONENTS

LINE NO.	TRAIN	EQUIP CLASS	MARK NO.	SYSTEM/EQUIPMENT DESCRIPTION	Dwg. No./Rev./Zone	<--- Building	EQUIPMENT Flr.Elv.	LOCATION ----> Rm. or Row/Col.	SORT	NOTES	<-- OP. ST. --> Normal	Desired	POWER REQD?	SUPPORTING SYS. DWG. NO./REV.	REQ'D INTERCONNECTIONS & SUPPORTING COMPONENTS	REG. ISSUE
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
4126B	A	20	LI-FW-486	FW/RC-E-1B NARROW RANGE LEVEL INDICATOR	VTI 1.12-25	SRVB	735	CONT RM VB-C	S R		ON	ON	YES	RE-22AA	VITAL BUS 3	A
4127B	A	20	LI-FW-494	FW/RC-E-1C NARROW RANGE LEVEL INDICATOR	VTI 1.12-25	SRVB	735	CONT RM VB-C	S R		ON	ON	YES	RE-22Y	VITAL BUS 1	A
4128B	B	20	LI-FW-495	FW/RC-E-1C NARROW RANGE LEVEL INDICATOR	VTI 1.12-25	SRVB	735	CONT RM VB-C	S R		ON	ON	YES	RE-22Y	VITAL BUS 2	A
4129B	A	20	LI-FW-496	FW/RC-E-1C NARROW RANGE LEVEL INDICATOR	VTI 1.12-25	SRVB	735	CONT RM VB-C	S R		ON	ON	YES	RE-22AB	VITAL BUS 3	A
1201B	A	20	LI-QS-100A	QS/RWST LEVEL INDICATOR	VTI 1.12-25/92	SRVB	735	CONT RM VB-C	S R		ON	ON	YES	RE-22ET	VITAL BUS 3	A
1202B	B	20	LI-QS-100B	QS/RWST LEVEL INDICATOR	VTI 1.12-25/92	SRVB	735	CONT RM VB-C	S R		ON	ON	YES	RE-22ET	VITAL BUS 4	A
1203B	A	20	LI-QS-100C	QS/RWST LEVEL INDICATOR	VTI 1.12-25/92	SRVB	735	CONT RM VB-A	S R		ON	ON	YES	RE-22EV	VITAL BUS 1	A
3124B	A	20	LI-RC-459A	RC/PZR LEVEL INDICATOR	VTI 7.70-0002, RK-3A	SRVB	735	CONT RM BB-B	S R		ON	ON	YES	RE-22BH	VITAL BUS 1	A
3125B	B	20	LI-RC-460	RC/PZR LEVEL INDICATOR	VTI 7.70-0002	SRVB	735	CONT RM BB-B	S R		ON	ON	YES	RE-22BJ	VITAL BUS 2	A
3126B	A	20	LI-RC-461	RC/PZR LEVEL INDICATOR	VTI 7.70-0002	SRVB	735	CONT RM BB-B	S R		ON	ON	YES	RE-22BK	VITAL BUS 3	A
4101B	A	20	LI-WT-104A1	WT/WT-TK-10 LEVEL INDICATOR	VTI 7.70-0002	SRVB	735	CONT RM VB-C	S R		ON	ON	YES	RE-22FG	VITAL BUS 2	A
4102B	B	20	LI-WT-104A2	WT/WT-TK-10 LEVEL INDICATOR	VTI 7.70-0002	SRVB	735	CONT RM VB-C	S R		ON	ON	YES	RE-22FG	VITAL BUS 2	A
1204B	B	20	LR-QS-100	QS/RWST LEVEL RECORDER	VTI 7.70-0005	SRVB	735	CONT RM VB-A	S R		ON	ON	YES	RE-22EV	VITAL BUS 2	A
4121A	A	18	LT-FW-474	FW/RC-E-1A NARROW RANGE LEVEL TRANSMITTER	ISO 6.24-3394, RK-1B	RCBX	718	ANNULUS COL 16	S R		ON	ON	YES	RE-22W	VITAL BUS 1	A
4122A	B	18	LT-FW-475	FW/RC-E-1A NARROW RANGE LEVEL TRANSMITTER	ISO 6.24-3394, RK-1B	RCBX	718	ANNULUS COL 16	S R		ON	ON	YES	RE-22W	VITAL BUS 2	A
4123A	A	18	LT-FW-476	FW/RC-E-1A NARROW RANGE LEVEL TRANSMITTER	ISO 6.24-3885, RK-1B	RCBX	718	ANNULUS COL 15	S R		ON	ON	YES	RE-22Z	VITAL BUS 3	A
4124A	A	18	LT-FW-484	FW/RC-E-1B NARROW RANGE LEVEL TRANSMITTER	ISO 6.24-3361, RK-1A, 1F	RCBX	738	ANNULUS COL 9	S R		ON	ON	YES	RE-22X	VITAL BUS 1	A
4125A	B	18	LT-FW-485	FW/RC-E-1B NARROW RANGE LEVEL TRANSMITTER	ISO 6.24-3363, RK-1A, 1F	RCBX	738	ANNULUS COL 9	S R		ON	ON	YES	RE-22X	VITAL BUS 2	A
4126A	A	18	LT-FW-486	FW/RC-E-1B NARROW RANGE LEVEL TRANSMITTER	ISO 6.24-3362, RK-1A, 1F	RCBX	718	ANNULUS COL 9	S R		ON	ON	YES	RE-22AA	VITAL BUS 3	A
4127A	A	18	LT-FW-494	FW/RC-E-1C NARROW RANGE LEVEL TRANSMITTER	DWG RK-1B, RK-6D	RCBX	718	ANNULUS COL 5	S R		ON	ON	YES	RE-22Y	VITAL BUS 1	A
4128A	B	18	LT-FW-495	FW/RC-E-1C NARROW RANGE LEVEL TRANSMITTER	ISO 6.24-3364, RK-1B, 1F	RCBX	718	ANNULUS COL 5	S R		ON	ON	YES	RE-22Y	VITAL BUS 2	A

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LINE NO.	TRAIN	EQUIP CLASS	MARK NO.	SYSTEM/EQUIPMENT DESCRIPTION	Dwg. No./Rev./Zone	<--------- Building	EQUIPMENT Flr.Elv.	LOCATION -----> Rm. or Row/Col.	SORT	NOTES	<-- OP. ST. --> Normal	Desired	POWER REQD?	SUPPORTING SYS. DWG. NO./REV.	REQ'D INTERCONNECTIONS & SUPPORTING COMPONENTS	REG. ISSUE
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
4129A	A	18	LT-FW-496	FW/RC-E-1C NARROW RANGE LEVEL TRANSMITTER	ISO 6.24-3885, RK-1B	RCBX	718	ANNULUS COL 4	S R		ON	ON	YES	RE-22AB	VITAL BUS 3	A
1201A	A	18	LT-QS-100A	QS/RWST LEVEL TRANSMITTER	RK-5D, RP-6B	YARD	735	AT RWST	S R		ON	ON	YES	RE-22ET	VITAL BUS 3	A
1202A	B	18	LT-QS-100B	QS/RWST LEVEL TRANSMITTER	RK-5D&F,RP-6B,ISO6.2 4-674	YARD	735	AT RWST	S R		ON	ON	YES	RE-22ET	VITAL BUS 4	A
1203A	A	18	LT-QS-100C	QS/RWST LEVEL TRANSMITTER	RK-5D&F,RP-6B,ISO6.2 4-674	YARD	735	AT RWST	S R		ON	ON	YES	RE-22EV	VITAL BUS 1	A
1204A	B	18	LT-QS-100D	QS/RWST LEVEL TRANSMITTER	RK-5D, RP-6B	YARD	735	AT RWST	S R		ON	ON	YES	RE-22EV	VITAL BUS 2	A
3124A	A	18	LT-RC-459	RC/PZR LEVEL TRANSMITTER	ISO 6.24-3396, RK-1A	RCBX	718	OUTSIDE PZR CUB	S R		ON	ON	YES	RE-22BH	VITAL BUS 1	A
3125A	B	18	LT-RC-460	RC/PZR LEVEL TRANSMITTER	ISO 6.24-3396, RK-1A	RCBX	718	OUTSIDE PZR CUB	S R		ON	ON	YES	RE-22BJ	VITAL BUS 2	A
3126A	A	18	LT-RC-461	RC/PZR LEVEL TRANSMITTER	ISO 6.24-3396, RK-1A	RCBX	718	OUTSIDE PZR CUB	S R		ON	ON	YES	RE-22BK	VITAL BUS 3	A
4101A	A	18	LT-WT-104A1	WT/WT-TK-10 LEVEL TRANSMITTER	ISO 6.24-4016	YARD	735	AT DWST	S R		ON	ON	YES	RE-22FG	VITAL BUS 2	A
4102A	B	18	LT-WT-104A2	WT/WT-TK-10 LEVEL TRANSMITTER	ISO 6.24-4017	YARD	735	AT DWST	S R		ON	ON	YES	RE-22FG	VITAL BUS 2	A
8018	A	01	MCC-1-E1	EE/480V MOTOR CONTROL CENTER	DWG RE-53A, 37M, 21DB	INTS	705	A CUBICLE	S R		ON	ON	YES	RE-21DB	480V BN BK 7	A
8027	B	01	MCC-1-E10	EE/480V MOTOR CONTROL CENTER	DWG RE-27B, 38C	SRVB	713	DF SWGR	S R		ON	ON	YES	RE-21DC	480V 9P BK 11	A
8028	A	01	MCC-1-E11	EE/480V MOTOR CONTROL CENTER	DWG RE-38C, 42K	SFGB	735	W CABLE VAULT	S R		ON	ON	YES	RE-21DC	480V 9P1 BK 21	A
8029	B	01	MCC-1-E12	EE/480V MOTOR CONTROL CENTER	DWG RE-38C, 42K	SFGB	735	E CABLE VAULT	S R		ON	ON	YES	RE-21DC	480V BN BK 15	A
8030	A	01	MCC-1-E13	EE/480V MOTOR CONTROL CENTER	DWG RE-38Q, 42G	SFGB	756	MCC ROOM	S R		ON	ON	YES	RE-21DC	480V 9P BK 15	A
8031	B	01	MCC-1-E14	EE/480V MOTOR CONTROL CENTER	DWG RE-42K	SFGB	735	E CABLE VAULT	S R		ON	ON	YES	N/A	480V BUS 1P	A
8019	B	01	MCC-1-E2	EE/480V MOTOR CONTROL CENTER	DWG RE-53C, 37M, 21DB	INTS	705	B CUBICLE	S R		ON	ON	YES	RE-21DB	480V 9P BK 8	A
8020	A	01	MCC-1-E3	EE/480V MOTOR CONTROL CENTER	DWG RE-21DB, RE-38C, 48C	AXLB	735	COL 8-7/8	S R		ON	ON	YES	RE-21DB	480v 8N BK 8	A
8021	B	01	MCC-1-E4	EE/480V MOTOR CONTROL CENTER	DWG RE-21DB, RE-38C, 48C	AXLB	735	COL 8-7/8	S R		ON	ON	YES	RE-21DB	480V 9P BK 9	A
8022	A	01	MCC-1-E5	EE/480V MOTOR CONTROL CENTER	DWG RE-38C, 42K	SFGB	735	W CABLE VAULT	S R		ON	ON	YES	RE-21DB	480V 8N BK 6	A
8023	B	01	MCC-1-E6	EE/480V MOTOR CONTROL CENTER	DWG RE-38C, 42K	SFGB	735	E CABLE VAULT	S R		ON	ON	YES	RE-21DB	480V 9P BK 14	A
8024	A	01	MCC-1-E7	EE/480V MOTOR CONTROL CENTER	DWG RE-58A, RE-21DC	DGBX	735	DIESEL GEN #1	S R		ON	ON	YES	RE-21DC	480V 8N BK 14	A
8025	B	01	MCC-1-E8	EE/480V MOTOR CONTROL CENTER	DWG RE-58A, RE-21DC	DGBX	735	DIESEL GEN #2	S R		ON	ON	YES	RE-21DC	480V 9P BK 7	A
8026	A	01	MCC-1-E9	EE/480V MOTOR CONTROL CENTER	DWG RE-27B, 38C	SRVB	713	AE SWGR	S R		ON	ON	YES	RE-21DC	480V 8N BK 11	A

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332 INDIVIDUAL PLANT COMPONENTS

LINE NO.	TRAIN	EQUIP CLASS	MARK NO.	SYSTEM/EQUIPMENT DESCRIPTION	Dwg. No./Rev./Zone	<--- Building	EQUIPMENT Flr.Elv.	LOCATION ----> Rm. or Row/Col.	SORT	NOTES	<-- OP. Normal	ST. --> Desired	POWER REQD?	SUPPORTING SYS. DWG. NO./REV.	REQ'D INTERCONNECTIONS & SUPPORTING COMPONENTS	REG. ISSUE
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
1208	A	08A	MOV-CH-115B	CH/RWST-CHARGING PUMP ISOLATION	ISO 6.24-277	AXLB	722	BLENDER	S R		CLOSED	OPEN	YES	RE-21FR	MCC1-E3 BK J	A
1209	B	08A	MOV-CH-115C	CH/VCT ISOLATION VALVE	ISO 6.24-271	AXLB	722	BLENDER	S R		OPEN	CLOSED	YES	RE-21FR	MCC1-E3 BK K	A
1210	B	08A	MOV-CH-115D	CH/RWST-CHARGING PUMP ISOLATION	ISO 6.24-277	AXLB	722	BLENDER	S R		CLOSED	OPEN	YES	RE-21FR	MCC1-E4 BK J	A
1211	B	08A	MOV-CH-115E	CH/VCT ISOLATION VALVE	ISO 6.24-271	AXLB	722	BLENDER	S R		OPEN	CLOSED	YES	RE-21FR	MCC1-E4 BK K	A
3211	A	08A	MOV-CH-137	CH/EXCESS LETDOWN HX FLOW CONT	ISO 6.24-1613	RCBX	707	EXC LETD PLATF	R		CLOSED	CLOSED	NO	RE-21FS	PNL-AC-E1 BK 13	A
1217	A	08A	MOV-CH-275A	CH/CH-P-1A MINIFLOW ISOLATION	ISO 6.24-265	AXLB	722	CH-P-1A CUBICLE	R		OPEN	OPEN	NO	RE-21FR	MCC1-E3 BK H	A
1218	A	08A	MOV-CH-275B	CH/CH-P-1B MINIFLOW ISOLATION	ISO 6.24-265	AXLB	722	CH-P-1B CUBICLE	R		OPEN	OPEN	NO	RE-21FR	MCC1-E3 BK P	A
1219	A	08A	MOV-CH-275C	CH/CH-P-1C MINIFLOW ISOLATION	ISO 6.24-265	AXLB	722	CH-P-1C CUBICLE	R		OPEN	OPEN	NO	RE-21FR	MCC1-E3 BK Q	A
1215	A	08A	MOV-CH-289	CH/CHARGING HEADER ISOLATION	ISO 6.24-268	SFGB	722	PENT A	R		OPEN	OPEN	NO	RE-21FS	MCC1-E5 BK BB	A
1230	A	08A	MOV-CH-303A	CH/RCP 1A #1 SEAL LEAKOFF ISOLATION	ISO 6.13-220	RCBX	692	FLOOR SE	R		OPEN	OPEN	NO	RE-21FS	MCC1-17 BK AQ	A
1231	A	08A	MOV-CH-303B	CH/RCP 1B #1 SEAL LEAKOFF ISOLATION	ISO 6.13-221	RCBX	692	FLOOR SE	R		OPEN	OPEN	NO	RE-21FS	MCC1-19 BK AK	A
1232	B	08A	MOV-CH-303C	CH/RCP 1C #1 SEAL LEAKOFF ISOLATION	ISO 6.13-222	RCBX	692	FLOOR SE	R		OPEN	OPEN	NO	RE-21FS	MCC1-18 BK AK	A
1225	A	08A	MOV-CH-308A	CH/RCP-1A SEAL WATER CONTAINMENT ISOLATION VALVE	ISO 6.24-267	SFGB	722	PENT A	R		OPEN	OPEN	NO	RE-21FS	MCC1-E3 BK AE	A
1226	A	08A	MOV-CH-308B	CH/RCP-1B SEAL WATER CONTAINMENT ISOLATION VALVE	ISO 6.24-267	SFGB	722	PENT A	R		OPEN	OPEN	NO	RE-21FS	MCC1-E3 BK AF	A
1227	A	08A	MOV-CH-308C	CH/RCP-1C SEAL WATER CONTAINMENT ISOLATION VALVE	ISO 6.24-267	SFGB	722	PENT A	R		OPEN	OPEN	NO	RE-21FS	MCC1-E3 BK AN	A
1216	B	08A	MOV-CH-310	CH/CHARGING HEADER ISOLATION	ISO 6.24-253	RCBX	693	49-3 RAD AZ 350	R		OPEN	OPEN	NO	RE-21FS	MCC1-E6 BK AX	A
1248	B	08A	MOV-CH-350	CH/EMERGENCY BORATION ISOLATION	VTI-6.48-5	AXLB	722	BLENDER	S R		CLOSED	OPEN	YES	RE-21FS	MCC1-E4 BK S	A
1228	B	08A	MOV-CH-370	CH/SEAL INJ HEADER ISOLATION	ISO 6.24-267	AXLB	722	BLENDER ROOM	R		OPEN	OPEN	NO	RE-21FS	MCC1-14 BK AC	A
1220	B	08A	MOV-CH-373	CH/CHARGING PUMP RECIRC ISOLATION	ISO 6.24-256	AXLB	722	BLENDER	R		OPEN	OPEN	NO	RE-21FR	MCC1-E4 BK Q	A
3209	A	08A	MOV-CH-378	CH/RCP SEAL LEAKOFF ISOLATION	ISO 6.24-380	RCBX	718	PENT #19	S R	8	OPEN	CLOSED	YES	RE-21FR	MCC1-E5 BK BA	A
3210	B	08A	MOV-CH-381	CH/RCP SEAL LEAKOFF ISOLATION	ISO 6.24-255	SFGB	722	PENT A	S R	8	OPEN	CLOSED	YES	RE-21FR	MCC1-E6 BK AW	A
4109	B	08A	MOV-FW-151A	[illegible] FEED FLOW CONTROL VALVE	6.48-55,7.65-34,44	SFGB	735	AUX FEED PUMP	S R	17	OPEN	THROT	YES	RE-21HF,6.24-65	MCC1-E6 BK A6	A
4110	A	08A	MOV-FW-151B	[illegible] FLOW CONTROL VALVE	6.48-55,7.65-34,44	SFGB	735	AUX FEED PUMP	S R	17	OPEN	THROT	YES	RE-21HF,6.24-65	MCC1-E5 BK A6	A
4111	B	08A	MOV-FW-151C	FW/[illegible] FEED FLOW CONTROL VALVE	6.48-55,7.65-34,44	SFGB	735	AUX FEED PUMP	S R	17	OPEN	THROT	YES	RE-21HF,6.24-65	MCC1-E6 BK AH	A
4112	A	08A	MOV-FW-151D	FW/AU[illegible]ED FLOW CONTROL VALVE	6.48-55,7.65-34,44	SFGB	735	AUX FEED PUMP	S R	17	OPEN	THROT	YES	RE-21HF,6.24-65	MCC1-E5 BK AH	A

BEAVER VALLEY POWER STATION UNIT 1
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332 INDIVIDUAL PLANT COMPONENTS

LINE NO.	TRAIN	EQUIP CLASS	MARK NO.	SYSTEM/EQUIPMENT DESCRIPTION	Dwg. No./Rev./Zone	<--------- Building	EQUIPMENT Flr.Elv.	LOCATION -----> Rm. or Row/Col.	SORT	NOTES	<-- OP. Normal	ST. --> Desired	POWER REQD?	SUPPORTING SYS. DWG. NO./REV.	REQ'D INTERCONNECTIONS & SUPPORTING COMPONENTS	REG. ISSUE
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
4113	B	OBA	MOV-FW-151E	FW/AUX FEED FLOW CONTROL VALVE	6.48-55,7.65-34,44	SFGB	735	AUX FEED PUMP	S R	17	OPEN	THROT	YES	RE-21HF,6.24-65	MCC1-E6 BK AJ	A
4114	A	OBA	MOV-FW-151F	FW/AUX FEED FLOW CONTROL VALVE	6.48-55,7.65-34,44	SFGB	735	AUX FEED PUMP	S R	17	OPEN	THROT	YES	RE 21HF,6.24-65	MCC1-E5 BK AJ	A
4115	N/A	OBA	MOV-FW-160	FW/FW-P-4 DISCHARGE ISOLATION VALVE	ISO 6.24-383	TRBB	693	BASEMENT @ PUMP	R		CLOSED	CLOSED	NO	RE-21HF	MCC1-43 BK 3J	A
4208	B	OBA	MOV-MS-101A	MS/MAIN STEAM TRIP [TV-MS-101A] BYPASS VALVE	ISO 6.24-2	SFGB	752	MSVH	R		CLOSED	CLOSED	NO	RE-21HX	MCC1-E6 BK BM	A
4209	B	OBA *	MOV-MS-101B	MS/MAIN STEAM TRIP [TV-MS-101B] BYPASS VALVE	ISO 6.24-2	SFGB	752	MSVH	R		CLOSED	CLOSED	NO	RE-21HX	MCC1-E6 BK BN	A
4210	B	OBA	MOV-MS-101C	MS/MAIN STEAM TRIP [TV-MS-101C] BYPASS VALVE	ISO 6.24-2	SFGB	752	MSVH	R		CLOSED	CLOSED	NO	RE-21HX	MCC1-E6 BK BP	A
4214	B	OBA	MOV-MS-105	MS/AFW TURBINE STEAM SUPPLY ISOLATION	6.48-95,96	SFGB	735	MSVH	S R		OPEN	CLOSED	YES	RE-21HY, ISO 6.24-625	MCC1-E6 BK BA	A
2104	A	OBA	MOV-RC-535	RC/PRESSURIZER PORV ISOLATION	ISO 6.24-350	RCBX	768	PZR CUBICLE	S R		OPEN	CLOSED	YES	RE-21JQ	MCC1-E5 BK BE	A
2106	B	OBA	MOV-RC-536	RC/PRESSURIZER PORV ISOLATION	ISO 6.24-350	RCBX	768	PZR CUBICLE	S R		OPEN	CLOSED	YES	RE-21JQ	MCC1-E6 BK BC	A
2108	A	OBA	MOV-RC-537	RC/PRESSURIZER PORV ISOLATION	ISO 6.24-350	RCBX	768	PZR CUBICLE	S R		OPEN	CLOSED	YES	RE-21JQ	MCC1-E6 BK BD	A
3219	A	OBA	MOV-RH-700	RH/RHR INLET ISOLATION	ISO 6.24-3197	RCBX	692	W OF SI ACC 1A	R		CLOSED	CLOSED	NO	RE-21JV	MCC1-E5 BK P	A
3320	A	OBA	MOV-RH-720A	RH/RHR RETURN ISOLATION	ISO 6.24-3189	RCBX	692	W OF SI ACC 1B	R		CLOSED	CLOSED	NO	RE-21JV	MCC1-E5 BK Q	A
3321	B	OBA	MOV-RH-720B	RH/RHR RETURN ISOLATION	ISO 6.24-3191	RCBX	692	W OF SI ACC 1C	R		CLOSED	CLOSED	NO	RE-21JV	MCC1-E6 BK Q	A
5104	B	OBA	MOV-RW-102A1	RW/PUMP DISCHARGE ISO	S.48-22,23	INTS	705	A CUBICLE	S R		CLOSED	OPEN	YES	RE-21KZ,ISO 6.24-801, RP-4L	MCC1-E1 BK D	A
5105	A	OBA	MOV-RW-102A2	RW/PUMP DISCHARGE ISO	6.48-22,23	INTS	705	A CUBICLE	S R		CLOSED	OPEN	YES	RE-21KZ,ISO 6.24-801, RP-4L	MCC1-E1 BK G	A
5106	B	OBA	MOV-RW-102B1	RW/PUMP DISCHARGE ISO	6.48-22,23	INTS	705	B CUBICLE	S R		CLOSED	OPEN	YES	RE-21KZ,ISO 6.24-801, RP-4L	MCC1-E2 BK D	A
5107	A	OBA	MOV-RW-102B2	RW/PUMP DISCHARGE ISO	6.48-22,23	INTS	705	B CUBICLE	S R		CLOSED	OPEN	YES	RE-21KZ,ISO 6.24-801, RP-4L	MCC1-E2 BK G	A
5108	B	OBA	MOV-RW-102C1	RW/PUMP DISCHARGE ISO	6.48-22,23	INTS	705	C CUBICLE	S R		CLOSED	OPEN	YES	RE-21KZ,ISO 6.24-801, RP-4L	MCC1-E2 BK H	A
5109	A	OBA	MOV-RW-102C2	RW/PUMP DISCHARGE ISO	6.48-22,23	INTS	705	C CUBICLE	S R		CLOSED	OPEN	YES	RE-21KZ,ISO 6.24-801, RP-4L	MCC1-E1 BK H	A
4116	A	OBA	MOV-RW-103A	RW/'A'HEADER RW FLOW TO RECIRC SPRAY	6.48-32,33	AXLB	722	COL K	S R		CLOSED	OPEN	YES	RE-21LA,6.24-12 8	MCC1-E3 BK B	A
4117	B	OBA	MOV-RW-103B	RW/'A'HEADER RW FLOW TO RECIRC SPRAY	6.48-32,33	AXLB	722	COL K	S R		CLOSED	OPEN	YES	RE-21LA,6.24-12 8	MCC1-E4 BK B	A

BEAVER VALLEY POWER STATION UNIT 1
RELAY REVIEW
SAFE SHUTDOWN EQUIPMENT LIST (SSEL)
332 INDIVIDUAL PLANT COMPONENTS

LINE NO.	TRAIN	EQUIP CLASS	MARK NO.	SYSTEM/EQUIPMENT DESCRIPTION	Dwg. No./Rev./Zone	<--------- EQUIPMENT LOCATION -----> Building	Flr.Elv.	Rm. or Row/Col.	SORT	NOTES	<-- OP. ST. --> Normal	Desired	POWER REQD?	SUPPORTING SYS. DWG. NO./REV.	REQ'D INTERCONNECTIONS & SUPPORTING COMPONENTS	REG. ISSUE
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
5135	A	08A	MOV-RW-103C	RW/'B' HDR RW FLOW TO RECIRC SPRAY	ISO 6.24-68	AXLB	722	N/A	R		CLOSED	CLOSED	NO	RE-21LA	MCC1-E3 BK C	A
5136	B	08A	MOV-RW-103D	RW/'B' HDR RW FLOW TO RECIRC SPRAY	ISO 6.24-68	AXLB	722	N/A	R		CLOSED	CLOSED	NO	RE-21LA	MCC1-E4 BK C	A
5119	B	08A	MOV-RW-106A	RW/CCR HT EXCH ISOLATION	6.48-51,52	AXLB	722	EAST CENTRAL	S R	18	OPEN	CLOSED	YES	RE-21LA,6.24-68	MCC1-E4 BK P	A
5120	B	08A	MOV-RW-106B	RW/CCR HT EXCH ISOLATION	ISO 6.24-68	AXLB	722	N/A	R		OPEN	OPEN	NO	RE-21LA	MCC1-E4 BK D	A
5121	A	08A	MOV-RW-113A	RW/DIESEL GEN COOLING ISO	ISO 6.24-159	DGBX	735	DIESEL GEN #1	S R		CLOSED	OPEN	YES	RE-21LA	MCC1-E3 BK H	A
5122	A	08A	MOV-RW-113B	RW/DIESEL GEN COOLING ISO	ISO 6.24-160	DGBX	735	DIESEL GEN #1	S R		CLOSED	OPEN	YES	RE-21LA	MCC1-E7 BK J	A
5123	B	08A	MOV-RW-113C	RW/DIESEL GEN COOLING ISO	ISO 6.24-159	DGBX	735	DIESEL GEN #2	S R		CLOSED	OPEN	YES	RE-21LA	MCC1-E8 BK H	A
5124	B	08A	MOV-RW-113D1	RW/DIESEL GEN COOLING ISO	ISO 6.24-160	DGBX	735	DIESEL GEN #2	S R		CLOSED	OPEN	YES	RE-21LA	MCC1-E8 BK J	A
5125	A	08A	MOV-RW-114A	RW/CCR HT EXCH ISOLATION	ISO 6.24-68	AXLB	722	EAST CENTRAL	S R	18	OPEN	CLOSED	YES	RE-21LA	MCC1-E5 BK D	A
5126	A	08A	MOV-RW-114B	RW CCR HT EXCH ISOLATION	ISO 6.24-68	AXLB	722	N/A	R		OPEN	OPEN	NO	RE-21LA	MCC1-E3 BK AC	A
5127	A	08A	MOV-RW-116	RW/STRAINER ISOLATION	ISO 6.24 68	AXLB	722	N/A	R		CLOSED	CLOSED	NO	RE-21KZ	MCC1-E3 BK AD	A
5131	A	08A	MOV-RW-116A	RW/AUX RW PUMP SUPPLY TO A RW HDR REACTOR PLANT	ISO 6.24-521	YARD	730	RW VALVE PIT	R		CLOSED	CLOSED	NO	RE-21KZ	MCC1-E7 BK Y	A
5132	B	08A	MOV-RW-116B	RW/AUX RW PUMP SUPPLY TO B RW HDR REACTOR PLANT	ISO 6.24-521	YARD	730	RW VALVE PIT	R		CLOSED	CLOSED	NO	RE-21KZ	MCC1-E8 BK Z	A
5128	B	08A	MOV-RW-117	RW/STRAINER ISOLATION	ISO 6.24-68	AXLB	722	N/A	R		CLOSED	CLOSED	NO	RE-21KZ	MCC1-E3 BK G	A
1236	A	08A	MOV-SI-836	SI/HHSI RCL COLD LEG ISOLATION VALVE	ISO 6.24-275	SFGB	722	PENT A	R		CLOSED	CLOSED	NO	RE-21KK	MCC1-E5 BK AB	A
1237	A	08A	MOV-SI-863A	SI/1A LHSI TO CHG PUMPS SUPPLY VALVE	ISO 6.24-115	SFGB	735	NW	R		CLOSED	CLOSED	NO	RE-21KK	MCC1-E5 BK U	A
1238	B	08A	MOV-SI-863B	SI/1B LHSI TO CHG PUMPS SUPPLY VALVE	ISO 6.24-114	SFGB	735	NW	R		CLOSED	CLOSED	NO	RE-21KK	MCC1-E6 BK U	A
1222	A	08A	MOV-SI-867A	SI/BIT ISOLATION VALVE	ISO 6.24-272	AXLB	722	BLENDER	R		CLOSED	CLOSED	NO	RE-21XT	MCC1-E5 BK W	A
1223	B	08A	MOV-SI-867B	SI/BIT ISOLATION VALVE	ISO 6.24-272	AXLB	722	BLENDER	R		CLOSED	CLOSED	NO	RE-21XT	MCC1-E6 BK W	A
1234	A	08A	MOV-SI-869A	SI/HHSI RCL HOT LEG ISOLATION VALVE	ISO 6.24-275	SFGB	722	PENT A	R		CLOSED	CLOSED	NO	RE-21KK	MCC1-E5 BK AR	A
1235	B	08A	MOV-SI-869B	SI/HHSI RCL HOT LEG ISOLATION VALVE	ISO 6.24-368	SFGB	722	PENT C	R		CLOSED	CLOSED	NO	RE-21KK	MCC1-E6 BK BJ	A
2105	A	07	PCV-RC-455C	RC/PRESSURIZER PORV	ISO 6.24-349	RCBX	767	PZR CUBICLE	S R	20	CLOSED	OPEN	YES	RE-21JT	DC-PNL-2 BK 8-35	A
2109	A	07	PCV-RC-455D	RC/PRESSURIZER PORV	ISO 6.24-349	RCBX	767	PZR CUBICLE	S R	20	CLOSED	OPEN	YES	RE-21JT	DC-PNL-3 BK 8-34	A
2107	B	07	PCV-RC-456	RC/PRESSURIZER PORV	ISO 6.24-349	RCBX	767	PZR CUBICLE	S R	20	CLOSED	OPEN	YES	RE-21JT	DC-PNL-3 BK 8-34	A

BEAVER VALLEY POWER STATION UNIT 1
RELAY REVIEW
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332 INDIVIDUAL PLANT COMPONENTS

LINE NO.	TRAIN	EQUIP CLASS	MARK NO.	SYSTEM/EQUIPMENT DESCRIPTION	Dwg. No./Rev./Zone	<---- Building	EQUIPMENT Flr.Elv.	LOCATION -----> Rm. or Row/Col.	SORT	NOTES	<-- OP. Normal	ST. --> Desired	POWER REQD?	SUPPORTING SYS. DWG. NO./REV.	REQ'D INTERCONNECTIONS & SUPPORTING COMPONENTS	REG. ISSUE
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
2110B	A	20	PI-RC-402A	RCS/WIDE RANGE PRESSURE INDICATOR	VTI 1.12-23	SRVB	735	CONT RM VB-A	S R		ON	ON	YES	RE-22BM	VITAL BUS 2	A
2111B	B	20	PI-RC-403	RCS/WIDE RANGE PRESSURE INDICATOR	VTI 1.12-23	SRVB	735	CONT RM VB-A	S R		ON	ON	YES	RE-22BM	VITAL BUS 2	A
2110A	A	18	PT-RC-402	RC/WIDE RANGE RCS PRESSURE TRANS	DWG RK-1B	RCBX	717	ANNULUS COL 4-5	S R		ON	ON	YES	RE-22BM	VITAL BUS 3	A
2111A	B	18	PT-RC-403	RC/WIDE RANGE RCS PRESSURE TRANS	DWG RK-1B, RK-1F	RCBX	692	A CUBICLE	S R		ON	ON	YES	RE-22BM	VITAL BUS 2	A
2224	A	21	PZR-HTR-A	RC/PRESSURIZER HEATER		RCBX	739	IN PZR	R		OFF	ON	YES	RE-21JR	480V BUS 1N1 BK N12	A
2225	B	21	PZR-HTR-B	RC/PRESSURIZER HEATER		RCBX	739	IN PZR	R		OFF	ON	YES	RE-21JR	480V BUS 1P1 BK	A
2226	A	21	PZR-HTR-D	RC/PRESSURIZER HEATER		RCBX	739	IN PZR	R		OFF	ON	YES	RE-21JS	480V BUS 1N BK N	A
2227	B	21	PZR-HTR-E	RC/PRESSURIZER HEATER		RCBX	739	IN PZR	R		OFF	ON	YES	RE-21JS	480V BUS 1P BK P	A
1207	N/A	21	QS-TK-1	QS/REFUELING WATER STORAGE TANK	DWG RV-24A	YARD	735	YARD	S R		N/A	N/A	NO	RE-63V	HCC1-E11, E12	A
1206C	N/A	08B	SOV-CH-122	CH/(FCV-1CH-122) SOLENOID	RK-3A	AXLB	722	BLENDER CUB	S R		ENERG	ENERG	YES	RE-21FT	PNL-DC-3 BK 8-23	A
3206C	A	08B	SOV-CH-200A	CH/(TV-1CH-200A) SOLENOID	VTI 06.041-5, 6	RCBX	718	RLF TK AREA	S R		ENERG	DEENERG	NO	RE-21FU	PNL-DC-3 BK 8-20	A
3206D	A	08B	SOV-CH-200A1	CH/(TV-1CH-200A) SOLENOID	VTI 06.041-3, 8	RCBX	718	RLF TK AREA	S R		ENERG	DEENERG	NO	RE-21FU	PNL-DC-3 BK 8-1	A
3207C	A	08B	SOV-CH-200B	CH/(TV-1CH-200B) SOLENOID	VTI 06.041-5, 6	RCBX	718	RLF TK AREA	S R		ENERG	DEENERG	NO	RE-21FU	PNL-DC-3 BK 8-20	A
3207D	A	08B	SOV-CH-200B1	CH/(TV-1CH-200B) SOLENOID	VTI 06.041-3, 8	RCBX	718	RLF TK AREA	S R		ENERG	DEENERG	NO	RE-21FU	PNL-DC-3 BK 8-1	A
3208C	A	08B	SOV-CH-200C	CH/(TV-1CH-200C) SOLENOID	VTI 06.041-5, 6	RCBX	718	RLF TK AREA	S R		ENERG	DEENERG	NO	RE-21FU	PNL-DC-3 BK 8-20	A
3208D	A	08B	SOV-CH-200C1	CH/(TV-1CH-200C) SOLENOID	VTI 06.041-3, 8	RCBX	718	RLF TK AREA	S R		ENERG	DEENERG	NO	RE-21FU	PNL-DC-3 BK 8-1	A
4205C	A	08B	SOV-MS-101A	MS/(PCV-1MS-101A) CONTROL SOLENOID	RK-8A	SFGB	751	MSVH	S R		DEENERG	DEENERG	NO	RE-21JD	PNL-DC-3 BK 8-14	A
4205D	A	08B	SOV-MS-101A4	MS/(PCV-1MS-101A) CONTROL SOLENOID	RK-8A	SFGB	751	MSVH	S R		DEENERG	DEENERG	NO	RE-21JD	PNL-DC-3 BK 8-23	A
4206C	B	08B	SOV-MS-101B	MS/(PCV-1MS-101B) CONTROL SOLENOID	RK-8A	SFGB	751	MSVH	S R		DEENERG	DEENERG	NO	RE-21JD	PNL-DC-2 BK 8-14	A
4206D	B	08B	SOV-MS-101B4	MS/(PCV-1MS-101B) CONTROL SOLENOID	RK-8A	SFGB	751	MSVH	S R		DEENERG	DEENERG	NO	RE-21JD	PNL-DC-2 BK 8-23	A
4207C	B	08B	SOV-MS-101C	MS/(PCV-1MS-101C) CONTROL SOLENOID	RK-8A	SFGB	751	MSVH	S R		DEENERG	DEENERG	NO	RE-21JD	PNL-DC-2 BK 8-14	A
4207D	B	08B	SOV-MS-101C4	MS/(PCV-1MS-101C) CONTROL SOLENOID	RK-8A	SFGB	751	MSVH	S R		DEENERG	DEENERG	NO	RE-21JD	PNL-DC-2 BK 8-23	A
4211C	A	08B	SOV-MS-112A1	MS/(TV-1MS-101A) PILOT VALVE	RK-8A	SFGB	735	AUX FEED PUMP	S R		DEENERG	ENERG	YES	RE-21HX	DC-PNL-3 BK 8-6	A
4211D	B	08B	SOV-MS-112A2	MS/(TV-1MS-101A) PILOT VALVE	RK-8A	SFGB	735	AUX FEED PUMP	S R		DEENERG	ENERG	YES	RE-21HX	DC-PNL-3 BK 8-6	A
4212C	A	08B	SOV-MS-112B1	MS/(TV-1MS-101B) PILOT VALVE	RK-8A	SFGB	735	AUX FEED PUMP	S R		DEENERG	ENERG	YES	RE-21HX	DC-PNL-3 BK 8-21	A
4212D	B	08B	SOV-MS-112B2	MS/(TV-1MS-101B) PILOT VALVE	RK-8A	SFGB	735	AUX FEED PUMP	S R		DEENERG	ENERG	YES	RE-21HX	DC-PNL-3 BK 8-21	A
4213C	A	08B	SOV-MS-112C1	MS/(TV-1MS-101C) PILOT VALVE	RK-8A	SFGB	735	QUEN SPRAY PUMP	S R		DEENERG	ENERG	YES	RE-21HX	DC-PNL-3 BK 8-22	A
4213D	B	08B	SOV-MS-112C2	MS/(TV-1MS-101C) PILOT VALVE	RK-8A	SFGB	735	QUEN SPRAY PUMP	S R		DEENERG	ENERG	YES	RE-21HX	DC-PNL-3 BK 8-22	A

BEAVER VALLEY POWER STATION UNIT 1
RELAY REVIEW
SAFE SHUTDOWN EQUIPMENT LIST (SSEL)
332 INDIVIDUAL PLANT COMPONENTS

LINE NO.	TRAIN	EQUIP CLASS	MARK NO.	SYSTEM/EQUIPMENT DESCRIPTION	Dwg. No./Rev./Zone	<---------- Building	EQUIPMENT Flr.Elv.	LOCATION -----> Rm. or Row/Col.	SORT	NOTES	<-- OP. Normal	ST. --> Desired	POWER REQD?	SUPPORTING SYS. DWG. NO./REV.	REQ'D INTERCONNECTIONS & SUPPORTING COMPONENTS	REG. ISSUE
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
2122	B	088	SOV-RC-455C1	SI/(PCV-RC-455C) SOLENOID	ISO 6.24-3786,RK-1D	RCBX	767	PRZR CUBICLE	S R		CLOSED	OPEN	YES	RE-21JT	PNL-DC-2 BK 8-35	A
2123	B	088	SOV-RC-455C2	SI(PCV-RC-455C) SOLENOID	ISO 6.24-3786,RK-1D	RCBX	767	PRZR CUBICLE	S R		CLOSED	OPEN	YES	RE-21JT	PNL-DC-2 BK 8-35	A
2124	A	088	SOV-RC-455D1	SI/(PCV-RC-455D) SOLENOID	ISO 6.24-3786,RK-1D	RCBX	767	PRZR CUBICLE	S R		CLOSED	OPEN	YES	RE-21JT	PNL-DC-3 BK 8-34	A
2125	A	088	SOV-RC-455D2	SI(PCV-RC-455D) SOLENOID	ISO 6.24-3786,RK-1D	RCBX	767	PRZR CUBICLE	S R		CLOSED	OPEN	YES	RE-21JT	PNL-DC-3 BK 8-34	A
2126	A	088	SOV-RC-456-1	RC/(PCV-RC-456) SOLENOID	RK-1D	RCBX	767	PRZR CUBICLE	S R		CLOSED	OPEN	YES	RE-21JT	PNL-DC-3 BK 8-34	A
2127	A	088	SOV-RC-456-2	RC/(PCV-RC-456) SOLENOID	RK-1D	RCBX	767	PRZR CUBICLE	S R		CLOSED	OPEN	YES	RE-21JT	PNL-DC-3 BK 8-34	A
5231	B	088	SOV-VS-209A1	VS/UPPER FILTER BANK DRAIN VALVE	DWG RM-2B, VTI 10.1-216	AXLB	780	M FILTER BANK	R		CLOSED	CLOSED	NO	RE-21MT	DC-PNL-4 BK 19	A
5232	B	088	SOV-VS-209A2	VS/UPPER FILTER BANK DRAIN VALVE	DWG RM-2B, VTI 10.1-216	AXLB	780	M FILTER BANK	R		CLOSED	CLOSED	NO	RE-21MT	DC-PNL-4 BK 19	A
5233	B	088	SOV-VS-209B1	VS/LOWER FILTER BANK DRAIN VALVE	DWG RM-2B, VTI 10.1-216	AXLB	768	M FILTER BANK	R		CLOSED	CLOSED	NO	RE-21MT	DC-PNL-4 BK 19	A
5234	B	088	SOV-VS-209B2	LOWER FILTER BANK DRAIN VALVE	DWG RM-2B, VTI 10.1-216	AXLB	768	M FILTER BANK	R		CLOSED	CLOSED	NO	RE-21MT	DC-PNL-4 BK 19	A
5339	A	20	SSW-VITBUS-1	UPS/UPS BACKED VITAL INSTRUMENT BUS STATIC SWITCH	DWG RE-27B, 21EB, 38D	SRVB	713	AE SWGR	S R		ON	ON	YES	1.24-181	MCC1-E13	A
5340	B	20	SSW-VITBUS-2	UPS/UPS BACKED VITAL INSTRUMENT BUS STATIC SWITCH	DWG RE-21EB, 27B, 38D	SRVB	713	DF SWGR	S R		ON	ON	YES	1.24-181	MCC1-E14	A
5341	A	20	SSW-VITBUS-3	UPS/UPS BACKED VITAL INSTRUMENT BUS STATIC SWITCH	DWG RE-27B, 21EB, 38D	SRVB	713	AE SWGR	S R		ON	ON	YES	1.24-181	MCC1-E13	A
5342	B	20	SSW-VITBUS-4	UPS/UPS BACKED VITAL INSTRUMENT BUS STATIC SWITCH	DWG RE-21EB, 27B, 38D	SRVB	713	DF SWGR	S R		ON	ON	YES	1.24-181	MCC1-E14	A
4203C	B	20	TR-RC-410	RC/REACTOR COOLANT COLD LEG 3 PEN RECORDER		SRVB	735	CONT RM VB-A	S R		ON	ON	YES	RE-228P	VITAL BUS 2	A
4203D	A	20	TR-RC-413	RC/REACTOR COOLANT HOT LEG 3 PEN RECORDER		SRVB	735	CONT RM VB-A	S R		ON	ON	YES	RE-228N	VITAL BUS 1	A
4201B	B	19	TRB-RC-410	RC/LOOP 1A COLD LEG RESISTANCE TEMPERATURE DETECTOR	VTI 7.41-33	RCBX	718	A CUBICLE	S R	19	ON	ON	YES	RE-228P	VITAL BUS 2	A
4201A	A	19	TRB-RC-413	RC/LOOP 1A HOT LEG RESISTANCE TEMPERATURE DETECTOR	VTI 7.41-33	RCBX	718	A CUBICLE	S R	19	ON	ON	YES	RE-228N	VITAL BUS 1	A
4202B	B	19	TRB-RC-420	RC/LOOP 1B COLD LEG RESISTANCE TEMPERATURE DETECTOR	VTI 7.41-33	RCBX	718	B CUBICLE	S R	19	ON	ON	YES	RE-228P	VITAL BUS 2	A
4202A	A	19	TRB-RC-423	RC/LOOP 1B HOT LEG RESISTANCE TEMPERATURE DETECTOR	VTI 7.41-33	RCBX	718	B CUBICLE	S R	19	ON	ON	YES	RE-228N	VITAL BUS 1	A

BEAVER VALLEY POWER STATION UNIT 1
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332 INDIVIDUAL PLANT COMPONENTS

LINE NO.	TRAIN	EQUIP CLASS	MARK NO.	SYSTEM/EQUIPMENT DESCRIPTION	Dwg. No./Rev./Zone	<---------- LOCATION -----> Building	Flr Elv.	Rm. or Row/Col.	SORT	NOTES	<-- OP. ST. --> Normal	Desired	POWER REQD?	SUPPORTING SYS. DWG. NO./REV.	REQ'D INTERCONNECTIONS & SUPPORTING COMPONENTS	REG. ISSUE
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
4203B	B	19	TRB-RC-430	RC/LOOP 1C COLD LEG RESISTANCE TEMPERATURE DETECTOR	VTI 7.41-33	RCBX	718	C CUBICLE	S R	19	ON	ON	YES	RE-22BP	VITAL BUS 1	A
4203A	A	19	TRB-RC-433	RC/LOOP 1C HOT LEG RESISTANCE TEMPERATURE DETECTOR	VTI 7.41-33	RCBX	718	C CUBICLE	S R	19	ON	ON	YES	RE-22BN	VITAL BUS 1	A
4211	A/B	07	TV-MS-101A	MS/MAIN STEAM ISOLATION	ISO 6.24-2	SFGB	752	MSVH	S R	9	OPEN	CLOSED	YES	RE-21HX	PNL-DC-3(2) 8-6	A
4212	A/B	07	TV-MS-101B	MS/MAIN STEAM ISOLATION	ISO 6.24-2	SFGB	752	MSVH	S R	9	OPEN	CLOSED	YES	RE-21HX	PNL-DC-3(2) 8-6	A
4213	A/B	07	TV-MS-101C	MS/MAIN STEAM ISOLATION	ISO 6.24-2	SFGB	752	MSVH	S R	9	OPEN	CLOSED	YES	RE-21HX	PNL-DC-3(2) 8-6	A
4215	A	07	TV-MS-111A	MS/MAIN STM PRE-NRTRN DRAIN ISOL VALVE	ISO 6.24-1576	SFGB	768	MSVH	S R		OPEN	CLOSED	NO	RE-21HY	PNL-DC-3 BK-8 8	A
4216	A	07	TV-MS-111B	MS/MAIN STM PRE-NRTRN DRAIN ISOL VALVE	ISO 6.24-1576	SFGB	768	MSVH	S R		OPEN	CLOSED	NO	RE-21HY	PNL-DC-3 BK-8 8	A
4217	A	07	TV-MS-111C	MS/MAIN STM PRE-NRTRN DRAIN ISOL VALVE	ISO 6.24-1576	SFGB	768	MSVH	S R		OPEN	CLOSED	NO	RE-21HY	PNL-DC-3 BK-8 8	A
1240	A	08B	TV-SS-105A1	RC/HOTLEG SAMPLE HDR INSIDE CNMT ISOL TRIP VALVE	ISO 6.24-3402, RP-18A	RCBX	718	PENT	S R		OPEN	OPEN	YES	RE-21XH	PNL-DC-3 BK 8-59	A
1241	B	08B	TV-SS-105A2	RC/HOTLEG SAMPLE HDR OUTSIDE CNMT ISOL TRIP VALVE	VTI 7.067-0133,0261	SFGB	722	PENT A	S R		OPEN	OPEN	YES	RE-21XJ, ISO 6.24-3401,3754, RP-18A	PNL-DC-2 BK 8-59	A
1239	B	08B	TV-SS-106D	SS/1B RCS HOTLEG RV SIDE OF LOOP STOP SAMPLE ISOLATION	ISO 6.24-3402, RP-18A	RCBX	738	B RCP CUBICLE	S R		CLOSED	OPEN	YES	RE-21XS	PN-AC-10 BK10-20	A
3217	A	07	TV-SS-108	SS/PZR LIQUID SPACE SAMPLE ISOLATION	ISO ISI-2821A,3680,RP-18 A	RCBX	738	PZR CUBICLE	R		CLOSED	CLOSED	NO	RE-21KR	PNL-AC-10 BK 7	A
3218	A	07	TV-SS-110	SS/PZR VAPOR SPACE SAMPLE ISOLATION	DWG RM-32A, RP-18A	RCBX	738	PZR CUBICLE	R		CLOSED	CLOSED	NO	RE-21KR	PNL-AC-10 BK 7	A
5235	A	10	VS-AC-1A	VS/CONTROL ROOM A/C UNIT	DWG RB-17J, RB-17K	SRVB	713	CR VENT	S R		ON	ON	YES	RE-21MK	480V BUS 1N BK N	A
5236	B	10	VS-AC-1B	VS/CONTROL ROOM A/C UNIT	DWG RB-17J, RB-17K	SRVB	713	CR VENT	S R		ON	ON	YES	RE-21MK	480V BUS 1P BK P	A
5242	A/B	0	VS-AD-10	VS/VS-F-40B DISCHARGE DAMPER	DWG RB-17J, RB-17K	SRVB	713	CR VENT	S R	13	OPEN	OPEN	NO	RE-21MJ	MCC1-E10 BK C	A
5252	A/B	0	VS-AD-3	VS/VS-AC-1A SUCTION DAMPER		SRVB	713	CR VENT	S R	13	OPEN	OPEN	NO	RE-21MJ	N/A	A
5253	A/B	0	VS-AD-4	VS/VS-AC-1B SUCTION DAMPER		SRVB	713	CR VENT	S R	13	OPEN	OPEN	NO	RE-21MJ	N/A	A
5254	A/B	0	VS-AD-5	VS/VS-AC-1A DISCHARGE DAMPER		SRVB	713	CR VENT	S R	13	OPEN	OPEN	NO	RE-21MJ	N/A	A
5255	A/B	0	VS-AD-6	VS/VS-AC-1B DISCHARGE DAMPER		SRVB	713	CR VENT	S R	13	OPEN	OPEN	NO	RE-21MJ	N/A	A
5239	A/B	0	VS-AD-7	VS/VS-F-40A SUCTION DAMPER		SRVB	713	CR VENT	S R	13	OPEN	OPEN	NO	RE-21MJ	MCC1-E9 BK C	A
5240	A/B	0	VS-AD-8	VS/VS-F-40B SUCTION DAMPER		SRVB	713	CR VENT	S R	13	OPEN	OPEN	NO	RE-21MJ	MCC1-E10 BK C	A

BEAVER VALLEY POWER STATION UNIT 1
RELAY REVIEW
SAFE SHUTDOWN EQUIPMENT LIST (SSEL)
332 INDIVIDUAL PLANT COMPONENTS

LINE NO.	TRAIN	EQUIP CLASS	MARK NO.	SYSTEM/EQUIPMENT DESCRIPTION	Dwg. No./Rev./Zone	<--------- EQUIPMENT Bldg	Flr.Elv.	LOCATION -----> Rm. or Row/Col.	SORT	NOTES	<-- OP. ST. --> Normal	Desired	POWER REQD?	SUPPORTING SYS. DWG. NO./REV.	REQ'D INTERCONNECTIONS & SUPPORTING COMPONENTS	REG. ISSUE
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
5241	A/B	0	VS-AD-9	VS/VS-F-40A DISCHARGE DAMPER		SRVB	713	CR VENT	S R	13	OPEN	OPEN	NO	RE-21MJ	MCC1-E9 BK C	A
5256	A/B	0	VS-AFD-1	VS/ZONE 5 SUPPLY FIRE DAMPER		SRVB	713	CR VENT	S R	13	OPEN	OPEN	NO	RE-21MH	AC-PNL-E3 BK 4	A
5265	A/B	0	VS-AFD-10	VS/ZONE 5 BYPASS FIRE DAMPER		SRVB	713	CR VENT	S R	13	OPEN	OPEN	NO	RE-21MH	AC-PNL-E3 BK 4	A
5266	A/B	0	VS-AFD-11	VS/ZONE 4 RETURN FIRE DAMPER		SRVB	713	CR VENT	S R	13	OPEN	OPEN	NO	RE-21MH	AC-PNL-E3 BK 4	A
5267	A/B	0	VS-AFD-12	VS/ZONE 1 RETURN FIRE DAMPER		SRVB	713	CR VENT	S R	13	OPEN	OPEN	NO	RE-21MH	AC-PNL-E3 BK 4	A
5268	A/B	0	VS-AFD-13	VS/ZONE 2 RETURN FIRE DAMPER		SRVB	713	CR VENT	S R	13	OPEN	OPEN	NO	RE-21MH	AC-PNL-E3 BK 4	A
5269	A/B	0	VS-AFD-14	VS/ZONE 3 RETURN FIRE DAMPER		SRVB	713	CR VENT	S R	13	OPEN	OPEN	NO	RE-21MH	AC-PNL-E3 BK 4	A
5270	A/B	0	VS-AFD-15	VS/ZONE 5 RETURN FIRE DAMPER		SRVB	713	CR VENT	S R	13	OPEN	OPEN	NO	RE-21MH	AC-PNL-E3 BK 4	A
5257	A/B	0	VS-AFD-2	VS/ZONE 4 SUPPLY FIRE DAMPER		SRVB	713	CR VENT	S R	13	OPEN	OPEN	NO	RE-21MH	AC-PNL-E3 BK 4	A
5258	A/B	0	VS-AFD-3	VS/ZONE 1 SUPPLY FIRE DAMPER		SRVB	713	CR VENT	S R	13	OPEN	OPEN	NO	RE-21MH	AC-PNL-E3 BK 4	A
5259	A/B	0	VS-AFD-4	VS/ZONE 2 SUPPLY FIRE DAMPER		SRVB	713	CR VENT	S R	13	OPEN	OPEN	NO	RE-21MH	AC-PNL-E3 BK 4	A
5260	A/B	0	VS-AFD-5	VS/ZONE 3 SUPPLY FIRE DAMPER		SRVB	713	CR VENT	S R	13	OPEN	OPEN	NO	RE-21MH	AC-PNL-E3 BK 4	A
5261	A/B	0	VS-AFD-6	VS/ZONE 3 BYPASS FIRE DAMPER		SRVB	713	CR VENT	S R	13	OPEN	OPEN	NO	RE-21MH	AC-PNL-E3 BK 4	A
5262	A/B	0	VS-AFD-7	VS/ZONE 2 BYPASS FIRE DAMPER		SRVB	713	CR VENT	S R	13	OPEN	OPEN	NO	RE-21MH	AC-PNL-E3 BK 4	A
5263	A/B	0	VS-AFD-8	VS/ZONE 1 BYPASS FIRE DAMPER		SRVB	713	CR VENT	S R	13	OPEN	OPEN	NO	RE-21MH	AC-PNL-E3 BK 4	A
5264	A/B	0	VS-AFD-9	VS/ZONE 4 BYPASS FIRE DAMPER		SRVB	713	CR VENT	S R	13	OPEN	OPEN	NO	RE-21MH	AC-PNL-E3 BK 4	A
5271	\	12	VS-C-1A	VS/TEMP CONT AIR COMP	VTI 10.1-281, 300	SRVB	713	CR VENT	S R		OFF	ON	YES	RE-21MS	AC-PNL-E3 BK 5	A
5273	)	10	VS-C-1A1	VS/TEMP CONT AIR COMP RECIEVER TK AIR DRYER	VTI 10.1-281, 300	SRVB	713	CR VENT	S R		N/A	N/A	N/A	RE-21MS	AC-PNL-E3 BK 5	A
5272	B	12	VS-C-1B	VS/TEMP CONT AIR COMP	VTI 10.1-281, 300	SRVB	713	CR VENT	S R		OFF	ON	YES	RE-21MS	AC-PNL-E4 BK 5	A
5274	/	10	VS-C-1B1	VS/TEMP CONT AIR COMP RECIEVER TK AIR DRYER	VTI 10.1-281, 300	SRVB	713	CR VENT	S R		N/A	N/A	N/A	RE-21MS	AC-PNL-E4 BK 5	A
5205	A	0	VS-D-16A	VS/EMERG SWITCHGEAR EXHAUST DAMPER	DWG RB-17L	SRVB	725	CABLE MEZZ	S R		OPEN	OPEN	NO	RE-21MZ	MCC1-E9 BK AF	A
5206	B	0	VS-D-16B	VS/EMERG SWITCHGEAR EXHAUST DAMPER	DWG RB-17L	SRVB	725	CABLE MEZZ	S R		CLOSED	OPEN	YES	RE-21MZ	MCC1-E10 BK AC	A
5327	A	G	VS-D-22-1A	VS/DG BLDG EXHAUST DAMPER	VTI 10.1-1073,RB-27A	DGBX	756	DG#1 ROOF	S R		CLOSED	OPEN	YES	RE-21MP	PNL-AC-E3 BK E3-	A
5328	B	0	VS-D-22-1B	VS/DG BLDG EXHAUST DAMPER	VTI 10.1-1073,RB-27A	DGBX	756	DG#2 ROOF	S R		CLOSED	OPEN	YES	RE-21MP	PNL-AC-E4 BK E4-	A
5329	A	0	VS-D-22-2A	VS/DG BLDG AIR SUPPLY DAMPER	RB-27A, VTI 10.1-1074	DGBX	745	DIESEL GEN #1	S R		CLOSED	OPEN	YES	RE-21MP	PNL-AC-E3 BK E3-	A
5330	B	0	VS-D-22-2B	VS/DG BLDG AIR SUPPLY DAMPER	RB-27A, VTI 10.1-1074	DGBX	745	DIESEL GEN #2	S R		CLOSED	OPEN	YES	RE-21MP	PNL-AC-E4 BK E4-	A

BEAVER VALLEY POWER STATION UNIT 1
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332 INDIVIDUAL PLANT COMPONENTS

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(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
5331	A	0	VS-D-22-2C	VS/DG BLDG AIR SUPPLY DAMPER	RB-27A, VTI 10.1-1074	DGBX	745	DIESEL GEN #1	S R		CLOSED	OPEN	YES	RE-21MP	PNL-AC-E3 BK E3-	A
5332	B	0	VS-D-22-2D	VS/DG BLDG AIR SUPPLY DAMPER	RB-27A, VTI 10.1-1074	DGBX	745	DIESEL GEN #2	S R		CLOSED	OPEN	YES	RE-21MP	PNL-AC-E4 BK E4-	A
5220	A/B	08A	VS-D-4-10A	VS/MAIN FILTER BANK [1VS-FL-7,8,9] IN DAMPER	RB-8J SECT 17-17	AXLB	768	BY FILTER BANK	R		CLOSED	CLOSED	YES	RE-21MS	PNL-AC-11 BK 1	A
5221	A/B	08A	VS-D-4-10B	VS/MAIN FILTER BANK [1VS-FL-7,8,9] OUT DAMPER	RB-8J SECT 17-17	AXLB	768	BY FILTER BANK	R		CLOSED	CLOSED	YES	RE-21MS	PNL-AC-11 BK 1	A
5224	A	0	VS-D-4-12A	VS/QUENCH SPRAY PUMP RM OUTSIDE AIR IN ISOLATION DAMPER	RB-5L&5P SECT 24-24	SFGB	735	VS-AC-7 RM	S R		CLOSED	OPEN	YES	RE-21MT	PNL-AC-E1 BK 7	A
5225	B	0	VS-D-4-12B	VS/QUENCH SPRAY PUMP RM OUTSIDE AIR IN ISOLATION DAMPER	RB-5L&5P SECT 24-24	SFGB	735	VS-AC-7 RM	S R		CLOSED	OPEN	YES	RE-21MT	PNL-AC-E2 BK 6	A
5226	A	0	VS-D-4-15A	VS/AUX FEED PUMP RM EXHAUST DAMPER	RB-5L&5P SECT 24-24	SFGB	735	AUX FD PUMP RM	S R		CLOSED	OPEN	YES	RE-21MT	PNL-AC-E1 BK 7	A
5227	B	0	VS-D-4-15B	VS/AUX FEED PUMP RM EXHAUST DAMPER	RB-5L&5P SECT 24-24	SFGB	735	AUX FD PUMP RM	S R		CLOSED	OPEN	YES	RE-21MT	PNL-AC-E2 BK 6	A
5207	A	08A	VS-D-4-1A	VS/MAIN FILTER BANK UPSTREAM BYPASS ISOLATION DAMPER	RB-8H (L 1/2-10 1/2)	AXLB	768	BY FILTER BANK	R		OPEN	OPEN	NO	RE-21MS	MCC1-E3 BK V	A
5208	B	08A	VS-D-4-1B	VS/MAIN FILTER BANK UPSTREAM BYPASS ISOLATION DAMPER	RB-8H (L 1/2-10 1/2)	AXLB	768	BY FILTER BANK	R		OPEN	OPEN	NO	RE-21MS	MCC1-E4 BK V	A
5209	A	09A	VS-D-4-2A	VS/MAIN FILTER BANK LEAK COLLECTION TRAIN B IN ISOL DAM	RB-8H (K 1/2-10)	AXLB	768	BY FILTER BANK	R		CLOSED	CLOSED	NO	RE-21MS	PNL-AC-E1 BK 3	A
5210	B	08A	VS-D-4-2B	VS/MAIN FILTER BANK LEAK COLLECTION TRAIN A IN ISOL DAM	RB-8H (K-10)	AXLB	768	BY FILTER BANK	R		CLOSED	CLOSED	NO	RE-21MS	PNL-AC-E2 BK 2	A
5211	B	08A	VS-D-4-3B	VS/CHG PUMP CUBICLE NORM EXHAUST DAMPER	RB-8B (J-10 1/2)&4-4	AXLB	722	BLENDER CUBICLE	R		CLOSED	CLOSED	NO	RE-21MT	MCC1-E4 BK W	A
5212	A	08A	VS-D-4-4A	VS/CHG PUMP CUBICLE EMER EXHAUST DAMPER	RB-8H (K 1/2-9 3/8)	AXLB	768	BY BATCH TANK	R		OPEN	OPEN	NO	RE-21MS	PNL-AC-E1 BK 3	A
5213	B	08A	VS-D-4-4B	VS/CHG PUMP CUBILCE EMER EXHAUST DAMPER	RB-8H (K1/2-9 3/8)	AXLB	768	BY BATCH TANK	R		OPEN	OPEN	NO	RE-21MS	PNL-AC-E2 BK 2	A
5214	A	0	VS-D-4-7A	VS/LEAK COLL EXHAUST FAN 4A SUCTION ISOLATION DAMPER	RB-8G (G 1/2-11)	AXLB	768	AT FAN	S R		CLOSED	OPEN	YES	RE-21MS	N/A	A
5216	A	0	VS-D-4-8A	VS/LEAK COLL EXHAUST FAN 4B SUCTION ISOLATION DAMPER	RB-8G (G 1/2-12)	AXLB	768	AT FAN	S R		CLOSED	OPEN	YES	RE-21MS	N/A	A
5218	A/B	08A	VS-D-4-9A	VS/MAIN FILTER BANK [1VS-FL-4,5,6] IN DAMPER	RB-8H (K-10 1/4)	AXLB	768	BY FILTER BANK	R		OPEN	OPEN	YES	RE-21MS	PNL-AC-11 BK 1	A
5219	A/B	08A	VS-D-4-9B	VS/MAIN FILTER BANK [1VS-FL-4,5,6] OUT DAMPER	RB-8H (K-10 7/8)	AXLB	768	BY FILTER BANK	R		OPEN	OPEN	YES	RE-21MS	PNL-AC-11 BK 1	A

BEAVER VALLEY POWER STATION UNIT 1
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(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
5243	A/B	08A	VS-D-40-1A	VS/CONTROL ROOM AIR INTAKE DAMPER	VTI 10.1-326,327,328,329	SRVB	713	CR VENT	S R		OPEN	OPEN	NO	RE-21ML,RB-2D,17J,17K	MCC1-E9 BK U	A
5244	A/B	08A	VS-D-40-1B	VS/CONTROL ROOM AIR INTAKE DAMPER	VTI 10.1-326,327,328,329	SRVB	713	CR VENT	S R		OPEN	OPEN	NO	RE-21ML,RB-2D,17J,17K	MCC1-E10 BK J	A
5245	A/B	08A	VS-D-40-1C	VS/CONTROL RM AIR EXHAUST DAMPER	VTI 10.1-326,327,328,329	SRVB	713	CR VENT	S R	13	OPEN	OPEN	NO	RE-21ML,RB-2D,17J,17K	MCC1-E9 BK V	A
5246	A/B	08A	VS-D-40-1D	VS/CONTROL RM AIR EXHAUST DAMPER	VTI 10.1-326,327,328,329	SRVB	713	CR VENT	S R	13	OPEN	OPEN	NO	RE-21ML,RB-2D,17J,17K	MCC1-E10 BK K	A
5247	A/B	0	VS-D-40-1F	VS/MIN OUTSIDE AIR INTAKE DAMPER	VTI 10.1-326,327,328,329	SRVB	713	CR VENT	S R	13	OPEN	OPEN	NO	RB-2D,17J,17K	N/A	A
5248	A/B	0	VS-D-40-1G	VS/MAX OUTSIDE AIR INTAKE DAMPER	VTI 10.1-326,327,328,329	SRVB	713	CR VENT	S R	13	OPEN	OPEN	NO	RB-2D,17J,17K	N/A	A
5249	A/B	0	VS-D-40-1H	VS/AIR RECIRC DAMPER	VTI 10.1-326,327,328,329	SRVB	713	CR VENT	S R	13	OPEN	OPEN	NO	RB-2D,17J,17K	N/A	A
5250	A/B	0	VS-D-40-1K	VS/AIR RECIRC DAMPER	VTI 10.1-326,327,328,329	SRVB	713	CR VENT	S R	13	OPEN	OPEN	NO	RB-2D,17J,17K	N/A	A
5251	A/B	0	VS-D-40-1M	VS/VS-F-40A & B EXHAUST DAMPER	VTI 10.1-326,327,328,329	SRVB	713	CR VENT	S R	13	OPEN	OPEN	NO	RB-2D,17J,17K	N/A	A
5228	A	08A	VS-D-5-2	VS/CNMT PURGE & EXHAUST TO MAIN FILTER BANK DAMPER	RB-8H (K-10 1/4)	AXLB	768	OVERHEAD	R		CLOSED	CLOSED	NO	RE-21MH	PNL-AC-11 BK 5	A
5101D	A	0	VS-D-57A1	VS/INTAKE STRUCTURE OUTSIDE AIR DAMPER	RB-2E RB-26A & C	INTS	705	A CUBICLE	S R		CLOSED	OPEN	YES	RE-21MW	MCC1-E1 BK B	A
5101E	A	0	VS-D-57A2	VS/INTAKE STRUCTURE RECIR AIR DAMPER	RB-2E RB-26A & C	INTS	705	A CUBICLE	S R		CLOSED	OPEN	YES	RE-21MW	MCC1-E1 BK B	A
5102D	B	0	VS-D-57B1	VS/INTAKE STRUCTURE OUTSIDE AIR DAMPER	RB-2E RB-26A & C	INTS	705	B CUBICLE	S R		CLOSED	OPEN	YES	RE-21MW	MCC1-E2 BK B	A
5102E	B	0	VS-D-57B2	VS/INTAKE STRUCTURE RECIR AIR DAMPER	RB-2E RB-26A & C	INTS	705	B CUBICLE	S R		CLOSED	OPEN	YES	RE-21MW	MCC1-E2 BK B	A
5103D	A/B	0	VS-D-57C1	VS/INTAKE STRUCTURE OUTSIDE AIR DAMPER	RB-2E RB-26A & C	INTS	705	C CUBICLE	S R		CLOSED	OPEN	YES	RE-21MW	MCC1-E1/2 BK E	A
5103E	A/B	0	VS-D-57C2	VS/INTAKE STRUCTURE RECIR AIR DAMPER	RB-2E RB-26A & C	INTS	705	C CUBICLE	S R		CLOSED	OPEN	YES	RE-21MW	MCC1-E1/2 BK E	A
5229	A	08A	VS-D-7-2A	VS/AUX BLDG A SYSTEM MAIN FILTER BANK IN DAMPER	RB-8G (G7/8-10 1/4)	AXLB	768	BY FILTER BANK	R		CLOSED	CLOSED	NO	RE-21MA	PNL-AC-7 BK 16	A
5230	B	08A	VS-D-7-4A	VS/AUX BLDG B SYSTEM MAIN FILTER BANK IN DAMPER	RB-8G (SECT Y-Y)	AXLB	768	ABOVE EXH FANS	R		CLOSED	CLOSED	NO	RE-21MA	PNL-AC-8 BK 45	A
5203	A	09	VS-F-16A	VS/EMERG SWITCHGEAR EXHAUST FAN	DWG RB-17L	SRVB	725	CABLE MEZZ	S R	12	ON	ON	YES	RE-21MZ	MCC1-E9 BK AF	A

BEAVER VALLEY POWER STATION UNIT 1
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(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
5204	B	09	VS-F-16B	VS/EMERG SWITCHGEAR EXHAUST FAN	DWG RB-17L	SRVB	725	CABLE MEZZ	S R	12	OFF	ON	YES	RE-21MZ	MCC1-E10 BK AC	A
5325	A	09	VS-F-22A	VS/DG BLDG EXHAUST FAN	RB-27A, VTI 10.1-242	DGBX	756	DG#1 ROOF	S R		OFF	ON	YES	RE-21MP	MCC1-E7 BK E	A
5326	B	09	VS-F-22B	VS/DG BLDG EXHAUST FAN	RB-27A, VTI 10.1-242	DGBX	756	DG#2 ROOF	S R		OFF	ON	YES	RE-21MP	MCC1-E8 BK E	A
5237	A	09	VS-F-40A	VS/CONTROL ROOM RETURN AIR FAN	DWG RB-17J, RB-17K	SRVB	713	CR VENT	S R		ON	ON	YES	RE-21MJ	MCC1-E9 BK C	A
5238	B	09	VS-F-40B	VS/CONTROL ROOM RETURN AIR FAN	DWG RB-17J, RB-17K	SRVB	713	CR VENT	S R		ON	ON	YES	RE-21MJ	MCC1-E10 BK C	A
5222	A	09	VS-F-4A	VS/LEAK COLLECTION EXHAUST FAN	DWG RM-2B, VTI 10.001-153	AXLB	768	NE CORNER	S R		ON	ON	YES	RE-21MS	480V BUS 1N BK5	A
5223	B	09	VS-F-4B	VS/LEAK COLLECTION EXHAUST FAN	DWG RM-2B, VTI 10.001-153	AXLB	768	NE CORNER	S R		OFF	ON	YES	RE-21MS	480V BUS 1P 3K6	A
5201	A	09	VS-F-55A	VS/EMERG SWITCHGEAR SUPPLY FAN	DWG RB-17L	SRVB	725	CABLE MEZZ	S R	12	OFF	ON	YES	RE-21MZ	MCC1 E9 BK P	A
5202	B	09	VS-F-55B	VS/EMERG SWITCHGEAR SUPPLY FAN	DWG RB-17L	SRVB	725	CABLE MEZZ	S R	12	OFF	ON	YES	RE-21MZ	MCC1-E10 BK X	A
5101C	A	09	VS-F-57A	VS/INTAKE STRUCTURE CUBICLE #1 SUPPLY FAN	RB-2E	INTS	705	A CUBICLE	S R		ON	ON	YES	RE-21MW	MCC1 E1 BK B	A
5102C	B	09	VS-F-57B	VS/INTAKE STRUCTURE CUBICLE #2 SUPPLY FAN	RB-2E	INTS	705	B CUBICLE	S R		ON	ON	YES	RE-21MW	MCC1-E2 BK B	A
5103C	A/B	09	VS-F-57C	VS/INTAKE STRUCTURE CUBICLE #3 SUPPLY FAN	RB-2E	INTS	705	C CUBICLE	S R		ON	ON	YES	RE-21MW	MCC1-E1/2 BK E	A
5101	A	06	WR-P-1A	RW/RIVER WATER PUMP	2.42-14,16,23	INTS	705	A CUBICLE	S R		ON	ON	YES	RE-21KW,RC-32E, 32J,ISO 6.24-801, RP-4K, 4L	BUS 1AE BK E10	A
5102	B	06	WR-P-1B	RW/RIVER WATER PUMP	2.42-14,16,23	INTS	705	B CUBICLE	S R		OFF	ON	YES	RE-21KW,RC-32E, 32J,ISO 6.24-801, RP-4K, 4L	BUS 1DF BK F10	A
5103	A/B	06	WR-P-1C	RW/RIVER WATER PUMP	2.42-14,16,23	INTS	705	C CUBICLE	S R		OFF	ON	YES	RE-21KX,RC-32E, 32J,ISO 6.24-801, RP-4K, 4L	BUS 1AE OR 1DF B	A

Section 5

RESULTS OF RELAY SCREENING AND EVALUATION

5.1 INTRODUCTION

This section documents the relay screening and evaluations for each of the SSEL relay review equipment items listed in Section 4 of this report. The G.4 forms from References 7 and 10 were used to summarize the relay review and provide a traceable record of the review. References are made to more detailed discussions, and supplementary information is contained in Appendices C&H, as needed. A summary of the evaluation bases discus ɔd in Appendices C&H is provided below.

5.2 BACKGROUND

5.2.1 GROUND RESPONSE SPECTRA AND FLOOR RESPONSE SPECTRA

The BVPS-1 is founded on a soil site. The site Operational Basis Earthquake (OBE) is based on 0.06 g maximum ground acceleration at zero period, and the site Design Basis Earthquake (DBE)/Safe Shutdown Earthquake (SSE) is based on 0.125 g maximum ground acceleration at zero period.

As part of the re-analysis of Seismic Class I piping systems performed in 1979, Amplified Response Spectra (ARS/FRS) were developed using Soil-Structure Interaction (SSI) methodology.

The amplified response spectra (Appendix A) used in the analysis are based on the methodology described in the report entitled "Soil-Structure Interaction in the Development of Amplified Response Spectra for BVPS-1." This report was submitted to the USNRC by Duquesne Light Company on June 11, 1979 and included USNRC requested revisions (Docket No. 50-334). The USNRC SER, dated 5-22-92, issued relative to GL 87-02 and GIP-2, categorized BVPS-1 as having a "conservative design" in-structure response spectra.

The curves of Appendix B are the ARS plotted at the 1% damping level associated with the SSE for structural analysis, and 5% damping curves required for A-46 use. Conversion was performed using the GIP section 4.4.3 guidance. Each type of relay enclosure for which the GIP provides amplification factors is represented by a curve as well (MCC, SWGR, BB/CP). The enclosure curves represent the Demand levels to which relays located within will be subjected (without unusual intervening supports-wingwalls, etc.).

5.2.2 The following is a listing of some common equipment that is either found to be non-vulnerable or acceptable based on seismic testing.

5.2.2.1 MOTOR CONTROL CENTER (MCC)

Standard MCCs are used at BVPS-1 to supply power to small motor operated devices such as motor-operated valves and small pumps/fans. The standard motor control center is an Allis Chalmers frame with cubicles filled with a standard set of components; two (2) Gould MCCs are also included on the SSEL. The MCC cubicles contain the power control equipment for each device including a molded case circuit breaker with magnetic trips and typically one or two contactors. Two contactors are used for motor-operated valves, and one contactor is used for small pump/fan motors. The contactors have thermal overloads to provide time overcurrent protection. There are also auxiliary contacts on the contactors. These devices are spring-loaded and are operated by the motion of the contactor plunger. A 480V to 120V transformer is also included in MCC cubicles to provide control power. There are no relays or other devices which are susceptible to contact chatter in the MCCs. Accordingly, based on GERS CON.3, the standard control circuits for motor-operated valves and small pumps/fans are seismically adequate since the GERS indicate a capacity of 4.5 g and the highest MCC Demand is 3.586 g [(AF=3) X (PSA = 1.195 g)] for MCCs at elevation 705 of the intake structure (highest FRS of any MCC location).

5.2.2.2 LOW VOLTAGE (480V) SWITCHGEAR

The standard 480V low voltage switchgear at BVPS-1 uses G.E. AK 25 or 50 breakers. These are metal clad air circuit breakers which come in two types. Both types can be automatically operated through control logic circuits. The AK-50 is a stored energy device in which springs are charged by an electric motor when control power is applied. The AK-25 has a closing coil which causes closing of the breaker. The AK-25 and 50 both have a set of mechanically operated auxiliary contacts associated with the breaker. The contacts are horizontally oriented, but the breaker support arrangement is judged sufficient to prevent sidesway significant enough to break contact. Overcurrent protection for the AK-25 and 50 breakers are solid state protective devices integrally mounted on the circuit breaker. These are solid state electronics and have no moving parts which are prone to chatter. There are no other relays or devices prone to relay chatter included in the AK-25 or 50 and its auxiliary components. The AK-25 and 50 breakers are acceptable because the switchgear seismic demand is less than the seismic capacity.

5.2.2.3 MEDIUM VOLTAGE (4KV) SWITCHGEAR

The medium voltage switchgear to BVPS-1 contains ITE Model 5 HK breakers. These breakers are metal clad air circuit breakers which are closed by stored energy from charged springs. The springs will automatically charge (in three seconds) after the breaker is racked in and made operational. There are a number of LS and 52 contacts included on the breaker. These are mechanically operated and not prone to chatter. The 4KV breaker also has an X closing coil and a Y anti-pump relay. There are no other relays associated with the breaker itself. The 4KV breakers are normally controlled by control logic which is either included in the top portion of the 4KV switchgear cabinets or at remote locations. Accordingly, control circuits for the 4KV breakers need to be examined for chatter prone devices.

5.2.2.4 MOTOR-OPERATED VALVE (MOV)

The standard MOV motor operator at BVPS-1 is a Limitorque Type MO. Valve sizes range from 2 to 30 inches. The stroke time can vary for each application. Included in the motor-operated valve is a set of limit switch (LS) contacts which consist of a rotary shaft with one set of contacts on a shaft and spring clips making up the other half of the contacts. Actuation of a contact requires the rotary shaft to turn 90 degrees. Accordingly, these contacts are not prone to seismic chatter. Also included with the motor-operated valve is a torque switch with contacts (TSC and TSO). A torque switch is a mechanical device and not prone to chatter. Since the contacts at the valve are mechanically actuated, that portion of a valve control circuit is seismically adequate.

5.3 G.4 FORMS

The G.4 forms provided herein provide a traceable record of the functionally important relays associated with each SSEL component requiring a relay review. SSEL component identifications are provided in the left column of the G.4 form. They are ordered by shutdown function as follows:

- Reactivity Control - 1000 Series: Rod drop - 1100; Boration - 1200.
- Pressure Control - 2000 Series: Reduction - 2100; Increase - 2200.
- Inventory Control - 3000 Series: CVCS - 3100; Leakoffs - 3200.
- Heat Removal - 4000 Series: AFW - 4100; Steam Dump - 4200.
- Support Systems - 5000 Series: River Water - 5100; HVAC - 5200; Electrical (EDG) - 5300.
- Electrical Enclosures/Supports - 8000 Series.
- Potential Electrical Loads on the Emergency Diesel Generators - 9000 Series.
- Solid State Protection Circuits - 9100 Series.

The control circuit drawings for components are listed in the second column. Each contact or contact group that affects the SSEL component is listed in the third column. For essential relays, the relay type and location are provided in the fourth column. The two right-most columns summarize the results of the review and reference supporting discussions. Where GERS are listed, a Capacity versus Demand assessment can be found in Appendix G for the subject relay type.

Section 6

REFERENCES

1. USNRC Generic Letter 87-02; Verification of Seismic Adequacy of Mechanical and Electrical Equipment in Operating Reactors, Unresolved Safety Issues (USI), A-46; February 19, 1987.

2. Use of Seismic Experience and Test Data to Show Ruggedness of Equipment in Nuclear Power Plants; R. Kennedy, W. Von Riesemann, P. Ibanez, A. Schiff, L. A. Wylie; prepared for the SQUG and in cooperation with the Office of Nuclear Reactor Regulation - USNRC; Revision 4.0; SAND-92-0140-UC 52; February 28, 1991.

3. Generic Implementation Procedure (GIP) For Seismic Verification of Nuclear Plant Equipment; February 1992; copyright Seismic Qualification Utility Group; Revision 2 Corrected February 14, 1992.

4. USNRC Generic Letter 87-02; 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).

5. Duquesne Light Company letters to USNRC, dated September 22, 1992, and February 19, 1993, committing to SQUG resolution of USI A-46.

6. USNRC letter dated November 20, 1992, accepting the Duquesne Light Company Commitment to SQUG of September 22, 1992.

7. EPRI NP-7148-SL; Procedure For Evaluating Nuclear Power Plant Relay Seismic Functionality; Electric Power Research Institute; December 1990.

8. EPRI NP-7147-SL; Seismic Ruggedness of Relays; Electric Power Research Institute; August 1991.

9. EPRI NP-5223-SL; Generic Seismic Ruggedness of Power Plant Equipment; Revision 1; Electric Power Research Institute; August 1991.

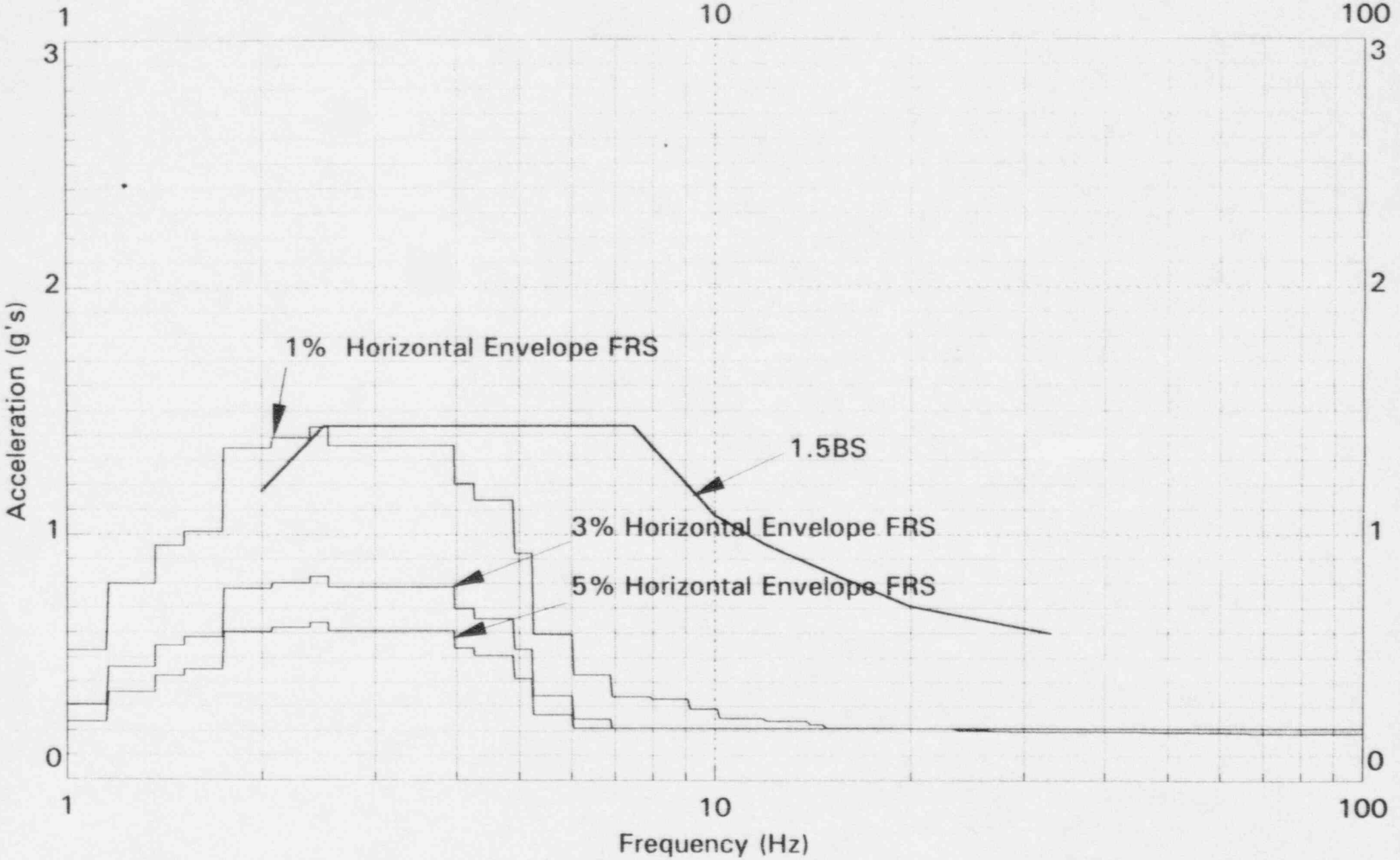
10. EPRI NP-7148-SL; Procedure for Evaluating Nuclear Power Plant Relay Seismic Functionality, Volume 2: Addendum 1; September 1993 and Addendum 2, April 1995.

11. EPRI NP-7146-SL; Guidelines for Development of In-Cabinet Seismic Demand for Devices Mounted in Electrical Cabinets; Revision 1; Electric Power Research Institute; June 1995.

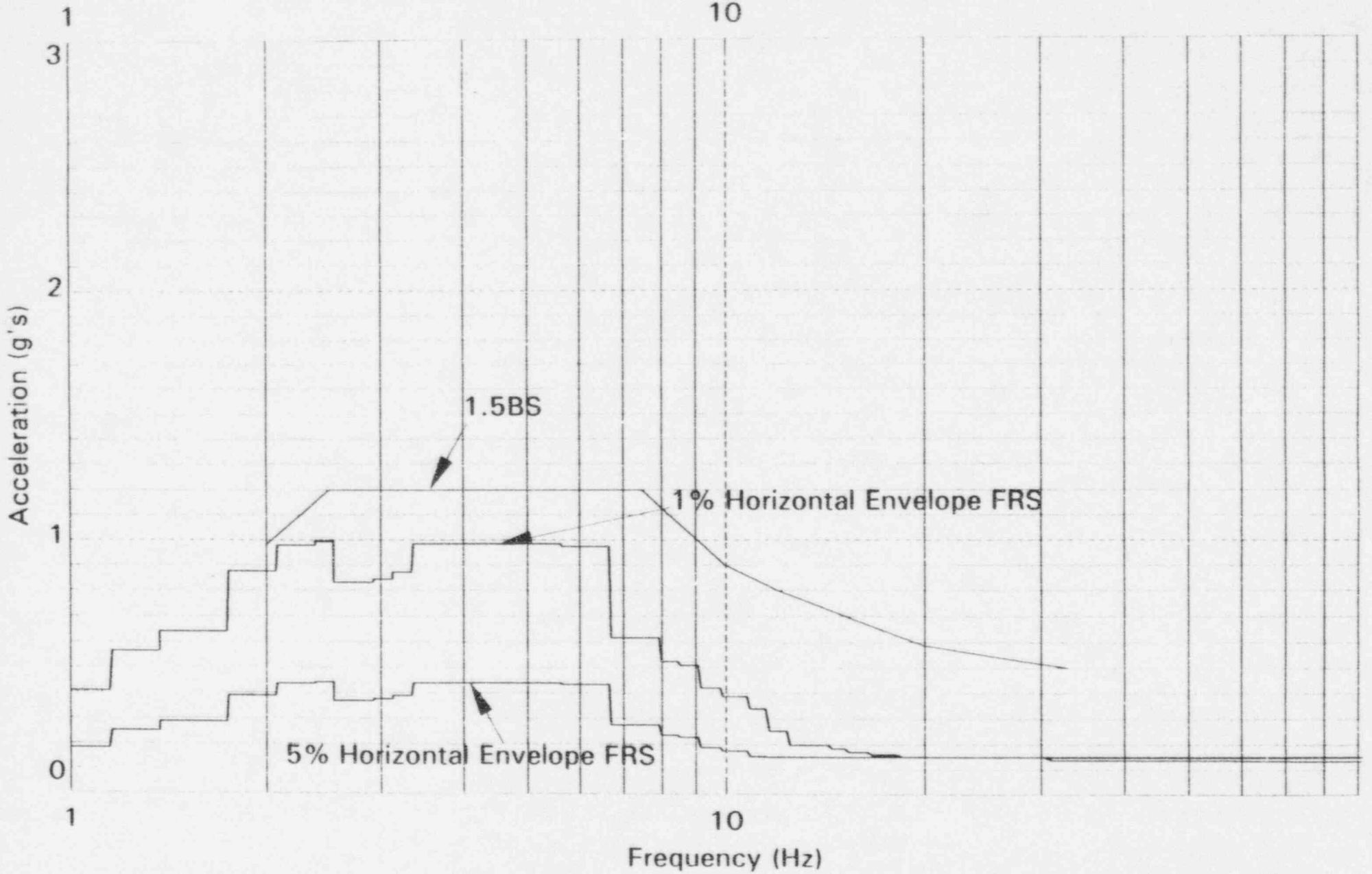
Appendix A

FLOOR SPECTRA for Relay Locations

SQUG Review AUXILIARY BUILDING (AXLB) ELEV. 768 & BELOW
Horizontal Envelope vs. 1.5BS

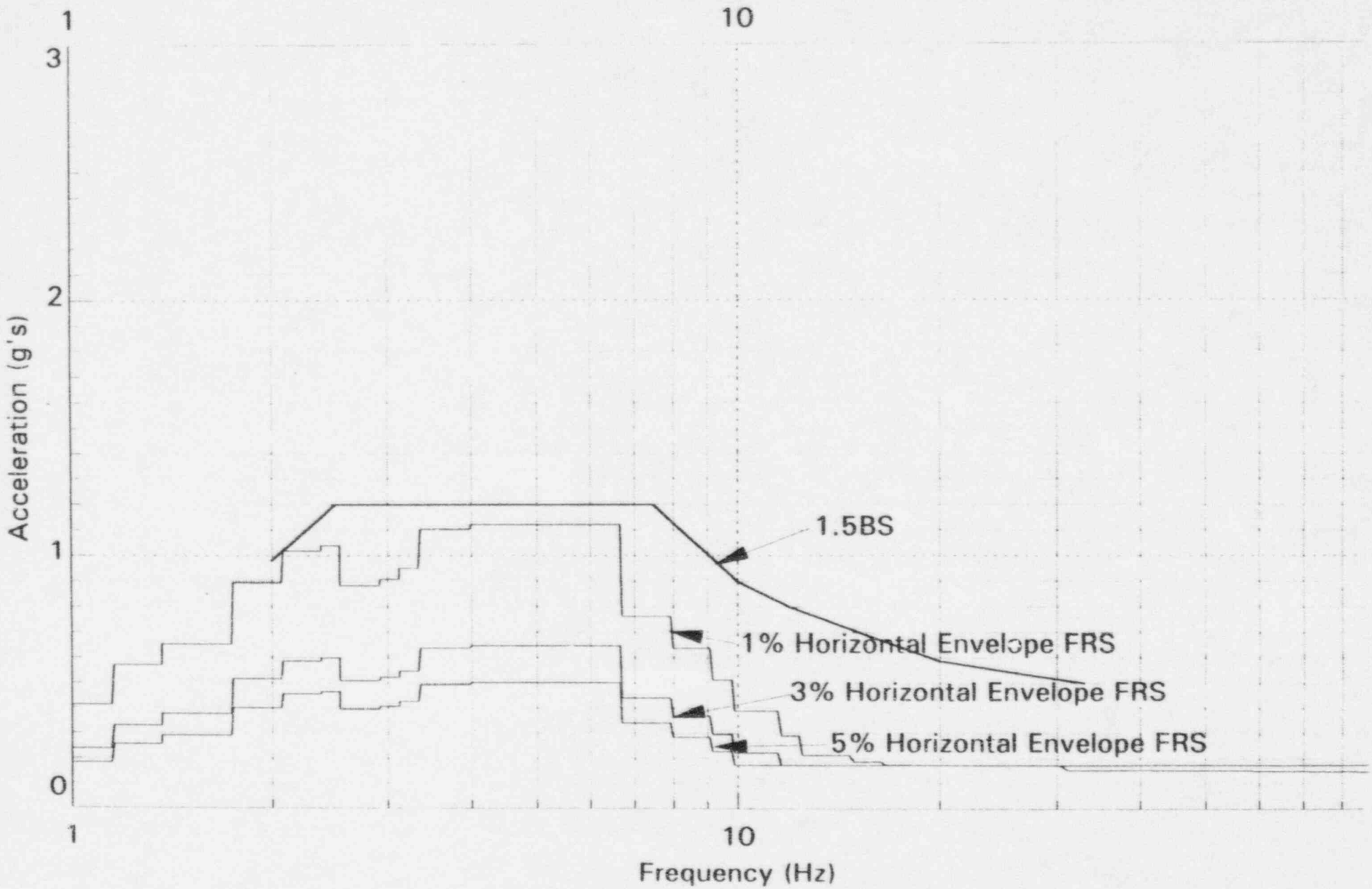


SQUG Review DIESEL GENERATOR BUILDING (DGBX) ELEV. 735
Horizontal SSE Envelope vs. 1.5BS

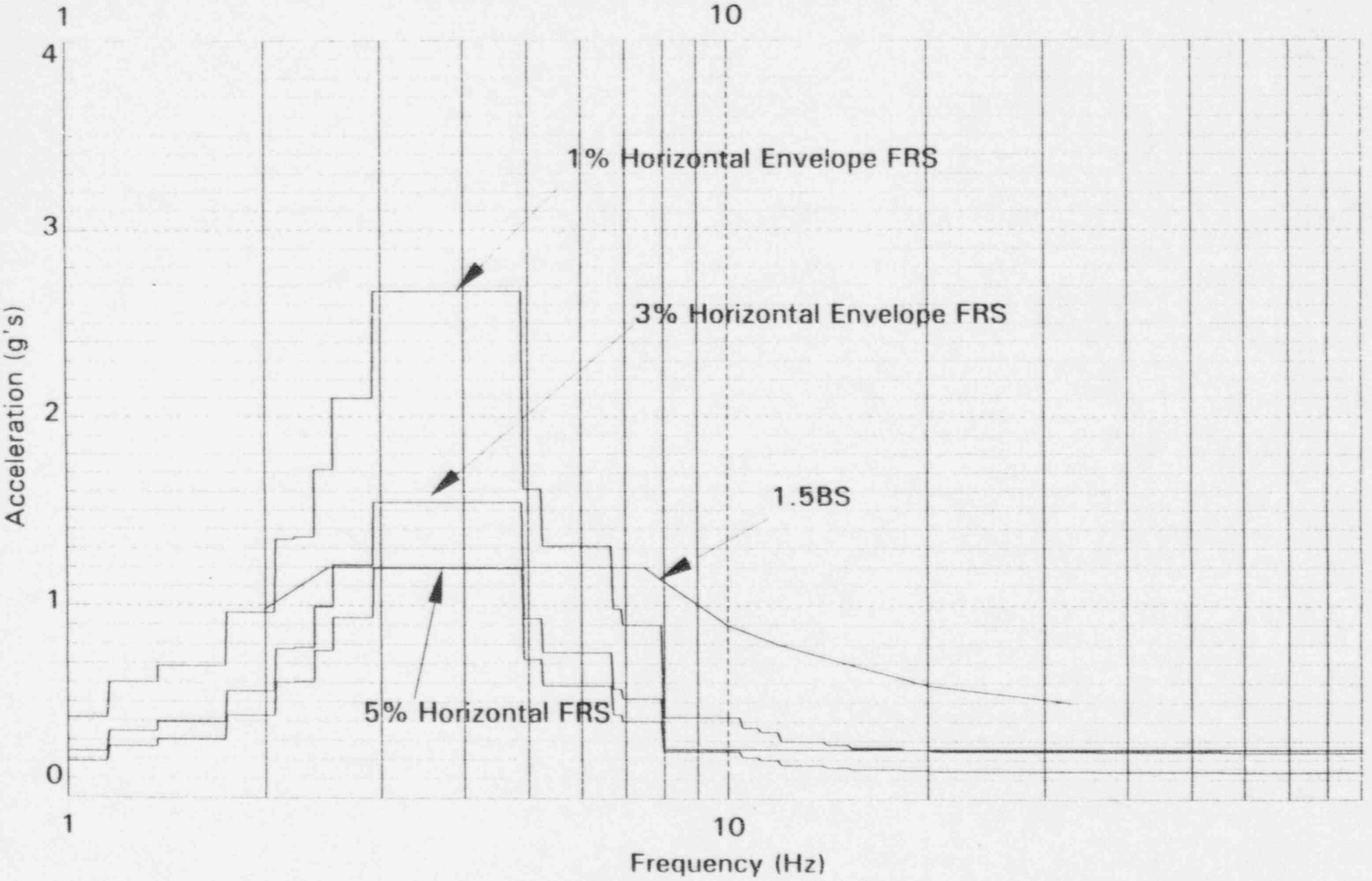


SQUG Review DIESEL GENERATOR BUILDING (DGBX) ELEV. 75

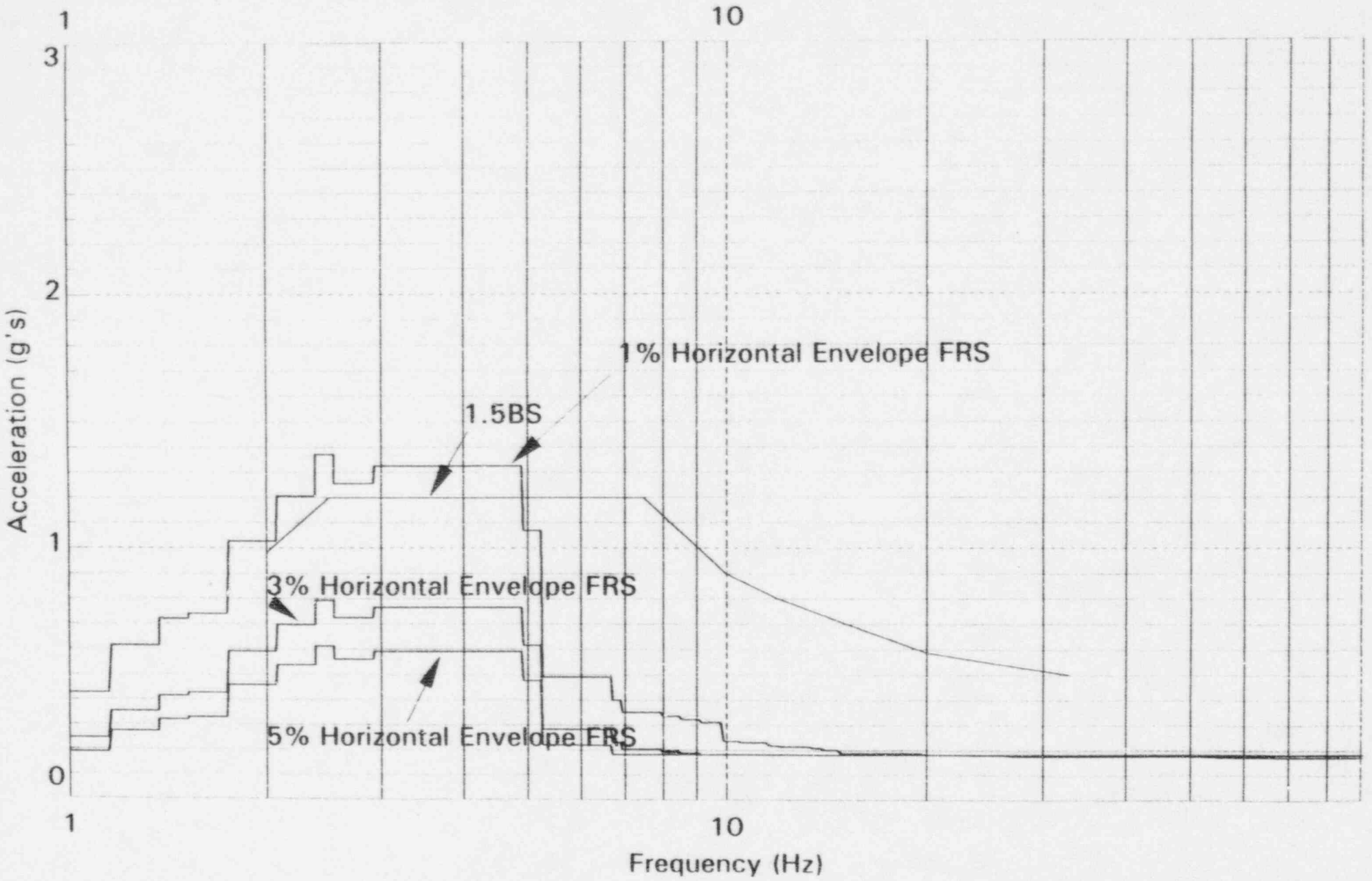
Horizontal SSE Envelope vs. 1.5BS



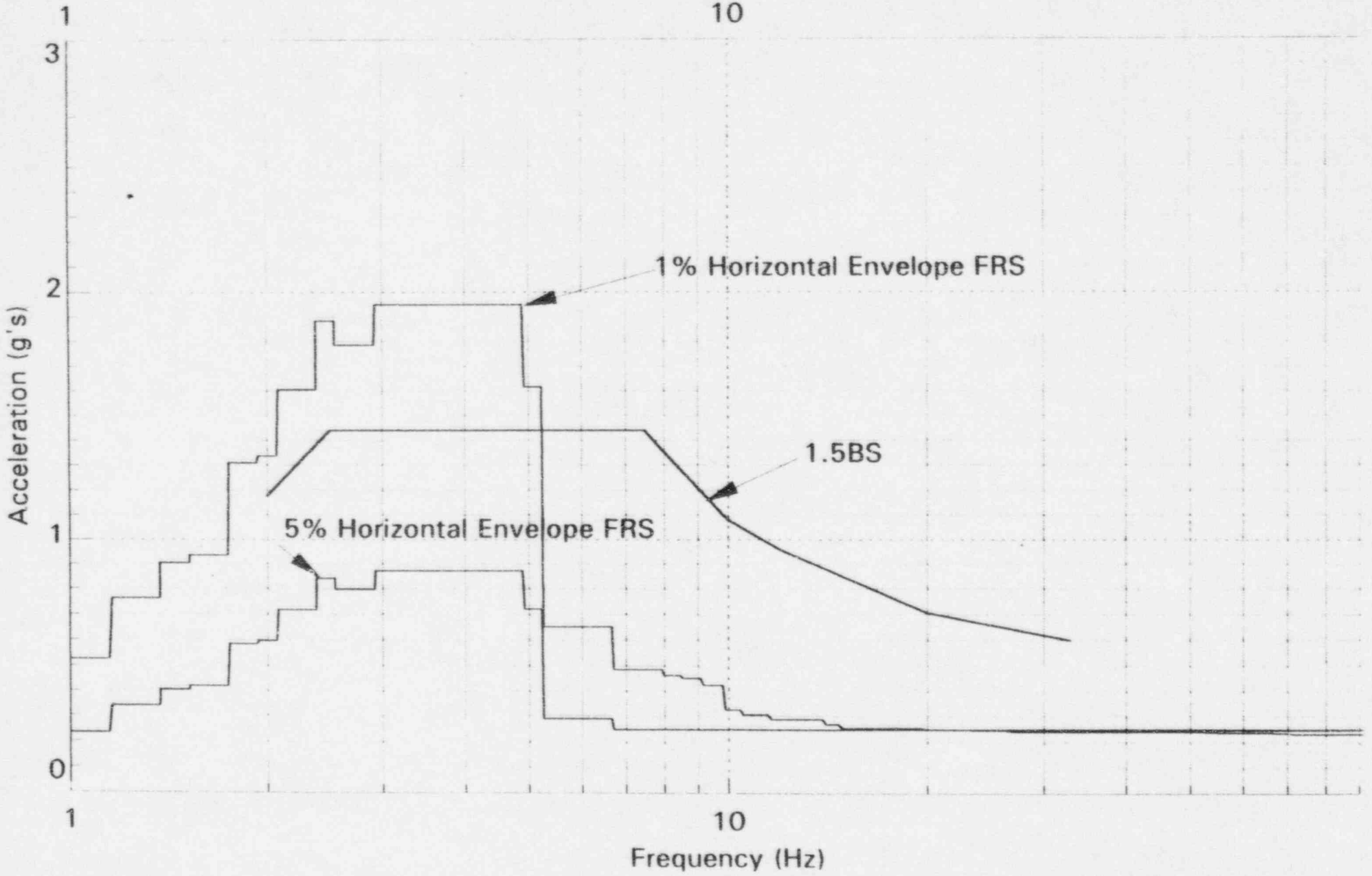
SQUG Review INTAKE STRUCTURE (INTS) ELEV. 705
Horizontal SSE Envelope vs. 1.5BS



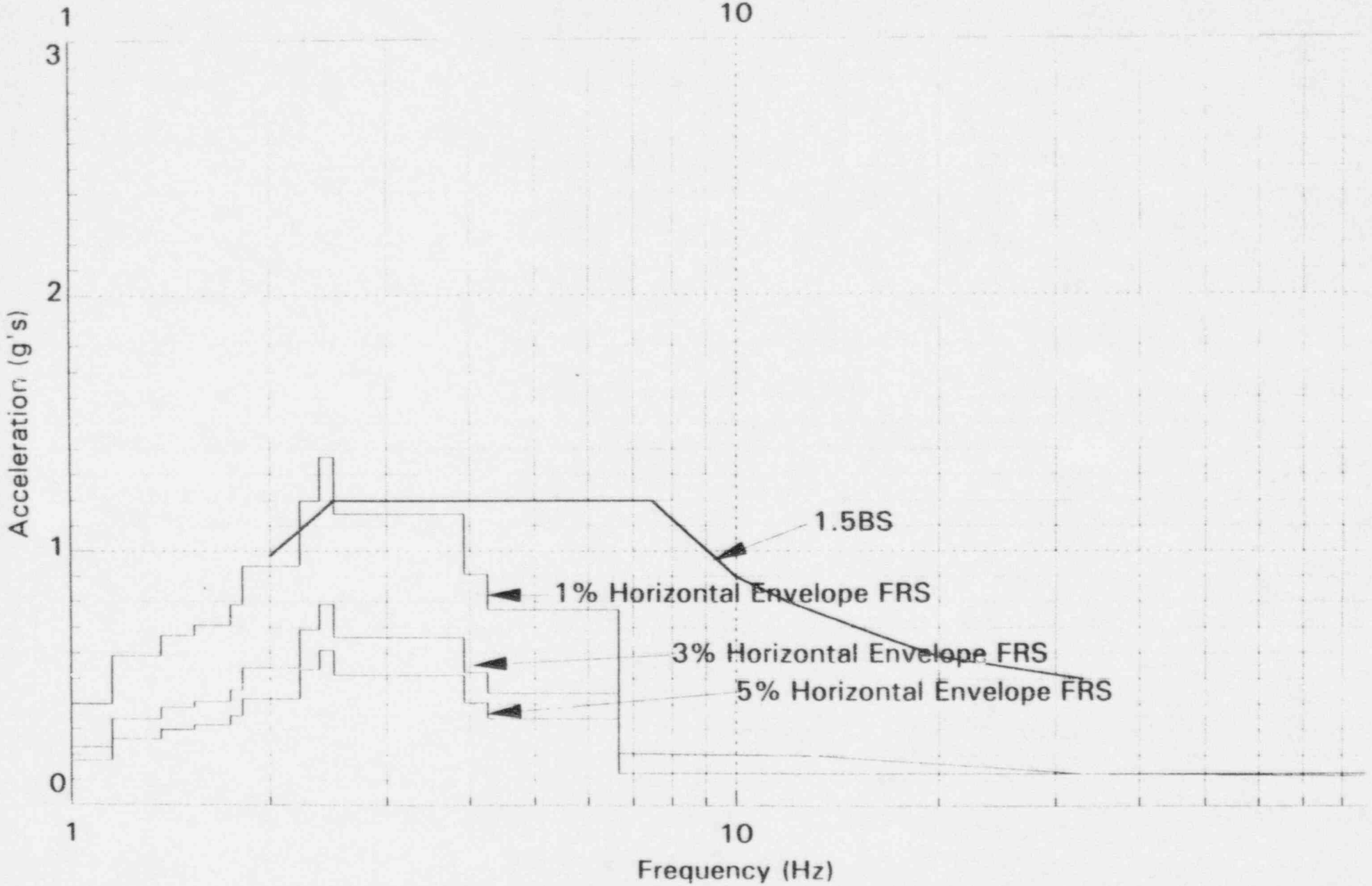
SQUG Review MAIN STEAM/CABLE VAULT (MSCV) ELEV. 753.5
Horizontal SSE Envelope vs. 1.5BS



SQUG Review MAIN STEAM/CABLE VAULT (MSCV) EL. 768
Horizontal SSE Envelope vs. 1.5BS

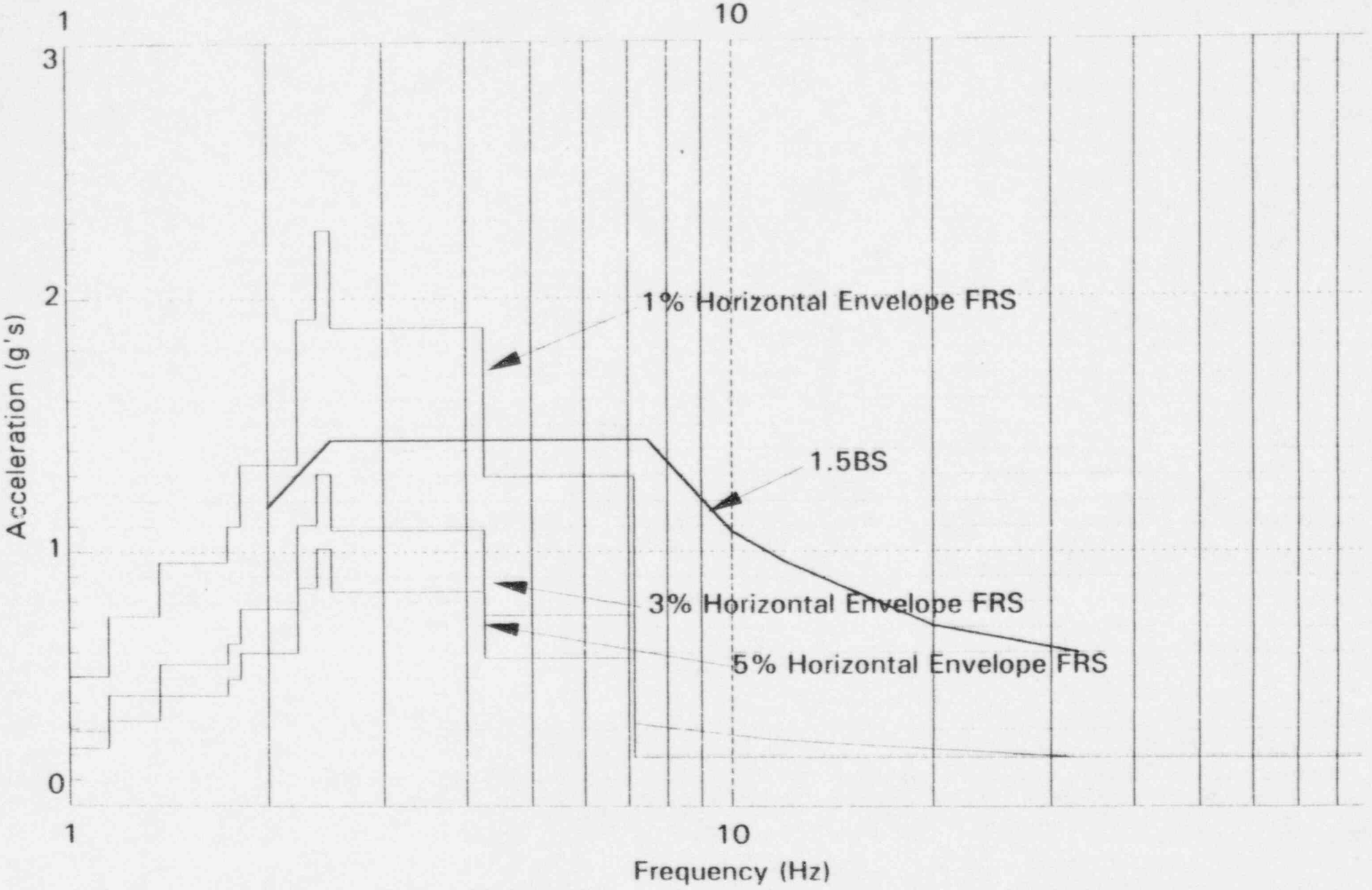


SQUG Review REACTOR CONTAINMENT (RCBX) ELEV. 738
Horizontal SSE Envelope vs. 1.5BS

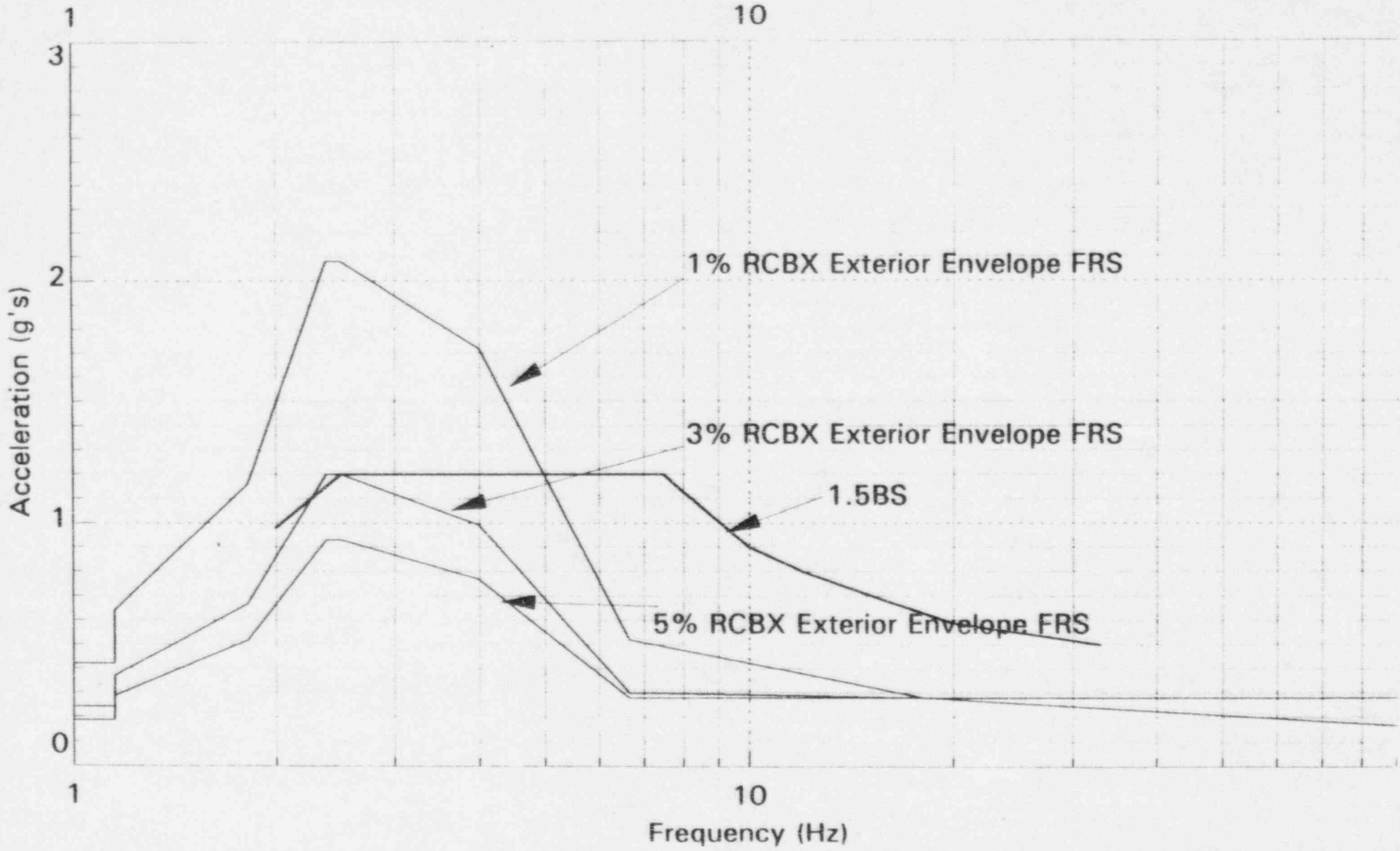


SQUG Review REACTOR CONTAINMENT (RCBX) ELEV. 767

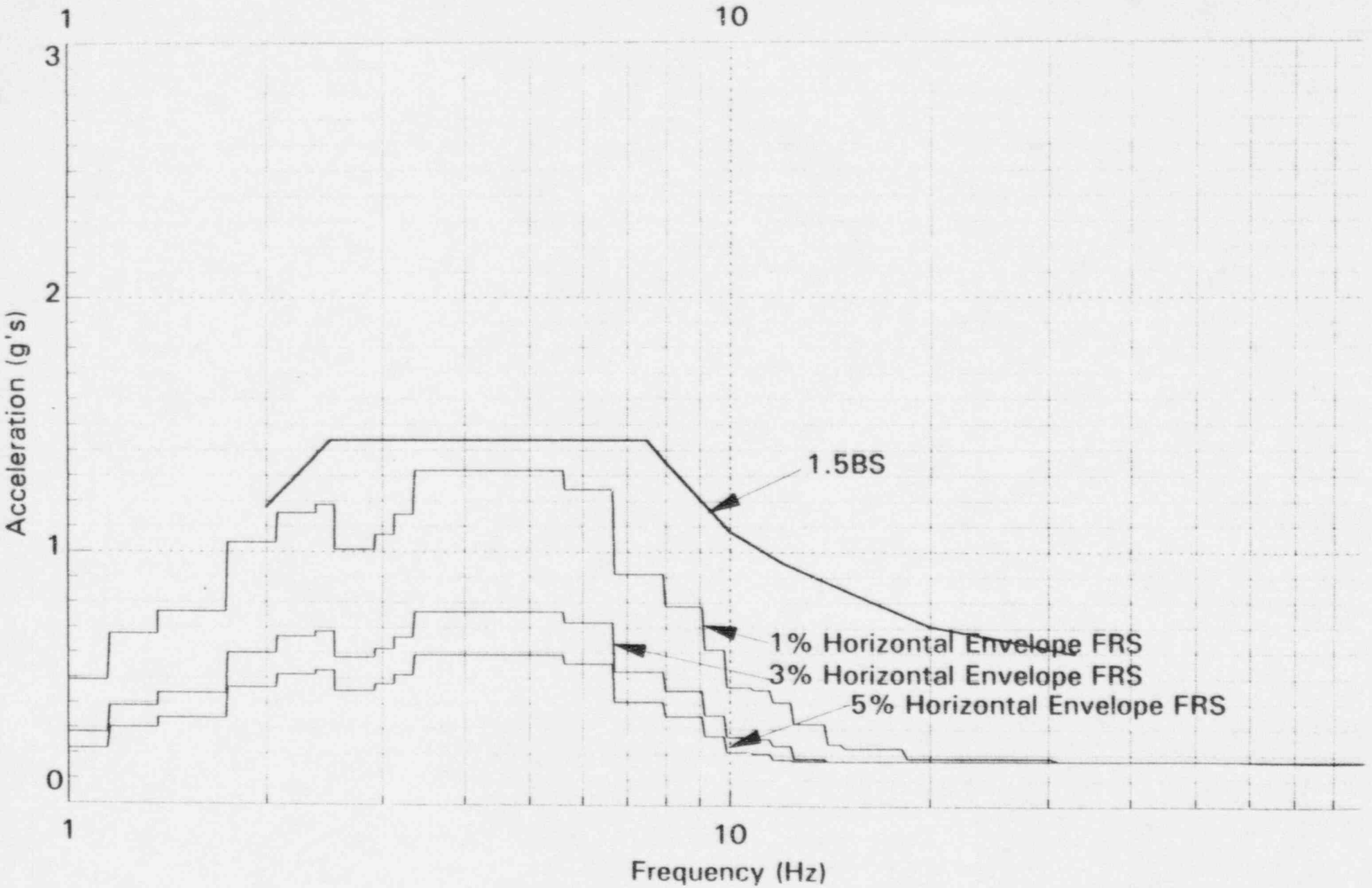
Horizontal Envelope vs. 1.5BS



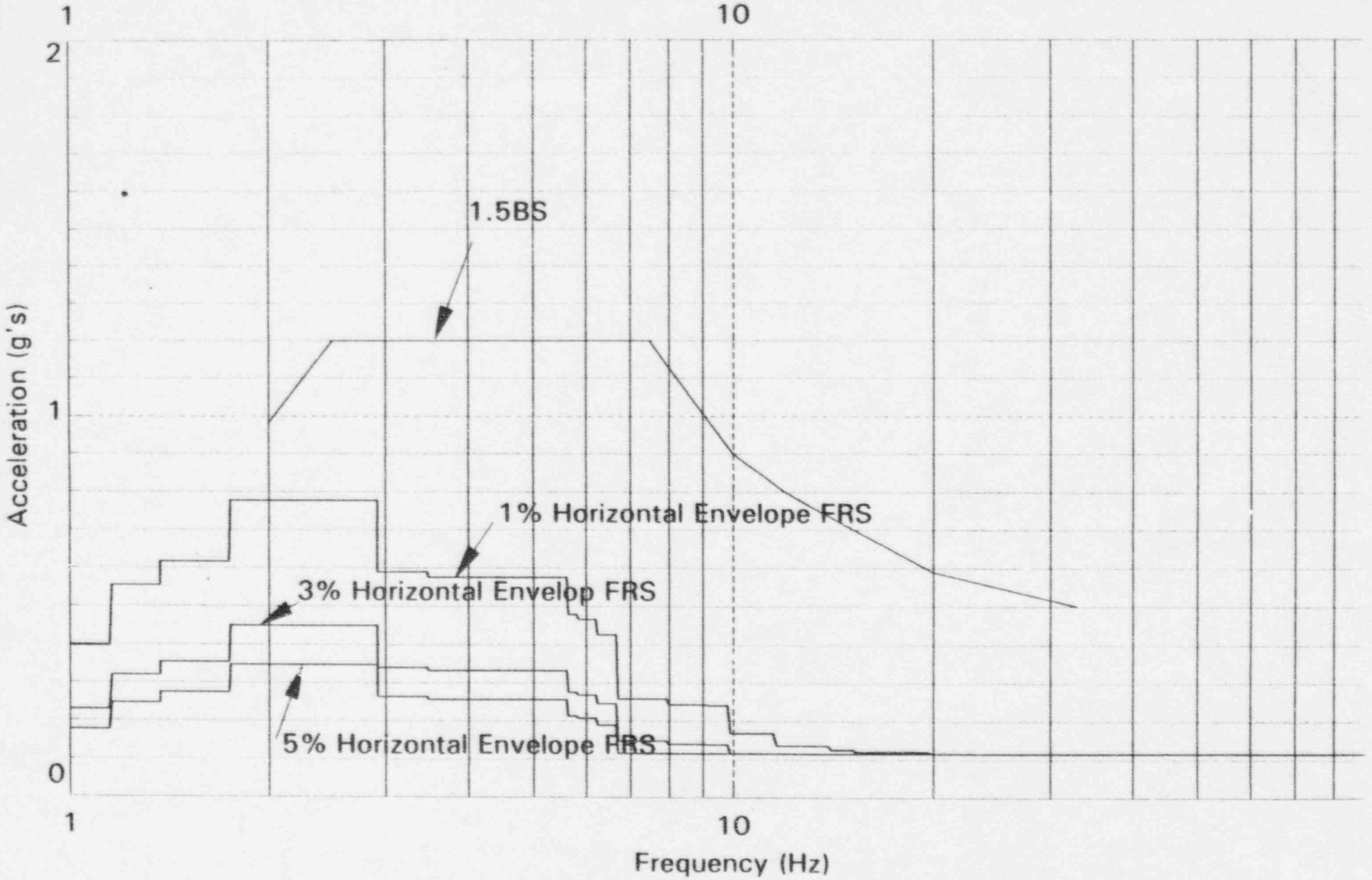
SQUG Review EXTERIOR REACTOR CONTAINMENT (RCBX) EL.79
Horizontal Envelope vs. 1.5BS
(FRS are drawn to envelope broadened ARS)



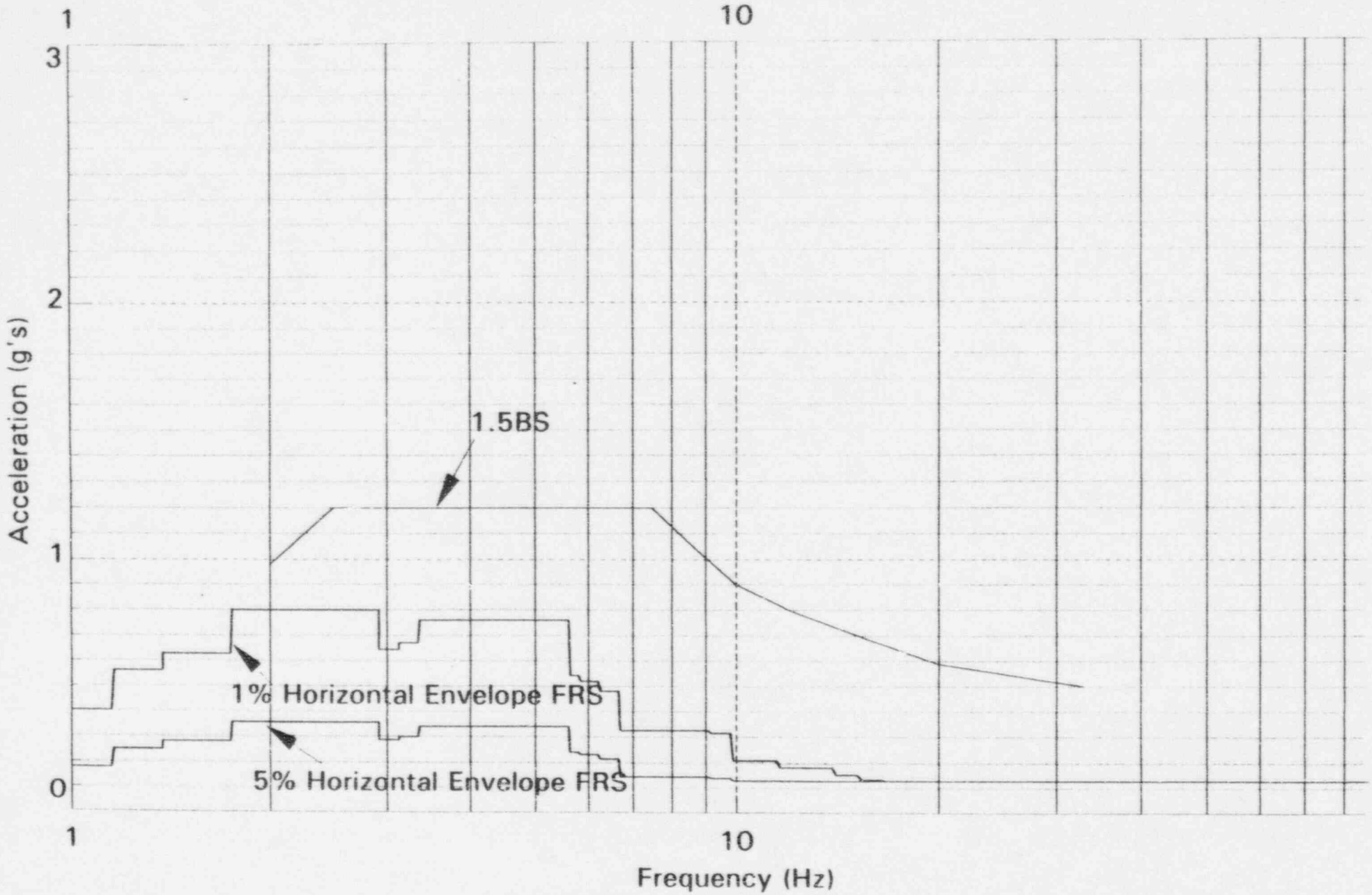
SQUG Review SAFEGAURDS BUILDING (SFGB) EL. 733
Horizontal Envelope vs. 1.5BS



SQUG Review SERVICE BUILDING (SRVB) ELEV. 713
Horizontal SSE Envelope vs. 1.5BS



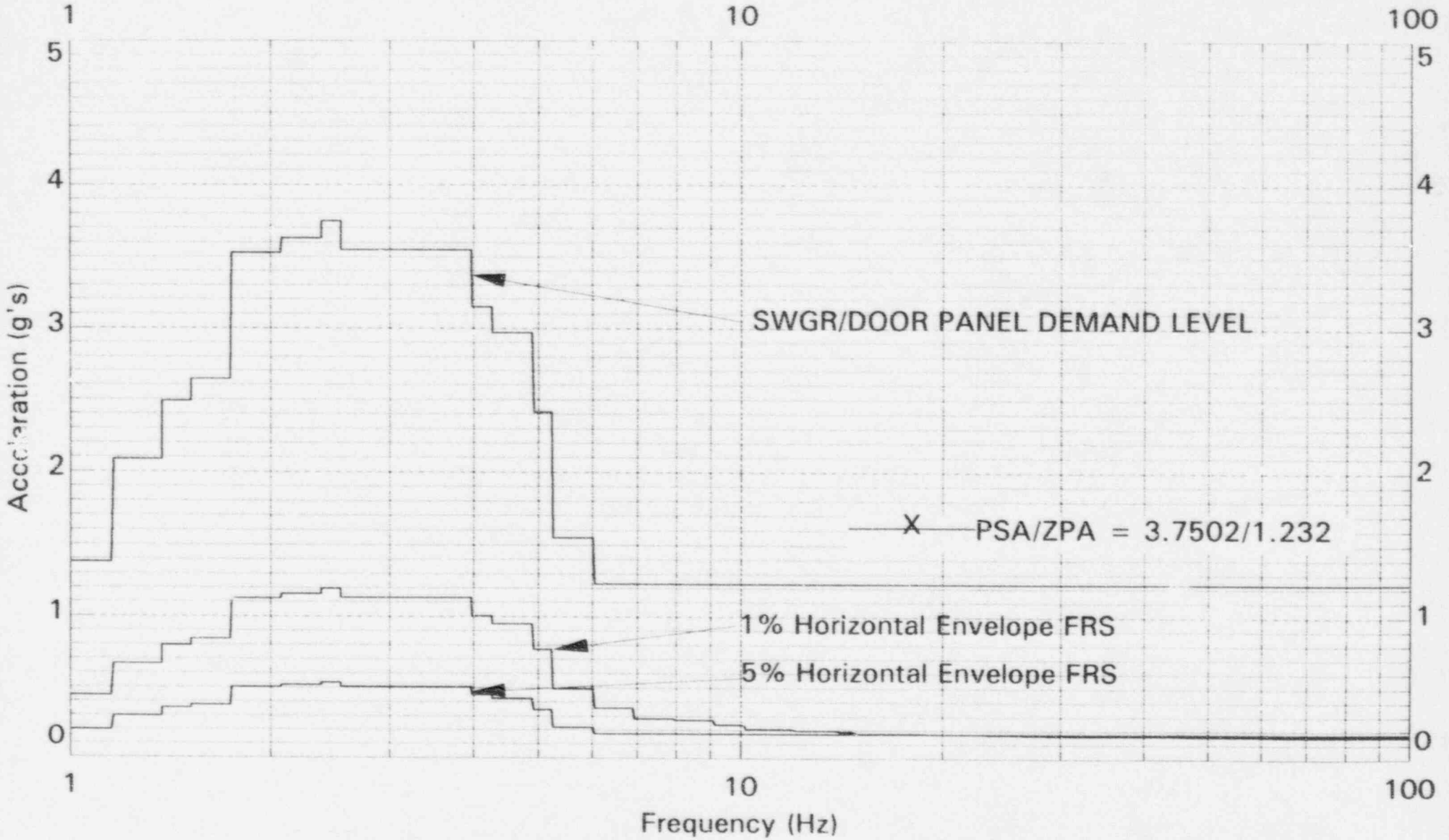
SQUG Review SERVICE BUILDING (SRVB) ELEV. 735
Horizontal SSE Envelope vs. 1.5BS



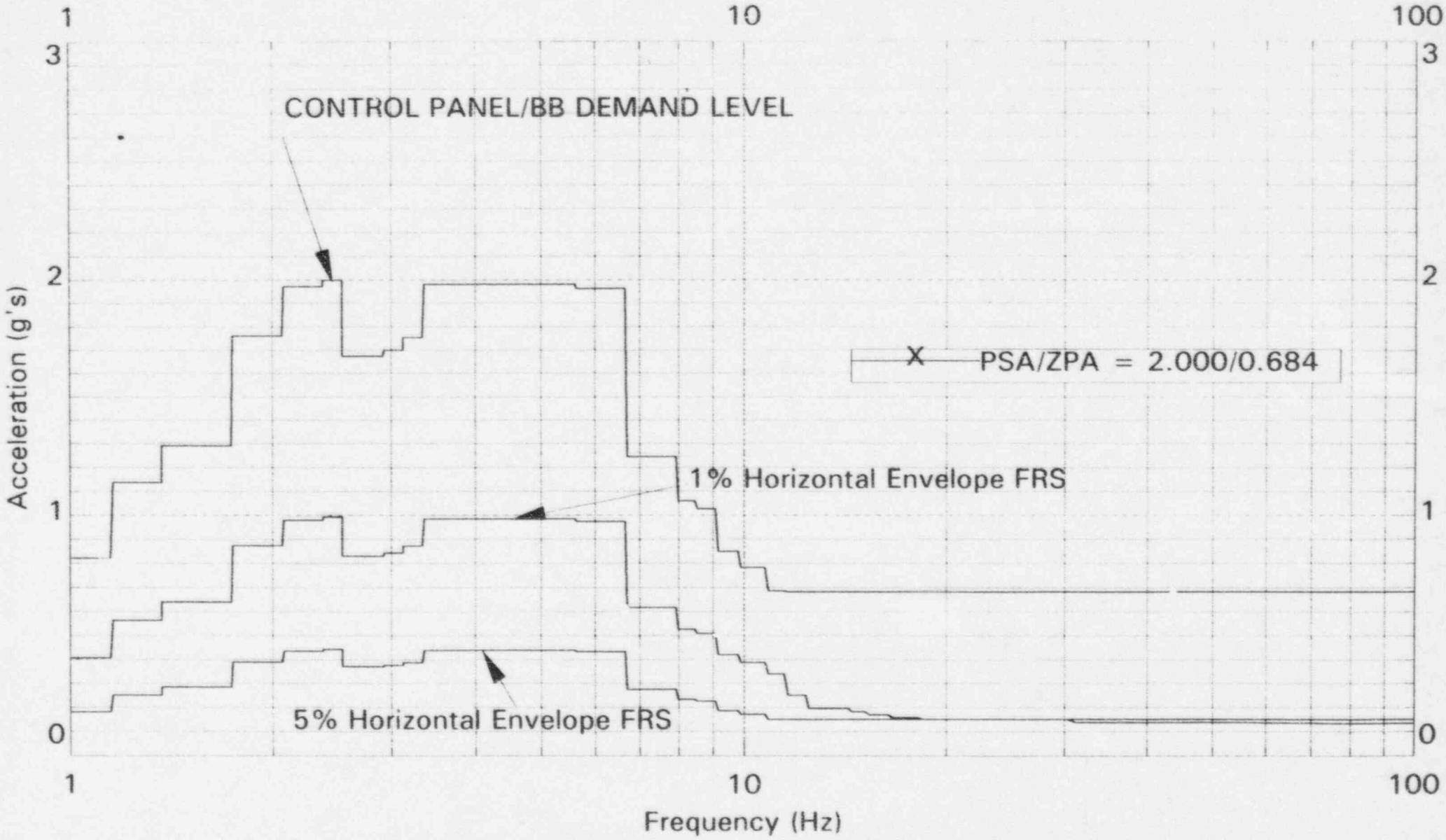
Appendix B

RELAY DEMAND CURVES FOR ENCLOSURE TYPES AND PLANT LOCATIONS

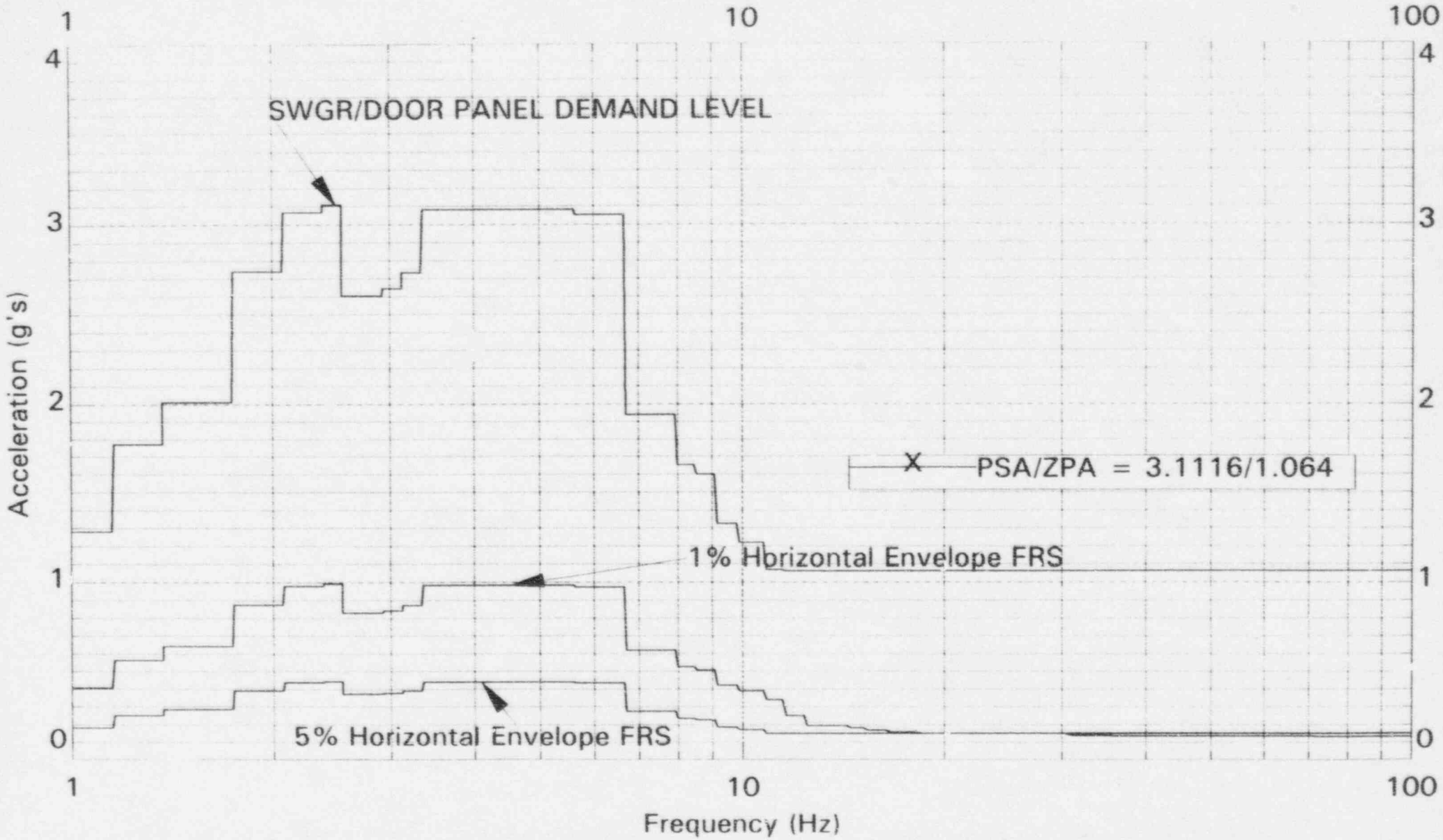
SQUG Relay Review SWGR & DOOR PANEL Demand Level for AUXILLIARY BUILDING (AXLB) ELEV. 768 (Amplification is 7.0)



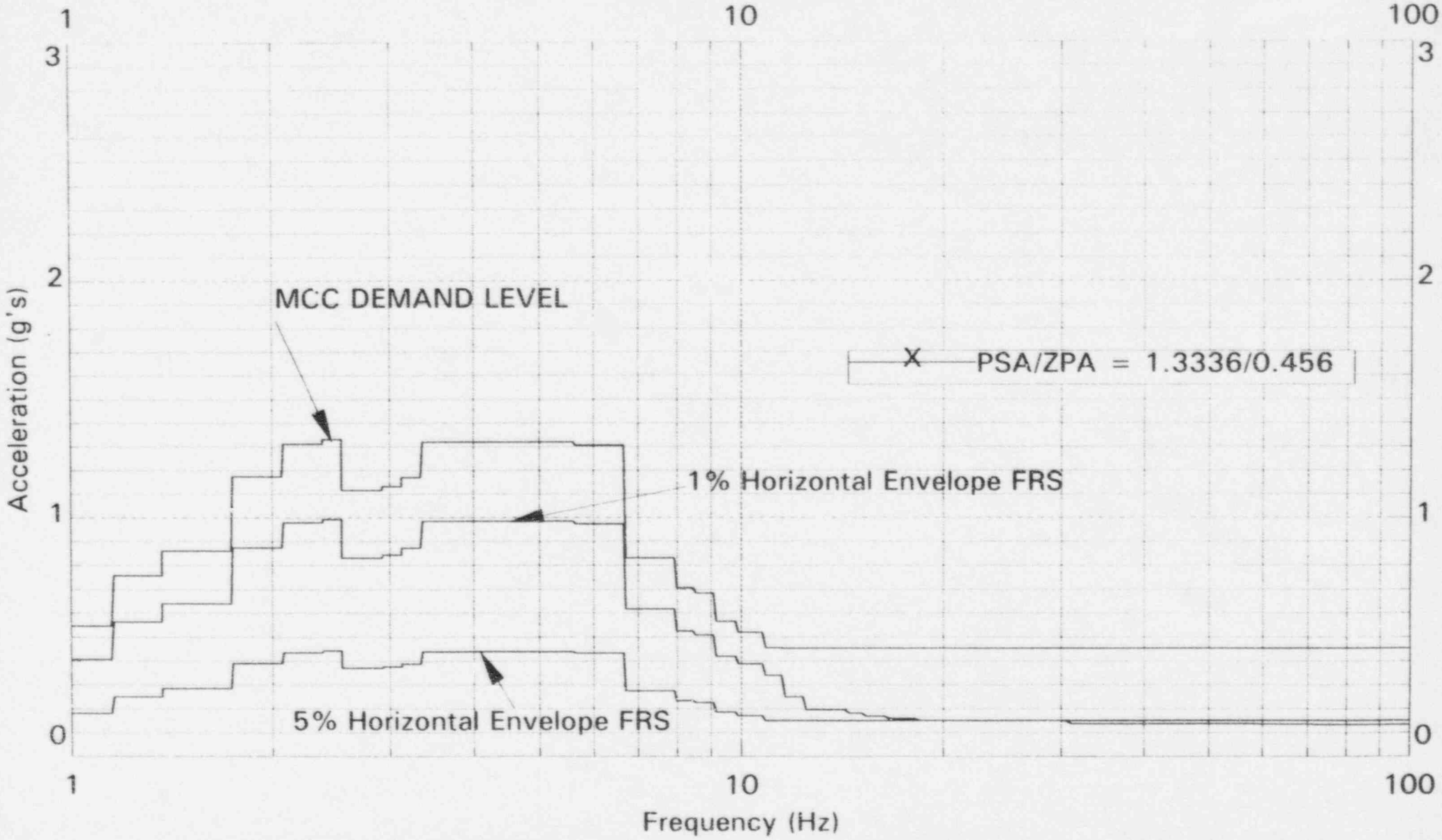
SQUG Relay Review CONTROL PANEL & BENCHBOARD Demand Lev for DIESEL GENERATOR BUILDING (DGBX) ELEV. 735 (Amplification is 4.5)



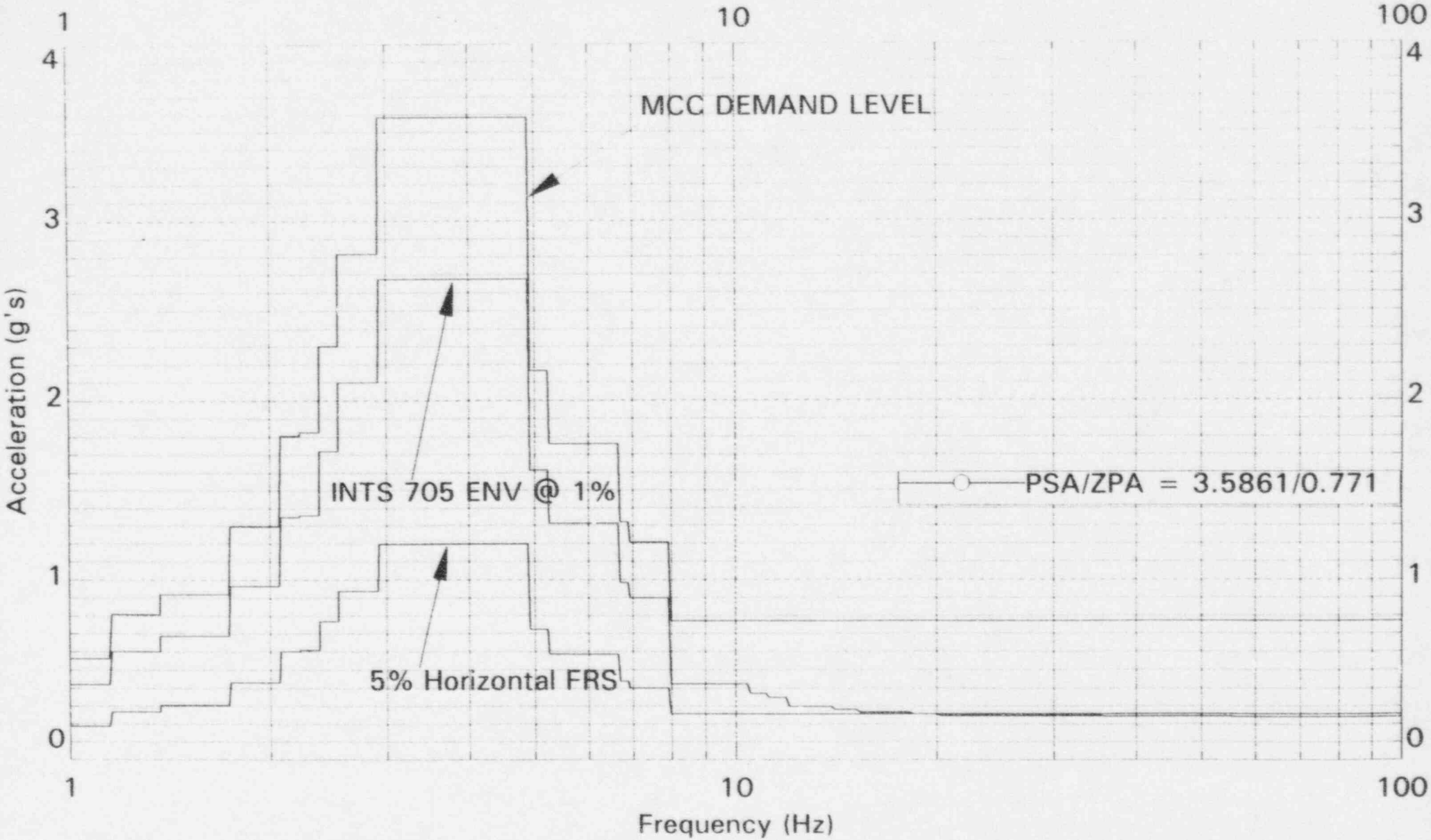
SQUG Relay Review SWGR & DOOR PANEL Demand Level for DIESEL GENERATOR BUILDING (DGBX) ELEV. 735 (Amplification is 7.0)



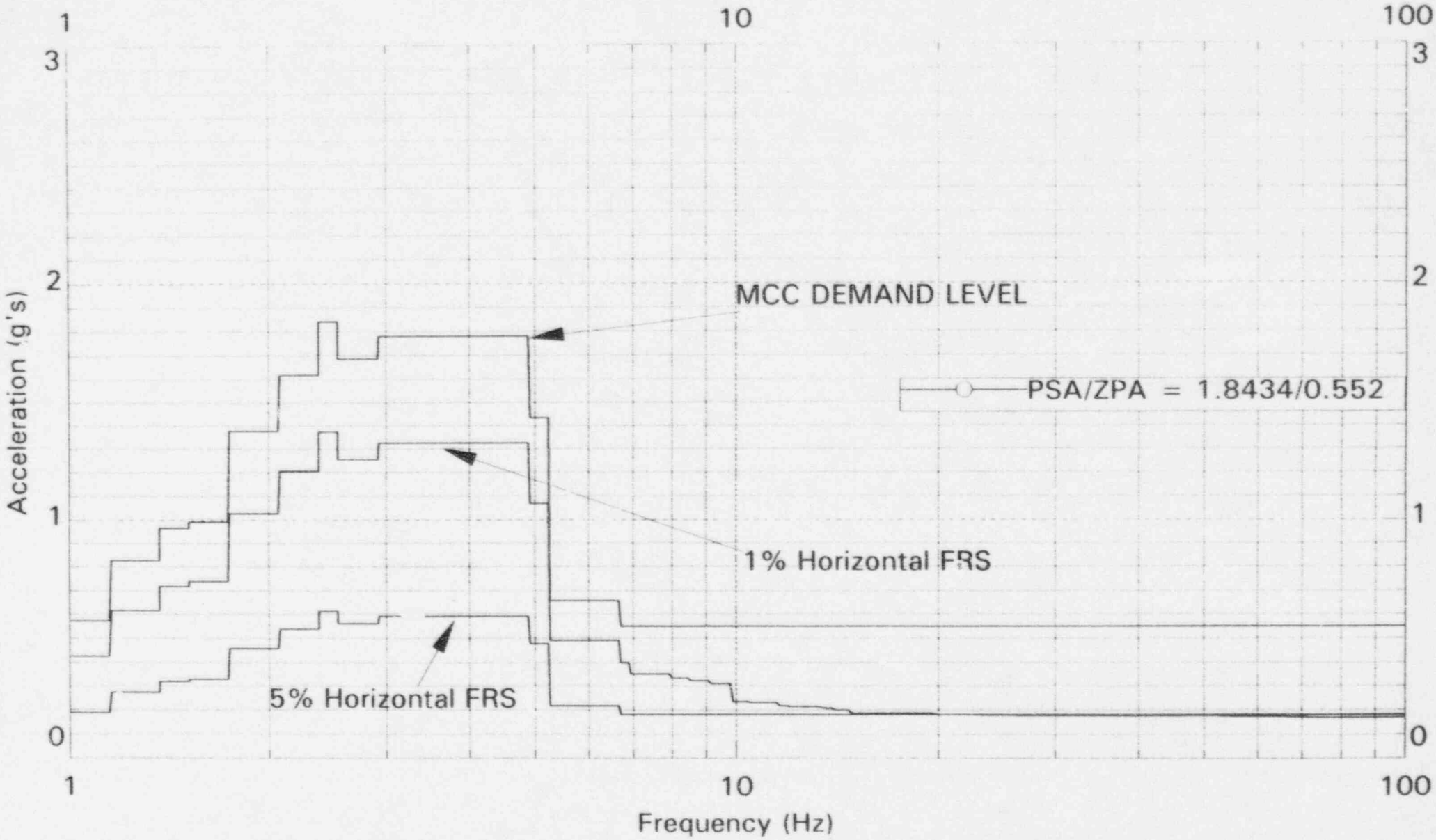
SQUG Relay Review MCC Demand Level for DIESEL GENERATOR BUILDING (DGBX) ELEV. 735 (Amplification is 3.0)



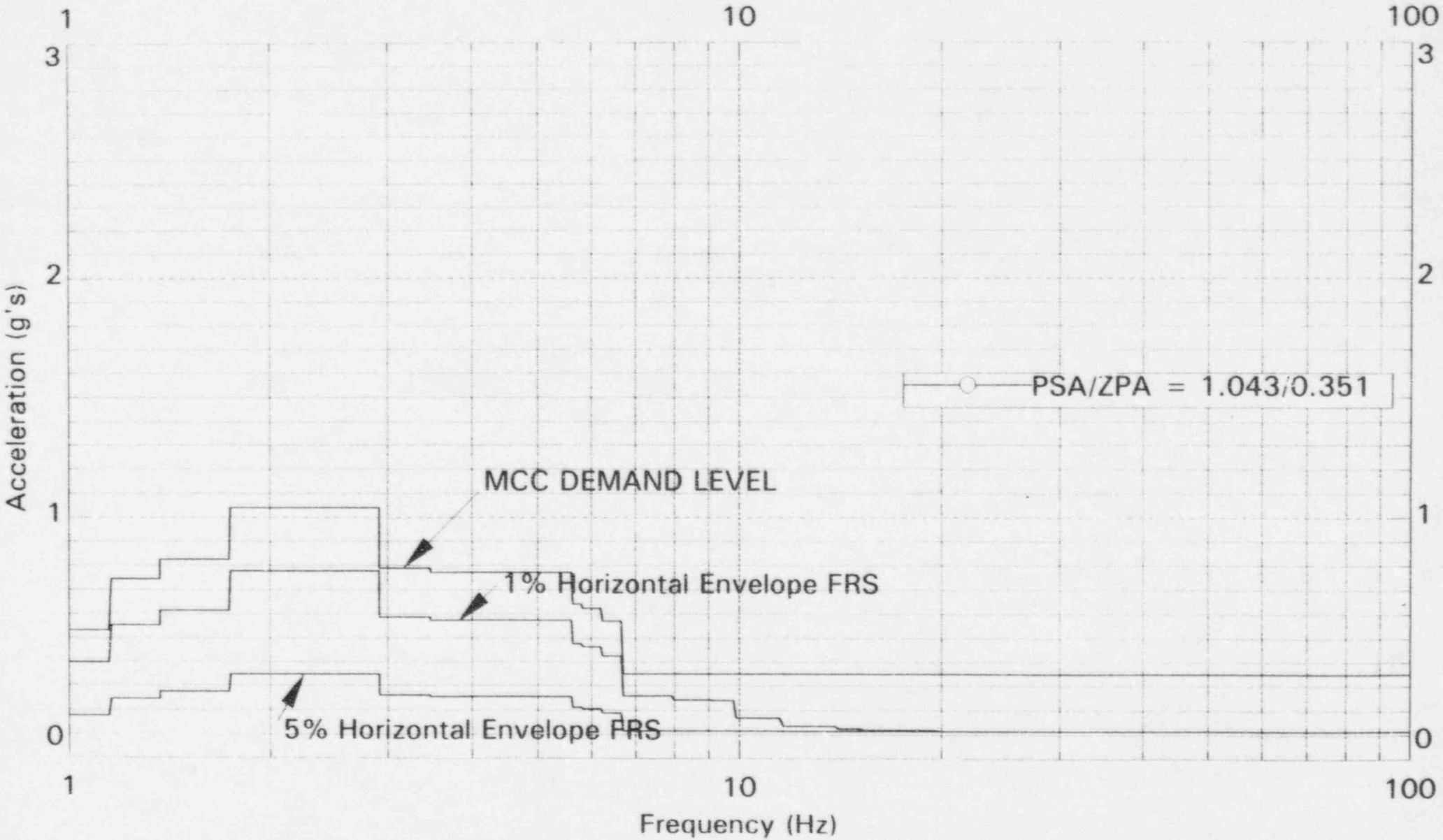
SQUG Relay Review MCC Demand Level for INTAKE STRUCTURE (INTS) ELEV. 705 (Amplification is 3.0)



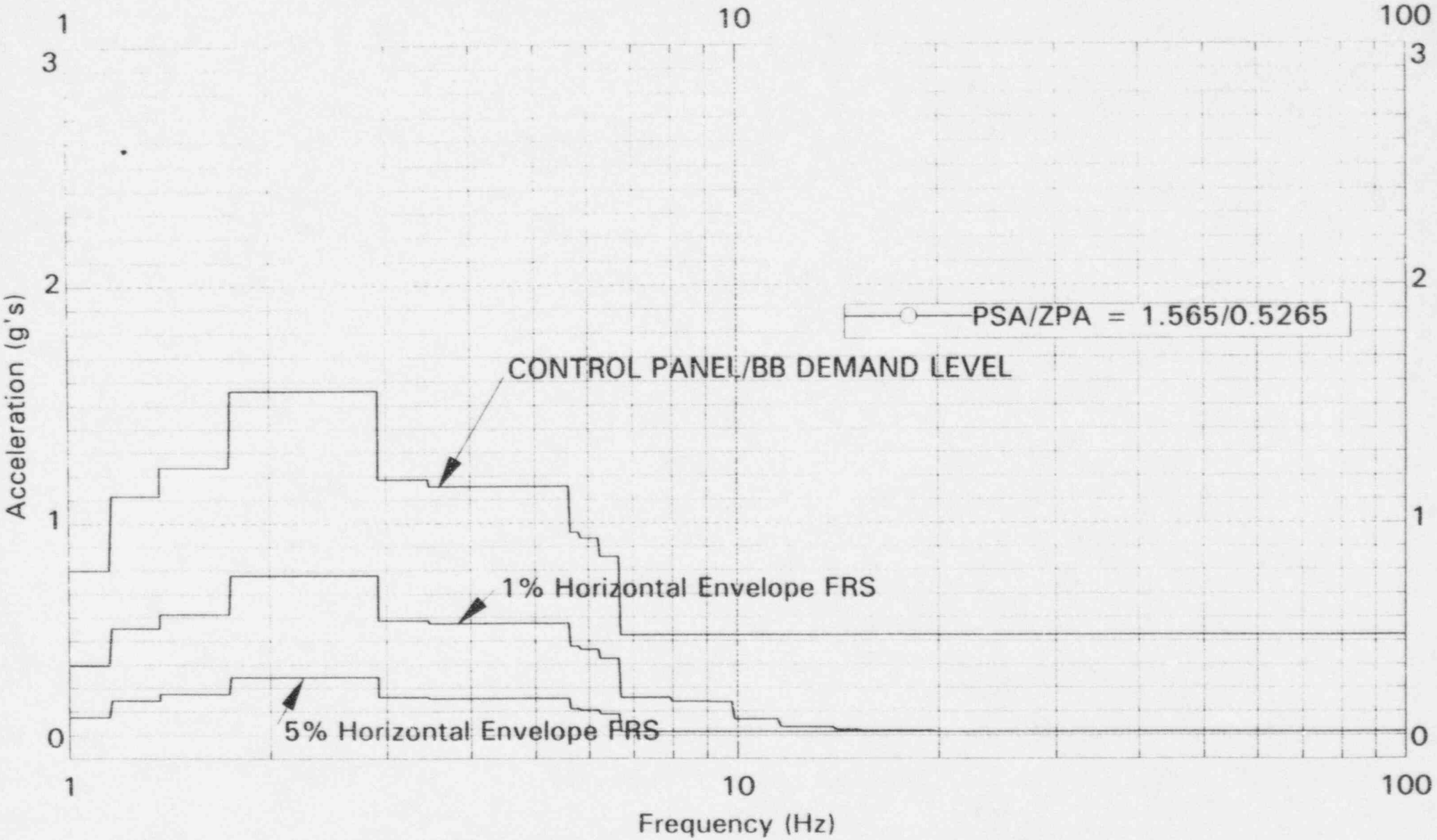
SQUG Relay Review MCC Demand Level for MAIN STEAM/CABLE VAULT (MSCV) ELEV. 753.5 (Amplification is 3.0)



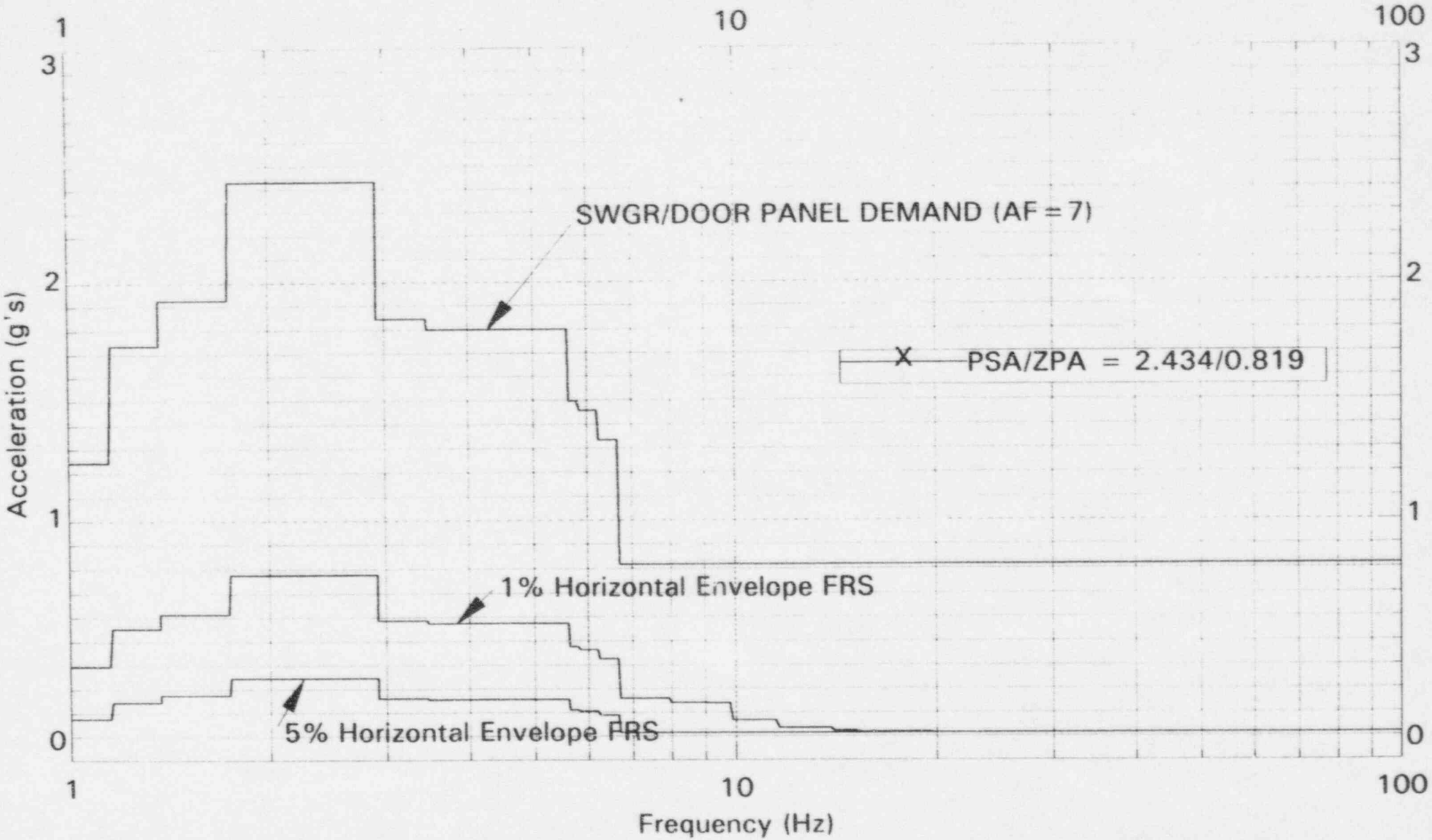
SQUG Relay Review MCC Demand Level for SERVICE BUILDING (SRVB) ELEV. 713 (Amplification is 3.0)



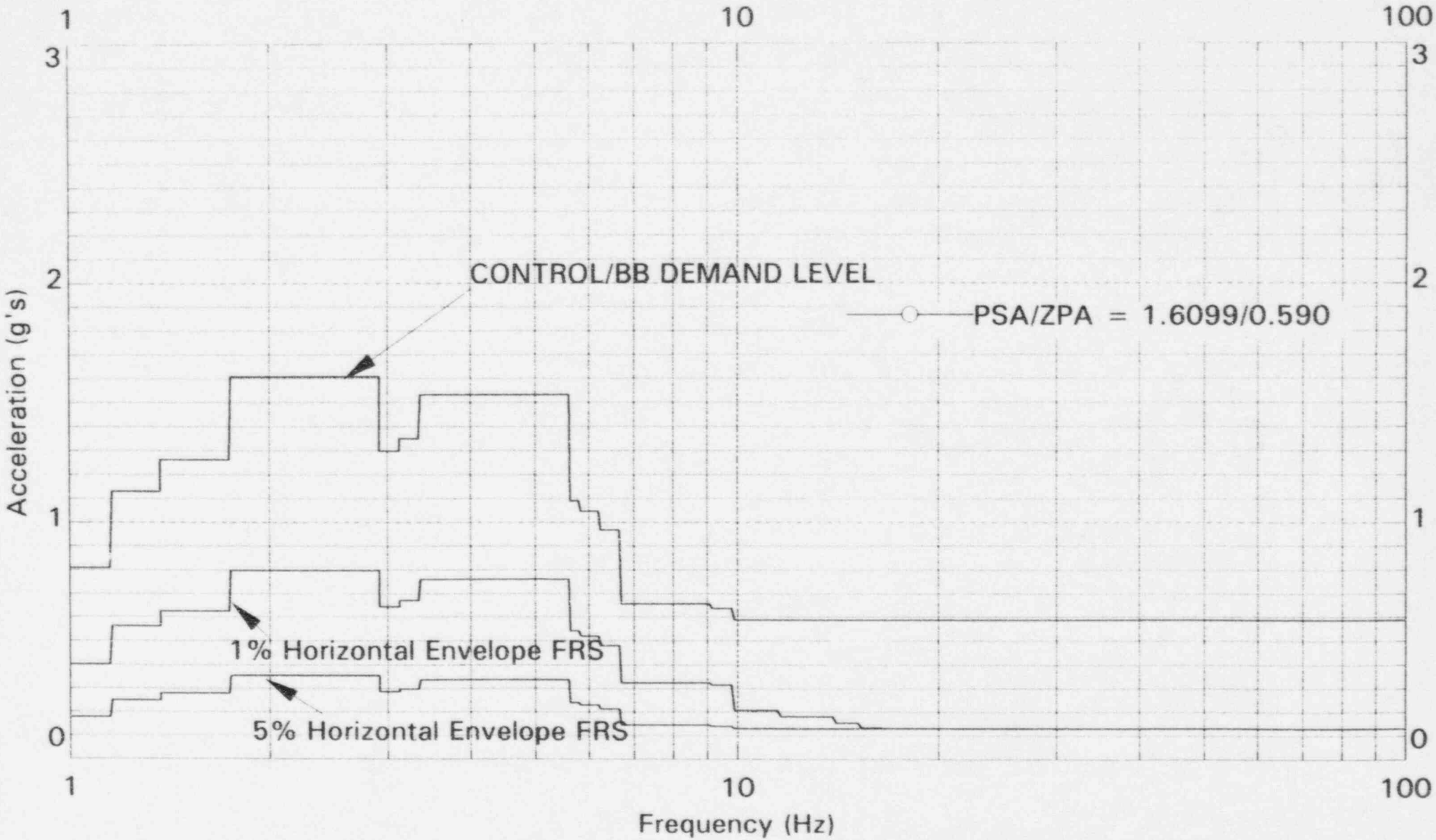
SQUG Relay Review CONTROL PANEL & BENCHBOARD Demand Level for SERVICE BUILDING (SRVB) ELEV. 713 (Amplification is 4.5)



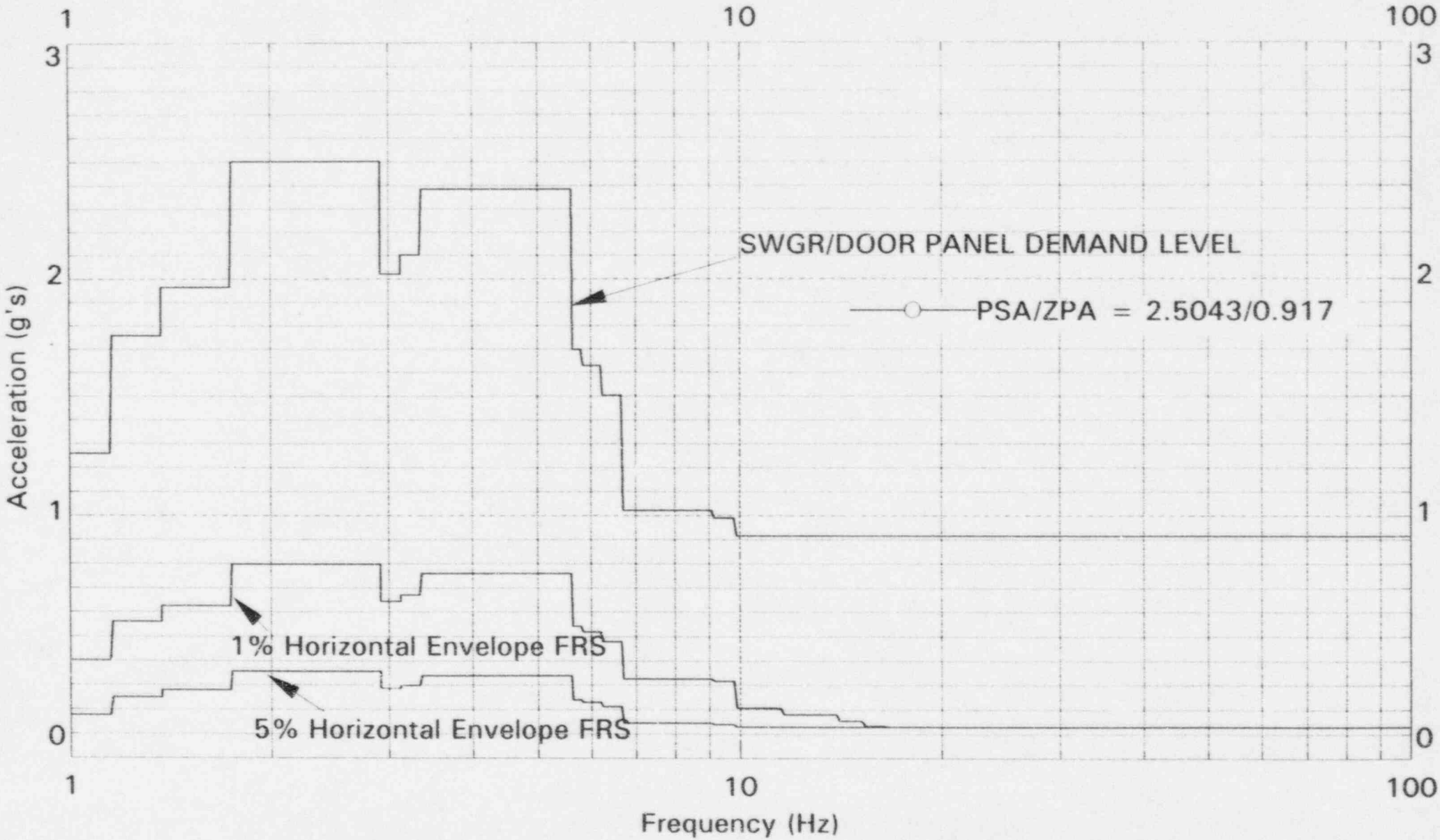
SQUG Relay Review SWGR & DOOR PANEL Demand Level for SERVICE BUILDING (SRVB) ELEV. 713 (Amplification is 7.0)



SQUG Relay Review CONTROL PANEL & BENCHBOARD Demand Level for SERVICE BUILDING (SRVB) ELEV. 735 (Amplification is 4.5)



SQUG Relay Review SWITCHGEAR/DOOR PANEL Demand Level for SERVICE BUILDING (SRVB) ELEV. 735 (Amplification is 7.0)



Appendix C

SYSTEM/CIRCUIT EVALUATION DISCUSSIONS

The BVPS-1 plant electrical systems, subsystems and components considered essential for plant shutdown are summarized below.

C.1 Reactor Trip System:

The safe shutdown reactor trip function is carried out by the reactor protection system. The portion of the reactor trip circuitry consisting of the plant variable sensors is not explicitly considered in this examination, rather just the trip logic portion of the circuitry. Any chatter in the sensors or bistables will be considered trip logic chatter.

The BVPS-1 reactor protection system is designed in accordance with IEEE 279 design requirements. It utilizes a coincident trip philosophy which provides protection against a single failure so that the single failure will not defeat its function nor cause a spurious reactor trip. The reactor trip logic controls two reactor trip breakers, RTA and RTB, which control power to the control rod drive mechanisms. The two breakers are connected in series. Opening either breaker will interrupt power to all control rod drive mechanisms causing all rods to fall by gravity into the core. An operator can initiate a manual trip by turning a switch or pushing a button which actuates the shunt trip coil and de-energizes the undervoltage coil of the trip breakers.

Each reactor protection channel feeds two relay logic matrices, one for each undervoltage trip circuit. Each undervoltage reactor trip circuit is designed so that a trip occurs when the circuit is de-energized. An open circuit, loss of channel power, or relay chatter will cause the affected circuit to initiate a trip. Accordingly, the reactor trip system is inherently safe in the event of loss of control rod drive power, spurious tripping of the breakers, or eliminating power to the breakers by spurious relay operation. The reactor trip can also be initiated by closing any open contact in the trip coil (TC) signal logic. Once the reactor trip is initiated, the control rods drop and the trip is carried out to completion. Since a reactor trip is considered a safe mode in the event of an earthquake, relay chatter causing a trip is acceptable as discussed below. Both of the reactor trip breakers and the two bypass breakers are W DB-50s.

The Breakers can be tripped by two methods. Energizing the trip coil (TC) will actuate the breaker shunt trip and, in turn, trip the breaker. Alternately, the undervoltage relay (UV) can be de-energized causing the UV relay to drop out and the breaker to trip. The relay control logic for the trip coil is operated in a normally de-energized mode. In the event of the closure of any of the appropriate pairs of contacts, the trip coil will be energized and the breaker will trip. Accordingly, chatter of any of these contacts in a manner which would energize the trip coil will cause a trip. There are no seal-in or lockout logic capabilities in the trip circuit.

The control logic contacts in series with the undervoltage (UV) trip relay are maintained in a normally closed position keeping the UV relay coil energized. Any spurious chatter of the appropriate pairs of contacts would cause the loss of voltage to the UV coil and accordingly drop

out the relay and trip the breaker. There are no seal-in or lockout capabilities in the UV trip control logic.

The RTA and RTB breakers are normally closed providing power to the control rod drives. The signal path to the closing coil (CC) of the RTA and RTB breakers passes through an X contact of the breaker X relay. This contact is mechanically detached and held open when the breaker closes. Since there is no direct signal path to the CC coil while the breaker is closed, any chatter in the closing circuit of this relay will not affect the breaker. Therefore, chatter in any of the control logic of either reactor trip breaker is acceptable and the relays in these circuits need not be seismically qualified.

C.1.2 Alarm System

Throughout the control logic circuits for components in the Beaver Valley safe shutdown systems there are numerous contacts which feed the control room alarm system. These contacts are from switches, limit switches and various types of relays. The closure of one of these contacts leads to an alarm in the control room. Some of these contacts could spuriously operate during a seismic event.

During a seismic event there will likely be spurious actuation of alarms both in safe shutdown system equipment and in systems not essential to the safe shutdown process. For example, water level alarms in various tanks throughout the plant may actuate because of sloshing of the fluid. Vibration alarms on rotating equipment may also actuate. This will give rise to alarms which will come up on the main control board and may remain for the short period of time during the strong earthquake motion. After the strong ground motion is over, and the possible alarm contact chattering or the actual event such as water sloshing has stopped, the alarm will be in a cleared state. Accordingly, the next time the operator pushes the reset button in the normal course of activities for handling the reactor shutdown and stabilizing the plant, the spurious alarms will be cleared. Since the strong ground motion of an earthquake is not expected to last more than 30 seconds, any alarms which come in during this period will be part of a large number of other valid alarms resulting from a reactor trip and the assumed loss of off-site power events. During the first minutes of the event, the operators will be busy confirming reactor trip, associated shutdown functions, and other key confirmations associated with a loss of off-site power which will be evident from the dimming of the lights in the control room for a short period of time along with the reactor trip. The presence of some spurious alarms along with the large number of other valid alarms will not impact the operators' actions during the first minutes of their response to the loss of off-site power during this trip. Following the strong motion of the earthquake, when the spurious alarms are no longer activated through either the stop of the chatter or the stop of the actual spurious activity such as water sloshing, then, the next time an operator pushes the reset button, these spurious alarms will be cleared. This is all expected to occur within the first minute or two of the event. Accordingly, spurious operation of alarms, caused by relay chatter and other spurious events, such as water sloshing, may likely occur during the strong motion but will be corrected by normal operator actions before their effect can be of consequence. Accordingly, chatter of relay contacts and other contacts feeding the alarm system are acceptable and the relays in these systems need not be seismically qualified.

C.1.3 DC Electrical System

The DC Electric Distribution System for BVPS-1 has five separate, isolated sources of 125V DC power, four of which supply QA Category I loads. Each source consists of a battery, a charger, and a distribution bus. DC power is supplied from the battery charger during normal operation with back up from the battery. The DC system provides control power for the entire electrical system controls and power to associated emergency components such as emergency lighting, solenoid operated valves, reactor protection instrumentation, inverters and generator seal oil pump. The four safety related sources for each unit are electrically-separated redundant systems to satisfy the single failure criteria.

Each battery is a 125V DC supply consisting of 59 or 60 cells with an eight-hour rating at least 1700 ampere-hours. Each battery charger is a 480V AC to 130V DC 200 amp rated charger. The DC buses are located in distribution cabinets in the emergency switchgear rooms on level 713'. The chargers are located in the same room as the distribution cabinets and the batteries are in adjacent rooms. Each line can be supplied from its associated battery with a battery output breaker. None of these are affected by relays since there are no relay logic controls for these breakers. The feeds coming off of each of the DC buses go through molded case manual circuit breakers to their respective loads.

With the exception of the battery output breakers, all breakers in the DC system are manual breakers. These are either molded case circuit breakers or manual low voltage air circuit breakers. Accordingly, the DC power feeds from the batteries to the buses and the subsequent feeds from the buses to the DC loads are not affected by relay chatter. This is also the case for feeds from the battery chargers to the batteries and the feed to the battery charger from the MCC. Accordingly, no modifications or special operator instructions are necessary for the DC electrical supply to survive an earthquake.

C.1.4 Vital Instrumentation Power System

The vital AC system supplies power for reactor instrumentation, the reactor protection system and other safety related components. It consists of four buses. Each of the four buses is supplied by a static inverter (preferred supply) or alternately from a 480V to 120V transformer that is automatically switched on undervoltage from the inverter. There are interlocks to prevent simultaneous closure of both of these breakers. Each inverter is supplied by both 125V DC and 480V AC through two manual breakers. The 480V AC bus is the preferred source of power with backup through a 125V DC bus. It is rectified after it enters the inverter. There is an automatic transfer to the 125V DC supply through a blocking diode if the preferred 480VAC becomes too low. Therefore, the 120V vital AC will not be adversely affected by relay chatter.

C.1.5 Typical Motor-Operated Valve (MOV) Control Logic

The logic circuit for typical motor-operated valves are described below. The valve motive power and control power are supplied from a 480V AC bus at a motor control center. The power from

the bus to the valve motor goes through a manually operated molded case breaker and then through either an open (O) or close (C) contactor with overload trips. The breaker and the pair of reversing contactors are located in the motor control center. A 480V AC to 120V AC transformer is also located in the motor control center to supply control power for the control circuit. Note that in the event that 480V AC power is lost, the control circuit will be de-energized and the valve will fail as is.

Appendix D

RELAYS SCREENED USING SWITCHGEAR GERS

Contact	Relay type	Model/Style	State	Location	EIN	Line #
152A-BXAE	AGASTAT	EGPD002	DE/NC	PNL-DG-SEQ-1	SI-P-1A	9033
152A-BXDF	AGASTAT	EGPD002	DE/NC	PNL-DG-SEQ-2	SI-P-1B	9034
362-AEX	W MG-6	1163803	DE/NO	PNL-DG-SEQ-1	SI-P-1A	9033
362-AEX	W MG-6	1162803	DE/NO	PNL-DG-SEQ-1	RS-P-2A	9035
362-AEX	W MG-6	1163803	DE/NO	PNL-DG-SEQ-1	QS-P-1A	9039
362-AEX	W MG-6	1163803	DE/NO	PNL-DG-SEQ-1	VS-F-2A	9044
362-AEX/DFX	W MG-6	1163803	DE/NO	PNL-DG-SEQ-1	VS-F-2C	9046
362-DFX	W MG-6	1163803	DE/NO	PNL-DG-SEQ-2	SI-P-1B	9034
362-DFX	W MG-6	1163803	DE/NO	PNL-DG-SEQ-2	RS-P-2B	9036
362-DFX	W MG-6	1163803	DE/NO	PNL-DG-SEQ-2	QS-P-1B	9040
362-DFX	W MG-6	1163803	DE/NO	PNL-DG-SEQ-2	VS-F-2B	9045
462-AEX	W MG-6	1163803	DE/NO	PNL-DG-SEQ-1	RS-P-1A	9037
462-DFX	W MG-6	1163803	DE/NO	PNL-DG-SEQ-1	RS-P-1B	9038
62-8N3	ATC TIMER	305D011L10UX	DE/NO	PNL-REL-37R	RS-P-1A	9037
62-8N4	ATC TIMER	305D011L10UX	DE/NO	PNL-REL-37R	QS-P-1A	9039
62-9P4	ATC TIMER	305D011L10UX	DE/NO	PNL-REL-38R	RS-P-1B	9038
62-9P5	ATC TIMER	305D011L10UX	DE/NO	PNL-REL-38R	QS-P-1B	9040
62-RN100X1	W MG-6	1163797	DE/NO	480V BUS 1N	VS-F-4A	5222
62-RN100X1	W MG-6	SPECIAL	DE/NO	480V BUS 1N	VS-AC-1A	5235
62-RN100X1,X2	W MG-6	1163797	DE/NO/NC	480V BUS 1N	480V BUS 1N	9009
62-RN100X2	W MG-6	SPECIAL	DE/NO	480V BUS 1N	PZR-HTR-D	2226
62-RN100X4	W MG-6	1163797	DE/NO/NC	480V BUS 1N	MCC-1-E1	8018
62-RN100X4	W MG-6	1163797	DE/NO/NC	480V BUS 1N	MCC-1-E3	8020
62-RN100X4	W MG-6	1163797	DE/NO/NC	480V BUS 1N	MCC-1-E5	8022
62-RN100X4	W MG-6	1163797	DE/NO/NC	480V BUS 1N	MCC-1-E7	8024
62-RN100X4	W MG-6	1163797	DE/NO/NC	480V BUS 1N	MCC-1-E9	8026
62-RN100X4,X5	W MG-6	1163797	DE/NO/NC	480V BUS 1N	480V BUS 1N	9009
62-RN100X4,X5	W MG-6	1163797	DE/NO/NC	480V BUS 1P	480V BUS 1P	9011
62-RN1100X1	W MG-6	MODIFIED	DE/NC	480V BUS 1N	PRZ-HTR-A	2224
62-RN1100X1	W MG-6	1163779	DE/NO/NC	480V BUS 1N	MCC-1-E11	8028
62-RN1100X1,X2	W MG-6	1163797	DE/NO	480V BUS 1N1	480V BUS	9013
62-RP100X1	W MG-6	1163797	DE/NO	480V BUS 1P	VS-F-4B	5223
62-RP100X1	W MG-6	SPECIAL	DE/NO	480V BUS 1P	VS-AC-1B	5236

Contact	Relay type	Model/Style	State	Location	EIN	Line #
62-RP100X1,X2	W MG-6	1163797	DE/NO/NC	480V BUS 1P	480V BUS 1P	9011
62-RP100X2	W MG-6	SPECIAL	DE/NO-----	480V BUS 1N	PZR-HTR-E	2227
62-RP100X4	W MG-6	1163797	DE/NO/NC	480V BUS 1P	MCC-1-E2	8019
62-RP100X4	W MG-6	1163797	DE/NO/NC	480V BUS 1P	MCC-1-E4	8021
62-RP100X4	W MG-6	1163797	DE/NO/NC	480V BUS 1P	MCC-1-E6	8023
62-RP100X4	W MG-6	1163797	DE/NO/NC	480V BUS 1P	MCC-1-E8	8025
62-RP100X4	W MG-6	1163797	DE/NO/NC	480V BUS 1P	MCC-1-E10	8027
62-RP1100X1	W MG-6	SPECIAL	DE/NC	480V BUS 1P	PZR-HTR-B	2225
62-RP1100X1	W MG-6	1163797	DE/NO/NC	480V BUS 1P	MCC-1-E12	8029
62-RP1100X1,X2	W MG-6	1163797	DE/NO	480V BUS 1P1	480V BUS	9014
62-VE/F100X3	W MG-6	293B301A25B	DE/NO	4KVS-1E/F,CU	WR-P-1C	5103
62-VE/VF100X4	W MG-6	293B301A25B	DE/NO	4KVS-1E/F8A	CH-P-1C	1214
62-VE100X1,X2	W MG-6	288B977A15	DE/NO/NC	4KVS-1E, CUB	4KVS-1AE	9003
62-VE100X3	W MG-6	293B301A25B	DE/NO	4KVS-1E, CUB	WR-P-1A	5101
62-VE100X3,X4	W MG-6	288B977A15	DE/NO/NC	4KVS-1E, CUB	4KVS-1AE	9003
62-VE100X4	W MG-6	293B301A25B	DE/NO	4KVS-1E8A	CH-P-1A	1212
62-VE100X4	W MG-6	293B301A25B	DE/NO/NC	4KVS-1E, CUB	FW-P-3A	4107
62-VE100X5	W MG-6	288B977A15	DE/NO/NC	4KVS-1E, CUB	4KVS-1AE	9003
62-VE113	ATC TIMER	35D011L10UX	DE/NO	4KVS-1E, CUB	RS-P-2A	9035
62-VF100X1,X2	W MG-6	288B977A15	DE/NO/NC	4KVS-1F, CUB	4KVS-1DF	9007
62-VF100X3	W MG-6	293B301A25B	DE/NO	4KVS-1F, CUB	WR-P-1B	5102
62-VF100X3,X4	W MG-6	288B977A15	DE/NO/NC	4KVS-1F, CUB	4KVS-1DF	9007
62-VF100X4	W MG-6	293B301A25B	DE/NO	4KVS-1E8A	CH-P-1B	1213
62-VF100X4	W MG-6	293B301A25B	DE/NO/NC	4KVS-1F, CUB	FW-P-3B	4108
62-VF100X5	W MG-6	288B977A15	DE/NO/NC	4KVS-1F, CUB	4KVS-1DF	9007
62-VF113	ATC TIMER	305D011L10UX	DE/NO	4KVS-1F, CUB	RS-P-2B	9036
63-VS106A	BARKSDALE	DIT-M3	NOP/NO	LOCALLY MTD	VS-F-4A	5222
63-VS106B	BARKSDALE	DIT-M3	NOP/NO	LOCALLY MTD	VS-F-4B	5223
K609	W AR440AR	W AR440AR	DE/NO	RK-REAC-PROT	SI-P-1A	9033
K609	W AR440AR	W AR440AR	DE/NO	RK	SI-P-1B	9034
K643	W AR440	W AR440	DE/NO	RK-REAC-PROT	QS-P-1A	9039
K643	W AR440	W AR440	DE/NO	RK-REAC-PROT	QS-P-1B	9040

Appendix E

ESSENTIAL RELAY LIST

The SQUG relay review and attached G-4 sheets were prepared and reviewed by two engineers that have completed the SQUG relay evaluation course. The initials RPF and GSB on the G-4 sheets denote that Ron P. Ferrie (RPF) and George S. Bellamacina (GSB) have prepared or reviewed the database from which the sheets are generated.

Ron P Ferrie 12/6/95

George S. Bellamacina 12/6/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
52-RTA	RE-21TZ	PB 1-RT	W OT2	----------	REACT TRIP SWGR	PUSHBUTTON	NV	--
		52A BRK AUX CON	W TYPE DB-50	----------	REACT TRIP SWGR	DB-50	NV	--
1101		PB 1-SI1A	W OT2	----------	BENCHBOARD	----------	NV	--
		PB 1-SIA2	W OT2	----------	BENCHBOARD	----------	NV	--
		CS 1-RTC	W TYPE 2	----------	BENCHBOARD	----------	NV	--
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01/REACTOR TRIP BREAKER 'A'

The safety related action performed by the Reactor Trip Breakers is to OPEN. This interrupts power to the control rod gripper coils permitting the rods to drop and trip the reactor. The breakers trip OPEN on a loss of 48vdc to the breaker undervoltage trip attachment or shunt trip relay. The breaker shunt trip coil is energized by either the Reactor Trip Control Switch, push button, SI actuation Switches or shunt trip relay.

The Reactor Trip System is considered to be inherently rugged because it fails in the safe direction (refernce EPRI NP-7148-SL SECTION B.3.2). The Reactor Trip Breakers are Westinghouse type DB-50. The circuit can tolerate side-to-side movement of the breaker during a seismic event, which could cause circuit disontinuity in the breaker control circuit disconnecting stabs or change of state of the breaker auxiliary switches, because the safety-related action of dropping the rods will still be achieved by the UV trip attachment. The breaker auxiliary switches are not relied upon to perform any other safety-related function.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/13/95

Reviewed by GSB Date 07/18/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
52-RTB	RE-21TZ	PB 1-RT	W OT2	----------	REACT TRIP SWGR	PUSHBUTTON	NV	--
		52A BRK AUX CON	W TYPE DB-50	----------	REACT TRIP SWGR	DB-50	NV	--
1102		PB 1-SI1A	W OT2	----------	BENCHBOARD	----------	NV	--
		PB 1-SIA2	W OT2	----------	BENCHBOARD	----------	NV	--
		CS 1-RTC	W TYPE 2	----------	BENCHBOARD	----------	NV	--
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01/REACTOR TRIP BREAKER 'B'

The safety related action performed by the Reactor Trip Breakers is to OPEN. This interrupts power to the control rod gripper coils to drop the rod and trip the reactor. The breakers trip OPEN on a loss of 48vdc to the breaker undervoltage trip attachment or shunt trip relay. The breaker shunt trip coil is energized by either the Reactor Trip Control Switch, push button, SI actuation Switches and shunt trip relay.

The Reactor Trip System is considered to be inherently rugged because it fails in the safe direction (reference EPRI NP-7148-S1 SECTION B.3.2). The Reactor Trip Breakers are Westinghouse type DB.50. The circuit can tolerate side-to-side movement of the breaker during a seismic event, which could cause circuit disontinuity in the breaker control circuit disconnecting stabs or change of state of the breaker auxiliary switches, because the safety-related action of dropping the rods will still be achieved by the UV trip attachment. The breaker auxiliary switches are not relied upon to perform any other safety-related function.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/13/95

Reviewed by GSB Date 07/18/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
LI-QS-100A	RE-22ET	TOGGLE SWITCH	W 2429A31	----------	RK-PRI-PROC-	TOGGLE SWITCH	NV	--
		BISTABLE SWITCH	W 2429A31	----------	RK-PRI-PROC I	BISTABLE SWITCH	NV	--
1201		----------	----------	----------	----------	----------	----------	--
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QS/RWST LEVEL INDICATOR

The entire instrumnet loop is electronics, wiring, toggle and bistable switches and is not vulnerable to chatter.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/20/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
LT-QS-100A	RE-22ET	TOGGLE SWITCH	W 2429A31	----------	RK-PRI-PROC-	TOGGLE SWITCH	NV	--
		BISTABLE SWITCH	W 2429A31	----------	RK-PRI-PROC I	BISTABLE SWITCH	NV	--
1201A		---	---	---	---	---	---	--
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QS/RWST LEVEL TRANSMITTER

The entire instrument loop is electronics, wiring, toggle and bistable switches and is not vulnerable to chatter.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/20/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
LT-QS-100B	RE-22ET	TOGGLE SWITCH	W 2429A31	----------	RK-PRI-PROC-	TOGGLE SWITCH	NV	--
		BISTABLE SWITCH	W 2429A31	----------	RK-PRI-PROC II	BISTABLE SWITCH	NV	--
1202A		----------	----------	----------	----------	----------	----------	--
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QS/RWST LEVEL TRANSMITTER

The entire instrument loop is electronics, wiring, toggle and bistable switches and is not vulnerable to chatter.

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CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
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OA - Operator action.
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AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/20/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
LI-QS-100B	RE-22ET	TOGGLE SWITCH	W 2429A31	----------	RK-PRI-PROC-	TOGGLE SWITCH	NV	--
		BISTABLE SWITCH	W 2429A31	----------	RK-PRI-PROC II	BISTABLE SWITCH	NV	--
1202B		----------	----------	----------	----------	----------	----------	--
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QS/RWST LEVEL INDICATOR

The entire instrument loop is electronics, wiring, toggle and bistable switches and is not vulnerable to chatter.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/20/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
LT-QS-100C	RE-22EV	TOGGLE SWITCH	W 2429A31	----------	RK-PRI-PROC-	TOGGLE SWITCH	NV	--
		BISTABLE SWITCH	W 2429A31	----------	RK-PRI PROC III	BISTABLE SWITCH	NV	--
1203A		----------	----------	----------	----------	----------	----------	--
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QS/RWST LEVEL TRANSMITTER

The entire instrument loop is electronics, wiring, toggle and bistable switches and is not vulnerable to chatter.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
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OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/20/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
LI-QS-100C	RE-22EV	TOGGLE SWITCH	W 2429A31	----------	RK-PRI-PROC-	TOGGLE SWITCH	NV	--
		BISTABLE SWITCH	W 2429A31	----------	RK-PRI-PROC I	BISTABLE SWITCH	NV	--
1203B		----------	----------	----------	----------	----------	----------	--
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QS/RWST LEVEL RECORDER

The entire instrument loop is electronics, wiring, toggle and bistable switches and is not vulnerable to chatter.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/20/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
LT-QS-100D	RE-22EV	TOGGLE SWITCH	W 2429A31	----------	RK-PRI-PROC-	TOGGLE SWITCH	NV	--
		BISTABLE SWITCH	W 2429A31	----------	RK-PRI-PROC IV	BISTABLE SWITCH	NV	--
1204A		----------	----------	----------	----------	----------	----------	--
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QS/RWST LEVEL TRANSMITTER

The entire instrument loop is electronics , wiring, toggle and bistable switches and is not vulnerable to chatter.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSM Date 07/20/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
LR-QS-100	RE-22EV	TOGGLE SWITCH	W 2429A31	----------	[illegible] PRI-PROC-	TOGGLE SWITCH	NV	--
		BISTABLE SWITCH	W 2429A31	----------	[illegible] PRI-PROC	BISTABLE SWITCH	NV	--
1204B		----------	----------	----------	----------	----------	----------	--
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QS/RWST LEVEL RECORDER

The entire instrument loop is electronics, wiring, toggle and bistable switches and is not vulnerable to chatter.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA	-	Chatter acceptable.
NV	-	Not vulnerable (mechanically actuated contacts and solid state relays).
GERS	-	Seismically adequate based on GERS_____; include GERS number.
NA	-	Component not affected by relays.
CR	-	Corrective action required.
OA	-	Operator action.
DC	-	Direct control.
AS	-	See Assessment Sheet for details.
F	-	Fire Protection no QTR available.
-	-	No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/18/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
FT-CH-122	RE-22L							--
								--
1205A								--
								--
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								--
								--
								--

CH/CHARGING HEADER FLOW TRANSMITTER

The entire instrument loop is electronics and wiring and is not vulnerable to chatter.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/03/95

Reviewed by GSB Date 07/18/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
FI-CH-122A	RE-[illegible]2L	----------	----------	----------	----------	----------	----------	--
		----------	----------	----------	----------	----------	----------	--
1205B		----------	----------	----------	----------	----------	----------	--
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CS/CHARGING HEADER FLOW INDICATOR

The entire instrumnet loop is electronics and wiring and is not vulnerable to chatter.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/03/95

Reviewed by GSB Date 07/18/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
FCV-CH-122	RE-22L							--
								--
1206								--
								--
								--
								--
								--
								--

CH/CHARGING FLOW CONTROL VALVE SOLENOID

The entire instrument loop is electronics and wiring and is not vulnerable to chatter.

FCV-CH-122 is an air operated valve which fails OPEN on loss of air. Flow can be controlled by manually operated valves CH-28 or 30.

SOV-CH-122 will transfer control of FCV-CH-122 to the SDP if energized.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 02/03/95

Reviewed by GSB Date 07/18/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
SOV-CH-122	RE-21FT	CS (Li)	W OT2	----------	SHUTDOWN PANEL	W OT2	NV	--
1206C								--
								--
								--
								--
								--
								--
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CH/CHARGING FLOW CONTROL VALVE SOLENOID

The entire instrument loop is electronics and wiring and is not vulnerable to chatter.

FCV-CH-122 is an air operated valve which fails OPEN on loss of air. Flow can be controlled by manually operated valves CH-28 or 30.

SOV-CH-122 will transfer control of FCV-CH-122 to the SDP if energized.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/03/95

Reviewed by GSB Date 07/18/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
QS-TK-1	RE-63V	TCH-SI-029A	TH-725	E/NO/NC	QS-RACK-3	XTH725-PC	CA	--
		TCH-SI-029B	TH-725	E/NO/NC	QS-RACK-4	XTH725-PC	CA	--
1207		TCH-SI-129A	TH-725	E/NO/NC	QS-RACK-3	XTH725-PC	CA	--
		TCH-SI-129B	TH-725	E/NO/NC	QS-RACK-4	XTH725-PC	CA	--
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QS/RWST

THE RWST HEAT TRACING CIRCUITS ET-10 & ET-129 PROTECTING 12" PIPE SI-1-153W-Q3 HAVE BEEN REVIEWED TO ENSURE THAT THE LINE WILL NOT FREEZE IN THE 72 HOURS FOLLOWING AN EARTHQUAKE.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 11/15/95

Reviewed by GSB Date 11/15/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-CH-115B	RE-21FR	LS#4	LIMITORQUE	----------	MOV-CH-115B	LIMIT SWITCH	NV	--
		TS#18	TORQUE SWITCH	----------	MOV-CH-115B	LIMITORQUE	NV	--
1208		CS (1-)	W OT2	----------	BENCHBOARD	PUSHBUTTON	NV	--
		CONTACTOR 420/C	ALLIS TY2	DE/NO	MCC1-E3, CUB J	ALLIS CHALMERS	RLY-CON.3	AS
		49	ALLIS TY2	NC	MCC1-E3, CUB J	ALLIS-CHALMERS	RLY-CON.3	AS
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CH/RWST-CHARGING PUMP ISOLATION

MOV-CH-115B connects the RWST to the Charging Pump suction. The valve OPENS automatically on LO-LO VCT level or on an SI Signal. The valve is NSA CLOSED. The valve must be capable of opening after an earthquake. Automatic opening of the valve is acceptable but it is expected that the valve would be manually opened with the control switch.

Chatter which could cause the valve to OPEN during an earthquake is ACCEPTABLE.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS__ ___; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 01/25/95

Reviewed by GSB Date 07/18/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-CH-115C	RE-21FR	LS#1	LIMITORQUE	----------	MOV-CH-115C	LIMIT SWITCH	NV	--
		TS#17	TORQUE SWITCH	----------	MOV-CH-115C	LIMITORQUE	NV	--
1309		CS (1-)	W OT2	----------	BENCHBOARD	PUSHBUTTON	NV	--
		CONTACTOR 420/C	ALLIS TY2	DE/NO	MCC1-E3, CUB K	ALLIS CHALMERS	RLY-CON.3	AS
		49	ALLIS TY2	NC	MCC1-E3, CUB K	ALLIS-CHALMERS	RLY-CON.3	AS
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CH/VCT ISOLATION VALVE

MOV-CH-115C is a series isolation valve connecting the VCT to the Charging Pump Suction. It is NSA OPEN and automatically CLOSES on LO-LO VCT level on an SI signal. The valve must be capable of closing following an earthquake. Automatic closure is acceptable but it is expected that the valve would be manually closed with the control switch.

Chatter which could cause the valve to CLOSE during an earthquake is ACCEPTABLE because a permissive from MOV-CH-115B is in the closing circuit.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA	-	Chatter acceptable.
NV	-	Not vulnerable (mechanically actuated contacts and solid state relays).
GERS	-	Seismically adequate based on GERS _____; include GERS number.
NA	-	Component not affected by relays.
CR	-	Corrective action required.
OA	-	Operator action.
DC	-	Direct control.
AS	-	See Assessment Sheet for details.
F	-	Fire Protection no QTR available.
-	-	No entry necessary.

Prepared by RPF Date 01/25/95

Reviewed by GSB Date 07/18/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-CH-115D	RE-21FR	LS#4	Limitorque	----------	MOV-CH-115D	LIMIT SWITCH	NV	--
		TS#18	LIMITORQUE	----------	MOV-CH-115D	LIMITORQUE	NV	--
1210		LS#5	LIMITORQUE	----------	MOV-CH-115D	LIMIT SWITCH	NV	--
		CS (1-)	W OT2	----------	BENCHBOARD	PUSHBUTTON	NV	--
		CONTACTOR (O)	ALLIS TY2	DE/NO	MCC1-E4, CUB J	ALLIS-CHALMERS	RLY-CON.3	AS
		49	ALLIS TY2	NC	MCC1-E4, CUB J	ALLIS CHALMERS	RLY-CON.3	AS
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CH/RWST-CHARGING PUMP ISOLATION

MOV-CH-115D connects the RWST to the Charging Pump suction. The valve OPENS automatically on LO-LO VCT level or an SI signal. The valve is NSA CLOSED. The valve must be capable of opening after an earthquake. Automatic opening is acceptable but it is expected that the valve will be manually opened with the control switch.

Chatter which could cause the valve to OPEN during an earthquake is ACCEPTABLE.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS _____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/25/95

Reviewed by GSB Date 07/18/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-CH-115E	RE-21FR	TS#17/LS#1	LIMITORQUE	----------	MOV-CH-115E	LIMIT/TORQUE SW	NV	--
		CS (1-)	W OT2	----------	BENCHBOARD	W OT2	NV	--
1211		CONTACTOR (C)	ALLIS TY2	DE/NO	MCC1-E4, CUB K	ALLIS CHALMERS	RLY-CON.3	AS
		49	ALLIS TY2	NC	MCC1-E4, CUB K	ALLIS CHALMERS	RLY-CON.3	AS
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CH/VCT ISOLATION VALVE

MOV-CH-115E is a series isolation valve connecting the VCT to the Charging Pump suction. It is NSA OPEN and automatically CLOSES on LO-LO VCT level or an SI signal. The valve must be capable of closing after an earthquake. It is acceptable for the valve to close automatically but it is expected the the valve would be maunually closed with the control switch.

Chatter which could cause the valve to CLOSE during an earthquake is ACCEPTABLE because a permissive from MOV-CH-115D is in the closing circuit.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA	-	Chatter acceptable.
NV	-	Not vulnerable (mechanically actuated contacts and solid state relays).
GERS	-	Seismically adequate based on GERS_____; include GERS number.
NA	-	Component not affected by relays.
CR	-	Corrective action required.
OA	-	Operator action.
DC	-	Direct control.
AS	-	See Assessment Sheet for details.
F	-	Fire Protection no QTR available.
-	-	No entry necessary.

Prepared by RPF Date 01/25/95

Reviewed by GSB Date 07/19/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
CH-P-1A	RE-21FN	62-VE100X4	W MG-6	DE/NO	4KVS-1E8A	293B301A25B	DC/CA	--
		52H-1E15	CELL SW	----------	4KVS-1E15	ITE	NV	--
1212		50-VE111G	ITE GR-5	DE/NO	4KVS-1E, CUB 11	202D6141	NV	--
		51-VE111A	W COM-5	DE/NO	4KVS-1E, CUB 11	289B456A19	TBL2-1GRP7	AS
		51-VE111B	W COM-5	DE/NO	4KVS-1E, CUB 11	289B456A19	TBL2-1GRP7	AS
		51-VE111C	W COM-5	DE/NO	4KVS-1E, CUB 11	289B456A19	TBL2-1GRP7	AS
		CS (1-)	W TYPE W	----------	BENCHBOARD	W TYPE W	NV	--
		43-VE111X	GE HEA	NOP/NC	4KVS-1E, CUB 10	12HEA61CRD238X2	RLY-ALO.2	AS

CH/CHARGING PUMP

The Charging Pumps are used during and after an earthquake to supply borated water to the RCS and to maintain RCS inventory and pressure. The normal arrangement is to have one pump running on one bus with a second pump in standby on the other bus. The third pump breaker would be racked out. It is assumed that the earthquake causes a loss of power which would result in tripping of the running Charging Pump. The Charging Pumps on both busses must be capable of starting on a Diesel Loading Sequence Signal after the earthquake.

Chatter during the earthquake is acceptable if a loss of power conditon exists.

Relay 50-VE111G is a GR-5 which is a solid state relay with an SCR output and therefore cannot chatter.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA	-	Chatter acceptable.
NV	-	Not vulnerable (mechanically actuated contacts and solid state relays).
GERS	-	Seismically adequate based on GERS_____; include GERS number.
NA	-	Component not affected by relays.
CR	-	Corrective action required.
OA	-	Operator action.
DC	-	Direct control.
AS	-	See Assessment Sheet for details.
F	-	Fire Protection no QTR available.
-	-	No entry necessary.

Prepared by RPF Date 01/25/95

Reviewed by GSB Date 07/19/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
CH-P-1B	RE-21FN	62-VF100X4	W MG-6	DE/NO	4KVS-1E8A	293B301A25B	DC/CA	--
		52H-1F15	CELL SW	----------	4KVS-1E15	ITE	NV	--
1213		50-VF111G	ITE GR-5	DE/NO	4KVS-1E, CUB 11	202D6141	NV	--
		51-VF111A	W COM-5	DE/NO	4KVS-1F, CUB 11	289B456A19	TBL2-1GRP7	AS
		51-VF111B	W COM-5	DE/NO	4KVS-1F, CUB 11	289B456A19	TBL2-1GRP7	AS
		51-VF111C	W COM-5	DE/NO	4KVS-1F, CUB 11	289B456A19	TBL2-1GRP7	AS
		CS (1-)	W TYPE W	----------	BENCHBOARD	W TYPE W	NV	--
		43-VF111X	GE HEA	NOP/NC	4KVS-1F, CUB 10	12HEA61CRD238X2	RLY-ALO.2	AS

CH/CHARGING PUMP

THe Charging Pumps are used during and after an earthquake to supply borated water ot the RCS and to maintain RCS inventory and pressure. The normal arrangement is to have one pump running on one bus with a second pump in standby on the other bus. The third pump breaker would be racked out. It is assumed that the earthquake causes a loss of power which would result in tripping of the running Charging Pump. The Charging Pumps on both busses must be capable of starting on a Diesel Loading Sequence Signal after the earthquake.

Chatter during the earthquake is acceptable if a loss of power conditon exists.

Relay 50-VF111G is a GR-5 which is a solid state relay with an SCR output and therefore cannot chatter.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/25/95

Reviewed by GSB Date 07/19/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
CH-P-1C	RE-21FP	62-VE/VF100X4	W MG-6	DE/NO	4KVS-1E/F8A	293B301A25B	DC/CA	--
		52H-1E/F15	CELL SW	----------	4KVS-1E/F15	ITE	NV	--
1214		50-VE/F115G	ITE GR-5	DE/NO	4KVS-1E/F,CUB 15	202D6141	NV	--
		51-VE/F115A	W COM-5	DE/NO	4KVS-1E/F,CUB 15	289B456A19	TBL2-1GRP7	AS
		51-VE/F115B	W COM-5	DE/NO	4KVS-1E/F,CUB 15	289B456A19	TBL2-1GRP7	AS
		51-VE/F115C	W COM-5	DE/NO	4KVS-1E/F,CUB 15	289B456A19	TBL2-1GRP7	AS
		CS (1-)	W TYPE W	----------	BENCHBOARD	W TYPE W	NV	--
		43-VE/F115X	GE HEA	NOP/NC	4KVS-1E/F,CUB 15	12HEA61CRD238X2	RLY-ALO.2	AS

CH/CHARGING PUMP

The Charging Pumps are used during and after an earthquake to supply borated water to the RCS and to maintain RCS inventory and pressure. The normal arrangement is to have one pump running on one bus with a second pump in standby on the other bus. The third pump breaker would be racked out. It is assumed that the earthquake causes a loss of power which would result in tripping of the running Charging pump. The charging Pumps on both busses must be capable of starting on a Diesel Loading Sequence Signal after the earthquake.

Chatter during the earthquake is acceptable if a loss of power condition exists.

Relay 50-VE/F115G is a GR-5 which is a solid state relay with an SCR output and therefore cannot chatter.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/25/95

Reviewed by GSB Date 07/19/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-CH-289	RE-21FS	CS (1-)	W OT2	----------	BENCHBOARD	W OT2	NV	--
		CONTACTOR (C)	ALLIS TY2	DE/NO	MCC1-E5, CUB BB	ALLIS CHALMERS	RLY-CON.3	AS
1215		K603	W AR440AR	DE/NO	RR-REAC-PROT-3A	W AR440AR	RLY-AI1.4	AS
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CH/CHARGING HEADER ISOLATION

MOV-CH-289 is the Outside Containment Charging Header Isolation Valve. It is NSA OPEN. The valve must remain OPEN during and after an earthquake.

Chatter of contactor 42C or relay K603 could cause the valve to CLOSE.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/25/95

Reviewed by GSB Date 07/19/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-CH-310	RE-21FS	CS (1-)	W OT2	----------	BENCHBOARD	W OT2	NV	--
		CONTACTOR (C)	ALLIS TY2	DE/NO	MCC1-E6, CUB AX	ALLIS CHALMERS	RLY-CON.3	AS
1216		K603	W AR440AR	DE/NO	RK-REAC-PROT-3B	W AR440AR	RLY-AI1.4	AS

CH/CHARGING HEADER ISOLATION

MOV-CH-310 is the Inside Containment Charging Header Isolation Valve. It is NSA OPEN and must remain open during of after an earthquake.

Chatter of the close contactor 42C or relay K603 could cause the valve to close.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 01/25/95

Reviewed by GSB Date 07/19/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-CH-275A	RE-21FR	CS (1-)	W OT2	----------	BENCHBOARD	W OT2	NV	--
		CONTACTOR (C)	ALLIS TY2	DE/NO	MCC1-E3, CUB H	ALLIS CHALMERS	RLY-CON.3	AS
1217								--
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CH/CH-P-1A MINIFLOW ISOLATION

MOV-CH-275A, B, and C are the Charging Pump Miniflow Isolation Valves and are NSA OPEN. The valves must remain OPEN during and after an earthquake.

There are no relay contacts in the CLOSE circuit. Only chatter of the contactor 42C could cause the valve to CLOSE.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/25/95

Reviewed by GSB Date 07/19/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-CH-275B	RE-21FR	CS (1-)	W OT2	----------	BENCHBOARD	W OT2	NV	--
		CONTACTOR (C)	ALLIS TY2	DE/NO	MCC1-E3, CUB P	ALLIS CHALMERS	RLY-CON.3	AS
1218		----------	----------	----------	----------	----------	----------	--
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CH/CH-P-1B MINIFLOW ISOLATION

MOV-CH-275A, B, and C are the Charging Pump Miniflow Isolation Valves and are NSA OPEN. The valves must remain OPEN during and after an earthquake.

There are no relay contacts in the closing circuit which could cause the valve to close. Only chatter of contactor 42C could cause the valve to close.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA	-	Chatter acceptable.
NV	-	Not vulnerable (mechanically actuated contacts and solid state relays).
GERS	-	Seismically adequate based on GERS_____; include GERS number.
NA	-	Component not affected by relays.
CR	-	Corrective action required.
OA	-	Operator action.
DC	-	Direct control.
AS	-	See Assessment Sheet for details.
F	-	Fire Protection no QTR available.
-	-	No entry necessary.

Prepared by RPF Date 01/25/95

Reviewed by GSB Date 07/19/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-CH-275C	RE-21FR	CS (1-)	W OT2	----------	BENCHBOARD	W OT2	NV	--
		CONTACTOR (C)	ALLIS TY2	DE/NO	MCC1-E3, CUB Q	ALLIS CHALMERS	RLY-CON.3	AS
1219								

CH/CH-P-1C MINIFLOW ISOLATION

MOV-CH-275A, B, and C are the Charging Pump Miniflow Isolation Valves and are NSA OPEN. The valves must remain open during and after an earthquake.

There are no relay contacts in the closing circuit. Only chatter of contactor 42C could cause the valve to close.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA	-	Chatter acceptable.
NV	-	Not vulnerable (mechanically actuated contacts and solid state relays).
GERS	-	Seismically adequate based on GERS_____; include GERS number.
NA	-	Component not affected by relays.
CR	-	Corrective action required.
OA	-	Operator action.
DC	-	Direct control.
AS	-	See Assessment Sheet for details.
F	-	Fire Protection no QTR available.
-	-	No entry necessary.

Prepared by RPF Date 01/25/95

Reviewed by GSB Date 07/19/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-CH-373	RE-21FR							--
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1220								--
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								--
								--
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CH/CHARGING PUMP RECIRC ISOLATION

Valve MOV-CH-373 LOCKED OPEN with power removed. Chatter will not cause the valve to Close.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA	-	Chatter acceptable.
NV	-	Not vulnerable (mechanically actuated contacts and solid state relays).
GERS	-	Seismically adequate based on GERS_____; include GERS number.
NA	-	Component not affected by relays.
CR	-	Corrective action required.
OA	-	Operator action.
DC	-	Direct control.
AS	-	See Assessment Sheet for details.
F	-	Fire Protection no QTR available.
-	-	No entry necessary.

Prepared by RPF Date 01/25/95

Reviewed by GSB Date 07/19/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-SI-867A	RE-21XT	CS (1-)	W OT2	----------	BENCHBOARD	W OT2	NV	--
		CONTACTOR (O)	ALLIS TY2	DE/NO	MCC1-E5, CUB W	ALLIS CHALMERS	RLY-CON.3	AS
1222		K604	W AR440AR	DE/NO	RK-REAC-PROT-3A	W AR440AR	RLY-AI1.4	AS
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SI/BIT ISOLATION VALVE

MOV-SI-867A and B are BIT isolation valves which are NSA CLOSED. The valves must remain CLOSED during and after an earthquake.

Chatter of contactor 420 and relay K604 could cause the valve to OPEN.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/25/95

Reviewed by GSB Date 07/19/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-SI-867B	RE-21XT	CS (1-)	W OT2	----------	BENCHBOARD	W OT2	NV	--
		CONTACTOR (O)	ALLIS TY2	DE/NO	MCC1-E6, CUB W	ALLIS CHALMERS	RLY-CON.3	AS
1223		K604	W AR440AR	DE/NO	RK-REAC-PROT-3B	W AR440AR	RLY-AI1.4	AS
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SI/BIT ISOLATION VALVE

MOV-SI-867A and B are BIT isolation valves that are NSA CLOSED. The valves must remain CLOSED during and after an earthquake.

Chatter of contactor 420 or relay K604 could cause the valve to OPEN.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/25/95

Reviewed by GSB Date 07/19/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
FCV-CH-160	RE-22P	----------	----------	----------	----------	----------	----------	--
		----------	----------	----------	----------	ALLIS CHALMERS	----------	--
1224		----------	----------	----------	----------	----------	----------	--
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CH/CHARGING FILL HEADER FLOW CONTROL VAL

The entire control loop fo FCV-CH-160 is electronic and is not vulnerable to chatter.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/08/95

Reviewed by GSB Date 07/19/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-CH-308A	RE-21FS	CS (1-)	W OT2	----------	BENCHBOARD	W OT2	NV	--
		CONTACTOR 42C	ALLIS TY2	DE/NO	MCC1-E3, CUB AE	ALLIS CHALMERS	RLY-CON.3	AS
1225		----------	----------	----------	----------	----------	----------	--
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CH/RCP-1A SEAL WATER CONTAINMENT ISOLATI

MOV-CH-308A, B, and C are Outside Containment Isolation Valves for the RCP Seal Injection. The valves are NSA OPEN and must remain OPEN during and after an earthquake.

There are no relay contacts in the closing circuit . Only chatter of contactor 42C could cause the valve to close.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 01/26/95

Reviewed by GSB Date 07/19/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-CH-308B	RE-21FS	CS (1-)	W OT2	----------	BENCHBOARD	W OT2	NV	--
		CONTACTOR 42C	ALLIS TY2	DE/NO	MCC1-23, CUB AF	ALLIS CHALMERS	RLY-CON.3	AS
1226								
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CH/RCP-1B SEAL WATER CONTAINMENT ISOLATI

MOV-CH-308A, B, and C are the Outside Containment Isolation Valves for the RCP Seal Injection. The valves are NSA OPEN and must remain OPEN during and after an earthquake.

There are no relay contacts in the closing circuit. Only chatter of contactor 42C could cause the valve to close.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/26/95

Reviewed by GSB Date 07/19/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-CH-308C	RE-21FS	CS (1-)	W OT2	----------	BENCHBOARD	W OT2	NV	--
		CONTACTOR 42C	ALLIS TY2	DE/NO	MCC1-E3, CUB AN	ALLIS CHALMERS	RLY-CON.3	AS
1227								--
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CH/RCP-1C SEAL WATER CONTAINMENT ISOLATI

MOV-CH-308A, B, and C are the Outside Containment Isolation Valves for the RCP Seal Injection. The valves are NSA OPEN and must remain OPEN during and after an earthquake.

Ther are no relay contacts in the closing circuit. Only chatter of contactor 42C could cause the valve to close.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/26/95

Reviewed by GSB Date 07/19/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-CH-370	RE-21FS	CS (1-)	W OT2	----------	BENCHBOARD	W OT2	NV	--
		CONTACTOR 42C	ALLIS TY2	DE/NO	MCC1-14, CUB AC	ALLIS CHALMERS	RLY-CON.3	AS
1228								

CH/SEAL INJ HEADER ISOLATION

MOV-CH-370 is powered from MCC1-14 which is not a Safety Related MCC.

With a loss of power condition MCC1-14 will not be energized. The valve will not be powered.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA	-	Chatter acceptable.
NV	-	Not vulnerable (mechanically actuated contacts and solid state relays).
GERS	-	Seismically adequate based on GERS_____; include GERS number.
NA	-	Component not affected by relays.
CR	-	Corrective action required.
OA	-	Operator action.
DC	-	Direct control.
AS	-	See Assessment Sheet for details.
F	-	Fire Protection no QTR available.
-	-	No entry necessary.

Prepared by RPF Date 01/26/95

Reviewed by GSB Date 07/19/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
HCV-CH-186	RE-22G							--
								--
1229								--
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								--
								--
								--

CH/RCP SEAL SUPPLY, HAND CONT

The entire loop is electronic and is not vulnerable to chatter.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 02/08/95

Reviewed by GSB Date 07/19/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-CH-303A	RE-21FS	CS (1-)	W OT2	----------	BENCHBOARD	W OT2	NV	--
		CONTACTOR 42C	ALLIS TY2	DE/NO	MCCI-17, CUB AQ	ALLIS CHALMERS	----------	CA
1230		----------	----------	----------	----------	----------	----------	--
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CH/RCP 1A #1 SEAL LEAKOFF ISOLATION

MOV-CH-303A, B, and C are the RCP Seal Leakoff Isolation Valves. They are NSA OPEN and it is desired that they remain OPEN during and after an earthquake.
There are no relay contacts in the closing circuit. Only chatter of contactor 42C could cause the valve to close. If these valves did close the RCP's could remain running for a short time. If the pumps were not running inadvertent closure of these valves would force all seal leakoff through the No. 2 seals but would not harm the seals or the pump shaft.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/26/95

Reviewed by GSB Date 07/19/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-CH-303B	RE-21FS	CS (1-)	W OT2	----------	BENCHBOARD	W OT2	NV	--
		CONTACTOR 42C	ALLIS TY2	DE/NO	MCC1-19, CUB AK	ALLIS CHALMERS	----------	CA
1231		----------	----------	----------	----------	----------	----------	--
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CH/RCP 1B #1 SEAL LEAKOFF ISOLATION

MOV-CH-303A, B, and C are the RCP Seal Leakoff Isolation Valves. They are NSA OPEN and it is desired that they remain OPEN during and after an earthquake.
There are no relay contacts in the closing circuit. Only chatter of contactor 42C could cause the valve to close.
If these valves did close the RCP's could remain running for a short time. If the pumps were not running inadvertent closure of these valves would force all seal leakoff through the No. 2 seals but would not harm the seals or the pump shaft.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/26/95

Reviewed by GSB Date 07/19/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-CH-303C	RE-21FS	CS (1-)	W OT2	----------	BENCHBOARD	W OT2	NV	--
		CONTACTOR 42C	ALLIS TY2	DE/NO	MCC1-18, CUB AK	ALLIS CHALMERS	----------	CA
1232		----------	----------	----------	----------	----------	----------	--
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CH/RCP 1C #1 SEAL LEAKOFF ISOLATION

MOV-CH-303A, B, and C are the RCP Seal Leakoff Isolation Valves. They are NSA OPEN and it is desired that they remain OPEN during and after an earthquake.
There are no relay contacts in the closing circuit. Only chatter of contactor 42C could cause the valve to close. If these valves did close the RCP's could remain running for a short time. If the pumps were not running inadvertent closure of these valves would force all seal leakoff through the No. 2 seals but would not harm the seals or the pump shaft.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS _____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/26/95

Reviewed by GSB Date 07/19/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
HCV-CH-389	RE-21FU	CS (1-)	W OT2	----------	BENCHBOARD	W OT2	NV	--
		---	---	---	---	---	---	--
1233		---	---	---	---	---	---	--
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CH/EXCESS LETDOWN DRAIN DIVERT VALVE

HCV-CH-389 is a 3-way valve that diverts excess letdown from the loop drains to either the VCT or PD-TK-1. The valve is normally aligned to the VCT. The SQUG function is to stay aligned to the VCT. The SOV is de-energized when aligned to the VCT. There are no interlocks other than the control switch on the Main Control Board which is not vulnerable to chatter.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/26/95

Reviewed by GSB Date 07/19/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-SI-869A	RE-21KK							--
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1234								--
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								--
								--

SI/HHSI RCL HOT LEG ISOLATION VALVE

MOV-SI-869A & B are HHSI Hot Leg Isolation Valves and are NSA CLOSED. They are required to stay CLOSED during and after an earthquake. The power to the line starter is normally removed by a withdrawn "banana plug". Therefore, the circuit is not vulnerable to chatter and no analysis is required.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA	-	Chatter acceptable.
NV	-	Not vulnerable (mechanically actuated contacts and solid state relays).
GERS	-	Seismically adequate based on GERS_____; include GERS number.
NA	-	Component not affected by relays.
CR	-	Corrective action required.
OA	-	Operator action.
DC	-	Direct control.
AS	-	See Assessment Sheet for details.
F	-	Fire Protection no QTR available.
-	-	No entry necessary.

Prepared by RPF Date 01/26/95

Reviewed by GSB Date 07/19/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-SI-869B	RE-21KK							--
								--
1235								--
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SI/HHSI RCL HOT LEG ISOLATION VALVE

MOV-SI-869A & B are HHSI Hot Leg Isolation Valves and are NSA CLOSED and are required to stay CLOSED during and after an earthquake. The power
to the line starter is normally removed by a withdrawn "banana plug". Therefore, the circuit is not vulnerable to chatter and no analysis is required.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA	-	Chatter acceptable.
NV	-	Not vulnerable (mechanically actuated contacts and solid state relays).
GERS	-	Seismically adequate based on GERS_____; include GERS number.
NA	-	Component not affected by relays.
CR	-	Corrective action required.
OA	-	Operator action.
DC	-	Direct control.
AS	-	See Assessment Sheet for details.
F	-	Fire Protection no QTR available.
-	-	No entry necessary.

Prepared by RPF Date 01/26/95

Reviewed by GSB Date 07/19/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-SI-836	RE-21KK	CS (1-)	W OT2	----------	BENCHBOARD	W OT2	NV	--
		CONTACTOR 420	ALLIS TY2	DE/NO	KCC1-E5, CUB AB	ALLIS CHALMERS	RLY-CON.3	AS
1236								--
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SI/HHSI RCL COLD LEG ISOLATION VALVE

MOV-SI-836 is a HHSI Cold Leg Isolation Valve and is NSA CLOSED and is required to stay closed during and after an earthquake. Therefore, only the opening circuit is analyzed.

Chatter of the open contactor 420 could cause the valve to OPEN.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/26/95

Reviewed by GSB Date 07/19/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-SI-863A	RE-21KK	CS (1-)	W OT2	----------	BENCHBOARD	W OT2	NV	--
		CONTACTOR 420	ALLIS TY2	DE/NO	MCC1-E5, CUB U	ALLIS CHALMERS	RLY-CON.3	AS
1237		K641	W AR440AR	DE/NO	RK-REAC-PROT-3A	W AR440AR	RLY-AI1.4	AS
		K642	W AR440AR	DE/NO	RK-REAC-PROT-3A	W AR440AR	RLY-AI1.4	AS
		K640	W AR440AR	DE/NO	RK-REAC-PROT-3A	W AR440AR	RLY-AI1.4	AS
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SI/1A LHSI TO CFG PUMPS SUPPLY VALVE

MOV-SI-863A & B OPEN on Transfer to Recirculation Phase of SI. They divert the Low Head SI Pump Discharge to the suction of the Charging Pumps. They are NSA CLOSED and must remain CLOSED for SQUG scenario, possible RWST drainage to the containment sump. Therefore, only the opening circuit is analyzed.

Chatter of the open contactor 420, relays K640, k641 and K642 could cause the valve to Open.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/26/95

Reviewed by GSB Date 07/19/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-SI-863B	RE-21KK	CS (1-)	W OT2	----------	BENCHBOARD	W OT2	NV	--
		CONTACTOR 420	ALLIS TY2	DE/NO	MCC1-E6, CUB U	ALLIS CHALMERS	RLY-CON.3	AS
1238		K641	W AR440AR	DE/NO	RK-REAC-PROT-3B	W AR440AR	RLY-AI1.4	AS
		K642	W AR440AR	DE/NO	RK-REAC-PROT-3B	W AR440AR	RLY-AI1.4	AS
		K640	W AR440AR	DE/NO	RK-REAC-PROT-3B	W AR440AR	RLY-AI1.4	AS
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SI/1B LHSI TO CHG PUMPS SUPPLY VALVE

MOV-SI-863A & b OPEN on Transfer to Recirculation Phase of SI. They divert the Low Head SI Pump Discharge to the suction of the Charging Pumps. They are NSA CLOSED and MUST stay CLOSED for the SQUG scenario, possible RWST drainage to the containment sump. Therefore, only the opening circuit is analyzed.

Chatter of the open contactor 420, relays K640, K641 and K642 could cause the valve to Open.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/26/95

Reviewed by GSB Date 07/19/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
TV-SS-106D	RE-21XS	CS	W OT2	----------	BENCHBOARD	W OT2	NV	--
		CS (2/2C)	GE SB10	----------	----------	----------	NV	--
1239		CS (4/4C)	GE SB10	----------	----------	----------	NV	--
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/B RCS HOTLEG RV SIDE OF LOOP STOP SAMPL

TV-SS-106D is an inside containment Hot Leg Isolation Valve. It is NSA CLOSED and MUST be OPENABLE after an earthquake to permit RCS boron sampling.

The valve has no interlocks which could cause the valve to chatter open during an earthquake.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/26/95

Reviewed by GSB Date 07/19/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
TV-SS-105A1	RE-21XH	43X-PASA	ASEA RXMH2	DE/NO	PNL-PAS-RA	RK-223-069-AP	QTR-ABB	AS
		CS	W OT2	----------	PNL-PAS-RA	----------	NV	--
1240		3A-PASA	ASEA RXME1	DE/NO	PNL-PAS-RA	RK-221-025-AN	QTR-ABB	AS
		K607	W AR440AR	DE/NC	RK-REAC-PROT-3A	W AR440AR	RLY-AI1.4	AS
		CS	W OT2	----------	PAS PANEL	W OT2	NV	--
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/RCS HOTLEG SAMPLE HDR INSIDE CNMT ISOL

TV-SS105A1 is NSA OPEN and after an earthquake it must remain OPEN or be OPENABLE. Chatter which CLOSES the valve is acceptable provided the valve can be OPENED.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/26/95

Reviewed by GSB Date 07/19/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
TV-SS-105A2	RE-21XJ	43X-PASB	ASEA RXMH2	DE/NO	PNL-PAS-RB	RK-223-069-AP	QTR-ABB	AS
		CS	W OT2	----------	PNL-PAS-RB	----------	NV	--
1241		3A-PASB	ASEA RXME1	DE/NO	PNL-PAS-RB	RK-221-025-AN	QTR-ABB	AS
		K607	W AR440AR	DE/NC	RK-REAC-PROT-3B	W AR440AR	RLY-AI1.4	AS
		CS	W OT2	----------	PAS PANEL	W OT2	NV	--
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/RCS HOTLEG SAMPLE HDR OUTSIDE CNMT ISOL

TV-SS105A2 is NSA OPEN and after an earthquake it must remain OPEN or be OPENABLE. Chatter which Closes the valve is acceptable provide the valve can be OPENED.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays)
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available
\- - No entry necessary.

Prepared by RPF Date 01,26/95

Reviewed by GSB Date 07/19/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
CH-P-2A	RE-21FQ	CS (1-)	W TYPE W	----------	BENCHBOARD	W TYPE W	NV	--
		43-E11BX	GE HEA	NOP/NC	PNL-REL-33	12HEAC61238X2	RLY-ALO.2	AS
1246		CONTACTOR 42S	ALLIS TY3	DE/NO	MCC1-E12, CUB B	ALLIS CHALMERS	RLY-CON.3	AS
		CONTACTOR 42F	ALLIS TY3	DE/NO	MCC1-E11, CUB B	ALLIS CHALMERS	RLY-CON.3	AS
		49S	ALLIS TY3	NC	MCC1-E11, CUB B	ALLIS CHALMERS	RLY-CON.3	AS
		49FX	ALLIS TY3	NC	MCC1-E11, CUB B	ALLIS CHALMERS	RLY-CON.3	AS
		CONTACTOR 42FX	ALLIS TY2	DE/NO	MCC1-E11, CUB B	ALLIS CHALMERS	RLY-CON.3	AS
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CH/BORIC ACID TRANSFER PUMP

The Boric Acid Transter Pumps are required to function in FAST speed following an earthquake to add 7% Boric Acid to the RCS. This is needed to allow boration to cold shutdown xenon-free prior to blocking auto SI below P-11.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/26/95

Reviewed by GSB Date 07/19/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
CH-P-2B	RE-21FQ	CS (1-)	W TYPE W	----------	BENCHBOARD	W TYPE W	NV	--
		43-E12BX	GE HEA	NOP/NC	PNL-REL-34	12HEAC61208X2	RLY-ALO.2	AS
1247		CONTACTOR 42S	ALLIS TY3	DE/NO	MCC1-E12, CUB B	ALLIS CHALMERS	RLY-CON.3	AS
		CONTACTOR 42F	ALLIS TY3	DE/NO	MCC1-E12, CUB B	ALLIS CHALMERS	RLY-CON.3	AS
		49S	ALLIS TY3	NC	MCC1-E12, CUB B	ALLIS CHALMERS	RLY-CON.3	AS
		49FX	ALLIS TY3	NC	MCC1-E12, CUB B	ALLIS CHALMERS	RLY-CON.3	AS
		CONTACTOR 42FX	ALLIS TY2	DE/NO	MCC1-E12, CUB B	ALLIS CHALMERS	RLY-CON.3	AS
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CH/BORIC ACID TRANSFER PUMP

The Boric Acid Transfer Pumps are required to function in FAST speed after an earthquake to add 7% Boric Acid to the RCS. This is needed to allow boration to Cold Shutdown xenoe-free prior to blocking auto SI below P-11.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA	-	Chatter acceptable.
NV	-	Not vulnerable (mechanically actuated contacts and solid state relays).
GERS	-	Seismically adequate based on GERS_____; include GERS number.
NA	-	Component not affected by relays.
CR	-	Corrective action required.
OA	-	Operator action.
DC	-	Direct control.
AS	-	See Assessment Sheet for details.
F	-	Fire Protection no QTR available.
-	-	No entry necessary.

Prepared by RPF Date 01/26/95

Reviewed by GSB Date 07/19/95

Mark No / Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-CH-350	RE-21FS	LS#4	LIMITORQUE	----------	MOV-CH-350	LIMITORQUE	NV	--
		TS#18/LS#5	LIMITORQUE	----------	MOV-CH-350	LIMITORQUE	NV	--
1248		CONTACTOR 420	ALLIS TY2	DE/NO	MCC1-E4, CUB S	ALLIS CHALMERS	RLY-CON.3	AS
		49	ALLIS TY2	NC	MCC1-E4, CUB S	ALLIS CHALMERS	RLY-CON.3	AS
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CH/EMERGENCY BORATION ISOLATION

MOV-CH-350 is NSA CLOSED. It is required to OPEN after an earthquake to allow 7% Boric Acid from CH-P-2A/B to enter the Charging Pump Suction into the RCS.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 01/26/95

Reviewed by GSB Date 07/19/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-RC-535	RE-21JQ	LS#1,4 & 5	LIMITORQUE	----------	MOV-RC-535	LIMITORQUE	NV	--
		TS# 17 & 18	LIMITORQUE	----------	MOV-RC-535	LIMITORQUE	NV	--
2104		CONTACTOR 42O/C	ALLIS TY2	DE/NO	MCC1-E5, CUB BE	ALLIS CHALMERS	RLY-CON.3	AS
		49	ALLIS TY2	NC	MCC1-E5, CUB BE	ALLIS CHALMERS	RLY-CON.3	AS
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RC/PRESSURIZER PORV ISOLATION

MOV-RC-535, 536, & 537 are used to isolate the Pressurizer PORV's. Normally 2 of the 3 valves are CLOSED. If a PORV begins to leak the associated block valve needs to be capable of CLOSING. If an isolated PORV is needed for pressure relief the associate block valve must be able to OPEN. Both the OPENING and CLOSING circuits must be operable following an earthquake.

Chatter of the open contactor 42O or close contactor 42C could cause the valve to move from its position prior to the earthquake.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/26/95

Reviewed by GSB Date 07/19/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
PCV-RC-455C	RE-21JT	CS (1-)	W OT2	----------	BENCHBOARD	W OT2	NV	--
		K628	W AR440AR	DE/NC	RK-REAC-PROT-3B	W AR440AR	RLY-AI1.4	AS
2105		PC-444BXB	W AR440AR	DE/NO	RK-AUX-REL-B	W AR440AR	RLY-AI1.4	AS
		SW-ISO-455C	W OT2	----------	TRS-BIP-PNL1	W OT2	NV	--
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RC/PRESSURIZER PORV

The PORV's are normally CLOSED. They OPEN automatically on high RCS pressure or can be manually opened upon operator demand to relieve RCS pressure. The manual open feature must work after an earthquake. The Pressurizer safety relief valves provide automatic overpressure protection. The PORV's must not chatter OPEN during or after an earthquake. This could lead to an unwanted Safety Injection.

Chatter of relay PC-444BXB could cause SOV-RC-455C1 and C2 to energize opening PCV-RC455.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 01/26/95

Reviewed by GSB Date 07/19/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-RC-536	RE-21JQ	LS#1,4 & 5	LIMITORQUE	----------	MOV-RC-536	LIMITORQUE	NV	--
		TS# 17 & 18	LIMITORQUE	----------	MOV-RC-536	LIMITORQUE	NV	--
2106		CONTACTOR 42O/C	ALLIS TY2	DE/NO	MCC1-E6, CUB BC	ALLIS CHALMERS	RLY-CON.3	AS
		49	ALLIS TY2	NC	MCC1-E6, CUB BC	ALLIS CHALMERS	RLY-CON.3	AS
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RC/PRESSURIZER PORV ISOLATION

MOV-RC-535, 536 and 537 are used to isolate the pressurizer PORV's. Normally 2 of the 3 are CLOSED. If a PORV begins to leak the associated block valve needs to be able to CLOSE. If an isolated PORV is needed for pressure relief, the associated block valve needs to be able to OPEN. Both the CLOSING and OPENING circuits must be Operable following an earthquake.

Chatter of the open contactor 42O and close contactor 42C could cause the valve to move from its position prior to the earthquake.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/26/95

Reviewed by GSB Date 07/20/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
PCV-RC-456	RE-21JT	CS (1-)	W OT2	----------	BENCHBOARD	W OT2	NV	--
		K628	W AR440AR	DE/NC	RK-REAC-PROT-3A	W AR440AR	RLY-AI1.4	AS
2107		PC-445AXA	W AR440AR	DE/NO	RK-AUX-REL-A	W AR440AR	RLY-AI1.4	AS
		SW-ISO-456	W OT2	----------	LOCAL- WEST CV	W OT2	NV	--
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RC/PRESSURIZER PORV

The PORV's ar mormally CLOSED. They OPEN automatically on High RCS Pressure or can be manually OPENED upon operator demand to relieve RCS pressure. The manual OPEN feature must work after an earthquake. The Pressurizer safety relief valves provide automatic overpressure protection. The PORV's must not chatter OPEN during or after an earthquake. This could lead to an unwanted Safety Injection.

Chatter of relay PC-445AXA could cause SOV-RC-456-1 and 2 to energize opening PCV-RC456.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/26/95

Reviewed by GSB Date 07/20/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-RC-537	RE-21JQ	LS#1,4 & 5	LIMITORQUE	----------	MOV-RC-537	LIMITORQUE	NV	--
		TS# 17 & 18	LIMITORQUE	----------	MOV-RC-537	LIMITORQUE	NV	--
2108		CONTACTOR 42O/C	ALLIS TY2	DE/NO	MCC1-E6, CUB BD	ALLIS CHALMERS	RLY-CON.3	AS
		49	ALLIS TY2	NC	MCC1-E6, CUB BD	ALLIS CHALMERS	RLY-CON.3	AS
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RC/PRESSURIZER POPV ISOLATION

MOV-RC-535, 536, & 537 are used to isolate the Pressurizer PORV's. Normally 2 of the 3 valves are Closed. If a PORV begins to leak the associated block valve needs to be able to CLOSE. If an isolated PORV is needed for pressure relief, the associated block valve needs to able to OPEN. Both the OPENING and CLOSING circuits must be operable following an earthquake.

Chatter of the open contactor 42O and close contactor 42C could cause the valve to move from its position prior to the earthquake.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/26/95

Reviewed by GSB Date 07/20/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
PCV-RC-455D	RE-21JT	CS (1-)	W OT2	----------	BENCHBOARD	W OT2	NV	--
		K628	W AR440AR	DE/NC	RK-REAC-PROT 3A	W AR440AR	RLY-AI1.4	AS
2109		PC-445AXA	W AR440AR	DE/NO	RK-AUX-REL-A	W AR440AR	RLY-AI1.4	AS
		SW-ISO-456	WEST OT2	----------	LOCAL-WEST CV	W OT2	NV	--
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RC/PRESSURIZER PORV

THe PORV's are normally CLOSED They OPEN automatically on high RCS pressure or can be manually opened by the operator to relieve RCS pressure. The manual OPENO feature must operate after an earthquake. The pressurizer safety relief valves provide automatic overpressure protection. The PORV's must not chatter OPEN during or after an earthquake. Chatter could lead to an unwanted Safety Injection.

Chatter of relay PC-444AXA could cause SOV-RC455D1 AND D2 to energize opening PCV-RC455D.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/26/95

Reviewed by GSB Date 08/07/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
PT-RC-402	RE-22BM	TOGGLE SWITCH	W 2429A31	----------	RK-PRI-PROC-17	----------	NV	--
2110A								

RCS/WIDE RANGE RCS PRESSURE TRANS

The entire loop is electronics, wiring and toggle switch. The circuit is non vulnerable to chatter. No analysis is required.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA	-	Chatter acceptable.
NV	-	Not vulnerable (mechanically actuated contacts and solid state relays).
GERS	-	Seismically adequate based on GERS_____; include GERS number.
NA	-	Component not affected by relays.
CR	-	Corrective action required.
OA	-	Operator action.
DC	-	Direct control.
AS	-	See Assessment Sheet for details.
F	-	Fire Protection no QTR available.
-	-	No entry necessary.

Prepared by RPF Date 02/03/95

Reviewed by GSB Date 07/20/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Mcmo
PI-RC-402A	RE-22BM	TOGGLE SWITCH	W 2429A31	---------	RK-PRI-PROC-17	----------	NV	--
2110B		----------	----------	---------	----------	----------	---------	--
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RCS/WIDE RANGE PRESSURE INDICATOR

The entire loop is electronics, wiring and toggle switch. The circuit is not vulnerable to chatter. No analysis not required.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/03/95

Reviewed by GSB Date 07/20/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
PT-RC-403	RE-22BM	TOGGLE SWITCH	W 2429A31	----------	[illegible]-PRI-PROC-12	----------	NV	--
		43-P403	W OT2	----------	[illegible]S-BIP-PNL1	W OT2	NV	--
2111A		----------	----------	----------	----------	----------	----------	--
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RCS/WIDE RANGE RCS PRESSURE TRANS

The entire loop is electronics, wiring and toggle switch. The circuit is not vulnerable to chatter. No analysis is required.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/03/95

Reviewed by GSB Date 07/20/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
PI-RC-403	RE-22BM	TOGGLE SWITCH	W 2429A31	----------	RK-PRI-PROC-12	----------	NV	--
		43-P403	W OT2	----------	TRS-BIP-PNL1	W OT2	NV	--
2111B		----------	----------	----------	----------	----------	----------	--
		----------	----------	----------	----------	----------	----------	--
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RCS/WIDE RANGE PRESSURE INDICATOR

The entire loop is electronics, wiring and toggle switch. The circuit is not vulnerable to chatter. No analysis is required.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/03/95

Reviewed by GSB Date 07/20/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
SOV-RC-455C1	RE-21JT	----------	----------	----------	----------	----------	----------	--
		----------	----------	----------	----------	----------	----------	--
2122		----------	----------	----------	----------	----------	----------	--
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(PCV-RC-455C) SOLENOID

Each PORV has 2 SOV's, both of which must be energized to OPEN the valve. No relay analysis is performed because it is included in the PORV analysis. (lines 2105, 2107, and 2109)

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/27/95

Reviewed by GSB Date 07/20/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
SOV-RC-455C2	RE-21JT							--
								--
2123								--
								--
								--
								--
								--
								--

(PCV-[illegible]-455C) SOLENOID

Each PORV has 2 SOV's, both of which must be energized to OPEN the valve. No relay analysis is performed because it is included in the PORV analysis. (Lines 2105, 2107, and 2109)

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 01/27/95

Reviewed by GSB Date 07/20/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
SOV-RC-455D1	RE-21JT							--
								--
2124								--
								--
								--
								--
								--
								--

(PCV-RC-455D) SOLENOID

Each PORV has 2 SOV's, both of which must be energized to OPEN the valve. No relay analysis is required because it is included in the PORV analysis. (Lines 2105, 2107, and 2109)

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/27/95

Reviewed by GSB Date 07/20/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
SOV-RC-455D2	RE-21JT							
2125								

(PCV-RC-455D) SOLENOID

Each PORV has 2 SOV's, both of which must be energized to OPEN the valve. No relay analysis is performed because it is included in the PORV analysis. (Lines 2105, 2107, and 2109)

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RFP Date 01/27/95

Reviewed by GSB Date 07/20/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
SOV-RC-456-1	RE-21JT							--
								--
2126								--
								--
								--
								--
								--
								--

(PCV-RC-456) SOLENOID

Each PORV has 2 SOV's, both of which must be energized to OPEN the valve. No relay analysis is performed beacuse it is included in the PORV analysis. (Lines 2105, 2107, and 2109)

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/27/95

Reviewed by GSB Date 07/20/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
SOV-RC-456-2	RE-21JT							--
								--
2127								--
								--
								--
								--
								--
								--

(PCV-RC-456) SOLENOID

Each PORV has 2 SOV's, both of which must be energized to OPEN the valve. No relay analysis is performed because it is included in the PORV analysis. (Lines 2105, 2107, and 2109)

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/27/95

Reviewed by GSB Date 07/20/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
LT-QS-100A	RE-22ET							--
								--
2201A								--
								--
								--
								--
								--
								--

QS/RWST LEVEL TRANSMITTER

Same as line 1201A.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/20/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
LI-QS-100A	RE-22ET							--
								--
2201B								--
								--
								--
								--
								--
								--

QS/RWST LEVEL INDICATOR

Sams as Line 1201B.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/20/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
LT-QS-100B	RE-22ET							--
								--
2202A								--
								--
								--
								--
								--
								--

QS/RWST LEVEL TRANSMITTER

Same as Line 1202A.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/20/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
LI-QS-100B	RE-22ET							--
								--
2202B								--
								--
								--
								--
								--
								--

QS/RWST LEVEL INDICATOR

Same as Line 1202B.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/20/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
LT-QS-100C	RE-22EV							
2203A								

QS/RWST LEVEL TRANSMITTER

Same as Line 1203A.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/20/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
LI-QS-100C	RE-22EV							--
								--
2203B								--
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QS/RWST LEVEL RECORDER

Same as Line 1203B.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/20/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
LT-QS-100D	RE-22EV							--
								--
2204A								--
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								--

QS/RWST LEVEL TRANSMITTER

Same as Line 1204A.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS _____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/20/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
LR-QS-100	RE-22EV	----------	----------	----------	----------	----------	----------	--
		----------	----------	----------	----------	----------	----------	--
2204B		----------	----------	----------	----------	----------	----------	--
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QS/RWST LEVEL RECORDER

Same as Line 1204B.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/20/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
FT-CH-122	RE-22L							--
								--
2205A								--
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								--
								--

CH/CHARGING HEADER FLOW TRANSMITTER

Same as Line 1205B.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/20/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
FI-CH-122A	RE-22L							--
								--
2205B								--
								--
								--
								--
								--
								--

CH/CHARGING HEADER FLOW INDICATOR

Same as Line 1205B.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS_____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- DC - Direct control.
- AS - See Assessment Sheet for details.
- F - Fire Protection no QTR available.
- - - No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/20/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
FCV-CH-122	RE-22L							
2206								

CH/CHARGING FLOW CONTROL VALVE SOLENOID

The entire instrument loop is electronics and wiring and is not vulnerable to chatter.

FCV-CH-122 is an air operated valve which fails OPEN on loss of air. Flow can be controlled by manually operated valves CH-28 or 30.

SOV-CH-122 will transfer control of FCV-CH-122 to the SDP if energized.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA	-	Chatter acceptable.
NV	-	Not vulnerable (mechanically actuated contacts and solid state relays).
GERS	-	Seismically adequate based on GERS_____; include GERS number.
NA	-	Component not affected by relays.
CR	-	Corrective action required.
OA	-	Operator action.
DC	-	Direct control.
AS	-	See Assessment Sheet for details.
F	-	Fire Protection no QTR available.
-	-	No entry necessary.

Prepared by RPF Date 02/03/95

Reviewed by GSB Date 07/18/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
SOV-CH-122	RE-22L							--
								--
2206C								--
								--
								--
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								--

CH/CHARGING FLOW CONTROL VALVE

Same as Line 1206.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/20/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
QS-TK-1	RE-63V	----------	----------	----------	----------	----------	----------	--
		----------	----------	----------	----------	----------	----------	--
2207		----------	----------	----------	----------	----------	----------	--
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QS/RWST

THIS LINE NO. IS A REPEAT OF LINE NO. 1207.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 11/15/95

Reviewed by GSB Date 11/15/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-CH-115B	RE-21FR							--
								--
2208								--
								--
								--
								--
								--
								--

CH/RWST-CHARGING PUMP ISOLATION

Same as Line 1208.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/20/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-CH-115C	RE-21FR	----------	----------	----------	----------	----------	----------	--
		----------	----------	----------	----------	----------	----------	--
2209		----------	----------	----------	----------	----------	----------	--
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CH/VCT ISOLATION VALVE

Same as Line 1209.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS_____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- DC - Direct control.
- AS - See Assessment Sheet for details.
- F - Fire Protection no QTR available.
- - - No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/20/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-CH-115D	RE-21FR							
2210								

CH/RWST-CHARGING PUMP ISOLATION

Same as Line 1210.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/20/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-CH-115E	RE-21FR	----------	----------	----------	----------	----------	----------	--
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2211		----------	----------	----------	----------	----------	----------	--
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CH/VCT ISOLATION VALVE

Same as Line 1211.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/20/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
CH-P-1A	RE-21FN							--
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2212								--
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CH/CHARGING PUMP

Same as Line 1212.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/20/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
CH-P-1B	RE-21FN	----------	----------	----------	----------	----------	----------	--
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2213		----------	----------	----------	----------	----------	----------	--
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CH/CHARGING PUMP

Same as Line 1213.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA	-	Chatter acceptable.
NV	-	Not vulnerable (mechanically actuated contacts and solid state relays).
GERS	-	Seismically adequate based on GERS_____; include GERS number.
NA	-	Component not affected by relays.
CR	-	Corrective action required.
OA	-	Operator action.
DC	-	Direct control.
AS	-	See Assessment Sheet for details.
F	-	Fire Protection no QTR available.
-	-	No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/20/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
CH-P-1C	RE-21FP							--
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2214								--
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								--
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CH/CHARGING PUMP

Same as Line 1214.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS _____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/20/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-CH-289	RE-21FS							--
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2215								--
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CH/CHARGING HEADER ISOLATION

Same as Line 1215

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/20/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-CH-310	RE-21FS	----------	----------	----------	----------	----------	----------	--
		----------	----------	----------	----------	----------	----------	--
2216		----------	----------	----------	----------	----------	----------	--
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CH/CHARGING HEADER ISOLATION

Sams as Line 1216.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA	-	Chatter acceptable.
NV	-	Not vulnerable (mechanically actuated contacts and solid state relays).
GERS	-	Seismically adequate based on GERS_____; include GERS number.
NA	-	Component not affected by relays.
CR	-	Corrective action required.
OA	-	Operator action.
DC	-	Direct control.
AS	-	See Assessment Sheet for details.
F	-	Fire Protection no QTR available.
-	-	No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/20/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-CH-275A	RE-21FR							--
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2217								--
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								--
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CH/CH-P-1A MINIFLOW ISOLATION

Same as Line 1217.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/20/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-RW-103A	RE-31LA	CS (1-)	W OT2	----------	BENCHBOARD	W OT2	NV	--
		CONTACTOR 420/C	ALLIS TY2	DE/NO	MCC1-E3, CUB B	ALLIS CHALMERS	RLY-CON.3	AS
4116		49	ALLIS TY2	NC	MCC1-E3, CUB B	ALLIS CHALMERS	RLY-CON.3	AS
		LS#4 & 5	Limitorque	----------	MOV-RW-103A	LIMITORQUE	NV	--
		TS# 18	LIMITORQUE	----------	MOV-RW-103A	LIMITORQUE	NV	--
		K643	W AR440AR	DE/NO	RX-REAC-PROT-3A	W AR440AR	RLY-AI1.4	AS
		----------	----------	----------	----------	----------	----------	--
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RW/'A'HEADER RW FLOW TO RECIRC SPRAY

MOV-RW-103's isolate the River Water Header from the Recirc Spray Heat Exchangers. They are NSA CLOSED and must remain CLOSED after an earthquake unless the plant needs to supply the Aux Feed Pumps with River Water after WT-TK-10 has been depleted in which case the valves will be required to OPEN.

Chatter of open contactor 420 and relay K643 could cause the valves to OPEN.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 01/27/95

Reviewed by GSB Date 07/30/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MO' W-103B	RE-21LA	CS (1-)	W OT2	----------	BENCHBOARD	W OT2	NV	--
		CONTACTOR 420/C	ALLIS TY2	DE/NO	MCC1-E4, CUB B	ALLIS CHALMERS	RLY-CON.3	AS
4117		49	ALLIS TY2	NC	MCC1-E4, CUB B	ALLIS CHALMERS	RLY-CON.3	AS
		LS#4 & 5	LIMITORQUE	----------	MOV-RW-103B	LIMITORQUE	NV	--
		TS# 18	LIMITORQUE	----------	MOV-RW-103B	LIMITORQUE	NV	--
		K643	W AR440AR	DE/NO	RK-REAC-PROT-3B	W AR440AR	RLY-AI1.4	AS
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RW/'A'HEADER RW FLOW TO RECIRC SPRAY

MOV-RW-103's isolate the River Water Header from the Recirc Spray Heat Exchangers. They are NSA CLOSED and will remain CLOSED after an earthquake unless the plant needs to supply the Aux Feed Pumps with River Water after WT-TK-10 has been depleted in which case the valves will be required to OPEN.

Chatter of open contactor 420 and relay K643 could cause the valves to OPEN.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/27/95

Reviewed by GSB Date 07/30/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
FR-MS-478	RE-22Z	TOGGLE SWITCH	W 2429A31	----------	RK-PRI-PROC-19	----------	NV	--
		BISTABLE SWITCH	W 2429A31	----------	RK-PRI-PROC-19	----------	NV	--
4118		1/FM-478A	AB 800T-H2	----------	MCB	----------	NV	--
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FW/RC-E-1A LEVEL RECORDER

The entire instrument loop is electronics, wiring and toggle and bistable switches and is not vulnerable to chatter.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA	-	Chatter acceptable.
NV	-	Not vulnerable (mechanically actuated contacts and solid state relays).
GERS	-	Seismically adequate based on GERS_____; include GERS number.
NA	-	Component not affected by relays.
CR	-	Corrective action required.
OA	-	Operator action.
DC	-	Direct control.
AS	-	See Assessment Sheet for details.
F	-	Fire Protection no QTR available.
-	-	No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/30/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
FR-MS-488	[illegible]-22AA	TOGGLE SWITCH	W 2429A31	----------	RK-PRI-PROC-20	----------	NV	--
		BISTABLE SWITCH	W 2429A31	----------	RK-PRI-PROC-20	----------	NV	--
4119		1/FM-478A	AB 800T-H2	----------	MCB	----------	NV	--
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FW/RC-E-1B LEVEL RECORDER

The entire instrument loop is electronics, wiring and toggle and bistable switches and is not vulnerable to chatter.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA	-	Chatter acceptable.
NV	-	Not vulnerable (mechanically actuated contacts and solid state relays).
GERS	-	Seismically adequate based on GERS_____; include GERS number.
NA	-	Component not affected by relays.
CR	-	Corrective action required.
OA	-	Operator action.
DC	-	Direct control.
AS	-	See Assessment Sheet for details.
F	-	Fire Protection no QTR available.
-	-	No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/30/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
FR-MS-498	RE-22AB	TOGGLE SWITCH	W 2429A31	----------	RK-PRI-PROC-18	----------	NV	--
		BISTABLE SWITCH	W 2429A31	----------	RK-PRI-PROC-18	----------	NV	--
4120		1/FM-478A	AB 800T-H2	----------	MCB	----------	NV	--
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FW/RC-E-1C LEVEL RECORDER

The entire instrument loop is electronics, wiring and toggle and bistable switches and is not vulnerable to chatter.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS_____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- DC - Direct control.
- AS - See Assessment Sheet for details.
- F - Fire Protection no QTR available.
- - - No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/30/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
LT-FW-474	RE-22W	TOGGLE SWITCH	W 2429A31	----------	RK-PRI-PROC-2	----------	NV	--
		BISTABLE SWITCH	W 2429A31	----------	RK-PRI-PROC-2	----------	NV	--
4121A		----------	----------	----------	----------	----------	----------	--
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FW/RC-E-1A NARROW RANGE LEVEL TRANSMITTE

The entire instrument loop is electronics, wiring and toggle and bistable switches and is not vulnerable to chatter.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/30/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
LI-FW-474	RE-22W	TOGGLE SWITCH	W 2429A31	----------	RK-PRI-PROC-2	----------	NV	--
		BISTABLE SWITCH	W 2429A31	----------	RK-PRI-PROC-2	----------	NV	--
4121B		----------	----------	----------	----------	----------	----------	--
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FW/RC-E-1A NARROW RANGE LEVEL INDICATOR

The entire instrument loop is electronics, wiring and toggle and bistable switches and is not vulnerable to chatter.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/30/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
LT-FW-475	RE-22W	TOGGLE SWITCH	W 2429A3i	----------	RK-PRI-PROC-13	----------	NV	--
		BISTABLE SWITCH	W 2429A31	----------	RK-PRI-PROC-13	----------	NV	--
4122A		----------	----------	----------	----------	----------	----------	--
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FW/RC-E-1A NARROW RANGE LEVEL TRANSMITTE

The entire instrument loop is electronics, wiring and toggle and bistable switches and is not vulnerable to chatter.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA	-	Chatter acceptable.
NV	-	Not vulnerable (mechanically actuated contacts and solid state relays).
GERS	-	Seismically adequate based on GERS_____; include GERS number.
NA	-	Component not affected by relays.
CR	-	Corrective action required.
OA	-	Operator action.
DC	-	Direct control.
AS	-	See Assessment Sheet for details.
F	-	Fire Protection no QTR available.
-	-	No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/30/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
LI-FW-475	RE-22W	TOGGLE SWITCH	W 2429A31	----------	RK-PRI-PROC-13	----------	NV	--
		BISTABLE SWITCH	W 2429A31	----------	RK-PRI-PROC-13	----------	NV	--
4122B		----------	----------	----------	----------	----------	----------	--
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FW/RC-E-1A NARROW RANGE LEVEL INDICATOR

The entire instrument loop is electronics, wiring and toggle and bistable switches and is not vulnerable to chatter.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/30/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
LT-FW-476	RE-223	TOGGLE SWITCH	W 2429A31	----------	RK-PRI-PROC-15	----------	NV	--
		BISTABLE SWITCH	W 2429A31	----------	RK-PRI-PROC-15	----------	NV	--
4123A		----------	----------	----------	----------	----------	----------	--
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FW/RC-E-1A NARROW RANGE LEVEL TRANSMITTE

The entire instrument loop is electronics, wiring and toggle and bistable switches and is not vulnerable to chatter.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/30/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-CH-275B	RE-21FR							--
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2218								--
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CH/CH-P-1B MINIFLOW ISOLATION

Same as Line 1218.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/06/95

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Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-CH-275C	RE-21FR							
2219								

CH/CH-P-1C MINIFLOW ISOLATION

Same as Line 1219.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS_____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- DC - Direct control.
- AS - See Assessment Sheet for details.
- F - Fire Protection no QTR available.
- - - No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/20/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-CH-373	RE-21FR							--
								--
2220								--
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CH/CHARGING PUMP RECIRC ISOLATION

Same as Line 1220.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - - Chatter acceptable.
  NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  GERS - Seismically adequate based on GERS _____; include GERS number.
  NA - Component not affected by relays.
  CR - Corrective action required.
  OA - Operator action.
  DC - Direct control.
  AS - See Assessment Sheet for details.
  F - Fire Protection no QTR available.
  - - No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/20/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-SI-867A	RE-21XT							--
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2222								--
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SI/BIT ISOLATION VALVE

Same as 1222.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/20/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-SI-867B	RE-21XT							--
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2223								--
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SI/BIT ISOLATION VALVE

Same as 1223.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/20/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
PRZ-HTR-A	RE-21JR	CS (1-)	W TYPE W	----------	BENCHBOARD	W TYPE W	NV	--
		43-8N12X	GE HEA	NOP/NC	PNL-REL-33	12HEA61C238X2	RLY-ALO.2	AS
2224		62-RN1100X1	W MG-6	DE/NC	480V BUS 1N	MODIFIED	DC/CA	--
		PB (TRANSFER)	W OT2	----------	----------	----------	NV----	--
		----------	----------	----------	----------	----------	----------	--
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		----------	----------	----------	----------	----------	----------	--
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RC/PRESSURIZER HEATER

The Pressurizer Heaters may be ON or OFF when an earthquake occurs. It is acceptable if any heaters that are ON trip but it is essential that the heaters are operable after an earthquake (i.e. they must be capable of manual actuation by an operator when needed for pressure control). There are 4 possible auto trips of the circuit breaker. 3 of the 4 do not lock out the CLOSING circuit and thererfore chatter is acceptable. The undervoltage trip does lock the breaker out. It is essential that chatter does not cause lockout of the breaker closing circuit.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/27/95

Reviewed by GSB Date 07/21/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
PZR-HTR-B	RE-21JR	CS (1-)	W TYPE W	----------	BENCHBOARD	W TYPE W	NV	--
		43-9P12X	GE HEA	NOP/NC	PNL-REL-34	12HEA61C238X2	RLY-ALO.2	AS
2225		52-RP1100X1	W MG-6	DE/NC	480V BUS 1P	SPECIAL	DC/CA	--
		PB (TRANSFER)	W OT2	----------	----------	----------	NV	--
		----------	----------	----------	----------	----------	----------	--
		----------	----------	----------	----------	----------	----------	--
		----------	----------	----------	----------	----------	----------	--
		----------	----------	----------	----------	----------	----------	--

RC/PRESSURIZER HEATER

The Pressurizer Heaters may be left ON or OFF when an earthquake occurs. It is acceptable if any heaters that are ON trip but it is essential that the heaters are operable after an earthquke (i.e. they must be capable of manual actuation by an operator when needed for pressure control). There are 4 possible auto trips of the circuit breaker. 3 of the 4 do not lock out the CLOSING circuit and therefore, chatter is acceptable. The undervoltage trip does lock the breaker out. It is essential that chatter does not cause lockout of the breaker closing circuit.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 08/27/95

Reviewed by GSB Date 07/21/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
PZR-HTR-D	RE-21JS	CS (1-)	W TYPE W	----------	BENCHBOARD	W TYPE W	NV	--
		62-RN100X2	W MG-6	DE/NO	480V BUS 1N	SPECIAL	DC/CA	--
2226		----------	----------	----------	----------	----------	----------	--
		----------	----------	----------	----------	----------	----------	--
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RC/PRESSURIZER HEATER

The Pressurizer Heaters may be left ON or OFF when an earthquake occurs. It is acceptable if any heaters that are ON trip but it is essential that the heaters are operable after an earthquake (i.e. they must be capable of manual actuation by an operator when needed for pressure control). There are 4 possible auto trips of the circuit breaker. 3 of the 4 do not lock out the closing circuit and thererfore, chatter is acceptable. The undervoltage trip does lock the breaker out. It is essential that chatter does not cause lockout of the breaker closing circuit.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/27/95

Reviewed by GSB Date 07/21/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
PZR-HTR-E	RE-21JS	CS (1-)	W TYPE W	----------	BENCHBOARD	W TYPE W	NV	--
		62-RP100X2	W MG-6	DE/NO-----	480V BUS 1N	SPECIAL	DC/CA	--
2227		---	---	---	---	---	---	--
		---	---	---	---	---	---	--
		---	---	---	---	---	---	--
		---	---	---	---	---	---	--
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RC/PRESSURIZER HEATER

The Pressurizer Heaters may be left ON or OFF when an earthquake occurs. It is acceptable if any heaters that are ON trip but it is essential that the heaters are operable after an earthquake (i.e. they must be capable of manual actuation by an operator when needed for pressure control). There are 4 possible auto trips of the circuit breaker. 3 of the 4 do not lock out the closing circuit and therefore, chatter is acceptable. The undervoltage trip does lock the breaker out.
It is essential that chatter does not cause lockout of the breaker closing circuit.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/27/95

Reviewed by GSB Date 07/21/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
FT-CH-124	RE-22G							--
								--
2228A								--
								--
								--
								--
								--
								--

CH/RCP-1C SEAL INJECTION FLOW TRANSMITTE

The entire loop is electronics, wiring and is not vulnerable to chatter. No analysis required.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/03/95

Reviewed by GSB Date 07/21/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
FI-CH-124	RE-22G							--
								--
2228B								--
								--
								--
								--
								--
								--

CH/RCP-1C SEAL INJECTION FLOW INDICATOR

The entire loop is electronics, wiring and is not vulnerable to chatter. No analysis required.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/03/95

Reviewed by GSB Date 07/21/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
FT-CH-127	RE-22G							
2229A								

CH/RCP-1B SEAL INJECTION FLOW TRANSMITTE

The entire loop is electronics, wiring and is not vulnerable to chatter. No analysis required.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
\- - No entry necessary.

Prepared by RPF Date 02/03/95

Reviewed by GSB Date 07/21/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
FI-CH-127	RE-22G							--
								--
2229B								--
								--
								--
								--
								--
								--

CH/RCP-1B SEAL INJECTION FLOW INDICATOR

The entire loop is electronics, wiring and is not vulnerable to chatter. No analysis required.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 02/03/95

Reviewed by GSB Date 07/21/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
FT-CH-130	RE-22G							--
								--
2230A								--
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								--
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								--

CH/RCP-1A SEAL INJECTION FLOW TRANSMITTE

The entire loop is electronics, wiring and is not vulnerable to chatter. No analysis required.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/03/95

Reviewed by GSB Date 07/21/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
FI-CH-130	RE-22G							
2230B								

CH/RCP-1A SEAL INJECTION FLOW INDICATOR

The entire loop is electronics, wiring and is not vulnerable to chatter. No analysis required.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/03/95

Reviewed by GSB Date 07/21/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
LT-QS-100A	RE-22ET							--
								--
3101A								--
								--
								--
								--
								--
								--

QS/RWST LEVEL TRANSMITTER

SAME AS 1INE 1201A.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/21/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
LI-QS-100A	RE-22ET	----------	----------	----------	----------	----------	----------	--
		----------	----------	----------	----------	----------	----------	--
3101B		----------	----------	----------	----------	----------	----------	--
		----------	----------	----------	----------	----------	----------	--
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QS/RWST LEVEL INDICATOR

Same as Line 1201B.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/21/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
LT-QS-100B	RE-22ET							--
								--
3102A								--
								--
								--
								--
								--
								--

QS/RWST LEVEL TRANSMITTER

Same as Line 1202A.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/21/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
LI-QS-100B	RE-22ET							--
								--
3102B								--
								--
								--
								--
								--
								--

QS/RWST LEVEL INDICATOR

Same as Line 1202B.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/21/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
LT-QS-100C	RE-22EV							--
								--
3103A								--
								--
								--
								--
								--
								--

QS/RWST LEVEL TRANSMITTER

Same as Line 1203A.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include WOG number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/21/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
LI-QS-100C	RE-22EV							--
								--
3103B								--
								--
								--
								--
								--
								--

QS/RWST LEVEL RECORDER

Same as Line 1203B.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/21/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
LT-QS-100D	RE-22EV							--
								--
3104A								--
								--
								--
								--
								--
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QS/RWST LEVEL TRANSMITTER

Same as Line 1204A.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/21/95

A-46 RELAY SCREENING AND EVALUATION FORM G-4 - RELAY TABULATION

PLANT Beaver Valley Unit 1

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
LR-QS-100	RE-22EV							--
								--
3104B								--
								--
								--
								--
								--
								--

QS/RWST LEVEL RECORDER

Same as Line 1204B.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/21/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
FT-CH-122	RE-22L							--
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3105A								--
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								--
								--

CH/CHARGING HEADER FLOW TRANSMITTER

Same as Line 1205A.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/21/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
FI-CH-122A	RE-22L							--
								--
3105B								--
								--
								--
								--
								--
								--

CH/CHARGING HEADER FLOW INDICATOR

Same as Line 1205B.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/21/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
FCV-CH-122	RE-22L							--
								--
3106								--
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								--
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CH/CHARGING FLOW CONTROL VALVE SOLENOID

The entire instrument loop is electronics and wiring and is not vulnerable to chatter.

FCV-CH-122 is an air operated valve which fails OPEN on loss of air. Flow can be controlled by manually operated valves CH-28 or 30.

SOV-CH-122 will transfer control of FCV-CH-122 to the SDP if energized.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/03/95

Reviewed by GSB Date 07/18/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
SOV-CH-122	RE-22L							
3106C								

CH/CHARGING FLOW CONTROL VALVE

Same as Line 1206.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS _____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
\- - No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/21/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
QS-TK-1	RE-63V	----------	----------	----------	----------	----------	----------	--
		----------	----------	----------	----------	----------	----------	--
3107		----------	----------	----------	----------	----------	----------	--
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QS/RWST

THIS LINE NO. IS A REPEAT OF LINE NO. 1207.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS _____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 11/15/95

Reviewed by GSB Date 11/15/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-CH-115B	RE-21FR	----------	----------	----------	----------	----------	----------	--
		----------	----------	----------	----------	----------	----------	--
3108		----------	----------	----------	----------	----------	----------	--
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CH/RWST-CHARGING PUMP ISOLATION

Same as Line 1208.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 01/27/95

Reviewed by GSB Date 07/21/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-CH-115C	RE-21fR							
3109								

CH/VCT ISOLATION VALVE

Same as Line 1209.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/27/95

Reviewed by GSB Date 07/21/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-CH-115D	RE-21FR							--
								--
3110								--
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								--
								--
								--
								--

CH/RWST-CHARGING PUMP ISOLATION

Same as Line 1210.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/27/95

Reviewed by GSB Date 07/21/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-CH-115E	RE-21FR							--
								--
3111								--
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CH/VCT ISOLATION VALVE

Same as Line 1211.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 01/27/95

Reviewed by GSB Date 07/21/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
CH-P-1A	RE-21FN							--
								--
3112								--
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								--
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CH/CHARGING PUMP

Same as Line 1212.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS _____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/27/95

Reviewed by GSB Date 07/21/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
CH-P-1B	RE-21FN	----------	----------	----------	----------	----------	----------	--
		----------	----------	----------	----------	----------	----------	--
3113		----------	----------	----------	----------	----------	----------	--
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CH/CHARGING PUMP

Same as Line 1213.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 01/27/95

Reviewed by GSB Date 07/21/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
CH-P-1C	RE-21FP							--
								--
3114								--
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								--
								--
								--

CH/CHARGING PUMP

Same as Line 1214.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/27/95

Reviewed by GSB Date 07/21/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-CH-289	RE-21FS							
3115								

CH/CHARGING HEADER ISOLATION

Same as Line 1215.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/27/95

Reviewed by GSB Date 07/21/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-CH-310	RE-21FS							--
								--
3116								--
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								--
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CH/CHARGING HEADER ISOLATION

Same as Line 1216.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/27/95

Reviewed by GSB Date 07/21/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-CH-275A	RE-21FR							--
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3117								--
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								--
								--
								--

CH/CH-P-1A MINIFLOW ISOLATION

Same as Line 1217.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 01/27/95

Reviewed by GSB Date 07/21/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-CH-275B	RE-21FR							--
								--
3118								--
								--
								--
								--
								--
								--

CH/CH-P-1B MINIFLOW ISOLATION

Same as Line 1218.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTP available.
- - No entry necessary.

Prepared by RPF Date 01/27/95

Reviewed by GSB Date 07/21/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-CH-275C	RE-21FR	----------	----------	----------	----------	----------	----------	--
		----------	----------	----------	----------	----------	----------	--
3119		----------	----------	----------	----------	----------	----------	--
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CH/CH-P-1C MINIFLOW ISOLATION

Same as Line 1219.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 01/27/95

Reviewed by GSB Date 07/21/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-CH-373	RE-21FR							
3120								

CH/CHARGING PUMP RECIRC ISOLATION

Same as Line 1220.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS _____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 01/27/95

Reviewed by GSB Date 07/21/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-SI-867A	RE-21XT							--
								--
3122								--
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								--
								--
								--
								--

SI/BIT ISOLATION VALVE

Smae as Line 1222.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/27/95

Reviewed by GSB Date 07/21/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-SI-867B	RE-21XT							--
								--
3123								--
								--
								--
								--
								--
								--

SI/BIT ISOLATION VALVE

Same as Line 1223.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/27/95

Reviewed by GSB Date 07/21/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
LT-RC-459	RE-22BH	TOGGLE SWITCH	W 2429A31	----------	RK-PRI-PROC-3	2429A31H01	NV	--
		BISTABLE SWITCH	W 2429A31	----------	RK-PRI-PROC-3	2429A31H01	NV	--
3124A		1/LR-RC-459	W OT1	----------	VERTICAL BOARD	W OT1	NV	--
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PRZR LEVEL TRANSMITTER

The entire loop is electronics, wiring, toggle and bistable switches and is not vulnerable to chatter.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/07/95

Reviewed by GSB Date 07/21/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
LI-RC-459A	RE-22BH	TOGGLE SWITCH	W 2429A31	----------	RK-PRI-PROC-3	2429A31H01	NV	--
		BISTABLE SWITCH	W 2429A31	----------	RK-PRI-PROC-3	2429A31H01	NV	--
3124B		1/LR-RC-459	W OT1	----------	VERTICAL BOARD	W OT1	NV	--
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PRZR LEVEL INDICATOR

The entire loop is electronics, wiring, toggle and bistable switches and are not vulnerable to chatter.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactor , include comments and references if needed to explain conclusion.

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically actuated contacts and solid state relays)
- GERS - Seismically adequate based on GERS_____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- DC - Direct control.
- AS - See Assessment Sheet for details.
- F - Fire Protection no QTR available.
- - - No entry necessary.

Prepared by RPF Date 02/07/95

Reviewed by GSB Date 07/21/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
LT-RC-460	RE-22BJ	TOGGLE SWITCH	W 2429A31	----------	RK-PRI-PROC-12	2429A31H01	NV	--
		BISTABLE SWITC	W 2429A31	----------	RK-PRI-PROC-12	2429A31H01	NV	--
3125A		HSS-1/LM-RC459	ELECTRO SWITCH	----------	VERTICAL BOARD	SERIES 24	NV	--
		43-L460 TRS-BIP	W OT2	----------	TRS-BIP-PNL1	W OT2	NV	--
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PZR LEVEL TRANSMITTER

The entire loop is electronics, wiring, toggle and bistable switches and is not vulnerable to chatter.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/07/95

Reviewed by GSB Date 07/21/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
LI-RC-460	RE-22BJ	TOGGLE SWITCH	W 2429A31	----------	RK-PRI-PROC-12	2429A31H01	NV	--
		BISTABLE SWITCH	W 2429A31	----------	RK-PRI-PROC-12	2429A31H01	NV	--
3125B		HSS-1/LM-RC459	ELECTRO SWITCH	----------	VERTICAL BOARD	SERIES 24	NV	--
		43-L460 TRS-BIP	W OT2	----------	TRS-BIP-PNL1	W OT2	NV	--
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PRZR LEVEL INDICATOR

The entire loop is electronics, wiring, toggle and bistable switches and is not vulnerable to chatter.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/07/95

Reviewed by GSB Date 07/21/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
LT-RC-461	RE-22BK	TOGGLE SWITCH	W 2429A31	----------	RK-PRI-PROC-16	2429A31H01	NV	--
		BISTABLE SWITCH	W 2429A31	----------	RK-PRI-PROC-16	2429A31H01	NV	--
3126A		----------	----------	----------	----------	----------	----------	--
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PRZR LEVEL TRANSMITTER

The entire loop is electronics, wiring, toggle and bistable switches and is not vulnerable to chatter.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/07/95

Reviewed by GSB Date 07/21/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
LI-RC-461	RE-22BK	TOGGLE SWITCH	W 2429A31	----------	RK-PRI-PROC-16	2429A31H01	NV	--
		BISTABLE SWITCH	W 2429A31	----------	RK-PRI-PROC-16	2429A31H01	NV	--
3126B		---	---	---	---	---	---	--
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PRZR LEVEL INDICATOR

The entire loop is electronics, wiring, toggle and bistable switches and is not vulnerable to chatter.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/07/95

Reviewed by GSB Date 07/21/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-SI-863A	RE-21KK							--
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3127								--
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								--

1A LHSI TO CHG PUMPS SUPPLY VALVE

Same as Line 1237.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/27/95

Reviewed by GSB Date 07/29/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-SI-863B	RE-2iKK	----------	----------	----------	----------	----------	----------	--
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3128		----------	----------	----------	----------	----------	----------	--
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1B LHSI TO CHG PUMPS SUPPLY VALVE

Same as LIne 1238.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA	-	Chatter acceptable.
NV	-	Not vulnerable (mechanically actuated contacts and solid state relays).
GERS	-	Seismically adequate based on GERS_____; include GERS number.
NA	-	Component not affected by relays.
CR	-	Corrective action required.
OA	-	Operator action.
DC	-	Direct control.
AS	-	See Assessment Sheet for details.
F	-	Fire Protection no QTR available.
-	-	No entry necessary.

Prepared by RPF Date 01/27/95

Reviewed by GSB Date 07/29/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
HCV-CH-389	RE-21FU							--
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3129								--
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								--
								--

CH/EICESS LETDOWN DRAIN DIVERT VALVE

Same as Line 1233.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS _____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 01/27/95

Reviewed by GSB Date 07/29/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-CH-370	RE-21FS							--
								--
3130								--
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								--
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								--

CH/SEAL INJ HEADER ISOLATION

Same as line 1228.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 01/27/95

Reviewed by GSB Date 07/29/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
HCV-CH-186	RE-22G	----------	----------	----------	----------	----------	----------	--
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3131		----------	----------	----------	----------	----------	----------	--
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CH/RCP SEAL SUPPLY, HAND CONT

Same as Line 1229.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/29/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
FT-CH-124	RE-22G							--
								--
3132A								--
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								--
								--
								--

CH/RCP-1C SEAL INJECTION FLOW TRANSMITTE

Same as Line 2228A.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/29/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
FI-CH-124	RE-22G							
3132B								

CH/RCP-1C SEAL INJECTION FLOW INDICATOR

Same as Line 2228B.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/29/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
FT-CH-127	RE-22G							
3133A								

CH/RCP-1B SEAL INJECTION FLOW TRANSMITTE

Same as Line 2229A.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/29/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
FI-CH-127	RE-22G							--
								--
3133B								--
								--
								--
								--
								--
								--

CH/RCP-1B SEAL INJECTION FLOW INDICATOR

Same as Line 2229B.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/29/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
FT-CH-130	RE-22G							--
								--
3134A								--
								--
								--
								--
								--
								--

CH/RCP-1A SEAL INJECTION FLOW TRANSMITTE

Same ae Line 2230A.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/29/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
FI-CH-130	RE-22G							--
3134B								--
								--
								--
								--
								--
								--

CH/RCP-1A SEAL INJECTION FLOW INDICATOR

Same as Line 2230B.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/29/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-RC-535	RE-21JQ	----------	----------	----------	----------	----------	----------	--
		----------	----------	----------	----------	----------	----------	--
3201		----------	----------	----------	----------	----------	----------	--
		----------	----------	----------	----------	----------	----------	--
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RC/PRESSURIZER PORV ISOLATION

Same as Line 2104.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA	-	Chatter acceptable.
NV	-	Not vulnerable (mechanically actuated contacts and solid state relays).
GERS	-	Seismically adequate based on GERS_____; include GERS number.
NA	-	Component not affected by relays.
CR	-	Corrective action required.
OA	-	Operator action.
DC	-	Direct control.
AS	-	See Assessment Sheet for details.
F	-	Fire Protection no QTR available.
-	-	No entry necessary.

Prepared by RPP Date 01/27/95

Reviewed by GSB Date 07/29/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-RC-536	RE-21JQ							--
								--
3202								--
								--
								--
								--
								--
								--

RC/PRESSURIZER PORV ISOLATION

Same as Line 2106.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 01/27/95

Reviewed by GSB Date 07/29/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-RC-537	RE-21JQ	----------	----------	----------	----------	----------	----------	--
		----------	----------	----------	----------	----------	----------	--
3203		----------	----------	----------	----------	----------	----------	--
		----------	----------	----------	----------	----------	----------	--
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		----------	----------	----------	----------	----------	----------	--

RC/PRESSURIZER PORV ISOLATION

Same as Line 2108.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 01/27/95

Reviewed by GSB Date 07/29/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
LCV-CH-460A	RE-21FU	CS (1-)	W OT2	----------	BENCHBOARD	W OT2	NV	--
		---	---	---	---	---	---	--
3204		---	---	---	---	---	---	--
		---	---	---	---	---	---	--
		---	---	---	---	---	---	--
		---	---	---	---	---	---	--
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CH/LETDOWN ISOLATION VALVE

LCV-CH-460A and B are normally in the OPEN position when the plant is running and are interlocked with TV-CH-200A, B, and C. Unless all three TV-CH-200's are closed, LCV-CH-460A and B cannot perform there SOUG function which is to close. These valves are air operated and fail closed on loss of air or power. If valves TV-CH-200A, B, and C are all closed LCV-CH-460A and B control switches must be placed in CLOSE and the valves will close. LCV-CH-460A and B fail closed on loss of air or control power.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA	-	Chatter acceptable.
NV	-	Not vulnerable (mechanically actuated contacts and solid state relays).
GERS	-	Seismically adequate based on GERS_____; include GERS number.
NA	-	Component not affected by relays.
CR	-	Corrective action required.
OA	-	Operator action.
DC	-	Direct control.
AS	-	See Assessment Sheet for details.
F	-	Fire Protection no QTR available.
-	-	No entry necessary.

Prepared by RPF Date 01/27/95

Reviewed by GSB Date 07/29/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
LCV-CH-460B	RE-21FU	CS (1-)	W OT2	----------	BENCHBOARD	W OT2	NV	--
		---	---	---	---	---	---	--
3205		---	---	---	---	---	---	--
		---	---	---	---	---	---	--
		---	---	---	---	---	---	--
		---	---	---	---	---	---	--
		---	---	---	---	---	---	--
		---	---	---	---	---	---	--

CH/LETDOWN ISOLATION VALVE

LCV-CH-460A and B are normally in the OPEN position when the plant is running and are interlocked with TV-CH-200A, B, and C. Unless all three TV-CH-200's are closed, LCV-CH-460A and B cannot perform there SOUG function which is to close. These valves are air operated and fail closed on loss of air or power. If valves TV-CH-200A, B, and C are all closed LCV-CH-460A and B control switches must be placed in close and the valves will close. LCV-CH-460A and B fail closed on loss of air or control power.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS _____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/27/95

Reviewed by GSB Date 07/29/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
TV-CH-200A	RE-21FU	CS (1-)	W OT2	----------	BENCHBOARD	W OT2	NV	--
3206								--
								--
								--
								--
								--
								--

CH/LETDOWN ORIFICE CNMT ISOLATION

TV-CH-200A, B, and C are air operated valves which fail Closed on loss of air. The valves are normally energized open. The SSEL lists this valves relay review under line # 3206C & D.

Chatter which could cause the valve to CLOSE is acceptable.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/20/95

Reviewed by GSB Date 08/07/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
TV-CH-200B	RE-21FU	CS (1-)	W OT2	----------	BENCHBOARD	W OT2	NV	--
		----------	----------	----------	----------	----------	----------	--
3207		----------	----------	----------	----------	----------	----------	--
		----------	----------	----------	----------	----------	----------	--
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CH/LETDOWN ORIFICE CNMT ISOLATION

TV-CH-200A, B, and C are air operated valves which fail closed on loss of air. The valves are normally energized open. The SSEL lists this valves relay review under line # 3207C & D.

Chatter which could cause the valves to CLOSE is acceptable.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/20/95

Reviewed by GSB Date 08/07/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
TV-CH-200C	RE-21FU	CS (1-)	W OT2	----------	BENCHBOARD	W OT2	NV	--
		---	---	---	---	---	---	--
3208		---	---	---	---	---	---	--
		---	---	---	---	---	---	--
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CH/LETDOWN ORIFICE CNMT ISOLATION

TV-CH-200A, B, and C are air operated valves which fail closed on loss of air. The valves are normally energized open. The SSEL lists this valves relay review under line # 3208C & D.

Chatter which could cause the valves to CLOSE is acceptable.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/20/95

Reviewed by GSB Date 08/07/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-CH-378	RE-21FR	TS & LS	LIMITORQUE	----------	MOV-CH-378	LIMITORQUE	NV	--
		CS (1-)	W OT2	----------	BENCHBOARD	W OT2	NV	--
3209		CONTACTOR 420/C	ALLIS TY2	DE/NO	MCC1-E5, CUB BA	ALLIS CHALMERS	RLY-CON.3	AS
		49	ALLIS TY2	NC	MCC1-E5, CUB BA	ALLIS CHALMERS	RLY-CON.3	AS
		----------	----------	----------	----------	----------	----------	--
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CH/RCP SEAL LEAKOFF ISOLATION

MOV-CH-378 and 381 are NSA OPEN and CLOSE automatically on a CIA signal. They are the containment isolation valves for the RCP seal leakoff return lines. After an earthquake they may need to be CLOSED by the operator to keep the leakoff fluid inside containment. If they are CLOSED, RCP seal leakoff is diverted to the PRT via RV-CH-382A. These valves must be CLOSABLE and preferrably OPENABLE after an earthquake. Only the CLOSING circuit is required.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/27/95

Reviewed by GSB Date 07/29/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-CH-381	RE-21FR	TS & LS	LIMITORQUE	----------	MOV-CH-381	LIMITORQUE	NV	--
		CS (1-)	W OT2	----------	BENCHBOARD	W OT2	NV	--
3210		CONTACTOR 420/C	ALLIS TY2	DE/NO	MCC1-E6, CUB AW	ALLIS CHALMERS	RLY-CON.3	AS
		49	ALLIS TY2	NC	MCC1-E6, CUB AW	ALLIS CHALMERS	RLY-CON.3	AS
		----------	----------	----------	----------	----------	----------	--
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CH/RCP SEAL LEAKOFF ISOLATION

MOV-CH-378 and 381 are NSA OPEN and CLOSE automatically on a CIA signal. They are the containment isolation valves for the RCP seal leakoff return lines. After an earthquake they may need to be manually CLOSED by the operator to keep leakoff fluid inside containment. If they are CLOSED, RCP seal leakoff is diverted to the PRT via RV-CH-382A. These valves must be CLOSABLE and preferrably OPENABLE after an earthquake. Only the CLOSING circuit is required.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/27/95

Reviewed by GSB Date 07/29/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-CH-137	RE-21FS	----------	----------	----------	----------	----------	----------	--
		----------	----------	----------	----------	----------	----------	--
3211		----------	----------	----------	----------	----------	----------	--
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EXCESS LETDOWN HX FLOW CONT

MOV-CH-137 has a Limitorque Modutronic operator which moves upon a signal from a potentiometer in the Control Room. All the wiring and solid-state electronics are mounted at the valve. There are no contacts that close or open to permit the valve to move. The circuitry is not vulnerable to chatter. No analysis is required.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA	-	Chatter acceptable.
NV	-	Not vulnerable (mechanically actuated contacts and solid state relays).
GERS	-	Seismically adequate based on GERS_____; include GERS number.
NA	-	Component not affected by relays.
CR	-	Corrective action required.
OA	-	Operator action.
DC	-	Direct control.
AS	-	See Assessment Sheet for details.
F	-	Fire Protection no QTR available.
-	-	No entry necessary.

Prepared by RPF Date 01/27/95

Reviewed by GSB Date 07/29/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
FT-CH-150	RE-22J	TOGGLE SWITCH	W 2429A31	----------	RK-PRI-PROC-8	2429A31H01	NV	--
		---	---	---	---	---	---	--
3212A		---	---	---	---	---	---	--
		---	---	---	---	---	---	--
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CH/LETDOWN FLOW TRANSMITTER

The entire instrument loop is electronics, wiring and toggle switches and is not vulnerable to chatter.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/29/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
FI-CH-150	RE-22J	TOGGLE SWITCH	W 2429A31	----------	RK-PRI-PROC-8	2429A31H01	NV	--
3212B								--
								--
								--
								--
								--
								--
								--

CH/LETDOWN FLOW INDICATION

The entire instrument loop is electronics, wiring and toggle switches and is not vulnerable to chatter.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA	-	Chatter acceptable.
NV	-	Not vulnerable (mechanically actuated contacts and solid state relays).
GERS	-	Seismically adequate based on GERS_____; include GERS number.
NA	-	Component not affected by relays.
CR	-	Corrective action required.
OA	-	Operator action.
DC	-	Direct control.
AS	-	See Assessment Sheet for details.
F	-	Fire Protection no QTR available.
-	-	No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/29/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
TV-SS-108	RE-21KR	CS (1-)	GE SB10	----------	SAMPLE PANEL	GE SB10	NV	--
3217								--
								--
								--
								--
								--
								--

PRZR LIQUID SPACE SAMPLE ISOLATION

TV-SS-108 is the Pressurizer liquid space sample isolation valve. It is NSA CLOSED and for RCS isolation purposes it must remain CLOSED during and after an earthquake. The valve fails CLOSED on loss of power or air.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA	-	Chatter acceptable.
NV	-	Not vulnerable (mechanically actuated contacts and solid state relays).
GERS	-	Seismically adequate based on GERS_____; include GERS number.
NA	-	Component not affected by relays.
CR	-	Corrective action required.
OA	-	Operator action.
DC	-	Direct control.
AS	-	See Assessment Sheet for details.
F	-	Fire Protection no QTR available.
-	-	No entry necessary.

Prepared by RPF Date 01/27/95

Reviewed by GSB Date 07/29/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
TV-SS-110	RE-2iKR	CS (1-)	GE SB10	----------	SAMPLE PANEL	GE SB10	NV	--
3218								--
								--
								--
								--
								--
								--

PRZR VAPOR SPACE SAMPLE ISOLATION

TV-SS-110 is the Pressurizer vapor space sample isolation valve. It is NSA CLOSED and for RCS isolation purposes it must remain CLOSED during and after an earthquake. The valve fails CLOSED on loss of power or air.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 01/27/95

Reviewed by GSB Date 07/29/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-RH-700	RE-21JV	CS (1-)	W OT2	----------	BENCHBOARD	W OT2	NV	--
		CONTACTOR 420	ALLIS TY2	DE/NO	MCC1-E5, CUB P	ALLIS CHALMERS	RLY-CON.3	AS
3219		----------	----------	----------	----------	----------	----------	--
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RH/RHR INLET ISOLATION

MOV-RH-700 isolates the RCS from the RHR system. It is NSA CLOSED and must remain CLOSED during and after an earthquake.

Chatter of the open contactor 420 could cause the valve to OPEN.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/27/95

Reviewed by GSB Date 07/29/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-RH-720A	RE-21JV	CS (1-)	W OT2	----------	BENCHBOARD	W OT2	NV	--
		CONTACTOR 420	ALLIS TY2	DE/NO	MCC1-E5, CUB Q	ALLIS CHALMERS	RLY-CON.3	AS
3320		----------	----------	----------	----------	----------	----------	--
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RH/RHR RETURN ISOLATION

MOV-RH-720A isolates the RCS from the RHR system. It is NSA CLOSED and must remain CLOSED during and after an earthquake.

Chatter of the open contactor 420 could cause the valve to OPEN.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/27/95

Reviewed by GSB Date 07/29/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-RH-720B	RE-21JV	CS (1-)	W OT2	----------	BENCHBOARD	W OT2	NV	--
		CONTACTOR 420	ALLIS TY2	DE/NO	MCC1-E6, CUB Q	ALLIS CHALMERS	RLY-CON.3	AS
3321		----------	----------	----------	----------	----------	----------	--
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RH/RHR RETURN ISOLATION

MOV-RH-720B ioslates the RCS from the RHR system. It is NSA CLOSED and must remain CLOSED during and after an earthquake.

Chatter of the open 420 contactor could cause the valve to OPEN.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/27/95

Reviewed by GSB Date 07/29/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
LT-WT-104A1	RE-22FG	----------	----------	----------	----------	----------	----------	--
		----------	----------	----------	----------	----------	----------	--
4101A		----------	----------	----------	----------	----------	----------	--
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WT/WT-TK-10 LEVEL TRANSMITTER

The entire instrument loop is electronics and wiring and is not vulnerable to chatter. No analysis required.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA	-	Chatter acceptable.
NV	-	Not vulnerable (mechanically actuated contacts and solid state relays).
GERS	-	Seismically adequate based on GERS_____; include GERS number.
NA	-	Component not affected by relays.
CR	-	Corrective action required.
OA	-	Operator action.
DC	-	Direct control.
AS	-	See Assessment Sheet for details.
F	-	Fire Protection no QTR available.
-	-	No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/29/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
LI-WT-104A1	RE-22FG							--
								--
4101B								--
								--
								--
								--
								--
								--

WT/WT-TK-10 LEVEL INDICATOR

The entire instrument loop is electronics and wiring and is not vulnerable to chatter. No analysis required.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/29/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
LT-WT-104A2	RE-22FG	----------	----------	----------	----------	----------	----------	--
		----------	----------	----------	----------	----------	----------	--
4102A		----------	----------	----------	----------	----------	----------	--
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		----------	----------	----------	----------	----------	----------	--
		----------	----------	----------	----------	----------	----------	--

WT/WT-TK-10 LEVEL TRANSMITTER

The entire instrument loop is electronics and wiring and is not vulnerable to chatter. No analysis required.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA	-	Chatter acceptable.
NV	-	Not vulnerable (mechanically actuated contacts and solid state relays).
GERS	-	Seismically adequate based on GERS_____; include GERS number.
NA	-	Component not affected by relays.
CR	-	Corrective action required.
OA	-	Operator action.
DC	-	Direct control.
AS	-	See Assessment Sheet for details.
F	-	Fire Protection no QTR available.
-	-	No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/29/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
LI-WT-104A2	RE-22FG							--
								--
4102B								--
								--
								--
								--
								--
								--

WT/WT-TK-10 LEVEL INDICATOR

The entire instrument loop is electronics and wiring and is not vulnerable to chatter. No analysis required.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/29/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
FT-FW-100A	RE-22DZ							--
								--
4103A								--
								--
								--
								--
								--
								--

FW/AUX FEED TO SGA TRANSMITTER

The entire instrument loop is electronics and wiring and is not vulnerable to chatter. No analysis required.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA	-	Chatter acceptable.
NV	-	Not vulnerable (mechanically actuated contacts and solid state relays).
GERS	-	Seismically adequate based on GERS_____; include GERS number.
NA	-	Component not affected by relays.
CR	-	Corrective action required.
OA	-	Operator action.
DC	-	Direct control.
AS	-	See Assessment Sheet for details.
F	-	Fire Protection no QTR available.
-	-	No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/29/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
FI-FW-100A	RE-22DZ							--
								--
4103B								--
								--
								--
								--
								--
								--

FW/AUX FEED TO SGA INDIC

The entire instrument loop is electronics and wiring and is not vulnerable to chatter. No analysis required.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/29/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
FT-FW-100B	RE-22DZ							--
								--
4104A								--
								--
								--
								--
								--
								--

FW/AUX FEED TO SGB TRANSMITTER

The entire instrument loop is electronics and wiring and is not vulnerable to chatter. No analysis required.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA	-	Chatter acceptable.
NV	-	Not vulnerable (mechanically actuated contacts and solid state relays).
GERS	-	Seismically adequate based on GERS_____; include GERS number.
NA	-	Component not affected by relays.
CR	-	Corrective action required.
OA	-	Operator action.
DC	-	Direct control.
AS	-	See Assessment Sheet for details.
F	-	Fire Protection no QTR available.
-	-	No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/29/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
FI-FW-100B	RE-22DZ							--
								--
4104B								--
								--
								--
								--
								--
								--

FW/AUX FEED TO SGB INDIC

The entire instrument loop is electronics and wiring and is not vulnerable to chatter. No analysis required.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA	-	Chatter acceptable.
NV	-	Not vulnerable (mechanically actuated contacts and solid state relays).
GERS	-	Seismically adequate based on GERS_____; include GERS number.
NA	-	Component not affected by relays.
CR	-	Corrective action required.
OA	-	Operator action.
DC	-	Direct control.
AS	-	See Assessment Sheet for details.
F	-	Fire Protection no QTR available.
-	-	No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/29/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
FT-FW-100C	RE-22DZ							
4105A								

FW/AUX FEED TO SGC TRANSMITTER

The entire instrument loop is electronics and wiring and is not vulnerable to chatter. No analysis required.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/29/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
FI-FW-100C	RE-22DZ							--
								--
4105B								--
								--
								--
								--
								--
								--

FW/AUI FEED TO SGC INDIC

The entire instrument loop is electronics and wiring and is not vulnerable to chatter. No analysis required.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA	-	Chatter acceptable.
NV	-	Not vulnerable (mechanically actuated contacts and solid state relays).
GERS	-	Seismically adequate based on GERS _____; include GERS number.
NA	-	Component not affected by relays.
CR	-	Corrective action required.
OA	-	Operator action.
DC	-	Direct control.
AS	-	See Assessment Sheet for details.
F	-	Fire Protection no QTR available.
-	-	No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/29/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
FW-P-3A	RE-21HE	51-VE116X	W WL	NOP/NC	4KVS-1E, CUB 16	422D949G45	RLY-ALO.2	AS
		50-VE116G	ITE GR-5	DE/NO	4KVS-1E, CUB 16	202D6141	NV	--
4107		51-VE116A	W COM-5	DE/NO	4KVS-1E, CUB 16	289B456A21	TBL2-1GRP7	AS
		51-VE116B	W COM-5	DE/NO	4KVS-1E, CUB 16	289B456A21	TBL2-1GRP7	AS
		51-VE116C	W COM-5	DE/NO	4KVS-1E, CUB 16	289B456A21	TBL2-1GRP7	AS
		43-VE116X	GE HEA	NOP/NC	4KVS-1E, CUB 16	12HEA61CRD238X2	RLY-ALO.2	AS
		62-VE100X4	W MG-6	DE/NO/NC	4KVS-1E, CUB 8A	293B301A25B	DC/CA	--

FW/MOTOR DRIVEN AUX FEEDWATER PUMP

The Aux Feed Pumps are required to start following an earthquake to maintain water in the SG's which are the plants heat sink. No trip signals are allowed to chatter and cause the starting circuit to be locked out.

Chatter of the overcurrent relays, 51-VE116A, B, and c could actuate lockout relay 51-VE116X, locking out the breaker. Relay 50-VE116G is a GR-5 which is a solid state relay with an SCR output and therefore cannot chatter.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/27/95

Reviewed by GSB Date 07/29/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
FCV-FW-103A	RE-21HD	52I-1AFWRA	W MG-6	NC	PNL-REL-37R	1163828	RLY-ARH.5	AS
		52S-E16	----------	----------	----------	ITE-BREAKER	NV	--
4107C		FIS-FW151A	BARTON	NOP/NC	LOCALLY MTD	288A	RLY-PS.5	AS
		62-1AFWRA	AGASTAT	DE/NO	PNL-REL-37R	7022PD	RLY-PNT.7	AS
		3-1AFWRA	W SG	DE/NO	PNL-REL-37R	1163803	RLY-ARH.5	AS
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3A AFW PUMP RECIRCULATION VALVE

FCV-FW-103A and B are air operated valves which fail closed on loss of air. If air is available after an earthquake, the valves will open on low pump flow to provide a recirc path back to WT-TK-10 and will close if flow to the SG's is adequate for the pump.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 02/20/95

Reviewed by GSB Date 08/07/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
FW-P-3B	RE-21HE	51-VF116X	W WL	NOP/NC	4KVS-1F, CUB 16	422D949G45	RLY-ALO.2	AS
		50-VF116G	ITE GR-5	DE/NO	4KVS-1F, CUB 16	202D6141	NV	--
4108		51-VF116A	W COM-5	DE/NO	4KVS-1F, CUB 16	289B456A21	TBL2-1GRP7	AS
		51-VF116B	W COM-5	DE/NO	4KVS-1F, CUB 16	289B456A21	TBL2-1GRP7	AS
		51-VF116C	W COM-5	DE/NO	4KVS-1F, CUB 16	289B456A21	TBL2-1GRP7	AS
		43-VF116X	GE HEA	NOP/NC	[illegible]VS-1E, CUB 16	12HEA61CRD238X2	RLY-ALO.2	AS
		62-VF100X4	W MG-6	DE/NO/NC	[illegible]VS-1F, CUB 8A	293B301A25B	DC/CA	--

FW/MOTOR DRIVEN AUX FEEDWATER PUMP

The Aux Feed Pumps are required to start following an earthquake to maintain water in the SG's which are the plant heat sink. No trip signals are allowed to chatter causing the pump start circuit to be locked out.

Chatter of overcurrent relays 51-VF116A, B, and C could actuate lockout relay 51-VF116X, locking out the breaker. Relay 50-VF116G is a GR-5 which is a solid state relay with an SCR output and therefore cannot chatter.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS _____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/27/95

Reviewed by GSB Date 07/29/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
FCV-FW-103B	RE-21HE	52X-1AFWRB	W MG-6	NC	PNL-REL-38R	1163828	RLY-ARH.5	AS
		52S-F16	----------	----------	----------	ITE-BREAKER	NV	
4108C		FIS-FW151B	BARTON	NOP/NC	LOCALLY MTD	288A	RLY-PS.5	AS
		62-1AFWRB	AGASTAT	DE/NO	PNL-REL-38R	7022PD	RLY-PNT.7	AS
		3-1AFWRB	W SG	DE/NO	PNL-REL-38R	1163803	RLY-ARH.5	AS
		----------	----------	----------	----------	----------	----------	--
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3B AFW PUMP RECIRCULATION VALVE

FCV-FW-103A and B are air operated valves which fail closed on loss of air. If air is available after an earthquake, the valves will open on low pump flow to provide a recirc path back to WT-TK-10 and will close if flow to the SG's is adequate for the pump.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/20/95

Reviewed by GSB Date 08/07/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
DV-FP-12	10.1-474	HD-FP-9-1	HAD	NO	AUX FEED PUMP RM	302	OUTLIER	AS
		AK1	CURTIS RS8	NO	PNL-FE-WS-12A	CURTIS RS8	OUTLIER	AS
4108E		---	---	---	---	---	---	--
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AUX FEED PUMP ROOM DELUGE VALVE

IT IS DESIRABLE TO MAINTAIN THE DELUGE VALVE CLOSED TO MAINTAIN THE PUMPS ENVIROMENT DRY.IN THE EVENT THAT THE DELUGE WAS OPENED THERE ARE INDIVIDUAL SPRINKLERS OVER EACH MOTOR/TURBINE/PUMP THAT ARE DESIGNED TO OPEN AT 250 DEGREES F.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS _____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- DC - Direct control.
- AS - See Assessment Sheet for details.
- F - Fire Protection no QTR available.
- - - No entry necessary.

Prepared by RPF Date 11/29/95

Reviewed by GSB Date 11/29/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-FW-151A	RE-21HF	CS (1-)	W OT2	----------	BENCHBOARD	W OT2	NV	--
		CONTACTOR 42C	ALLIS TY2	DE/NO	MCC1-E6, CUB AG	ALLIS CHALMERS	RLY-CON.3	AS
4109		----------	----------	----------	----------	----------	----------	--
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FW/AUX FEED FLOW CONTROL VALVE

MOV-FW-151's are the Aux Feed Pump Discharge valves to the SG's. The valves are NSA OPEN and must remain OPEN during or after an earthquake. The valve cannot chatter CLOSED because the control switch is not vulnerable to chatter and the 42C contact does not "seal in".

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS _____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/27/95

Reviewed by GSB Date 07/29/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-FW-151B	RE-21HF	CS (1-)	W OT2	----------	BENCHBOARD	W OT2	NV	--
		CONTACTOR 42C	ALLIS TY2	DE/NO	MCC1-E5, CUB AG	ALLIS CHALMERS	RLY-CON.3	AS
4110		----------	----------	----------	----------	----------	----------	--
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FW/AUX FEED FLOW CONTROL VALVE

MOV-FW-151's are the Aux Feed Pump Discharge Valves to the SG's. They are NSA OPEN and must remain OPEN during or after an earthquake. The valve cannot chatter CLOSED because the control switch is not vulnerable to chatter and the 42C contact does not "seal in".

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA	-	Chatter acceptable.
NV	-	Not vulnerable (mechanically actuated contacts and solid state relays).
GERS	-	Seismically adequate based on GERS_____; include GERS number.
NA	-	Component not affected by relays.
CR	-	Corrective action required.
OA	-	Operator action.
DC	-	Direct control.
AS	-	See Assessment Sheet for details.
F	-	Fire Protection no QTR available.
-	-	No entry necessary.

Prepared by RPF Date 01/27/95

Reviewed by GSB Date 07/29/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-FW-151C	RE-21HF	CS (1-)	W OT2	----------	BENCHBOARD	W OT2	NV	--
		CONTACTOR 42C	ALLIS TY2	DE/NO	MCC1-E6, CUB AH	ALLIS CHALMERS	RLY-CON.3	AS
4111		----------	----------	----------	----------	----------	----------	--
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FW/AUX FEED FLOW CONTROL VALVE

MOV-FW-151's are the Aux Feed Pump Discharege Valves to the SG's. They are NSA OPEN and must remain OPEN during or after an earthquake. The valve cannot chatter CLOSED because the control switch is not vulnerable to chatter and the 42C contact does not "seal in".

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/27/95

Reviewed by GSB Date 07/29/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-FW-151D	RE-21HF	CS (1-)	W OT2	----------	BENCHBOARD	W OT2	NV	--
		CONTACTOR 42C	ALLIS TY2	DE/NO	MCC1-E5, CUB AH	ALLIS CHALMERS	RLY-CON.3	AS
4112		----------	----------	----------	----------	----------	----------	--
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FW/AUX FEED FLOW CONTROL VALVE

MOV-FW-151's are the Aux Feed Pump Discharge Valves to the SG's. They are NSA OPEN and must remain OPEN during and after an earthquake. The valve cannot chatter CLOSED because the control switch is not vulnerable to chatter and the 42C contact does not "seal in".

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/27/95

Reviewed by GSB Date 07/29/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-FW-151E	RE-21HF	CS (1-)	W OT2	----------	BENCHBOARD	W OT2	NV	--
		CONTACTOR 42C	ALLIS TY2	DE/NO	MCC1-E6, CUB AJ	ALLIS CHALMERS	RLY-CON.3	AS
4113		----------	----------	----------	----------	----------	----------	--
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FW/AUX FEED FLOW CONTROL VALVE

MOV-FW-151's are the Aux Feed Pump Discharge Valves to the SG's. They are NSA OPEN and must remain OPEN during and after an earthquake. The valve cannot chatter CLOSED because the control switch is not vulnerable to chatter and the 42C contact does not "seal in".

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/27/95

Reviewed by GSB Date 07/29/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-FW-151F	RE-21HF	CS (1-)	W OT2	----------	BENCHBOARD	W OT2	NV	--
		CONTACTOR 42C	ALLIS TY2	DE/NO	MCC1-E5, CUB AJ	ALLIS CHALMERS	RLY-CON.3	AS
4114		----------	----------	----------	----------	----------	----------	--
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FW/AUX FEED FLOW CONTROL VALVE

MOV-FW-151's are the Aux Feed Pump Dischare Valves to the SG's. They are NSA OPEN and must remain OPEN during and after an earthquake. The valve cannot chatter CLOSED because the control switch is not vulnerable to chatter and the 42C contact does not "seal in".

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/27/95

Reviewed by GSB Date 07/29/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-FW-160	RE-21HF	CS (1-)	W OT2	----------	BENCHBOARD	W OT2	NV	--
		CONTACTOR 420	ALLIS TY2	DE/NO	MCC1-43, CUB 3J	ALLIS CHALMERS	RLY-CON.3	AS
4115								

FW/FW-P-4 DISCHARGE ISOLATION VALVE

MOV-FW-160 is the dedicated Aux Feed Pump Discharge valve. It is NSA CLOSED and must remain CLOSED. MCC1-43 is a non-safety MCC. Offsite power may be lost during an earthquake. If the MCC is de-energized by a loss of offsite power then the valve cannot OPEN.

The MCC is located in the turbine building mezzanine.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA	-	Chatter acceptable.
NV	-	Not vulnerable (mechanically actuated contacts and solid state relays).
GERS	-	Seismically adequate based on GERS_____; include GERS number.
NA	-	Component not affected by relays.
CR	-	Corrective action required.
OA	-	Operator action.
DC	-	Direct control.
AS	-	See Assessment Sheet for details.
F	-	Fire Protection no QTR available.
-	-	No entry necessary.

Prepared by RPF Date 01/27/95

Reviewed by GSB Date 07/29/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
LI-FW-476	RE-22Z	TOGGLE SWITCH	W 2429A31	----------	RK-PRI-PROC-15	----------	NV	--
		BISTABLE SWITCH	W 2429A31	----------	RK-PRI-PROC-15	----------	NV	--
4123B		----------	----------	----------	----------	----------	----------	--
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FW/RC-E-1A NARROW RANGE LEVEL INDICATOR

The entire instrument loop is electronics, wiring and toggle and bistable switches and is not vulnerable to chatter.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/30/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
LT-FW-484	RE-22X	TOGGLE SWITCH	W 2429A31	----------	RK-PRI-PROC-2	----------	NV	--
		BISTABLE SWITCH	W 2429A31	----------	RK-PRI-PROC-2	----------	NV	--
4124A		----------	----------	----------	----------	----------	----------	--
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FW/RC-E-1B NARROW RANGE LEVEL TRANSMITTE

The entire instrument loop is electronics, wiring and toggle and bistable switches and is not vulnerable to chatter.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA	-	Chatter acceptable.
NV	-	Not vulnerable (mechanically actuated contacts and solid state relays).
GERS	-	Seismically adequate based on GERS_____; include GERS number.
NA	-	Component not affected by relays.
CR	-	Corrective action required.
OA	-	Operator action.
DC	-	Direct control.
AS	-	See Assessment Sheet for details.
F	-	Fire Protection no QTR available.
-	-	No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/30/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
LI-FW-484	RE-22I	TOGGLE SWITCH	W 2429A31	----------	RK-PRI-PROC-2	----------	NV	--
		BISTABLE SWITCH	W 2429A31	----------	RK-PRI-PROC-2	----------	NV	--
4124B		----------	----------	----------	----------	----------	----------	--
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FW/RC-E-1B NARROW RANGE LEVEL INDICATOR

The entire instrument loop is electronics, wiring and toggle and bistable switches and is not vulnerable to chatter.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/30/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
LT-FW-485	RE-22X	TOGGLE SWITCH	W 2429A31	----------	RK-PRI-PROC-13	----------	NV	--
		BISTABLE SWITCH	W 2429A31	----------	RK-PRI-PROC-13	----------	NV	--
4125A		----------	----------	----------	----------	----------	----------	--
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FW/RC-E-1B NARROW RANGE LEVEL TRANSMITTE

The entire instrment loop is electronics, wiring and toggle and bistable switches and is not vulnerable to chatter.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/30/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
LI-FW-485	RE-22X	TOGGLE SWITCH	W 2429A31	----------	RK-PRI-PROC-13	----------	NV	--
		BISTABLE SWITCH	W 2429A31	----------	RK-PRI-PROC-13	----------	NV	--
41253		----------	----------	----------	----------	----------	----------	--
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FW/RC-E-1B NARROW RANGE LEVEL INDICATOR

The entire instrument loop is electronics, wiring and toggle and bistable switches and is not vulnerable to chatter.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA	-	Chatter acceptable.
NV	-	Not vulnerable (mechanically actuated contacts and solid state relays).
GERS	-	Seismically adequate based on GERS_____; include GERS number.
NA	-	Component not affected by relays.
CR	-	Corrective action required.
OA	-	Operator action.
DC	-	Direct control.
AS	-	See Assessment Sheet for details.
F	-	Fire Protection no QTR available.
-	-	No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/30/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
LT-FW-486	RE-22AA	TOGGLE SWITCH	W 2429A31	----------	RK-PRI-PROC-15	----------	NV	--
		BISTABLE SWITCH	W 2429A31	----------	RK-PRI-PROC-15	----------	NV	--
4126A		----------	----------	----------	----------	----------	----------	--
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FW/RC-E-1B NARROW RANGE LEVEL TRANSMITTE

The entire instrument loop is electronics, wiring and toggle and bistable switches and is not vulnerable to chatter.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/30/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
LI-FW-486	RE-22AA	TOGGLE SWITCH	W 2429A31	----------	RK-PRI-PROC-15	----------	NV	--
		BISTABLE SWITCH	W 2429A31	----------	RK-PRI-PROC-15	----------	NV	--
4126B		----------	----------	----------	----------	----------	----------	--
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FW/RC-E-1B NARROW RANGE LEVEL INDICATOR

The entire instrument loop is electronics, wiring and toggle and bistable switches and is not vulnerable to chatter.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/30/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
LT-FW-494	RE-22Y	TOGGLE SWITCH	W 2429A31	----------	RK-PRI-PROC-2	----------	NV	--
		BISTABLE SWITCH	W 2429A31	----------	RK-PRI-PROC-2	----------	NV	--
4127A		----------	----------	----------	----------	----------	----------	--
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FW/RC-E-1C NARROW RANGE LEVEL TRANSMITTE

The entire instrument loop is electronics, wiring and toggle and bistable switches and is not vulnerable to chatter.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/30/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
LI-FW-494	RE-22Y	TOGGLE SWITCH	W 2429A31	----------	RK-PRI-PROC-2	----------	NV	--
		BISTABLE SWITCH	W 2429A31	----------	RK-PRI-PROC-2	----------	NV	--
4127B		----------	----------	----------	----------	----------	----------	--
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FW/RC-E-1C NARROW RANGE LEVEL INDICATOR

The entire instrument loop is electronics, wiring and toggle and bistable switches and is not vulnerable to chatter.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/30/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
LT-FW-495	RE-22Y	TOGGLE SWITCH	W 2429A31	----------	RK-PRI-PROC-13	----------	NV	--
		BISTABLE SWITCH	W 2429A31	----------	RK-PRI-PROC-13	----------	NV	--
4128A		----------	----------	----------	----------	----------	----------	--
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FW/RC-E-1C NARROW RANGE LEVEL TRANSMITTE

The entire instrument loop is electronics, wiring and toggle and bistable switches and is not vulnerable to chatter.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/30/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
LI-FW-495	RE-22Y	TOGGLE SWITCH	W 2429A31	----------	RK-PRI-PROC-13	----------	NV	--
		BISTABLE SWITCH	W 2429A31	----------	RK-PRI-PROC-13	----------	NV	--
4128B		----------	----------	----------	----------	----------	----------	--
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FW/RC-E-1C NARROW RANGE LEVEL INDICATOR

The entire instrument loop is electronics, wiring and toggle and bistable switches and is not vulnerable to chatter.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/30/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
LT-FW-496	RE-22AB	TOGGLE SWITCH	W 2429A31	----------	RK-PRI-PROC-15	----------	NV	--
		BISTABLE SWITCH	W 2429A31	----------	RK-PRI-PROC-15	----------	NV	--
4129A		----------	----------	----------	----------	----------	----------	--
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FW/RC-E-1C NARROW RANGE LEVEL TRANSMITTE

The entire instrument loop is electronics, wiring and toggle and bistable switches and is not vulnerable to chatter.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA	-	Chatter acceptable.
NV	-	Not vulnerable (mechanically actuated contacts and solid state relays).
GERS	-	Seismically adequate based on GERS_____; include GERS number.
NA	-	Component not affected by relays.
CR	-	Corrective action required.
OA	-	Operator action.
DC	-	Direct control.
AS	-	See Assessment Sheet for details.
F	-	Fire Protection no QTR available.
-	-	No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/30/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
LI-FW-496	RE-22AB	TOGGLE SWITCH	W 2429A31	----------	RK-PRI-PROC-15	----------	NV	--
		BISTABLE SWITCH	W 2429A31	----------	RK-PRI-PROC-15	----------	NV	--
4129B		----------	----------	----------	----------	----------	----------	--
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FW/RC-E-1C NARROW RANGE LEVEL INDICATOR

The entire instrument loop is electronics, wiring and toggle and bistable switches and is not vulnerable to chatter.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA	-	Chatter acceptable.
NV	-	Not vulnerable (mechanically actuated contacts and solid state relays).
GERS	-	Seismically adequate based on GERS_____; include GERS number.
NA	-	Component not affected by relays.
CR	-	Corrective action required.
OA	-	Operator action.
DC	-	Direct control.
AS	-	See Assessment Sheet for details.
F	-	Fire Protection no QTR available.
-	-	No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 03/30/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
TRB-RC-413	RE-22BN	TOGGLE SWITCH	W 2429A31	----------	RK-PRI-PROC-3	----------	NV	--
		BISTABLE SWITCH	W 2429A31	----------	RK-PRI-PROC-3	----------	NV	--
4201A		----------	----------	----------	----------	----------	----------	--
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RC/LOOP A-T HOT INDIC

The entire instrument loop is electronics, wiring and toggle and bistable switches and is not vulnerable to chatter.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/30/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
TRB-RC-410	RE-22BP	TOGGLE SWITCH	W 2429A31	----------	RK-PRI-PROC-12	----------	NV	--
		BISTABLE SWITCH	W 2429A31	----------	RK-PRI-PROC-12	----------	NV	--
4201B		43-T410	STACK POLE	----------	TPS-BIP-PNL1	STACK POLE 600	NV	--
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RC/LOOP A-T COLD INDIC

The entire instrument loop is electronics, wiring and toggle and bistable switches and is not vulnerable to chatter.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/30/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
TRB-RC-423	RE-22BN	TOGGLE SWITCH	W 2429A31	----------	RK-PRI-PROC-3	----------	NV	--
		BISTABLE SWITCH	W 2429A31	----------	RK-PRI-PROC-3	----------	NV	--
4202A		----------	----------	----------	----------	----------	----------	--
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RC/LOOP B-T HOT INDIC

The entire instrument loop is electronics, wiring and toggle and bistable switches and is not vulnerable to chatter.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
MV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/30/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
TRB-RC-420	RE-22BP	TOGGLE SWITCH	W 2429A31	----------	RK-PRI-PROC-12	----------	NV	--
		BISTABLE SWITCH	W 2429A31	----------	RK-PRI-PROC-12	----------	NV	--
4202B		43-T420	STACK POLE	----------	TRS-BIP-PNL1	STACK POLE 600	NV	--
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RC/LOOP B-T COLD INDIC

The entire instrument loop is electronics, wiring and toggle and bistable switches and is not vulnerable to chatter.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/30/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
TRB-RC-433	RE-22BN	TOGGLE SWITCH	W 2429A31	----------	RK-PRI-PROC-3	----------	NV	--
		BISTABLE SWITCH	W 2429A31	----------	RK-PRI-PROC-3	----------	NV	--
4203A		----------	----------	----------	----------	----------	----------	--
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RC/LOOP C-T HOT INDIC

The entire instrumnet loop is electronics, wiring and toggle and bistable switches and is not vulnerable to chatter.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/30/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
TRB-RC-430	RE-22BP	TOGGLE SWITCH	W 2429A31	----------	RK-PRI-PROC-12	----------	NV	--
		BISTABLE SWITCH	W 2429A31	----------	RK-PRI-PROC-12	----------	NV	--
4203B		43-T430	STACK POLE	----------	TRS-BIP-PNL1	STACK-POLE 600	NV	--
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RC/LOOP C-T COLD INDIC

The entire instrument loop is electronics, wiring and toggle and bistable switches and is not vulnerable to chatter.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date 07/30/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
TR-RC-410	RE-22BP	TOGGLE SWITCH	W 2429A31	----------	RK-PRI-PROC-12	----------	NV	--
		BISTABLE SWITCH	WE 2429A31	----------	----------	----------	NV	--
4203C		43-T410	STACK POLE	----------	TRS-BIP-PNL1	STACK POLE 600	NV	--
		43-T420	STACK PLOLE	----------	TRS-BIP-PNL1	STACK POLE 600	NV	--
		43-T430	STACK POLE	----------	TRS-BIP-PNL1	STACK POLE 600	NV	--
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REACTOR COOLANT COLD LEG 3 PER RECORDER

THe entire instrument loop is electronics, wiring, toggle and control switches and is not vulnerable to chatter.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date / /

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
TR-RC-413	RE-22BN	TOGGLE SWITCH	W 2429A31	----------	RK-PRI-PROC-3	----------	NV	--
		BISTABLE SWITCH	WE 2429A31	----------	----------	----------	NV	--
4203D		----------	----------	----------	----------	----------	----------	--
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REACTOR COOLANT HOT LEG 3 PEN RECORDER

The entire instrument loop is electronics, wiring, toggle and bistable switches and is not vulnerable to chatter.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 02/06/95

Reviewed by GSB Date / /

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
HCV-MS-104	RE-22DR	----------	----------	----------	----------	----------	----------	--
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4204		----------	----------	----------	----------	----------	----------	--
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MS/RESIDUAL HEAT RELEASE

THe entire circuit is electronic. There are no relay contacts which could be vulnerable to chatter. The valve will function if power and air are availabe.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 02/07/95

Reviewed by GSB Date 07/30/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
PCV-MS-101A	RE-21JD	63-MS101A	BARKSDALE	NO	STEAM LINE	BARKSDALE B2T	RLY-PS.5	AS
		43-SD?	W OT2	----------	SHUTDOWN PANEL	W OT2	NV	--
€205		----------	----------	----------	----------	----------	----------	--
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MS/A LOOP ATM STEAM DUMP

The Atmospheric Steam Dump Valves must not OPEN during an earthquake and must be operable using the manual/auto station in tha Control Room after an earthquake. The instrument loop, which is completely electronic, and not vulnerable to chatter, is shown on RE-22GN. The solenoids, which energize to OPEN the valves on high pressure are shown on RE-21JD. Chatter of pressure switch 63-MS101A, B, and C would cause the valve to chatter OPEN.

63-MS101A, B, AND C (PS-MS-101A, B, AND C) ARE BARKSDALE MODEL B2T-M12SS PRESSURE SWITCHES AND ARE LOCATED ON THE MAIN STEAM LINES.

The SSEL lists this valves relay review under line # 3205C & D.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/07/95

Reviewed by GSB Date 07/30/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
PCV-MS-101B	RE-21JD	63-MS101B 63-SDP	BARKSDALE W OT2	NO ----------	STEAM LINE SHUTDOWN PANEL	BARKSDALE B2T W OT2	RLY-PS.5 NV	AS --
4206		----------	----------	----------	----------	----------	----------	--
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MS/B LOOP ATM STEAM DUMP

The Atmospheric Steam Dump Valves must not OPEN during an earthquake and must be operable using the manual/auto station in the Control Room after an earthquake. The instrument loop, which is completely electronic, and not vulnerable to chatter. is shown on RE-22GM. The solenoids, which energize to OPEN the valves on high pressure are shown on RE-21JD. Chatter of pressure switch 63-MS101A, B, and C would cause the valve to chatter OPEN.

63-MS101A, B, AND C (PS-MS-101A,B, AND C) ARE BARKSDALE MODEL B2T-M12SS PRESSURE SWITCHES AND ARE LOCATED ON THE MAIN STEAM LINES.

The SSEL lists this valves relay review under line # 4206C & D.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/07/95

Reviewed by GSB Date 07/30/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
PCV-MS-101C	RE-21JD	63-MS101C 43-SDP	BARKSDALE W OT2	NO ----------	STEAM LINE SHUTDOWN PANEL	BARKSDALE B2T W OT2	RLY-PS.5 NV	AS --
4207		----------	----------	----------	----------	----------	----------	--
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MS/C LOOP ATM STEAM DUMP

The Atmospheric Steam Dump Valves must not OPEN during an earthquake and must be operable using the manual/auto station in the Control Room after an earthquake. The instrument loop, which is completely electronic, and is not vulnerable to chatter, is shown on RE-22GN. The solenoids, which energize to OPEN the valves on high pressure are shown on RE-21JD. Chatter of pressure switch 63-MS101A, B, and C would cause the valve to chatter OPEN.

63-MS101A, B, and C (PS-MS-101A, B, AND C) ARE BARKSDALE MODEL B2T-M12SS PRESSURE SWITCHES AND ARE LOCATED ON THE STEAM LINES.

The SSEL lists this valves relay review under line # 4207C & D.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/07/95

Reviewed by GSB Date 07/30/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-MS-101A	RE-21HX	CS (1-) CONTACTOR 420	W OT2 ALLIS TY2	---------- DE/NO	BENCHBOARD MCC1-E6, CUB BM	W OT2 ALLIS CHALMERS	NV RLY-CON.3	-- AS
4408		----------	----------	----------	----------	----------	----------	--
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MS/MAIN STEAM TRIP [TV-MS-101A] BYPASS V

MOV-MS-101's are NSA CLOSED and must remain CLOSED after an earthquake.

Chatter of the open contactor 420 could cause the valves to OPEN.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 01/27/95

Reviewed by GSB Date 07/30/95

A-46 RELAY SCREENING AND EVALUATION FORM G-4 - RELAY TABULATION

PLANT Beaver Valley Unit 1

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-MS-101B	RE-21HI	CS (1-) CONTACTOR 420	W OT2 ALLIS TY2	---------- DE/NO	BENCHBOARD MCC1-E6, CUB BN	W OT2 ALLIS CHALMERS	NV RLY-CON.3	-- AS
4209								

MS/MAIN STEAM TRIP [TV-MS-101B] BYPASS V

MOV-MS-101's are NSA CLOSED and must remain CLOSED after an earthquake.

Chatter of the open contactor 420 could cause the valves to OPEN.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/27/95

Reviewed by GSB Date 07/30/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-MS-101C	RE-21HI	CS (1-)	W OT2	----------	BENCHBOARD	W OT2	NV	--
		CONTACTOR 420	ALLIS TY2	DE/NO	MCC1-E6, CUB BP	ALLIS CHALMERS	RLY-CON.3	AS
4210								

MS/MAIN STEAM TRIP [TV-MS-101C] BYPASS V

MOV-MS-101's are NSA CLOSED and must remain CLOSED after an earthquake.

Chatter of the open contactor 420 could cause the valves to OPEN.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA	-	Chatter acceptable.
NV	-	Not vulnerable (mechanically actuated contacts and solid state relays).
GERS	-	Seismically adequate based on GERS_____; include GERS number.
NA	-	Component not affected by relays.
CR	-	Corrective action required.
OA	-	Operator action.
DC	-	Direct control.
AS	-	See Assessment Sheet for details.
F	-	Fire Protection no QTR available.
-	-	No entry necessary.

Prepared by RPT Date 01/27/95

Reviewed by GSB Date 07/30/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
TV-MS-101A	RE-21HX	CS (1-)	W OT2	----------	BENCHBOARD	W OT2	NV	--
4211								

MS/MAIN STEAM ISOLATION

The Main Steam Isolation valves CLOSE to isolate the SG's from the Main Steam Header. The valves are air operated and fail OPEN on loss of power and fail CLOSED on a loss of air. The valves must be CLOSABLE after an earthquake.

The SSEL lists this valves relay review under line # 4211C & D.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 01/30/95

Reviewed by GSB Date 07/31/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
TV-MS-101B	RE-21HI	CS (1-)	W OT2	----------	BENCHBOARD	W OT2	NV	--
4212								

MS/MAIN STEAM ISOLATION

THe Main Steam Isolation Valves CLOSE to isolate The SG's from the Main Steam Header. The valves are air operated and fail OPEN on a loss of power and fail CLOSED on a loss of air. The valves must be CLOSABLE after an earthquake.

The SSEL lists this valves relay review under line # 4212C & D.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/30/95

Reviewed by GSB Date 07/31/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
TV-MS-101C	RE-21HI	CS (1-)	W OT2	----------	BENCHBOARD	W OT2	NV	--
4213								

MS/MAIN STEAM ISOLATION

The Main Steam Isolation Valves CLOSE to isolate the SG's From the Main Steam Header. The valves are air operaterd and fail OPEN on loss of power and fail CLOSED on loss of air. The valves must be CLOSABLE after an earthquake.

The SSEL lists this valves relay review under line # 4213C & D.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/30/95

Reviewed by GSB Date 07/31/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-MS-105	RE-21HY	CS (1-)	W OT2	----------	BENCHBOARD	W OT2	NV	--
		CONTACTOR 42C	ALLIS TY2	DE/NO	MCC1-E6, CUB BA	ALLIS CHALMERS	RLY-CON.3	AS
4214		49	ALLIS TY2	NC	MCC1-E6, CUB BA	ALLIS CHALMERS	RLY-CON.3	AS
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MS/AFW TURBINE STEAM SUPPLY ISOLATION

MOV-MS-105 is an isolation valve for FW-P-2. It is NSA OPEN and it may need to be CLOSED after an earthquake. The valve will not chatter closed but if it did the valve could be OPENED.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA	-	Chatter acceptable.
NV	-	Not vulnerable (mechanically actuated contacts and solid state relays).
GERS	-	Seismically adequate based on GERS_____; include GERS number.
NA	-	Component not affected by relays.
CR	-	Corrective action required.
OA	-	Operator action.
DC	-	Direct control.
AS	-	See Assessment Sheet for details.
F	-	Fire Protection no QTR available.
-	-	No entry necessary.

Prepared by RPF Date 01/30/95

Reviewed by GSB Date 07/31/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
TV-MS-111A	RE-21HY	CS (1-)	W OT2	----------	BENCHBOARD	W OT2	NV	--
4215								

MS/MAIN STEAM PRE-NRTRN DRAIN ISOL VALVE

The Main Steam Drain Lines may need to be isolated to prevent an uncontrolled cooldown. The SOV which is energized to OPEN the valve must be de-energized to CLOSE the valve. This can be done with the control switch . No further analysis is required.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/30/95

Reviewed by GSB Date 08/07/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
TV-MS-111B	RE-21HY	CS (1-)	W OT2	----------	BENCHBOARD	W OT2	NV	--
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4216		---	---	---	---	---	---	--
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MS/MAIN STM PRE-NRTRN DRAIN ISOL VALVE

The Main Steam Drain Lines may need to be isolated to prevent an uncontrolled cooldown. The SOV which is energized to OPEN the valve must be de-energized to CLOSE the valve. This can be done with the control switch . No further analysis is required.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/30/95

Reviewed by GSB Date 08/07/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
TV-MS-111C	RE-21HY	CS (1-)	W OT2	----------	BENCHBOARD	W OT2	NV	--
4217								--
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								--
								--
								--
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MS/MAIN STM PRE-NRTRN DRAIN ISOL VALVE

The Main Steam Drain Lines may need to be isolated to prevent an uncontrolled cooldown. The SOV which is energized to OPEN the valve must be de-energized to CLOSE the valve. This can be done with the control switch . No further analysis is required.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/30/95

Reviewed by GSB Date 08/07/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
WR-P-1A	RE-21KW	CS (1-)	W TYPE W	----------	BENCHBOARD	W TYPE W	NV	--
		62-VE100X3	W MG-6	DE/NO	4KVS-1E, CUB 8A	293B301A25B	DC/CA	--
5101		52H-1E14	ITE CELL SW	NO	4KVS-1E, CUB 14	ITE	NV	--
		50-VE110G	ITE GR-5	DE/NO	4KVS-1E, CUB 10	202D6141	NV	--
		51-VE110A, B, C	W COM-5	DE/NO	4KVS-1E, CUB 10	289B456A19	TBL2-1GRP7	AS
		43-VE110X	GE HEA	NOP/NC	4KVS-1E. CUB 10	12HEA61CRD238X2	RLY-ALO.2	AS
		PB (43-)	W OT2	----------	SHUTDOWN PANEL	W OT2	NV	--
		62-AEX	W MG-6	DE/NO	PNL-DG-SEQ-1	1163803	RLY-ARH.5	AS

RW/RIVER WATER PUMP

Any 1 or 2 of the 3 River Water Pumps may be running prior to the earthquake depending on the time of year. Any pump that is running cannot trip during or after an earthquake. The 52H contacts must not chatter. This will ensure that pumps will not start on the same bus causing the Emergency Diesel to be overloaded. The pump must be loaded on the diesel if offsite power is lost. 2

Relay 50-VE110G is a GR-5 which is a solid state relay with an SCR output and therefore cannot chatter.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/30/95

Reviewed by GSB Date 07/31/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-F-57A	RE-21MW	CS (1-)	W OT2	NC	INTAKE CUB #1	W OT2	NV	--
		TS	THERMOSTAT	NO	INTAKE CUB #1	----------	CA	--
5101C		42	ALLIS TY2	----------	INTAKE CUB #1	ALLIS CHALMERS	RLY-CON.3	AS
		49	ALLIS TY2	NC	INTAKE CUB #1	ALLIS CHALMERS	RLY-CON.3	AS
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INTAKE STRUCTURE CUBICLE 1 SUPPLY FAN

The Intake Structure cubicle supply fans control switches are normally left in the AUTO position where they are controlled by a room thermostat. The dampers are wired thru a step down transformer to the fan motor leads and therefore open when the fan is running and close when the fan stops.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 11/28/95

Reviewed by GSB Date 11/28/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-D-57A1	RE-21MW	CS (1-)	W OT2	NC	INTAKE CUB #1	W OT2	NV	--
		TS	THERMOSTAT	NO	INTAKE CUB #1	----------	CA	--
5101D		42	ALLIS TY2	----------	INTAKE CUB #1	ALLIS CHALMERS	RLY-CON.3	AS
		49	ALLIS TY2	NC	INTAKE CUB #1	ALLIS CHALMERS	RLY-CON.3	AS
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INTAKE STRUCTURE CUBICLE 1 DAMPER

The Intake Structure cubicle supply fans control switches are normally left in the AUTO position where they are controlled by a room thermostat. The dampers are wired thru a step down transformer to the fan motor leads and therefore open when the fan is running and close when the fan stops.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 11/28/95

Reviewed by GSB Date 11/28/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-D-57A2	RE-21MW	CS (1-)	W OT2	NC	INTAKE CUB #1	W OT2	NV	--
		TS	THERMOSTAT	NO	INTAKE CUB #1	----------	CA	--
5101E		42	ALLIS TY2	----------	INTAKE CUB #1	ALLIS CHALMERS	RLY-CON.3	AS
		49	ALLIS TY2	NC	INTAKE CUB #1	ALLIS CHALMERS	RLY-CON.3	AS
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INTAKE STRUCTURE CUBICLE 1 DAMPER

The Intake Structure cubicle supply fans control switches are normally left in the AUTO position where they are controlled by a room thermostat. The dampers are wired thru a step down transformer to the fan motor leads and therefore open when the fan is running and close when the fan stops.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 11/28/95

Reviewed by GSB Date 11/28/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
WR-P-1B	RE-21KW	CS (1-)	W TYPE W	----------	BENCHBOARD	W TYPW W	NV	--
		62-VF100X3	W MG-6	DE/NO	4KVS-1F, CUB 8A	293B301A25B	DC/CA	--
5102		52H-1F14	ITE CELL SW	NO	4KVS-1F, CUB 14	ITE	NV	--
		50-VF110G	ITE GR-5	DE/NO	4KVS-1F, CUB 10	202D6141	NV	--
		51-VF110A, B, C	W COM-5	DE/NO	4KVS-1F, CUB 10	289B456A19	TBL2-1GRP7	AS
		43-VF110X	GE HEA	NOP/NC	4KVS-1F, CUB 10	12HEA61CRD238X2	RLY-ALO.2	AS
		PB (43-)	W OT2	----------	SHUTDOWN PANEL	W OT2	NV	--
		62-DFX	W MG-6	DE/NO	PNL-DG-SEQ-2	1163803	RLY-ARH.5	AS

RW/RIVER WATER PUMP

Any 1 or 2 of the 3 River Water Pumps may be running prior to the earthquake depending on the time ofyear. Any pump that is running must not trip during or after an earthquake. The 52H contacts must not chatter. This will ensure that 2 pumps will not start on the same bus causing the Emergency Diesel generator to be overloaded. The pump must be loaded on the diesel if offsite power is lost.

Relay 50-VF110G is a GR-5 which is a solid state relay with an SCR output and therefore cannot chatter.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/30/95

Reviewed by GSB Date 07/31/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-F-57B	RE-21MW	CS (1-)	W OT2	NC	INTAKE CUB #2	W OT2	NV	--
		TS	THERMOSTAT	NO	INTAKE CUB #2	----------	CA	--
5102C		42	ALLIS TY2	----------	INTAKE CUB #2	ALLIS CHALMERS	RLY-CON.3	AS
		49	ALLIS TY2	NC	INTAKE CUB #2	ALLIS CHALMERS	RLY-CON.3	AS
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INTAKE STRUCTURE CUBICLE 2 SUPPLY FAN

The Intake Structure cubicle supply fans control switches are normally left in the AUTO position where they are controlled by a room thermostat. The dampers are wired thru a step down transformer to the fan motor leads and therefore open when the fan is running and close when the fan stops.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 11/28/95

Reviewed by GSB Date 11/28/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-D-57B1	RE-21MW	CS (1-)	W OT2	NC	INTAKE CUB #2	W OT2	NV	--
		TS	THERMOSTAT	NO	INTAKE CUB #2	----------	CA	--
5102D		42	ALLIS TY2	----------	INTAKE CUB #2	ALLIS CHALMERS	RLY-CON.3	AS
		49	ALLIS TY2	NC	INTAKE CUB #2	ALLIS CHALMERS	RLY-CON.3	AS
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INTAKE STRUCTURE CUBICLE 2 DAMPER

The Intake Structure cubicle supply fans control switches are normally left in the AUTO position where they are controlled by a room thermostat. The dampers are wired thru a step down transformer to the fan motor leads and therefore open when the fan is running and close when the fan stops.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 11/28/95

Reviewed by GSB Date 11/28/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-D-57B2	RE-21MW	CS (1-)	W OT2	NC	INTAKE CUB #2	W OT2	NV	--
		TS	THERMOSTAT	NO	INTAKE CUB #2	----------	CA	--
5102E		42	ALLIS TY2	----------	INTAKE CUB #2	ALLIS CHALMERS	RLY-CON.3	AS
		49	ALLIS TY2	NC	INTAKE CUB #2	ALLIS CHALMERS	RLY-CON.3	AS
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INTAKE STRUCTURE CUBICLE 2 DAMPER

The Intake Structure cubicle supply fans control switches are normally left in the AUTO position where they are controlled by a room thermostat. The dampers are wired thru a step down transformer to the fan motor leads and therefore open when the fan is running and close when the fan stops.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA	-	Chatter acceptable.
NV	-	Not vulnerable (mechanically actuated contacts and solid state relays).
GERS	-	Seismically adequate based on GERS_____; include GERS number.
NA	-	Component not affected by relays.
CR	-	Corrective action required.
OA	-	Operator action.
DC	-	Direct control.
AS	-	See Assessment Sheet for details.
F	-	Fire Protection no QTR available.
-	-	No entry necessary.

Prepared by RPF Date 11/28/95

Reviewed by GSB Date 11/28/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
WR-P-1C	RE-21KX	CS (1-)	W TYPE W	----------	BENCHBOARD	W TYPE W	NV	--
		62-VE/F100X3	W MG-6	DE/NO	4KVS-1E/F,CUB 8A	293B301A25B	DC/CA	--
5103		52H-1E/F10	ITE CELL SW	NO	4KVS-1E/F,CUB 14	ITE	NV	--
		50-VE/F114G	ITE GR-5	DE/NO	4KVS-1E/F,CUB 14	202D6141	NV	--
		51-VE/F114A,B,C	W COM-5	DE/NO	4KVS-1E/F,CUB 14	289B456A19	TBL2-1GRP7	AS
		43-VE/F114X	GE HEA	NOP/NC	4KVS-1E/F, CUB14	12HEA61CRD238X2	RLY-ALO.2	AS
		PB (43-)	W OT2	----------	SHUTDOWN PANEL	W OT2	NV	--
		62-AEX/DFX	W MG-6	DE/NO	PNL-DG-SEQ-1/2	1163803	RLY-ARH.5	AS

RW/RIVER WATER PUMP

Any 1 or 2 of the 3 River Water Pumps may be running prior to an earthquake depending on the time of year. Any pump that is running must not trip during or after an earthquake. The 52H contacts must not chatter. This will ensure that 2 pumps will not start on the same bus causing the Emergency Diesel Generator to be overloaded. The pump must be loaded on the diesel if offsite power is lost.

Relay 50-VE/F114G is a GR-5 which is a solid state relay with an SCR output and therefore cannot chatter.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/30/95

Reviewed by GSB Date 07/31/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-F-57C	RE-21MW	CS (1-)	W OT2	NC	INTAKE CUB #3	W OT2	NV	--
		TS	THERMOSTAT	NO	INTAKE CUB #3	----------	CA	--
5103C		42	ALLIS TY2	----------	INTAKE CUB #3	ALLIS CHALMERS	RLY-CON.3	AS
		49	ALLIS TY2	NC	INTAKE CUB #3	ALLIS CHALMERS	RLY-CON.3	AS
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INTAKE STRUCTURE CUBICLE 3 SUPPLY FAN

The Intake Structure cubicle supply fans control switches are normally left in the AUTO position where they are controlled by a room thermostat. The dampers are wired thru a step down transformer to the fan motor leads and therefore open when the fan is running and close when the fan stops.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

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GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPP Date 11/28/95

Reviewed by GSB Date 11/28/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-D-57C1	RE-21MW	C8 (1-)	W OT2	NC	INTAKE CUB #3	W OT2	NV	--
		TS	THERMOSTAT	NO	INTAKE CUB #3	----------	CA	--
5103D		42	ALLIS TY2	----------	INTAKE CUB #3	ALLIS CHALMERS	RLY-CON.3	AS
		49	ALLIS TY2	NC	INTAKE CUB #3	ALLIS CHALMERS	RLY-CON.3	AS
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INTAKE STRUCTURE CUBICLE 3 DAMPER

The Intake Structure cubicle supply fans control switches are normally left in the AUTO position where they are controlled by a room thermostat. The dampers are wired thru a step down transformer to the fan motor leads and therefore open when the fan is running and close when the fan stops.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS_____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- DC - Direct control.
- AS - See Assessment Sheet for details.
- F - Fire Protection no QTR available.
- - - No entry necessary.

Prepared by RPF Date 11/28/95

Reviewed by GSB Date 11/28/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-D-57C2	RE-21MW	CS (1-)	W OT2	NC	INTAKE CUB #3	W OT2	NV	--
		TS	THERMOSTAT	NO	INTAKE CUB #3	----------	CA	--
5103E		42	ALLIS TY2	----------	INTAKE CUB #3	ALLIS CHALMERS	RLY-CON.3	AS
		49	ALLIS TY2	NC	INTAKE CUB #3	ALLIS CHALMERS	RLY-CON.3	AS
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INTAKE STRUCTURE CUBICLE 3 DAMPER

The Intake Structure cubicle supply fans control switches are normally left in the AUTO position where they are controlled by a room thermostat. The dampers are wired thru a step down transformer to the fan motor leads and therefore open when the fan is running and close when the fan stops.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

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- - No entry necessary.

Prepared by RPF Date 11/28/95

Reviewed by GSB Date 11/28/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-RW-102A1	RE-21KZ	CS (1-)	W OT2	----------	BENCHBOARD	W OT2	NV	--
		52S-1E10	ITE BKR AUX	NO/NC	4KVS-1E, CUB 10	ITE	NV	--
5104		CONTACTOR 420&C	ALLIS TY2	DE/NO	MCC1-E1, CUB D	ALLIS CHALMERS	RLY-CON.3	AS
		49	ALLIS TY2	NC	MCC1-E1, CUB D	ALLIS CHALMERS	RLY-CON.3	AS
		LS# 3, 4	LIMITORQUE	----------	MOV-RW-102A1	LIMITORQUE	NV	--
		TS# 17, 18	LIMITORQUE	----------	MOV-RW-102A1	LIMITORQUE	NV	--
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RW/PUMP DISCHARGE ISO

MOV-RW-102's are NSA in AUTO. The valves will OPEN when the pump starts and will CLOSE when the pump trips. The valves must be OPENABLE following an earthquake in case a pump trips and is restarted on the Emergency Diesel Generator.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/30/95

Reviewed by GSB Date 07/31/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-RW-102A2	RE-21KZ	CS (1-)	W OT2	----------	BENCHBOARD	W OT2	NV	--
		52S-1E10	ITE BKR AUX	NO/NC	4KVS-1E, CUB 10	ITE	NV	--
5105		CONTACTOR 420&C	ALLIS TY2	DE/NO	MCC1-E1, CUB G	ALLIS CHALMERS	RLY-CON.3	AS
		49	ALLIS TY2	NC	MCC1-E1, CUB G	ALLIS CHALMERS	RLY-CON.3	AS
		LS# 3, 4	LIMITORQUE	----------	MOV-RW-102A2	LIMITORQUE	NV	--
		TS# 17, 18	LIMITORQUE	----------	MOV-RW-102A2	LIMITORQUE	NV	--
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RW/PUMP DISCHARGE ISO

MOV-RW-102's are NSA in AUTO. The valves OPEN when the pumps start and will CLOSE when the pump trips. The valves must be OPENABLE following an earthquake in case a pump trips and restarts on the Emergency Diesel Generator.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/30/95

Reviewed by GSB Date 07/31/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-RW-102B1	RE-21KS	CS (1-)	W OT2	----------	BENCHBOARD	W OT2	NV	--
		52S-1F10	ITE BKR AUX	NO/NC	4KVS-1F, CUB 10	ITE	NV	--
5106		CONTACTOR 420&C	ALLIS TY2	DE/NO	MCC1-E2, CUB D	ALLIS CHALMERS	RLY-CON.3	AS
		49	ALLIS TY2	NC	MCC1-E2, CUB D	ALLIS CHALMERS	RLY-CON.3	AS
		LS# 3, 4	LIMITORQUE	----------	MOV-RW-102B1	LIMITORQUE	NV	--
		TS# 17, 18	LIMITORQUE	----------	MOV-RW-102B1	LIMITORQUE	NV	--
		----------	----------	----------	----------	----------	----------	--
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RW/PUMP DISCHARGE ISO

MOV-RW-102's are NSA in AUTO. The valves will OPEN when the pump starts and will CLOSE when the pump trips. The valves must be OPENABLE following an earthquake in case a pump trips and restarts on the Emergency Diesel Generator.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA	-	Chatter acceptable.
NV	-	Not vulnerable (mechanically actuated contacts and solid state relays).
GERS	-	Seismically adequate based on GERS_____; include GERS number.
NA	-	Component not affected by relays.
CR	-	Corrective action required.
OA	-	Operator action.
DC	-	Direct control.
AS	-	See Assessment Sheet for details.
F	-	Fire Protection no QTR available.
-	-	No entry necessary.

Prepared by RPF Date 01/30/95

Reviewed by GSB Date 07/31/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-RW-102B2	RE-21KZ	CS (1-)	W OT2	----------	BENCHBOARD	W OT2	NV	--
		52S-1F10	ITE BKR AUX	NO/NC	4KVS-1F, CUB 10	ITE	NV	--
5107		CONTACTOR 420&C	ALLIS TY2	DE/NO	MCC1-E2, CUB G	ALLIS CHALMERS	RLY-CON.3	AS
		49	ALLIS TY2	NC	MCC1-E2, CUB G	ALLIS CHALMERS	RLY-CON.3	AS
		LS# 3, 4	LIMITORQUE	----------	MOV-RW-102B2	LIMITORQUE	NV	--
		TS# 17, 18	LIMITORQUE	----------	MOV-RW-102B2	LIMITORQUE	NV	--
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RW/PUMP DISCHARGE ISO

MOV-RW-102's are NSA in AUTO. The valves OPEN when a pump starts and CLOSE when a pump trips. The valves must be OPENABLE following an earthquake in case a pump trips and restarts on the Emergency Diesel Generator.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 01/30/95

Reviewed by GSB Date 07/31/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-RW-102C1	RE-21KZ	CS (1-)	W OT2	----------	BENCHBOARD	W OT2	NV	--
		52S-1E14	ITE BKR AUX	NO/NC	4KVS-1E, CUB 14	ITE	NV	--
5108		CONTACTOR 420&C	ALLIS TY2	DE/NO	MCC1-E1, CUB H	ALLIS CHALMERS	RLY-CON.3	AS
		49	ALLIS TY2	NC	MCC1-E1, CUB H	ALLIS CHALMERS	RLY-CON.3	AS
		LS# 3, 4	LIMITORQUE	----------	MOV-RW-102C1	LIMITORQUE	NV	--
		TS# 17, 18	LIMITORQUE	----------	MOV-RW-102C1	LIMITORQUE	NV	--
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RW/PUMP DISCHARGE ISO

MOV-RW-102's are NSA in AUTO. The valves OPEN when a pump starts and CLOSE when a pump trips. The valves must OPENABLE following an earthquake in case a pump trips and restarts on the Emergency Diesel Generator.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/30/95

Reviewed by GSB Date 07/31/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-RW-102C2	RE-21KZ	CS (1-)	W OT2	----------	BENCHBOARD	W OT2	NV	--
		52S-1F14	ITE BKR AUX	NO/NC	4KVS-1F, CUB 14	ITE	NV	--
5109		CONTACTOR 420&C	ALLIS TY2	DE/NO	MCC1-E1, CUB H	ALLIS CHALMERS	RLY-CON.3	AS
		49	ALLIS TY2	NC	MCC1-E1, CUB H	ALLIS CHALMERS	RLY-CON.3	AS
		LS# 3, 4	LIMITORQUE	----------	MOV-RW-102C2	LIMITORQUE	NV	--
		TS# 17, 18	LIMITORQUE	----------	MOV-RW-102C2	LIMITORQUE	NV	--
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RW/PUMP DISCHARGE ISO

MOV-RW-102's are NSA in AUTO. The valves OPEN when a pump starts and CLOSE when a pump trips. The valves must be OPENABLE following an earthquake in case a pump trips and restarts on the Emergency Diesel Generator.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/30/95

Reviewed by GSB Date 07/31/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-RW-106A	RE-21LA	CS (1-)	W OT2	----------	BENCHBOARD	W OT2	NV	--
		CONTACTOR 42O&C	ALLIS TY2	DE/NO	MCC1-E4, CUB D	ALLIS CHALMERS	RLY-CON.3	AS
5119		49	ALLIS TY2	NC	MCC1-E4, CUB D	ALLIS CHALMERS	RLY-CON.3	AS
		K643	W AR440AR	DE/NO	RK-REAC-PROT-3B	W AR440AR	RLY-AI1.4	AS
		LS# 1, 8	LIMITORQUE	----------	MOV-RW-106A	LIMITORQUE	NV	--
		TS# 17	LIMITORQUE	----------	MOV-RW-106A	LIMITORQUE	NV	--
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RW/CCR HT EXCH ISOLATION

MOV-RW-106's must remain OPEN during and after an earthquake. MOV-RW-106A must be CLOSABLE at a later time if RW is used after WT-TK-10 is depleted.

Chatter of close contactor 42C and relay K643 could cause the valve to CLOSE.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/30/95

Reviewed by GSB Date 07/31/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-RW-106B	RE-21LA	CS (1-)	W OT2	----------	BENCHBOARD	W OT2	NV	--
		CONTACTOR 42O&C	ALLIS TY2	DE/NO	MCC1-E4, CUB D	ALLIS CHALMERS	RLY-CON.3	AS
5120		49	ALLIS TY2	NC	MCC1-E4, CUB D	ALLIS CHALMERS	RLY-CON.3	AS
		K645	W AR440AR	DE/NO	RK-REAC-PROT-3B	W AR440AR	RLY-AI1.4	AS
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RW/CCR HT EXCH ISOLATION

MOV-RW-106's must remain OPEN during and after an earthquake. MOV-RW-106A must be CLOSEABLE at a later time if RW is used after WT-TK-10 is depleted.

Chatter of close contactor 42C and relay K643 could cause the valve to CLOSE.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA	-	Chatter acceptable.
NV	-	Not vulnerable (mechanically actuated contacts and solid state relays).
GERS	-	Seismically adequate based on GERS _____; include GERS number.
NA	-	Component not affected by relays.
CR	-	Corrective action required.
OA	-	Operator action.
DC	-	Direct control.
AS	-	See Assessment Sheet for details.
F	-	Fire Protection no QTR available.
-	-	No entry necessary.

Prepared by RPF Date 01/30/95

Reviewed by GSB Date 07/31/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-RW-113A	RE-21LA	TS & LS	LIMITORQUE	----------	MOV-RW-113A	LIMITORQUE	NV	--
		ESRIA	W MG-6	DE/NO	PNL-DIGEN-1	1163801	RLY-ARH.5	AS
5121		CONTACTOR 42C&C	ALLIS TY2	DE/NO	MCC1-E7, CUB H	ALLIS CHALMERS	RLY-CON.3	AS
		49	ALLIS TY2	NC	MCC1-E7, CUB H	ALLIS CHALMERS	RLY-CON.3	AS
		CS (1-)	W OT2	----------	ENGINE CONT PNL	W OT2	NV	--
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RW/DIESEL GEN COOLING ISO

MOV-RW-113's are NSA CLOSED and must OPEN automatically on an Emergency Diesel start signal following an earthquake.

Chatter which could cause the valve to OPEN is ACCEPTABLE.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by [illegible] Date 01/30/95

Reviewed by GSB Date 07/31/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-RW-113B	RE-21LA	TS & LS	LIMITORQUE	----------	MOV-RW-113B	LIMITORQUE	NV	--
		ESRIA	W MG-6	DE/NO	PNL-DIGEN-1	1163801	RLY-ARH.5	AS
5122		CONTACTOR 420&C	ALLIS TY2	DE/NO	MCC1-E7, CUB J	ALLIS CHALMERS	RLY-CON.3	AS
		49	ALLIS TY2	NC	MCC1-E7, CUB J	ALLIS CHALMERS	RLY-CON.3	AS
		CS (1-)	W OT2	----------	ENGINE CONT PNL	W OT2	NV	--
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RW/DIESEL GEN COOLING ISO

MOV-RW-113's are NSA CLOSED and must OPEN automatically on an EMergency Diesel start signal following an earthquake.

Chatter which could cause the valve to OPEN is ACCEPTABLE.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/30/95

Reviewed by GSB Date 07/31/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-RW-113C	RE-21LA	TS & LS	LIMITORQUE	----------	MOV-RW-113C	LIMITORQUE	NV	--
		ESRIB	W MG-6	DE/NO	PNL-DIGEN-2	1163801	RLY-ARH.5	AS
5123		CONTACTOR 420&C	ALLIS TY2	DE/NO	MCC1-E8, CUB H	ALLIS CHALMERS	RLY-CON.3	AS
		49	ALLIS TY2	NC	MCC1-E8, CUB H	ALLIS CHALMERS	RLY-CON.3	AS
		CS (1-)	W OT2	----------	ENGINE CONT PNL	W OT2	NV	--
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RW/DIESEL GEN COOLING ISO

MOV-RW-113's are NSA CLOSED and must OPEN automatically on an Emergency Diesel start signal following an earthquake.

Chatter which could cause the valve to OPEN is ACCEPTABLE.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/30/95

Reviewed by GSB Date 07/31/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-RW-113D1	RE-21LA	TS & LS	LIMITORQUE	----------	MOV-RW-113D1	LIMITORQUE	NV	--
		ESRIB	W MG-6	DE/NO	PNL-DIGEN-2	1163801	RLY-ARH.5	AS
5124		CONTACTOR 420&C	ALLIS TY2	DE/NO	MCC1-E8, CUB J	ALLIS CHALMERS	RLY-CON.2	AS
		49	ALLIS TY2	NC	MCC1-E8, CUB J	ALLIS CHALMERS	RLY-CON.3	AS
		CS (1-)	W OT2	----------	ENGINE CONT PNL	W OT2	NV	--
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RW/DIESEL GEN COOLING ISO

MOV-RW-113's are NSA CLOSED and must OPEN automatically on an Emergency Diesel Generator start signal.

Chatter which could cause the valve to OPEN is ACCEPTABLE.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/30/95

Reviewed by GSB Date 07/31/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-RW-114A	RE-21LA	TS & LS	LIMITORQUE	----------	MOV-RW-114A	LIMITORQUE	NV	--
		K643	W AR440AR	DE/NO	RK-REAC-PROT-3A	W AR440AR	RLY-AI1.4	AS
5125		CONTACTOR 42O&C	ALLIS TY2	DE/NO	MCC1-E5, CUB D	ALLIS CHALMERS	RLY-CON.3	AS
		49	ALLIS TY2	NC	MCC1-E5, CUB D	ALLIS CHALMERS	RLY-CON.3	AS
		CS (1-)	W OT2	----------	BENCHBOARD	W OT2	NV	--
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RW/CCR HT EXCH ISOLATION

MOV-RW-114A and B are CCR isolation valves that are NSA OPEN. They Must remain OPEN following an earthquake. The valves may need to be CLOSED if RW is used in place of WT-TK-10.

Chatter of close contactor 42C or relay K643 could cause valve MOV-RW-114A to CLOSE.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/30/95

Reviewed by GSB Date 07/31/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-RW-114B	RE-21LA	TS & LS	LIMITORQUE	----------	MOV-RW-114B	LIMITORQUE	NV	--
		K645	W AR440AR	DE/NO	RK-REAC-PROT-3B	W AR440AR	RLY-AI1.4	AS
5126		CONTACTOR 420&C	ALLIS TY2	DE/NO	MCC1-E3, CUB AC	ALLIS CHALMERS	RLY-CON.3	AS
		49	ALLIS TY2	NC	MCC1-E3, CUB AC	ALLIS CHALMERS	RLY-CON.3	AS
		CS (1-)	W OT2	----------	BENCHBOARD	W OT2	NV	--
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RW CCR HT EXCH ISOLATION

MOV-RW-114 A and B are CCR isolation valves that are NSA OPEN. The valves must remain OPEN following an earthquake. The valves may need to be CLOSED if RW is used in place of WT-TK-10.

Chatter of close contactor or relay K645 could cause valve MOV-RW-114B to CLOSE.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 01/30/95

Reviewed by GSB Date 07/31/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-RW-116	RE-21KE	CS (1-) CONTACTOR 420	W OT2 ALLIS TY2	---------- DE/NO	BENCHBOARD MCC1-E3, CUB AD	W OT2 ALLIS CHALMERS	NV RLY-CON.3	-- AS
5127								--
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RW/STRAINER ISOLATION

MOV-RW-116 is NSA CLOSED and must remain closed at all times.

Chatter of open contactor 420 could cause the vave to OPEN.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/30/95

Reviewed by GSB Date 08/03/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-RW-117	RE-21KZ	CS (1-)	W OT2	----------	BENCHBOARD	W OT2	NV	--
		CONTACTOR 420	ALLIS TY2	DE/NO	MCC1-E3, CUB G	ALLIS CHALMERS	RLY-CON.3	AS
5128		----------	----------	----------	----------	----------	----------	--
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RW/STRAINER ISOLATION

MOV-RW-117 is NSA CLOSED and must remain CLOSED at all times.

Chatter of open contactor 420 could cause the vave to OPEN.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/30/95

Reviewed by GSB Date 08/03/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-RW-116A	RE-21KZ	CS (1-)	W OT2	----------	BENCHBOARD	W OT2	NV	--
		CONTACTOR 420	ALLIS TY2	DE/NO	MCC1-E7, CUB Y	ALLIS CHALMERS	RLY-CON.3	AS
5131		52S-1E2	ITE BKR AUX SW	NO/NC	4KVS-1E, CUB 2	ITE	NV	--
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RW/AUX RW PUMP SUPPLY TO A RW HDR REACTO

The Aux River Water Pump Discharge valve MOV-RW-116A is NSA CLOSED with the control switch in AUTO. The valve must remain CLOSED during and after an earthquake.

The valve is interlocked by a breaker auxiliary switch from the Auxiliary River Water Pump which is not vulnerable. The valve cannot chatter OPEN.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/30/95

Reviewed by GSB Date 03/03/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-RW-116B	RE-21KZ	CS (1-)	W OT2	----------	BENCHBOARD	W OT2	NV	--
		CONTACTOR 420	ALLIS TY2	DE/NO	MCC1-E8, CUB 2	ALLIS CHALMERS	RLY-CON.3	AS
5132		52S-1F2	ITE BKR AUI SW	NO/NC	4KVS-1F, CUB 2	ITE	NV	--
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RW/AUI RW PUMP SUPPLY TO B RW HDR REACTO

The Aux River Water Pump Discharge valve MOV-RW-116B is NSA CLOSED with the control switch in AUTO. The valve must remain CLOSED during and after an earthquake.

The valve is interlocked by a breaker auxiliary switch from the Auxiliary River Water Pump which is not vulnerable. The valve cannot chatter OPEN.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS _____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 01/30/95

Reviewed by GSB Date 08/03/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-RW-103A	RE-21LA	CS (1-)	W OT2	----------	BENCHBOARD	W OT2	NV	--
		CONTACTOR 420	ALLIS TY2	DE/NO	MCC1-E3, CUB B	ALLIS CHALMERS	RLY-CON.3	AS
5133		49	ALLIS TY2	NC	MCC1-E3, CUB B	ALLIS CHALMERS	RLY-CON.3	AS
		K643	W AR440AR	DE/NO	RK-REAC-PROT-3A	W AR440AR	RLY-AI1.4	AS
		LS & TS	LIMITORQUE	----------	MOV-RW-103A	LIMITORQUE	NV	--
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RW/'A' HDR RW FLOW TO RECIRC SPRAY

MOV-RW 103's are NSA CLOSED with the control switches in AUTO. THe valves must remain CLOSED during and after an earthquake. Valve MOV-RW-103A or B must be able able to be OPENED manually after WT-TK-10 is drained.

Chatter of open contactor 420 or relay K643 could cause the valves to OPEN.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 01/30/95

Reviewed by GSB Date 08/03/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
DV-FP-9	RE-21GV	HD-FP-9-18	HAD	NO	INSIDE MFB	302	OUTLIER	AS
		MAN PULL STATN	MANUAL SWITCH	NO	LUNCHROOM	UNKNOWN	NV	--
5133C		K1	----------	DE/NO	FE-WS-3B	----------	OUTLIER	F
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LOWER CHARCOAL FILTER DELUGE VALVE

IT IS DESIRABLE TO MAINTAIN THE DELUGE VALVE CLOSED TO MAINTAIN A FLOW PATH AVAILABLE IN CASE IT IS NEEDED OR IF ANY OF THE RAD MONITORS CHATTERS AND DIVERTS SLCRS FLOW THROUGH THE MAIN FILTER BANKS. IN THE EVENT THAT THE MFB's WERE FLOODED BY THE DELUGE VALVES OPENING THE OPERATORS COULD DIVERT SLCRS FLOW BACK THROUGH VS-D-4-1A & 1B (SEE RM-416-1) BECAUSE PER THE SQUG RULES THERE IS NO ACCIDENT IMPOSED IN ADDITION TO THE EARTHQUAKE.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 11/10/95

Reviewed by GSB Date 11/10/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-RW-103B	RE-21LA	CS (1-)	W OT2	----------	BENCHBOARD	W OT2	NV	--
		CONTACTOR 420	ALLIS TY2	DE/NO	MCC1-E4, CUB B	ALLIS CHALMERS	RLY-CON.3	AS
5134		49	ALLIS TY2	NC	MCC1-E4, CUB B	ALLIS CHALMERS	RLY-CON.3	AS
		K643	W AR440AR	DE/NO	RK-REAC-PROT-3B	W AR440AR	RLY-AI1.4	AS
		LS & TS	LIMITORQUE	----------	MOV-RW-103B	LIMITORQUE	NV	--
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RW/'A' HDR RW FLOW TO RECIRC SPRAY

MOV-RW-103's are NSA CLOSED with the control switches in AUTO. THe valves must remain CLOSED during and after ans earthquake. Valves MOV-RW-103A or B must be able to be OPENED manually after WT-TK-10 is drained.

Chatter of open contactor 420 or relay K643 could cause the valves to OPEN.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/30/95

Reviewed by GSB Date 08/03/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-RW-103C	RE-21LA	CS (1-)	W OT2	----------	BENCHBOARD	W OT2	NV	--
		CONTACTOR 420	ALLIS TY2	DE/NO	MCC1-E3, CUB C	ALLIS CHALMERS	RLY-CON.3	AS
5135		49	ALLIS TY2	NC	MCC1-E3, CUB C	ALLIS CHALMERS	RLY-CON.3	AS
		K643	W AR440AR	DE/NO	RK-REAC-PROT-3A	W AR440AR	RLY-AI1.4	AS
		LS & TS	LIMITORQUE	----------	MOV-RW-103C	LIMITORQUE	NV	--
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RW/'B' HDR RW FLOW TO RECIRC SPRAY

MOV-RW-103's are NSA CLOSED with the control switches in AUTO. The valves must remain CLOSED during and after an earthquake. Valves MOV-RW-103A or B must be able to be OPENED manually after WT-TK-10 is drained.

Chatter of open contactor 420 or relay K643 could cause the valves to OPEN.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 01/30/95

Reviewed by GSB Date 08/03/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MOV-RW-103D	RE-21LA	CS (1-)	W OT2	----------	BENCHBOARD	W OT2	NV	--
		CONTACTOR 420	ALLIS TY2	DE/NO	MCC1-E4, CUB C	ALLIS CHALMERS	RLY-CON.3	AS
5136		49	ALLIS TY2	NC	MCC1-E4, CUB C	ALLIS CHALMERS	RLY-CON.3	AS
		K645	W AR440AR	DE/NO	RK-REAC-PROT-3B	W AR440AR	RLY-AI1.4	AS
		LS & TS	LIMITORQUE	----------	MOV-RW-103D	LIMITORQUE	NV	--
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RW/'B' HDR RW FLOW TO RECIRC SPRAY

MOV-RW-103's are NSa CLOSED with the control switches in AUTO. The valves must remain CLOSED during and after an earthquake. Valve MOV-RW_103A or B must be able to be OPENED manually after WT-TK-10 is drained.

Chatter of open contactor 420 or relay K643 could cause the valves to OPEN.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS _____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 01/30/95

Reviewed by GSB Date 08/03/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-F-55A	RE-21MZ	CS (1-)	W TYPE W	----------	BLDG SERVICE PNL	W TYPE W	NV	--
		CONTACTOR 42	ALLIS TY3	DE/NO	MCC1-E9, CUB P	ALLIS CHALMERS	RLY-CON.3	AS
5201		49	ALLIS TY3	NC	MCC1-E9, CUB P	ALLIS CHALMERS	RLY-CON.3	AS
		26-VS55A	HONEYWELL	NO	EMERG SWGR RM	THERMOSTAT	CA	--
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VS/EMERG SWITCHGEAR SUPPLY FAN

The Emergency Switchgear Supply Fans are normally not running with the control switches in AUTO. The fans auto start on a high temperature signal from TS-HV-55A and B (26-55A and B). Since the non-emergency power switchgear ventilation may not be availabe following an earthquake, the Emergency Supply Fans must be able to start automatically or manually following an earthquake.

Chatter of the thermostat contacts is acceptable as long as the thermostat is functional following the earthquake.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 01/30/95

Reviewed by GSB Date 08/03/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-F-55B	RE-21MZ	CS (1-)	W TYPE W	----------	BLDG SERVICE PNL	W TYPE W	NV	--
		CONTACTOR 42	ALLIS TY3	DE/NO	MCC1-E10, CUB I	ALLIS CHALMERS	RLY-CON.3	AS
5202		49	ALLIS TY3	NC	MCC1-E10, CUB I	ALLIS CHALMERS	RLY-CON.3	AS
		26-V855B	HONEYWELL	NO	EMERG SWGR RM	THERMOSTAT	CA	--
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VS/EMERG SWITCHGEAR SUPPLY FAN

The Emergency Switchgear Supply Fans are normally not running with the control switches in AUTO. the Fans auto start on a high temperature signal from TS-HV-55A and B (26-55A and B). Since the non-emergency powered switchgear ventilation may not be available following an earthquake, the Emergency Supply Fans must be able to start automatically or manually following an earthquake.

Chatter of the thermostat is acceptable provided the thermostat is functional following an earthquake.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/30/95

Reviewed by GSB Date 08/03/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-F-16A	RE-21M2	CS (1-)	W TYPE W	----------	BLDG SERVICE PNL	W TYPE W	NV	--
		CONTACTOR 42	ALLIS TY3	DE/NC	MCC1-E9, CUB AF	ALLIS CHALMERS	RLY-CON.3	AS
5203		49	ALLIS TY3	NC	MCC1-E9, CUB AF	ALLIS CHALMERS	RLY-CON.3	AS
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VS/EMERG SWITCHGEAR EXHAUST FAN

One Emergency Switchgear Exhaust Fan is normally running with the other fan stopped. The running fan must continue to run following an earthquake. Each fan has an associated exhaust damper which must open when the fan starts.

Contactor chatter during the earthquake is acceptable as long as the contactor is operational following the earthquake so that the fan which was running restarts and the exhaust damper opens when the Emergency Diesel Generator loads.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA	-	Chatter acceptable.
NV	-	Not vulnerable (mechanically actuated contacts and solid state relays).
GERS	-	Seismically adequate based on GERS_____; include GERS number.
NA	-	Component not affected by relays.
CR	-	Corrective action required.
OA	-	Operator action.
DC	-	Direct control.
AS	-	See Assessment Sheet for details.
F	-	Fire Protection no QTR available.
-	-	No entry necessary.

Prepared by RPF Date 01/30/95

Reviewed by GSB Date 08/03/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-F-16B	RE-21MZ	CS (1-)	W TYPE W	----------	BLDG SERVICE PNL	W TYPE W	NV	--
		CONTACTOR 42	ALLIS TY3	DE/NC	MCC1-E10, CUB AC	ALLIS CHALMERS	RLY-CON.3	AS
5204		49	ALLIS TY3	NC	MCC1-E10, CUB AC	ALLIS CHALMERS	RLY-CON.3	AS
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VS/EMERG SWITCHGEAR EXHAUST FAN

One Emergency Switchgear Exhaust Fan is normally running with the other fan stopped. The running fan must continue to run after an earthquake. Each fan has an associated exhaust damper which must open when the fan is running.

Contactor chatter during the earthquake is acceptable as long as the contactor is operational following the earthquake so that the fan which was running restarts and the exhaust damper opens when the Emergency Diesel Generator loads.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/30/95

Reviewed by GSB Date 08/03/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-D-16A	RE-21MZ	CS (1-)	W TYPE W	----------	BLDG SERVICE PNL	W TYPE W	NV	--
		CONTACTOR 42	ALLIS TY3	DE/NC	MCC1-E9, CUB AF	ALLIS CHALMERS	RLY-CON.3	AS
5205		49	ALLIS TY3	NC	MCC1-E9, CUB AF	ALLIS CHALMERS	RLY-CON.3	AS
		LIMIT SWITCH	BARBER-COLEMAN	NC	VS-D-16A	MP-481	NV	--
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VS/EMERG SWITCHGEAR EXHAUST DAMPER

One Emergency Switchgear Exhaust Fan is normally running with the other stopped. The running fan must continue to run after an earthquake. Each fan has an associated exhaust damper which must open when the fan is running.

Contactor chatter during the earthquake is acceptable as long as the contactor is operational following the earthquake so that the fan which is running restarts and the exhaust damper opens when th Emergency Diesel Generator loads.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA	-	Chatter acceptable.
NV	-	Not vulnerable (mechanically actuated contacts and solid state relays).
GERS	-	Seismically adequate based on GERS_____; include GERS number.
NA	-	Component not affected by relays.
CR	-	Corrective action required.
OA	-	Operator action.
DC	-	Direct control.
AS	-	See Assessment Sheet for details.
F	-	Fire Protection no QTR available.
-	-	No entry necessary.

Prepared by RPF Date 01/30/95

Reviewed by GSB Date 08/03/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-D-16B	RE-21MZ	CS (1-)	W TYPE W	----------	BLDG SERVICE PNL	W TYPE W	NV	--
		CONTACTOR 42	ALLIS TY3	DE/NO	MCC1-E10, CUB AC	ALLIS CHALMERS	RLY-CON.3	AS
5206		49	ALLIS TY3	NV	MCC1-E10, CUB AC	ALLIS CHALMERS	RLY-CON.3	AS
		LIMIT SWITCH	BARBER-COLEMAN	NC	VS-D-16B	MP-481	NV	--
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VS/EMERG SWITCHGEAR EXHAUST DAMPER

One Emergency Switchgear Exhaust Fan is normally running with the other fan stopped. The running fan must continue to run after an earthquake. Each fan has an associated exhaust damper which must open when the fan is running.

Contactor chatter during the earthquake is acceptable as long as the contactor is operational following the earthquake so that the fan which was running restarts and the exhaust damper opens when the Emergency Diesel Generator loads.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 01/30/95

Reviewed by GSB Date 08/03/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	odel	Sat*	Memo
VS-D-4-1A	RE-21MS	CS (1-)	W OT2	----------	BLDG SERVICE PNL	W OT2	NV	--
		CONTACTOR 42C	ALLIS TY2	DE/NO	MCC1-E3, CUB V	ALLIS CHALMERS	RLY-CON.3	AS
5207		69-E3VI	W MG-6	DE/NO	PNL-REL-35R	1163803	RLY-ARE.5	AS
		K613IA-E3V	ASEA RIMH2	DE/NO	PNL-REL-35R	RK-223-068-EN	QTR-ABB	AS
		K613	W AR440AR	DE/NO	RK-REL-PROT-3A	W AR440AR	RLY-AI1.4	AS
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MAIN FILTER BANK UPSTREAM BYPASS ISOLATI

VS-D-4-1A and B are the SLCRS Main Filter Bank Bypass Dampers. They are NSA OPEN. A SLCRS flow path is relied upon for cooling of the Charging Pumps and Auxiliary Feedwater Pumps.

If any radiation monitor actuates during an earthquake, relay 69-E3VI will cause VS-D-4-1A to CLOSE but will maintain a SLCRS flow path by OPENING VS-D-4-2A. If any of the radiation monitors chatter and pickup 69-E3VI, it will also open VS-D-4-2A maintaining a flowpath.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/30/95

Reviewed by GSB Date 08/03/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-D-4-1B	RE-21MS	CS (1-)	W OT2	----------	BLDG SERVICE PNL	W OT2	NV	--
		CONTACTOR 42C	ALLIS TY2	DE/NO	MCC1-E4, CUB V	ALLIS CHALMERS	RLY-CON.3	AS
5208		69-E4VI	W MG-6	DE/NO	PNL-REL-36R	1163803	RLY-ARE.5	AS
		K613IB-E4V	ASEA RIMH2	DE/NO	PNL-REL-36R	RK-223-068-EN	QTR-ABB	AS
		K613	W AR440AR	DE/NO	RK-REAC-PROT-3B	W AR440AR	RLY-AI1.4	AS
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MAIN FILTER BANK UPSTREAM BYPASS ISOLATI

VS-D-4-1A and B are the SLCRS Main Filter Bank Bypass Dampers. They are NSA OPEN. A SLCRS flow path is relied upon for cooling of the Charging Pumps and Auxiliary Feedwater Pumps.

If any radiation monitor actuates during an earthquake, relay 69-E4VI will cause VS-D-4-1B to CLOSE but will maintain a SLCRS flow path by OPENING VS-D-4-2B. If any of the radiation monitors chatter and pickup 69-E3VI, it will also open VS-D-4-2B maintaining a flowpath.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA	-	Chatter acceptable.
NV	-	Not vulnerable (mechanically actuated contacts and solid state relays).
GERS	-	Seismically adequate based on GERS_____; include GERS number.
NA	-	Component not affected by relays.
CR	-	Corrective action required.
OA	-	Operator action.
DC	-	Direct control.
AS	-	See Assessment Sheet for details.
F	-	Fire Protection no QTR available.
-	-	No entry necessary.

Prepared by RPF Date 01/30/95

Reviewed by GSB Date 08/03/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-D-4-2A	RE-21MS	CS (1-)	W OT2	----------	BLDG SERVICE PNL	W OT2	NV	--
		K613YA-LDA	ASEA RXMH2	DE/NO	PNL-REL-35R	RK-223-068-EN	QTR-ABB	AS
5209		69-E3VX	W MG-6	DE/NO	PNL-REL-35R	1163803	RLY-ARH.5	AS
		K614	W AR440AR	DE/NO	RK-REAC-PROT-3A	W AR440AR	RLY-AI1.4	AS
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MAIN FILTER BANK LEAK COLLECTION TRAIN A

VS-D-4-2A and B are the SLCRS Main Filter Bank Bypass Dampers. They are NSA CLOSED. A SLCRS flow path is relied upon for cooling of the Charging Pumps and Auxiliary Feedwater Pumps.

If any radiation monitor actuates during an earthquake, relay 69-E3VX will cause VS-D-4-1A to CLOSE but will maintain a SLCRS flow path by OPENING VS-D-4-2A. Relay K613YA will maintain VS-D-4-2A OPEN.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 01/30/95

Reviewed by GSB Date 08/03/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-D-4-2B	RE-21MS	CS (1-)	W OT2	----------	BLDG SERVICE PNL	W OT2	NV	--
		K613YB-LDB	ASEA RXMH2	DE/NO	PNL-REL-36R	RK-223-068-EN	QTR-ABB	AS
5210		69-E4VX	W MG-6	DE/NO	PNL-REL-36R	1163803	RLY-ARH.5	AS
		K614	W AR440AR	DE/NO	RK-REAC-PROT-3B	W AR440AR	RLY-AI1.4	AS
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MAIN FILTER BANK LEAK COLLECTION TRAIN B

VS-D-4-2A and B are the SLCRS Main Filter Bank Bypass Dampers. They are NSA CLOSED. A SLCRS flow path is relied upon for cooling of the Charging Pumps and Auxiliary Feedwater Pumps.

If any radiation monitor actuates during an earthquake, relay 69-E4VX will cause VS-D-4-1B to CLOSE but will maintain a SLCRS flow path by OPENING VS-D-2B. Relay K613YB will maintain VS-D-4-2B OPEN.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS _____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/30/95

Reviewed by GSB Date 08/03/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-D-4-3B	RE-21MT	CS (1-)	W OT2	----------	LOCALLY MTD	W OT2	NV	--
		CONTACTOR 420	ALLIS TY2	DE/NO	MCC1-E4, CUB W	ALLIS CHALMERS	RLY-CON.3	AS
5211		----------	----------	----------	----------	----------	----------	--
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CHG PUMP CUBICLE NORM EXHAUST DAMPER

VS-D-4-3A and B are NSA CLOSED and must remain CLOSED to ensure that the Charging Pump cubicles are properly ventilated.

Only contactor chatter (420) would cause the damper to OPEN.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS _____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 01/30/95

Reviewed by GSB Date 08/03/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-D-4-4A	RE-21MS	CS (1-)	W OT2	----------	LOCALLY MTD	W OT2	NV	--
		3-LDA	ASEA RXMH2	DE/NO	TB-348A	RK-223-068-EN	QTR-ABB	AS
5212		---	---	---	---	---	---	--
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CHG PUMP CUBICLE EMER EXHAUST DAMPER

VS-D-4-4A and B are NSA OPEN and must remain OPEN to ensure that the Charging Pump cubicles are properly ventilated.

Chatter of LOCALLY MOUNTED relay 3-LDA could cause the relay to seal-in and cause damper VS-D-4-4A to CLOSE.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 01/30/95

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Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-D-4-4B	RE-21MS	CS (1-)	W OT2	----------	LOCALLY MTD	W OT2	NV	--
		3-LDB	ASEA RXMH2	DE/NO	TB-349A	RK-223-068-EN	QTR-ABB	AS
5213		----------	----------	----------	----------	----------	----------	--
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CHG PUMP CUBILCE EMER EXHAUST DAMPER

VS-D-4-4A and B are NSA OPEN and must remain OPEN to ensure that the Charging Pump cubicles are properly ventilated.

Chatter of LOCALLY MOUNTED relay 3-LDB could cause the relay to seal-in and cause damper VS-D-4-4B to CLOSE.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA	-	Chatter acceptable.
NV	-	Not vulnerable (mechanically actuated contacts and solid state relays).
GERS	-	Seismically adequate based on GERS_____; include GERS number.
NA	-	Component not affected by relays.
CR	-	Corrective action required.
OA	-	Operator action.
DC	-	Direct control.
AS	-	See Assessment Sheet for details.
F	-	Fire Protection no QTR available.
-	-	No entry necessary.

Prepared by RPF Date 01/30/95

Reviewed by GSB Date 08/03/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-D-4-7A	RE-21MS	52-8N5X	W MG-6	DE/NO	PNL-REL-35R	1168303	CA	--
5214								

LEAK COLL EXHAUST FAN 4A SUCTION ISOLATI

VS-D-4-7A and 8A are interlocked with the SLCRS fans. Since the fans will trip on a loss of power and then restart on a Emergency Diesel Generator Sequence Signal, the dampers must be able to reopen if they close. NSA is one SLCRS fan running with the other in standby.

Chatter of relay 52-8N5X is acceptable. Only failure of relay 52-8N5X would prevent damper VS-D-4-7A from opening on restart of the SLCRS fan.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/30/95

Reviewed by GSB Date 08/03/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-D-4-8A	RE-21MS	52-9P6X	W MG-6	DE/NO	PNL-REL-36R	1168303	CA	--
5216								--
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LEAK COLL EXHAUST FAN 4B SUCTION ISOLATI

VS-D-4-7A and 8A are interlocked with the SLCRS fans. Since the fans will trip on a loss of power and then restart on an Emergency Diesel Generator Sequence Signal, the dampers must be able to reopen if they close. NSA is one SLCRS fan running with the other in standby.

Chatter of relay 52-9P6X is acceptable. Only failure of relay 52-9P6X would prevent damper VS-D-4-8A from opening on restart of the SLCRS fan.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 01/30/95

Reviewed by GSB Date 08/03/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-D-4-9A	RE-21MS	CS (1-)	W OT2	----------	LOCALLY MTD	W OT2	NV	--
5218								

MAIN FILTER BANK [1VS-FL-4,5,6] IN DAMPE

The Main Filter Bank Inlet and Outlet Dampers VS-D-4-9A, 9B, 10A, and 10B normally have one pair OPEN and the other CLOSED. It is desired that the dampers remain in this alignment following an earthquake.

There are no contacts in the circuit which are vulnerable to chatter. Only failure of the damper operator could cause the dampers to change position.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA	-	Chatter acceptable.
NV	-	Not vulnerable (mechanically actuated contacts and solid state relays).
GERS	-	Seismically adequate based on GERS_____; include GERS number.
NA	-	Component not affected by relays.
CR	-	Corrective action required.
OA	-	Operator action.
DC	-	Direct control.
AS	-	See Assessment Sheet for details.
F	-	Fire Protection no QTR available.
-	-	No entry necessary.

Prepared by RPF Date 01/30/95

Reviewed by GSB Date 08/03/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-D-4-9B	RE-21MS	CS (1-)	W OT2	----------	LOCALLY MTD	W OT2	NV	--
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5219		---	---	---	---	---	---	--
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MAIN FILTER BANK [1VS-FL-4,5;6] OUT DAMP

The Main Filter bank Inlet and Outlet Dampers VS-D-4-9A, 9B, 10A, and 10B normally have one pair OPEN and the other CLOSED. It is desired that the dampers remain in this alignment following an earthquake.

There are no contacts in the circuit which are vulnerable to chatter. Only failure of the damper operator could cause the dampers to change position.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS _____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/30/95

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Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-D-4-10A	RE-21MS	CS (1-)	W OT2	----------	LOCALLY MTD	W OT2	NV	--
5220		---	---	---	---	---	---	--
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MAIN FILTER BANK [1VS-FL-7,8,9] IN DAMPE

The Main Filter Bank Inlet and Outlet Dampers VS-D-4-9A, 9B, 10A, and 10B normally have one pair OPEN and the other pair CLOSED. It is desired that the dampers remain in this alignment following an earthquake.

There are no contacts in the circuit which are vulnerable to chatter. Only failure of the damper operator could cause the dampers to change position.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA	-	Chatter acceptable.
NV	-	Not vulnerable (mechanically actuated contacts and solid state relays).
GERS	-	Seismically adequate based on GERS_____; include GERS number.
NA	-	Component not affected by relays.
CR	-	Corrective action required.
OA	-	Operator action.
DC	-	Direct control.
AS	-	See Assessment Sheet for details.
F	-	Fire Protection no QTR available.
-	-	No entry necessary.

Prepared by RPF Date 01/30/95

Reviewed by GSB Date 08/03/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-D-4-10B	RE-21MS	CS (1-)	W OT2A	----------	LOCALLY MTD	W OT2	NV	--
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5221		---	---	---	---	---	---	--
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MAIN FILTER BANK [1VS-FL-7,8;9] OUT DAMP

The Main Filter Bank Inlet and Outlet Dampers VS-D-4-9A, 9B, 10A, and 10B normally have one pair OPEN and the other pair CLOSED. It is desired that the dampers remain in this alignment following an earthquake.

There are no contacts in the circuit which are vulnerable to chatter. Only failure of the damper operator could cause the damper to change position.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/30/95

Reviewed by GSB Date 08/03/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-F-4A	RE-21MS	CS (1-)	W TYPE W	----------	BLDG SERVICE PNL	W TYPE W	NV	--
		63-VS106A	BARKSDALE	NOP/NO	LOCALLY MTD	DIT-M3	DC/CA	--
5222		62-RN100X1	W MG-6	DE/NO	480V BUS 1N	1163797	DC/CA	--
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LEAK COLLECTION EXHAUST FAN

One of the two SLCRS fans VS-F-4A or B is normally running. After an earthquake the fan which was running should continue to run or restart on an Emergency Diesel Generator Sequence Signal.

Relay Chatter of (62-RN100X1 or 62-RP100X1, 63-VS106A (PS-VS-106A) or 63-VS106B (PS-VS-106B) without a loss of power would trip the fan and the fan would not restart because there is no auto start of the fan except for Diesel Sequencing Signal. The pressure switches are Barksdale DIT-MS's which are acceptable per GERS-PS.5.

With a loss of power condition the fan will trip and will restart on a Diesel Sequencing Signal.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 01/30/95

Reviewed by GSB Date 08/03/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-F-4B	RE-21MS	CS (1-)	W TYPE W	----------	BLDG SERVICE PNL	W TYPE W	NV	--
		63-VS106B	BARKSDALE	NOP/NO	LOCALLY MTD	DIT-M3	DC/CA	--
5223		62-RP100X1	W MG-6	DE/NO	480V BUS 1P	1163797	DC/CA	--
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LEAK COLLECTION EXHAUST FAN

One of the two SLCRS fans VS-D-4A or 4B is normally running . After an earthquake the fan which was running should continue to run or restart on a Emergency Diesel Generator Sequence Signal.

Relay chatter of (62-RN100X1 or 62-RP100X1, 63-VS106A (PS-VS-106A) or 63-VS106B (PS-VS106B) without a loss of power would trip the fan and the fan would not restart because there is no auto start of the fan except for the Diesel Sequencing Signal. The pressure switches are Barksdale DIT-MS's which are acceptable per GERS-PS.5.

With a loss of power condition the fan will trip and restart on a Diesel Sequencing Signal.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 01/30/95

Reviewed by GSB Date 08/03/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-D-4-12A	RE-21MT	LS VS-D-4-15A	LIMIT SW AT DMPR	----------	MTD ON DMPR	----------	NV	--
		CS (1-)	W OT1	----------	BLDG SERVICE PNL W OT1		NV	--
5224		----------	----------	----------	----------	----------	----------	--
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QUENCH SPRAY PUMP RM OUTSIDE AIR IN ISOL

VS-D-4-12A and B and VS-D-4-15A and B are normally in a throttled position with the control swiches in AUTO. The dampers must be able to go fully OPEN if needed after an earthquake.

Chatter cannot cause the damper to go CLOSED because there are no contacts in the CLOSING circuit except for the control switch which is not vulnerable to chatter.

Failure of the limit switch (LMS VS-D-4-15A or 15B) in the OPENING circuit would prevent the damper from opening, however the damper could be OPENED manually with the control switch.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS _____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

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Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-D-4-12B	RE-21MT	LS VS-D-4-15B	LIMIT SW AT DMPR	----------	MTD ON DMPR	----------	NV	--
		CS (1-)	W OT1	----------	BLDG SERVICE PNL W OT1		NV	--
5225		----------	----------	----------	----------	----------	----------	--
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QUENCH SPRAY PUMP RM OUTSIDE AIR IN ISOL

VS-D-4-12A and B and VS-D-4-15A and B are normally in a throttled position with the control switches in AUTO. The dampers must be able to go fully OPEN if needed after an earthquake.

Chatter cannot cause the damper to go CLOSED because there are no contacts in the CLOSING circuit except for the control switch which is not vulnerable to chatter.

Failure of the limit switch (LMS VS-D-4-15A or 15B) in the OPENING circuit would prevent the damper from opening, however the damper could be OPENED manually with the control switch..

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA	-	Chatter acceptable.
NV	-	Not vulnerable (mechanically actuated contacts and solid state relays).
GERS	-	Seismically adequate based on GERS_____; include GERS number.
NA	-	Component not affected by relays.
CR	-	Corrective action required.
OA	-	Operator action.
DC	-	Direct control.
AS	-	See Assessment Sheet for details.
F	-	Fire Protection no QTR available.
-	-	No entry necessary.

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Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-D-4-15A	RE-21MT	TS-VS-4-1A CS (1-)	HONEYWELL W OT2	NO	LOCALLY MTD BLDG SERVICE PNL	T675D W OT2	CA NV	-- --
5226								--
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AUX FEED PUMP RM EXHAUST DAMPER

VS-D-4-12A and B and VS-D-4-15A and B are normally in a throttled position with the control switches in AUTO. The dampers must be able to go fully OPEN if needed after an earthquake.

Chatter cannot cause the dammper to go CLOSED because there are no contacts in the CLOSING circuit except for the control switch which is not vulnerable to chatter.

Failure of the temperature switch (TS-VS-4-1A or B) in the OPENING circuit would prevent the damper from OPENING, however the damper could be OPENED manually with the control switch.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

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Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-D-4-15B	RE-21MT	TS-VS-4-1B	HONEYWELL	NO	LOCALLY MTD	T675D	CA	--
		CS (1-)	W OT2	----------	BLDG SERVICE PNL	W OT2	NV	--
5227		----------	----------	----------	----------	----------	----------	--
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AUX FEED PUMP RM EXHAUST DAMPER

VS-D-4-14A and B and VS-D-4-15A and B are normally in a throttled position with the control switches in AUTO. The dampers must be able to go fully OPEN if needed after an earthquake.

Chatter cannot cause the damper to go CLOSED because there are no contacts in the CLOSING circuit except for the control switch which is not vulnerable to chatter.

Failure of the temperature switch (TS-VS-4-1A or B) in the OPENING circuit would prevent the damper from opening, however the damper could be OPENED manually with the control switch.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA	-	Chatter acceptable.
NV	-	Not vulnerable (mechanically actuated contacts and solid state relays).
GERS	-	Seismically adequate based on GERS_____; include GERS number.
NA	-	Component not affected by relays.
CR	-	Corrective action required.
OA	-	Operator action.
DC	-	Direct control.
AS	-	See Assessment Sheet for details.
F	-	Fire Protection no QTR available.
-	-	No entry necessary.

Prepared by RPF Date 01/30/95

Reviewed by GSB Date 08/03/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-D-5-2	RE-21MH	CS (1-)	W OT2	----------	BLDG SERVICE PNL	W OT2	NV	--
5228								

CNMT PURGE & EXHAUST TO MAIN FILTER BANK

S-D-5-2 is NSA CLOSED with its control switch in CLOSE. It must remain CLOSED to ensure full SLCRS flow is maintained from the areas expected. If the damper OPENS the SLCRS fan would trip on low suction pressure from 63-VS106A (PS-VS-106A) or 63-VS106B (PS-VS-106B).

There are no contacts in the damper OPENING circuit except for the control switch which is not vulnerable to chatter. The damper should not go OPEN.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 01/31/95

Reviewed by GSB Date 08/03/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-D-7-2A	RE-21MA							--
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5229								--
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AUX BLDG A SYSTEM MAIN FILTER BANK IN DA

VS-D-7-2A and 4A are NSA CLOSED and have no control switches. They OPEN and CLOSE solely on a radiation monitor signal. The dampers OPEN on a high-high radition signal.

Chatter of the rad monitor output contacts RIS-VS102A or B and relays RIS-VS102AX or BX could cause the dampers to OPEN. However, since they would reclose when the chatter stops, chatter is acceptable.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 01/31/95

Reviewed by GSB Date 08/03/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-D-7-4A	RE-21MA	----------	----------	----------	----------	----------	----------	--
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5230		----------	----------	----------	----------	----------	----------	--
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AUX BLDG B SYSTEM MAIN FILTER BANK IN DA

VS-D-7-2A and 4A are NSA CLOSED and have no control switches. They OPEN and CLOSE solely on a radiation signal. The dampers OPEN on a high-high radiation signal.

Chatter of the rad monitor output contacts RIS-VS102A or B and relays RIS-VS102AX or BX could cause the dampers to OPEN. However, since they would reclose when the chatter stops, chatter is acceptable.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA	-	Chatter acceptable.
NV	-	Not vulnerable (mechanically actuated contacts and solid state relays).
GERS	-	Seismically adequate based on GERS_____; include GERS number.
NA	-	Component not affected by relays.
CR	-	Corrective action required.
OA	-	Operator action.
DC	-	Direct control.
AS	-	See Assessment Sheet for details.
F	-	Fire Protection no QTR available.
-	-	No entry necessary.

Prepared by RPF Date 01/31/95

Reviewed by GSB Date 08/03/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
SOV-VS-209A1	RE-21MT	FE-WS-3A	K4	NO	LOCAL DELUGE PNL	----------	CA	--
		69-FE-WS-3A	W SG	DE/NO	PNL-REL-40R	----------	CA	--
5231		----------	----------	----------	----------	----------	----------	--
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UPPER FILTER BANK DRAIN VALVE

The Main Filter Bank Drains are NSA CLOSED and OPEN upon fire detection in the Charcoal Filters. To maintain proper SLCRS flows these valves must remain CLOSED.

SOV-VS209A1, A2, B1 and B2 are energized to OPEN the drain valves. Intermittent chatter of relays FE-WS-3A(K4) or 3B(K4), 69-FE-WS-3A or 3B could cause the valves to OPEN. However, the valves would reclose when chatter has stopped.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/31/95

Reviewed by GSB Date 08/03/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
DV-FP-8	RE-21GV	HD-FP-8-16	HAD	NO	INSIDE MFB	302	OUTLIER	AS
		MAN PULL STATN	MANUAL SWITCH	NO	LUNCHROOM	UNKNOWN	NV	--
5231C		K1	----------	DE/NO	FE-WS-3A	----------	OUTLIER	F
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UPPER CHARCOAL FILTER DELUGE VALVE

IT IS DESIRABLE TO MAINTAIN THE DELUGE VALVE CLOSED TO MAINTAIN A FLOW PATH AVAILABLE IN CASE IT IS NEEDED OR IF ANY OF THE RAD MONITORS CHATTERS AND DIVERTS SLCRS FLOW THROUGH THE MAIN FILTER BANKS. IN THE EVENT THAT THE MFB's WERE FLOODED BY THE DELUGE VALVES OPENING THE OPERATORS COULD DIVERT SLCRS FLOW BACK THROUGH VS-D-4-1A & 1B (SEE RM-416-1) BECAUSE PER THE SQUG RULES THERE IS NO ACCIDENT IMPOSED IN ADDITION TO THE EARTHQUAKE.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS _____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
\- - No entry necessary.

Prepared by RPF Date 11/10/95

Reviewed by GSB Date 11/10/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
SOV-VS-209A2	RE-21MT	FE-WS-3A	K4	NO	LOCAL DELUGE PNL	----------	CA	--
		69-FE-WS-3A	W SG	DE/NO	PNL-REL-40R	----------	CA	--
5232		----------	----------	----------	----------	----------	----------	--
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UPPER FILTER BANK DRAIN VALVE

The Main Filter Bank Drains are NSA CLOSED and OPEN upon fire detection in the Charcoal Filters. To maintain proper SLCRS flows these valves must remain CLOSED.

SOV-VS209A1, A2, B1, and B2 are energized to OPEN the drain valves. Intermittent chatter of relays FE-WS-3A(K4) or FE-WS-3B(K4), 69-FE-WS-3A or 3B could cause the valves to OPEN. However, the valves would reclose when the chatter has stopped.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/31/95

Reviewed by GSB Date 08/03/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
SOV-VS-209B1	RE-21MT	FE-WS-3B	K4	NO	LOCAL DELUGE PNL	----------	CA	--
		69-FE-WS-3B	W SG	DE/NO	PNL-REL-40R	----------	CA	--
5233		----------	----------	----------	----------	----------	----------	--
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LOWER FILTER BANK DRAIN VALVE

THe Nain Filter Bank Drains are NSA CLOSED and OPEN upon fire detection in the Charcoal FIlters. To maintain propre SLCRS flows these valves must remain CLOSED.

SOV-VS209A1, A2, B1, and B2 are energized to OPEN the drain valves. Intermittent chatter of relays FE-WS-3A(K4) OR FE-WS-3B(K4), 69-FE-WS-3A or 69-FE-WS-3B could cause the valves to OPEN. However, the valves would reclose when the chatter has stopped.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS _____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by PRF Date 01/31/95

Reviewed by GSB Date 08/03/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
SOV-VS-209B2	RE-21MT	FE-WS-3B	K4	NO	LOCAL DELUGE PNL	----------	CA	--
		69-FE-WS-3B	W SG	DE/NO	PNL-REL-40R	----------	CA	--
5234		----------	----------	----------	----------	----------	----------	--
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LOWER FILTER BANK DRAIN VALVE

The Main Filter Bank Drains are NSA CLOSED and OPEN upon fire detection in the Charcoal Filters. To maintain proper SLCRS flows these valves must remain CLOSED.

SOV-VS209A1, A2, B1, and B2 are energized to OPEN the drain valves. Intermittent chatter of relays FE-WS-3A(K4) or FE-WS-3B(K4), 69-FE-WS-3A or 69-FE-WS-3B could cause the valves to OPEN. However, the valve would reclose when the chatter has stopped.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/31/95

Reviewed by GSB Date 08/03/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-AC-1A	RE-21MK	CS (1-)	W TYPE W	----------	BLDG SERVICE PNL	----------	NV	--
		62-RN100X1	W MG-6	DE/NO	480V BUS 1N	SPECIAL	DC/CA	--
5235		162-AEX2	W MG-6	DE/NO	PNL-DG-SEQ-1	1163803	RLY-ARH.5	AS
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VS/CONTROL ROOM A/C UNIT

VS-AC-1A(B) and VS-F-40A(B) are normally run together. The return air fans have local control switches which are NSA in the AUTO. They START and STOP in response to the A/C unit. If the running A/C unit and fan trip on a loss of power during an earthquake, The A/C unit and fan which were running prior to the earthquake should be capable of automatically restarting on an Emergency Diesel Sequence Signal.

There are no contacts in the trip circuit which could chatter and cause the breaker to be locked out and prevent the A/C unit from restarting.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/31/95

Reviewed by GSB Date 08/03/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-AC-1B	RE-21MK	CS (1-)	W TYPE W	----------	BLDG SERVICE PNL	----------	NV	--
		62-RP100X1	W MG-6	DE/NO	480V BUS 1P	SPECIAL	DC/CA	--
5236		162-DFX2	W MG-6	DE/NO	PNL-DG-SEQ-1	1163803	RLY-ARM.5	AS
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VS/CONTROL ROOM A/C UNIT

VS-AC-1A(B) and VS-F-40A(B) are normally run together. The return air fans have local control swiches which are NSA in AUTO. They Start and STOP in response to the A/C unit. If the running A/C unit and fan trip on a loss of power during an earthquake, the A/C unit and fan which were running prior to the earthquake should be capable of automatically restarting on an Emergency Diesel Sequence Signal.

Ther are no contacts in the trip circuit which could chatter and cause the breaker to be locked out and prevent the A/C unit from restarting.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 01/31/95

Reviewed by GSB Date 08/03/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-F-40A	RE-21MJ	CS (1-)	W OT2	----------	LOCALLY MTD	W OT2	NV	--
		52-8N10X	W MG-6	DE/NO	PNL-REL-35F	1167803	RLY-ARM.5	AS
5237		CONTACTOR 42	ALLIS TY3	DE/NO	MCC1-E9, CUB C	ALLIS CHALMERS	RLY-CON.3	AS
		49	ALLIS TY3	NC	MCC1-E9, CUB C	ALLIS CHALMERS	RLY-CON.3	AS
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VS/CONTROL ROOM RETURN AIR FAN

VS-AC-1A(B) and VS-F-40A(B) are normally run together. The return air fans have local control switches which are NSA in AUTO. They START and STOP in response to the A/C unit. IF the running A/C unit and fan trip on a loss of power during an earthquake, the A/C unit and fan which were running prior to the earthquake should be capable of automaticlly restarting on an Emergency Diesel Sequence Signal.

Chatter of contacts in the fan starting circuit during an earthquake is not acceptable because both fans VS-F-40A and B could be started.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 01/31/95

Reviewed by GSB Date 08/03/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-F-40B	RE-21MJ	CS (1-)	W OT2	----------	LOCALLY MTD	W OT2	NV	--
		52-9P10X	W MG-6	DE/NO	PNL-REL-36F	1167803	RLY-ARH.5	AS
5238		CONTACTOR 42	ALLIS TY3	DE/NO	MCC1-E10, CUB C	ALLIS CHALMERS	RLY-CON.3	AS
		49	ALLIS TY3	NC	MCC1-E10, CUB C	ALLIS CHALMERS	RLY-CON.3	AS
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VS/CONTROL ROOM RETURN AIR FAN

VS-AC-1A(B) and VS-F-40A(B) are normally run together. The return air fans have local control switches which are NSA in AUTO. They START and STOP in response to the A/C unit If the running A/C unit and fan trip on a loss of power during as earthquake, the A/C unit and fan which were running prior to the earthquake should be capable of automatically restarting on an Emergency Diesel Sequence Signal.

Chatter of contacts in the fan starting circuit during an earthquake is not acceptable because both fans VS-F-40A and B could be started.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 01/31/95

Reviewed by GSB Date 08/03/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-AD-7	RE-21MJ	42-E9C	ALLIS TY2	NC	MCC1-E9, CUB C	ALLIS CHALMERS	RLY-CON.3	AS
		EP-VS-140-1	HONEYWELL	ENERGIZED	RK-VS-AC-1A	HNY RP403D	OUTLIER	AS
5239								--
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VS/VS-F-40A SUCTION DAMPER

V[illegible]-AD-7, 8, 9, and 10 are the intake and exhaust dampers for VS-F-40A and B. The dampers are interlocked with the fan [illegible]arters to OPEN the dampers when the fans START and CLOSE when the fans STOP.

Contact chatter during an earthquake is acceptable. The fan contactor must be operable following the earthquake.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/02/95

Reviewed by GSB Date 08/03/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-AD-8	RE-21MJ	42-E10C	ALLIS TY2	NO	MCC1-E10, CUB C	ALLIS CHALMERS	RLY-CON.3	AS
		EP-VS-140-2	HONEYWELL	ENERGIZED	RK-VS-AC-1B	HNY RP403D	OUTLIER	AS
5240								--
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VS/VS-F-40B SUCTION DAMPER

VS-AD-7, 8, 9, and 10 are intake and exhaust dampers for VS-F-40A and B. The dampers are interlocked with the fan starters to OPEN the dampers when the fans START and CLOSE when the fans STOP.

Contact chatter during the earthquake is acceptable. The fan contactor must be operable after the earthquake.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/02/95

Reviewed by GSB Date 08/03/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-AD-9	RE-21MJ	42-E9C EP-VS-140-1	ALLIS TY2 HONEYWELL	NC ENERGIZED	MCC1-E9, CUB C RK-VS-AC-1B	ALLIS CHALMERS HNY RP403D	GER OUTLIER	(1 AS
5241								

VS/VS-F-40A DISCHARGE DAMPER

VS-AD-7, 8, 9, and 10 are intake and exhaust dampers for VS-F-40A and B. The dampers are interlocked with the fan starters to OPEN the dampers when the fans START and CLOSE when the fans STOP.

Contact chatter during an earthquake is acceptable. The fan contactor must be operable following an earthquake.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/02/95

Reviewed by GSB Date 08/03/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-AD-10	RE-21MJ	42-E10C	ALLIS TY2	NO	MCC1-E10, CUB C	ALLIS CHALMERS	RLY-CON.3	AS
		EP-VS-140-2	HONEYWELL	ENERGIZED	RK-VS-AC-1A	HNY RP403D	OUTLIER	AS
5242								--
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VS/VS-F-40B DISCHARGE DAMPER

VS-AD-7, 8, 9, and 10 are the intake and exhaust dampers for VS-F-40A and B. The dampers are interlocked with the fan starters to OPEN the dampers when the fans START and CLOSE when the fans STOP.

Cantact chatter during the earthquake is acceptable. The fan contactor must be operable following the earthquake.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/02/95

Reviewed by GSB Date 08/03/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-D-40-1A	RE-21ML	CS (1-)/PB1&2	W OT2	----------	BLDG SERVICE PNL	W OT2	NV	--
		3-HVCA	ASE[illegible] RXMH2	DE/NO	PNL-REL-35F	RK-223-069-EN	QTR-ABB	AS
5243		62-ACAX1	W SG	DE/NO	PNL-REL-35F	293B255A26	RLY-ARH.5	AS
		CONTACTOR 42C	ALLIS TY2	DE/NO	MCC1-E9, CUB U	ALLIS CHALMERS	RLY-CON.3	AS
		62-ACAX3	W MG-6	DE/NO	PNL-REL-35F	1168303	RLY-ARH.5	AS
		K626	W AR440AR	DE/ON	RK-REAC-PROT-3A	W AR440AR	RLY-AI1.4	AS
		RM-RIS-218A	CONTACTOR	NO	RK-RAD-MON-7	942-501/90	OUTLIER	AS
		K630	W AR440AR	DE/NO	RK-REAC-PROT-3A	W AR440AR	RLY-AI1.4	AS

VS/CONTROL ROOM AIR INTAKE DAMPER

The Control Room Air Intake and Exhaust Dampers are normally OPEN with their control switches in AUTO. The dampers CLOSE on a CIB, Hi Chlorine or Hi-Hi radiation signal. To provide normal fresh air and cooling it is desirable that these dampers remain OPEN during and after an earthquake.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/01/95

Reviewed by GSB Date 08/03/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-D-40-1B	RE-21ML	CS (1-)/PB1&2	W OT2	----------	BLDG SERVICE PNL	W OT2	NV	--
		3-HVCB	ASEA RXMH2	DE/NO	PNL-REL-36F	RK-223-069-EN	QTR-ABB	AS
5244		62-ACBX1	W SG	DE/NO	PNL-REL-36F	293B255A26	RLY-ARH.5	AS
		CONTACTOR 42C	ALLIS TY2	DE/NO	MCC1-E10, CUB J	ALLIS CHALMERS	RLY-CON.3	AS
		62-ACBX3	W MG-6	DE/NO	PNL-REL-36F	1168303	RLY-ARH.5	AS
		K626	W AR440AR	DE/NO	RK-REAC-PROT-3B	W AR440AR	RLY-AI1.4	AS
		RM-RIS-218B	CONTACTOR	NO	RK-RAD-MON-7	942-501/90	OUTLIER	AS
		K630	W AR440AR	DE/NO	RK-REAC-PROT-3B	W AR440AR	RLY-AI1.4	AS

VS/CONTROL ROOM [illegible]AKE DAMPER

The Control Room Air [illegible]e and Exhaust Dampers are normally OPEN with their control switches in AUTO. The dampers CLOSE on a CIB, Hi Chlorine or Hi-Hi radiation signal. To provide normal fresh air and cooling it is desirable that these dampers remain OPEN during and after an earthquake.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/01/95

Reviewed by GSB Date 08/03/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-D-40-1C	RE-21ML	CS (1-)/PB1&2	W OT2	----------	BLDG SERVICE PNL	W OT2	NV	--
		3-HVCC	ASEA RIMH2	DE/NO	PNL-REL-35F	RK-223-069-EN	QTR-ABB	AS
5245		62-ACAX2	W MG-6	DE/NO	PNL-REL-35F	1163803	RLY-ARH.5	AS
		CONTACTOR 42C	ALLIS TY2	DE/NO	MCC1-E9, CUB V	ALLIS CHALMERS	RLY-CON.3	AS
		62-ACAX3	W MG-6	DE/NO	PNL-REL-35F	1168303	RLY-ARH.5	AS
		K626	W AR440AR	DE/NO	RK-REAC-PROT-3A	W AR440AR	RLY-AI1.4	AS
		RM-RIS-218A	CONTACTOR	NO	RK-RAD-MON-7	942-501/90	OUTLIER	AS
		K630	W AR440AR	DE/NO	RK-REAC-PROT-3A	W AR440AR	RLY-AI1.4	AS

VS/CONTROL RM AIR EXHAUST DAMPER

The Control Room Air Intake and Exhaust Dampers are normally OPEN with their control switches in AUTO. The dampers CLOSE on a CIB, Hi Chlorine or Hi-Hi radiation signal. To provide normal fresh air and cooling it is desirable that these dampers remain OPEN during and after an earthquake.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/01/95

Reviewed by GSB Date 08/03/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-D-40-1D	RE-21ML	CS (1-)/PB1&2	W OT2	----------	BLDG SERVICE PNL	W OT2	NV	--
		3-HVCD	ASEA RIMH2	DE/NO	PNL-REL-36F	RK-223-069-EN	QTR-ABB	AS
5246		62-ACBI2	W MG-6	DE/NO	PNL-REL-36F	1163803	RLY-ARH.5	AS
		CONTACTOR 42C	ALLIS TY2	DE/NO	MCC1-E10, CUB K	ALLIS CHALMERS	RLY-CON.3	AS
		62-ACBI3	W MG-6	DE/NO	PNL-REL-36F	1168303	RLY-ARE.5	AS
		K626	W AR440AR	DE/NO	RK-REAC-PROT-3B	W AR440 AR	RLY-AI1.4	AS
		RM-RIS-218B	CONTACTOR	NO	RK-RAD-MON-7	942-501/90	OUTLIER	AS
		K630	W AR440AR	DE/NO	RK-REAC-PROT-3B	W AR440AR	RLY-AI1.4	AS

VS/CONTRQL RM AIR EXHAUST DAMPER

The Control Room Air Intake and Exhaust Dampers are normally OPEN with their control switches in AUTO. The dampers CLOSE on CIB, Hi Chlorine or Hi-Hi radiation signal. To provide normal fresh air and cooling it is desirable that these dampers remain OPEN during and after an earthquake.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS_____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- DC - Direct control.
- AS - See Assessment Sheet for details.
- F - Fire Protection no QTR available.
- - - No entry necessary.

Prepared by RPF Date 02/01/95

Reviewed by GSB Date 06/03/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-D-40-1F	--------	----------	----------	----------	----------	----------	----------	--
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5247		----------	----------	----------	----------	----------	----------	--
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VS/MIN OUTSIDE AIR INTAKE DAMPER

VS-D-40-1F and G are outside air intake dampers that modulate open or closed along with VS-D-40-1M. A controller sets the amount of fresh air intake and controls these dampers and VS-D-40-1K and H. VS-D-40-1F, G and M all close on a signal from 62-ACAX2 and VS-D-40-1K and H close on the same signal. 62-ACAX2 is energized by any CREBAPS actuation signal. The position of these dampers does not matter after an earthquake because no other accident is postulated. No relays are essential.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RFF Date 02/02/95

Reviewed by GSB Date 08/03/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-D-40-1G	--------	----------	----------	----------	----------	----------	----------	--
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5248		----------	----------	----------	----------	----------	----------	--
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VS/MAX OUTSIDE AIR INTAKE DAMPER

VS-D-40-1F and G are outside air intake dampers that modulate open or closed along with VS-D-40-1M. A controller sets the amount of fresh air intake and controls these dampers and VS-D-40-1K and H. VS-D-40-1F, G and M all close on a signal from 62-ACAX2 and VS-D-40-1K and H close on the same signal. 62-ACAX2 is energized by any CREBAPS actuation signal. The position of these dampers does not matter after an earthquake because no other accident is postulated. No relays are essential.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/02/95

Reviewed by GSB Date 08/03/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-D-40-1H	--------	----------	----------	----------	----------	----------	----------	--
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5249		----------	----------	----------	----------	----------	----------	--
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VS/AIR RECIRC DAMPER

VS-D-40-1F and G are outside air intake dampers that modulate open or closed along with VS-D-40-1M. A controller sets the amount of fresh air intake and controls these dampers and VS-D-40-1K and H. VS-D-40-1F, G and M all close on a signal from 62-ACAX2 and VS-D-40-1K and H close on the same signal. 62-ACAX2 is energized by any CREBAPS actuation signal. The position of these dampers does not matter after an earthquake because no other accident is postulated. No relays are essential.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/02/95

Reviewed by GSB Date 08/03/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-D-40-1K	--------	----------	----------	----------	----------	----------	----------	--
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VS/AIR RECIRC DAMPER

VS-D-40-1F and G are outside air intake dampers that modulate open or closed along with VS-D-40-1M. A controller sets the amount of fresh air intake and controls these dampers and VS-D-40-1K and H. VS-D-40-1F, G and M all close on a signal from 62-ACAX2 and VS-D-40-1K and H close on the same signal. 62-ACAX2 is energized by any CREBAPS actuation signal. The position of these dampers does not matter after an earthquake because no other accident is postulated. No relays are essential.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA	-	Chatter acceptable.
NV	-	Not vulnerable (mechanically actuated contacts and solid state relays).
GERS	-	Seismically adequate based on GERS_____; include GERS number.
NA	-	Component not affected by relays.
CR	-	Corrective action required.
OA	-	Operator action.
DC	-	Direct control.
AS	-	See Assessment Sheet for details.
F	-	Fire Protection no QTR available.
-	-	No entry necessary.

Prepared by RPF Date 02/02/95

Reviewed by GSB Date 08/03/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-D-40-1M	--------	----------	----------	----------	----------	----------	----------	--
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5251		----------	----------	----------	----------	----------	----------	--
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VS/VS-F-40A & B EXHAUST DAMPER

VS-D-40-1F and G are outside air intake dampers that modulate open or closed along with VS-D-40-1M. A controller sets the amount of fresh air intake and controls these dampers and VS-D-40-1K and H. VS-D-40-1F, G and M all close on a signal from 62-ACAX2 and VS-D-40-1K and H close on the same signal. 62-ACAX2 is energized by any CREBAPS actuation signal. The position of these dampers does not matter after an earthquake because no other accident is postulated. No relays are essential.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/02/95

Reviewed by GSB Date 08/03/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-AD-3	RE-21MJ	52-8N10	GE AK25	----------	480V BUS 1N	----------	NV	--
		EP-VS-101-15	HONEYWELL	ENERGIZED	RK-VS-AC-1A	RP403-1058-3	OUTLIER	AS
5252		----------	----------	----------	----------	----------	----------	--
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VS/VS-AC-1A SUCTION DAMPER

VS-AD-3, 4, 5, and 6 are intake and exhaust dampers for A/C units VS-AC-1A and 1B. The electric to pneumatic converters EP-VS-101-15 and 16 are energized to allow control air to the dampers. They are interlocked with auxiliary switches from the 480V Unit Substation breakers which control the A/C units. The breakers are not vulnerable to chatter.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/02/95

Reviewed by GSB Date 08/03/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-AD-4	RE-21MJ	52-9P10	GE AK25	----------	480V BUS 1P	----------	NV	--
		EP-VS-101-16	HONEYWELL	ENERGIZED	RK-VS-AC-1B	RP403-1058-3	OUTLIER	AS
5253		----------	----------	----------	----------	----------	----------	--
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VS/VS-AC-1B SUCTION DAMPER

VS-AD-3, 4, 5, and 6 are intake and exhaust dampers for A/C units VS-AC-1A and 1B. The electric to pneumatic converters EP-VS-101-15 and 16 are energized to allow control air to the dampers. They are interlocked with auxiliary switches from the 480V Unit Substation breakers which control the A/C units. The breakers are not vulnerable to chatter.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/02/95

Reviewed by GSB Date 08/03/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-AD-5	RE-21MJ	52-8N10	GE AK25	----------	480V BUS 1N	----------	NV	--
		EP-VS-101-15	HONEYWELL	ENERGIZED	RK-VS-AC-1A	RP403-1058-3	OUTLIER	AS
5254		----------	----------	----------	----------	----------	----------	--
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VS/VS-AC-1A DISCHARGE DAMPER

VS-AD-3, 4, 5, and 6 are intake and exhaust dampers for A/C units VS-AC-1A and 1B. The electric to pneumatic converters EP-VS-101-15 and 16 are energized to allow control air to the dampers. They are interlocked with auxiliary switches from the 480V Unit Substation breakers which control the A/C units. The breakers are not vulnerable to chatter.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/02/95

Reviewed by GSB Date 08/03/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-AD-6	RE-21MJ	52-9P10	GE AK25	----------	480V BUS 1P	----------	NV	--
		EP-VS-101-16	HONEYWELL	ENERGIZED	RK-VS-AC-1B	RP403-1058-3	OUTLIER	AS
5255		----------	----------	----------	----------	----------	----------	--
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VS/VS-AC-1B DISCHARGE DAMPER

VS-AD-3, 4, 5, and 6 are intake and exhaust dampers for A/C unit VS-AC-1A and 1 B. The electric to pneumatic converters EP-VS-101-15 and 16 are energized to allow control air to the dampers. They are interlocked with auxiliary switches from the 480V Unit Substation breakers which control the A/c units. The breakers are not vulnerable to chatter.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/02/95

Reviewed by GSB Date 08/03/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-AFD-1	RE-21MM	----------	----------	----------	----------	----------	----------	--
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5256		----------	----------	----------	----------	----------	----------	--
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VS/ZONE 5 SUPPLY FIRE DAMPER

Automatic controls RETIRED IN PLACE by TER-9715.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/01/95

Reviewed by GSB Date 08/03/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-AFD-2	RE-21MM							--
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5257								--
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VS/ZONE 4 SUPPLY FIRE DAMPER

Automatic controls RETIRED IN PLACE by TER-9715.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/01/95

Reviewed by GSB Date 09/19/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-AFD-3	RE-21MM							--
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5258								--
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VS/ZONE 1 SUPPLY FIRE DAMPER

Automatic controls RETIRED IN PLACE by TER-9715.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/02/95

Reviewed by GSB Date 09/19/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-AFD-4	RE-21MM	----------	----------	----------	----------	----------	----------	--
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VS/ZONE 2 SUPPLY FIRE DAMPER

Automatic controls RETIRED IN PLACE by TER-9715.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 02/02/95

Reviewed by GSB Date 09/19/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-AFD-5	RE-21MM	----------	----------	----------	----------	----------	----------	--
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5260		----------	----------	----------	----------	----------	----------	--
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VS/ZONE 3 SUPPLY FIRE DAMPER

Automatic controls RETIRED IN PLACE by TER-9715.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/02/95

Reviewed by GSB Date 09/19/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-AFD-6	RE-21MM	----------	----------	----------	----------	----------	----------	--
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5261		----------	----------	----------	----------	----------	----------	--
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VS/ZONE 1 BYPASS FIRE DAMPER

Automatic controls RETIRED IN PLACE by TER-9715.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 02/02/95

Reviewed by GSB Date 09/19/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-AFD-7	RE-21MM	----------	----------	----------	----------	----------	----------	--
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5262		----------	----------	----------	----------	----------	----------	--
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VS/ZONE 2 BYPASS FIRE DAMPER

Automatic controls RETIRED IN PLACE by TER-9715.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/02/95

Reviewed by GSB Date 09/19/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-AFD-8	RE-21MM	----------	----------	----------	----------	----------	----------	--
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5263		----------	----------	----------	----------	----------	----------	--
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VS/ZONE 1 BYPASS FIRE DAMPER

Automatic controls RETIRED IN PLACE by TER-9715.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 02/02/95

Reviewed by GSB Date 09/19/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-AFD-9	RE-21MM	----------	----------	----------	----------	----------	----------	--
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5264		----------	----------	----------	----------	----------	----------	--
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VS/ZONE 4 BYPASS FIRE DAMPER

Automatic controls RETIRED IN PLACE by TER-9715.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA	-	Chatter acceptable.
NV	-	Not vulnerable (mechanically actuated contacts and solid state relays).
GERS	-	Seismically adequate based on GERS_____; include GERS number.
NA	-	Component not affected by relays.
CR	-	Corrective action required.
OA	-	Operator action.
DC	-	Direct control.
AS	-	See Assessment Sheet for details.
F	-	Fire Protection no QTR available.
-	-	No entry necessary.

Prepared by RPF Date 02/01/95

Reviewed by GSB Date 09/19/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-AFD-10	RE-21MM							--
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5265								--
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VS/ZONE 5 BYPASS FIRE DAMPER

Automatic controls RETIRED IN PLACE by TER-9715.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA	-	Chatter acceptable.
NV	-	Not vulnerable (mechanically actuated contacts and solid state relays).
GERS	-	Seismically adequate based on GERS_____; include GERS number.
NA	-	Component not affected by relays.
CR	-	Corrective action required.
OA	-	Operator action.
DC	-	Direct control.
AS	-	See Assessment Sheet for details.
F	-	Fire Protection no QTR available.
-	-	No entry necessary.

Prepared by RPF Date 02/01/95

Reviewed by GSB Date 09/19/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-AFD-11	RE-21MM	----------	----------	----------	----------	----------	----------	--
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5266		----------	----------	----------	----------	----------	----------	--
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VS/ZONE 4 RETURN FIRE DAMPER

Automatic controls RETIRED IN PLACE by TER-9715.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA	-	Chatter acceptable.
NV	-	Not vulnerable (mechanically actuated contacts and solid state relays).
GERS	-	Seismically adequate based on GERS_____; include GERS number.
NA	-	Component not affected by relays.
CR	-	Corrective action required.
OA	-	Operator action.
DC	-	Direct control.
AS	-	See Assessment Sheet for details.
F	-	Fire Protection no QTR available.
-	-	No entry necessary.

Prepared by RPF Date 02/01/95

Reviewed by GSB Date 09/19/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-AFD-12	RE-21MM							--
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5267								--
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VS/ZONE 1 RETURN FIRE DAMPER

Automatic controls RETIRED IN PLACE by TER-9715.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/02/95

Reviewed by GSB Date 09/19/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-AFD-13	RE-21MM	----------	----------	----------	----------	----------	----------	--
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5268		----------	----------	----------	----------	----------	----------	--
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VS/ZONE 2 RETURN FIRE DAMPER

Automatic controls RETIRED IN PLACE by TER-9715.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - -- - No entry necessary.

Prepared by RPF Date 02/02/95

Reviewed by GSB Date 09/19/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-AFD-14	RE-21MM	----------	----------	----------	----------	----------	----------	--
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5269		----------	----------	----------	----------	----------	----------	--
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VS/ZONE 3 RETURN FIRE DAMPER

Automatic controls RETIRED IN PLACE by TER-9715.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 02/02/95

Reviewed by GSB Date 09/19/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-AFD-15	RE-21MM	----------	----------	----------	----------	----------	----------	--
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5270		----------	----------	----------	----------	----------	----------	--
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VS/ZONE 5 RETURN FIRE DAMPER

Automatic controls RETIRED IN PLACE by TER-9715.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA	-	Chatter acceptable.
NV	-	Not vulnerable (mechanically actuated contacts and solid state relays).
GERS	-	Seismically adequate based on GERS_____; include GERS number.
NA	-	Component not affected by relays.
CR	-	Corrective action required.
OA	-	Operator action.
DC	-	Direct control.
AS	-	See Assessment Sheet for details.
F	-	Fire Protection no QTR available.
-	-	No entry necessary.

Prepared by RPF Date 02/01/95

Reviewed by GSB Date 09/19/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-C-1A	RE-21MJ	CS (1-)	W OT2	----------	LOCALLY MTD CR	W OT2	NV	--
		52-8N10I	W MG-6	E/NO	PNL-REL-35F	1167803	CA	--
5271		63-VS20/A	SQUARE D	NC	CONT RM- VS-C-1A	GHG-2	CA	--
		49	BI-METALLIC	NC	VS-C-1A	BI-METALLIC	RLY-PS.5	AS
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VS/TEMP CONT AIR COMP

The Control Room Compressed Air System is maintained at >50PSIG by intermittently running VS-C-1A or 1B. The air dryers are powered from the same control circuit. Normally one control switch is maintained in MANUAL and the other in AUTO.

Chatter during an earthquake could cause a compressor running in manual or automatic to STOP. The compressor would restart when the chatter has stopped.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 02/01/95

Reviewed by GSB Date 08/03/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-C-1B	RE-21MJ	CS (1-)	W OT2	----------	LOCALLY MTD CR	W OT2	NV	--
		52-9P10X	W MG-6	E/WO	PNL-REL-36F	1147803	CA	--
5272		63-VS207B	SQUARE D	NC	CONT RM- VS-C-1B	GHG-2	CA	--
		49	BI-METALLIC	NC	VS-C-1B	BI-METALLIC	RLY-PS.5	AS
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VS/TEMP CONT AIR COMP

The Control Room Compressed Air System is maintained at >50 PSIG by intermittently running VS-C-1A or 1B. The air dryers are powered from the same control circuit. Normally one control switch is maintained in MANUAL and the other in AUTO.

Chatter during an earthquake could cause a compressor running in manual or automatic to STOP. The compressor would restart when the chatter has stopped.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/01/95

Reviewed by GSB Date 08/03/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-C-1A1	RE-21MJ	CS (1-)	W OT2	----------	LOCALLY MTD CR	W OT2	NV	--
		52-8N10X	W MG-6	E/NO	PNL-REL-35F	1167803	CA	--
5273		49	BI-METALLIC	NC	VS-C-1A1	BI-METALLIC	RLY-PS.5	AS
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VS/TEMP CONT AIR COMP RECIEVER TK AIR DR

The Control Room Compressed Air System is maintained at >50 PSIG by intermittently running VS-C-1A or 1B. The air dryers are powered from the same control circuit. Normally one control switch is maintained in MANUAL and the other in AUTO.

If running in manual or automatic chatter could cause the air dryer to shutdown but it would restart when the chatter has stopped.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 02/01/95

Reviewed by GSB Date 08/03/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-C-1B1	RE-21MJ	CS (1-)	W OT2	----------	LOCALLY MTD CR	W OT2	NV	--
		52-8N10X	W MG-6	E/NO	PNL-REL-36F	1167803	CA	--
5274		49	BI-METALLIC	NC	VS-C-1B1	BI-METALLIC	RLY-PS.5	AS
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VS/TEMP CONT AIR COMP RECIEVER TK AIR DR

The Control Room Compressed AIr System is maintained at >50 PSIG by intermittently running VS-C-1A or 1B. The air dryers are power from the same control circuit. Normally on control switch is maintained in MANUAL and the other in AUTO.

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NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/01/95

Reviewed by GSB Date 08/03/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
EE-C-1A	RE-21BI	CS (1-)	W OT2	----------	D/G#1 WALL MTD	W OT2	NV	--
		PS-EE-201	FURNAS ELECTRIC	NOP/NC	D/G#1 SKID	69HAU1	CA	--
5300C		LS-EE-200-1A	QUALITROL	OP/NO	D/G#1 SKID	----------	CA	--
		CONTACTOR 42	ALLIS TY3	DE/NO	MCC1-E7, CUB N	ALLIS CHALMERS	RLY-CON.3	AS
		49	ALLIS TY3	NC	MCC1-E7, CUB N	ALLIS CHALMERS	RLY-CON.3	AS
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DIESEL GENERATOR START AIR COMPRESSOR

The Emergency Diesel Generator Compressor control switches are normally in the AUTO position and run periodically to maintain starting air pressure. If they are running during an earthquake it is acceptable for them to trip.

It is assumed that a loss of power occurs as a result of the earthquake. The Emergency Diesel Generators will start when the loss of power occurs and therefore, the starting air system would not be needed immediately following an earthquake or as long as the Diesel is running.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA	-	Chatter acceptable.
NV	-	Not vulnerable (mechanically actuated contacts and solid state relays).
GERS	-	Seismically adequate based on GERS_____; include GERS number.
NA	-	Component not affected by relays.
CR	-	Corrective action required.
OA	-	Operator action.
DC	-	Direct control.
AS	-	See Assessment Sheet for details.
F	-	Fire Protection no QER available.
-	-	No entry necessary.

Prepared by RPF Date 01/31/95

Reviewed by GSB Date 08/07/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
EE-C-2A	RE-21BI	CS (1-)	W OT2	----------	D/G#1 WALL MTD	W OT2	NV	--
		PS-EE-202	SQ D	NOP/NC	D/G#1 SKID	9012-GAW6	CA	--
5300D		LS-EE-200-2A	QUALITROL	OP/NO	D/G#1 SKID	----------	CA	--
		CONTACTOR 42	ALLIS TY3	DE/NO	MCC1-E7, CUB P	ALLIS CHALMERS	RLY-CON.3	AS
		49	ALLIS TY3	NC	MCC1-E7, CUB P	ALLIS CHALMERS	RLY-CON.3	AS
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GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPP Date 01/31/95

Reviewed by GSB Date 08/07/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
EE-C-1B	RE-21BI	CS (1-)	W OT2	----------	D/G#2 WALL MTD	W OT2	NV	--
		PS-EE-203	FURNAS ELECTRIC	NOP/NC	D/G#2 SKID	69HAU1	CA	--
5300E		LS-EE-200-1B	QUALITROL	OP/NO	D/G#2 SKID	----------	CA	--
		CONTACTOR 42	ALLIS TY3	DE/NO	MCC1-E8, CUB N	ALLIS CHALMERS	RLY-CON.3	AS
		49	ALLIS TY3	NC	MCC1-E8, CUB N	ALLIS CHALMERS	RLY-CON.3	AS
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DIESEL GENERATOR START AIR COMPRESSOR

The Emergency Diesel Gnerator Compressor control switches are normally in the AUTO position and run periodically to maintain starting air pressure. If they are running during an earthquake it is acceptable for them to trip.

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GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/31/95

Reviewed by GSB Date 08/07/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
EE-C-2B	RE-21BI	CS (1-)	W OT2	----------	D/G#2 WALL MTD	W OT2	NV	--
		PS-EE-204	SQ D	NOP/NC	D/G#2 SKID	9012-GAW6	CA	--
5300F		LS-EE-200-2B	QUALITROL	OP/NO	D/G#2 SKID	----------	CA	--
		CONTACTOR 42	ALLIS TY3	DE/NO	MCC1-E8, CUB P	ALLIS CHALMERS	RLY-CON.3	AS
		49	ALLIS TY3	NC	MCC1-E8, CUB P	ALLIS CHALMERS	RLY-CON.3	AS
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DIESEL GENERATOR START AIR COMPRESSOR

The Emergency Diesel Generator Compressor control switches are normally in the AUTO position and run periodically to maintain starting air pressure. If they are running during an earthquake it is acceptable for them to trip.

It is assumed that a loss of power occurs as a result of an earthquake. The Emergency Diesel Generators will start when the loss of power occurs and therefore, the starting air system would not be needed immediately following an earthquake or as long as the Diesel is running.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/31/95

Reviewed by GSB Date 08/07/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
EE-EG-1	RE-21BU	----------	----------	----------	----------	----------	----------	--
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5301		----------	----------	----------	----------	----------	----------	--
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EE/#1 DIESEL GENERATOR

SEE LINES 9015, 9016 AND 9017.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA	-	Chatter acceptable.
NV	-	Not vulnerable (mechanically actuated contacts and solid state relays).
GERS	-	Seismically adequate based on GERS_____; include GERS number.
NA	-	Component not affected by relays.
CR	-	Corrective action required.
OA	-	Operator action.
DC	-	Direct control.
AS	-	See Assessment Sheet for details.
F	-	Fire Protection no QTR available.
-	-	No entry necessary.

Prepared by GSB Date 10/09/95

Reviewed by Date / /

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
EE-EG-2	RE-21BZ	----------	----------	----------	----------	----------	----------	--
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5302		----------	----------	----------	----------	----------	----------	--
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EE/#2 DIESEL GENERATOR

SEE LINES 9018, 9019 AND 9020.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ___; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by GSE Date 10/09/95

Reviewed by Date / /

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
EE-P-1A	RE-21BI	CS (1-)	W OT2	----------	LOCALLY MTD DGB	W OT2	NV	--
		LS-EE-201-1	MAGNATROL	NO	DG NO.1 DAY TANK	A-103	CA	--
5303		CONTACTOR 42	ALLIS TY3	DE/NO	MCC1-E7, CUB Q	ALLIS CHALMERS	RLY-CON.3	AS
		49	ALLIS TY3	NC	MCC1-E7, CUB Q	ALLIS CHALMERS	RLY-CON.3	AS
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EE/FUEL OIL TRANSFER PUMP

The Day Tanks for the Emergency Diesel Generators will have adequate level at the time an earthquake may occur. When a loss of power occurs, the day tanks will eventually need to be refilled periodically. The fuel oil transfer pumps EE-P-1A, 1B, 2A, 2B must be operable following the earthquake. The control switches for the pumps are maintained in AUTO. Starting of the pumps due to chatter during an earthquake is accecptable.

(dentify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/31/95

Reviewed by GSB Date 08/07/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
EE-P-1B	RE-21BI	CS (1-)	W OT2	----------	LOCALLY MTD DGB	W OT2	NV	--
		LS-EE-201-1	MAGNATROL	NO	DG NO.1 DAY TANK	A-103	CA	--
5304		CONTACTOR 42	ALLIS TY3	DE/NO	MCC1-E7, CUB F	ALLIS CHALMERS	RLY-CON.3	AS
		49	ALLIS TY3	NC	MCC1-E7, CUB F	ALLIS CHALMERS	RLY-CON.3	AS
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EE/FUEL OIL TRANSFER PUMP

The Day Tanks for the Emergency Diesel Generators will have adequate level at the time an earthquake may occur. When a loss of power occurs, the day tanks will eventually need to be refilled periodically. The fuel oil transfer pumps EE-P-1A, 1B, 2A, 2B must be operable following the earthquake. The control switches for the pumps are maintained in AUTO. Starting of the pumps due to chatter during an earthquake is acceptable.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 01/31/95

Reviewed by GSB Date 08/07/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
EE-P-1C	RE-21BI	CS (1-)	W OT2	----------	LOCALLY MTD DGB	W OT2	NV	--
		LS-EE202-1	MAGNATROL	NO	DG NO.2 DAY TANK	A-103	CA	--
5305		CONTACTOR 42	ALLIS TY3	DE/NO	MCC1-E8, CUB Q	ALLIS CHALMERS	RLY-CON.3	AS
		49	ALLIS TY3	NC	MCC1-E8, CUB Q	ALLIS CHALMERS	RLY-CON.3	AS
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EE/FUEL OIL TRANSFER PUMP

The Day Tanks for the Emergency Diesel Generators will have adequaate level at the time an earthquake may occur. When a loss of power occurs, the day tanks will eventually need to be refilled periodically. The fuel oil transfer pumps EE-P-1A, 1B, 2A, 2B must be operable following an earthquake. The control switches for the pumps are maintained in AUTO. Starting of the pumps due to chatter during an earthquake is acceptable.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS _____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/31/95

Reviewed by GSB Date 08/07/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
EE-P-1D	RE-21BI	CS (1-)	W OT2	----------	LOCALLY MTD DGB	W OT2	NV	--
		LS-EE202-1	MAGNATROL	NO	DG NO.2 DAY TANK	A-103	CA	--
5306		CONTACTOR 42	ALLIS TY3	DE/NC	MCC1-E8, CUB R	ALLIS CHALMERS	RLY-CON.3	AS
		49	ALLIS TY3	NC	MCC1-E8, CUB R	ALLIS CHALMERS	RLY-CON.3	AS
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EE/FUEL OIL TRANSFER PUMP

The Day Tanks for the Emergency Diesl Generators will have adequate level at the time an earthquake may occur. When a loss of power occurs, the day tanks will eventually need to be refilled periodically. The fuel oil transfer pumps EE-P-1A, 1B, 2A, 2B must be operable following the earthquake. The control switches for the pumps are maintained in AUTO. Starting of the pumps due to chatter during an earthquake is acceptable.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/31/95

Reviewed by GSB Date 08/07/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-F-22A	RE-21MP	CS (1-)	W OT2	----------	LOCALLY MTD DGB	W OT2	NV	--
		TEMP SW	----------	NO	LOCALLY MTD DGB	----------	CA	--
5325		CONTACTOR 42	ALLIS TY3	DE/NO	MCC1-E7, CUB E	ALLIS CHALMERS	RLY-CON.3	AS
		49	ALLIS TY3	NC	MCC1-E7, CUB E	ALLIS CHALMERS	RLY-CON.3	AS
		63-FE-CDL-1A	----------	NC	LOCALLY MTD DGB	----------	CA	--
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44F/DG BLDG EXHAUST FAN

The Diesel Generator Building Ventilation Fans are normally in Auto with a local temperature switch controlling the fan. The fans start automatically when the temperature in the room reaches 90 degrees. The supply dampers are interlocked to open on start of the exhaust fan or Emergency Diesel.

Intermittent chatter of the temperature switch or CO2 discharge switch during an earthquake is acceptable. The CO2 discharge switch must reclose when the chatter has stopped for the fan to be operable.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/31/95

Reviewed by GSB Date 08/07/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-F-22B	RE-21MP	CS (1-)	W OT2	----------	LOCALLY MTD DGB	W OT2	NV	--
		TEMP SW	----------	NO	LOCALLY MTD DGB	----------	CA	--
5326		CONTACTOR 42	ALLIS TY3	DE/NO	MCC1-E8, CUB E	ALLIS CHALMERS	RLY-CON.3	AS
		49	ALLIS TY3	NC	MCC1-E8, CUB E	ALLIS CHALMERS	RLY-CON.3	AS
		63-FE-CDL-1B	----------	NC	LOCALLY MTD DGB	----------	CA	--
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44F/DG BLDG EXHAUST FAN

The Diesel Generator Building Ventilation Fans are normally in AUTO with a local temperature switch controlling the fan. The fans start automatically when the temperature in the room reaches 90 degrees. The supply dampers are interlocked to open on start of the exhaust fan or Emergency Diesel.

Intermittent chatter of the temperature switch or CO2 discharge switch during an earthquake is acceptable. The CO2 discharge switch must reclose when the chatter has stopped for the fan to be operable.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/31/95

Reviewed by GSB Date 08/07/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-D-22-1A	RE-21MP	42-E7E	ALLIS TY3	DE/NO	MCC1-E7, CUB E	ALLIS CHALMERS	RLY-CON.3	AS
5327								

44F/DG BLDG EXHAUST DAMPER

The Diesel Generator Building Ventilation Fans are normally in AUTO with a local temperature switch controlling the fan. The fans start automaticaliy when the temperature in the room reaches 90 degrees. The supply dampers are interlocked to open on start of the fans or Diesel Generator. The exhaust dampers open only when the exhaust fans start.

Chatter during an earthquake may cause the damper to OPEN intermittently but it would CLOSE when the chatter has stopped.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismicaily adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/31/95

Reviewed by GSB Date 08/07/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-D-22-1B	RE-21MP	42-E8E	ALLIS TY3	DE/NO	MCC1-E8, CUB E	ALLIS CHALMERS	RLY-CON.3	AS
5328								

44F/DG BLDG EXHAUST DAMPER

The Diesel Generator Building Ventilation Fans are normally in AUTO with a local temperature switch controlling the fan. The fans start automatically when the temperature in the room reaches 90 degrees. The supply dampers are interlocked to open on start of the exhaust fan or Diesel generator. The exhaust dampers open only when the exhaust fans start.

Chatter during an earthquake may cause the damper to OPEN but it would CLOSE when the chatter has stopped.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/31/95

Reviewed by GSB Date 08/07/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-D-22-2A	RE-21MP	42-E7E	ALLIS TY3	DE/NO	MCC1-E7, CUB E	ALLIS CHALMERS	RLY-CON.3	AS
		ESRXA	W MG-6	DE/NO	PNL-DIGEN-1	1163801	RLY-ARM.5	AS
5329		69-E7E	W MG-6	DE/NO	PNL-REL-35F	1168303	RLY-ARM.5	AS
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44F/DG BLDG AIR SUPPLY DAMPER

The Diesel Generator Building Ventilation Fans are normally in AUTO with a local temperature switch controlling the fan. The fans start automatically when the temperature in the room reaches 90 degrees. The supply dampers are interlocked to open on start of the exhaust fan or Emergency Diesel. The exhaust dampers open only when the exhuast fans start.

Chatter during an earthquake is acceptable.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 01/31/95

Reviewed by GSB Date 08/07/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-D-22-2B	RE-21MP	42-E7E	ALLIS TY3	DE/NO	MCC1-E7, CUB E	ALLIS CHALMERS	RLY-CON.3	AS
		ESRIA	W MG-6	DE/NO	PNL-DIGEN-1	1163801	RLY-ARH.5	AS
5330		69-E7E	W MG-6	DE/NO	PNL-REL-35F	1163803	RLY-ARH.5	AS
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44F/DG BLDG AIR SUPPLY DAMPER

The Diesel Generator Building Ventilation Fans are normally in AUTO with a local temperature switch controlling the fan. The fans start automaticaloy when the temperature in the room reaches 90 degrees. The supply dampers are interlocked to open on start of the exhaust fans or Diesel Generator. The exhaust dampers open only on start of the fans.

Chatter during an earthquake is acceptable.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contactr and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/31/95

Reviewed by GSB Date 08/07/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-D-22-2C	RE-21MP	42-E8E	ALLIS TY3	DE/NO	MCC1-E8, CUB E	ALLIS CHALMERS	RLY-CON.3	AS
		ESRIB	W MG-6	DE/NO	PNL-DIGEN-2	1163828	RLY-ARM.5	AS
5331		69-E8E	W MG-6	DE/NO	PNL-REL-36F	1163803	RLY-ARM.5	AS
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44F/DG BLDG AIR SUPPLY DAMPER

The Diesel Generator Building Ventilation Fans are normally in AUTO with a local temperature switch controlling the fan. The fans start automatically when the temperature in the room reaches 90 degrees. The supply dampers are interlocked to open on start of the exhaust fan or Emergency Diesel. The exhaust dampers open only on start of the exhaust fans.

Chatter during an earthquake is acceptable.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/31/95

Reviewed by GSB Date 08/07/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-D-22-2D	RE-21MP	42-E8E	ALLIS TY3	DE/NO	MCC1-E8, CUB E	ALLIS CHALMERS	RLY-CON.3	AS
		ESRIB	W MG-6	DE/NO	PNL-DIGEN-2	1163828	RLY-ARM.5	AS
5332		69-E8E	W MG-6	DE/NO	PNL-REL-36F	1163803	RLY-ARM.5	AS

44F/DG BLDG AIR SUPPLY DAMPER

The Diesel Generator Building Ventilation Fans are normally in AUTO with a local temperature switch controlling the fan. The fans start automatically when the temperature in the room reaches 90 degrees. The supply dampers are interlocked to open on start of the exhaust fan or Emergency Diesel. The exhaust dampers open only on start of the exhaust fans.

Chatter during an earthquake is acceptable.

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GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 01/31/95

Reviewed by GSB Date 08/07/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
INV-VITBUS-1	1.24-111	----------	----------	----------	----------	----------	----------	--
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5335		----------	----------	----------	----------	----------	----------	--
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38/UPS 1 (SOLID STATE CONTROLS)

The Solid-State Controls Inverters are qualified to IEEE-344-1975. This is an acceptable means for evaluating the seismic adequacy of the equipment.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS _____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/20/95

Reviewed by GSB Date 08/07/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
INV-VITBUS-2	1.24-111	----------	----------	----------	----------	----------	----------	--
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5336		----------	----------	----------	----------	----------	----------	--
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38/UPS 2 (SOLID STATE CONTROLS)

The Solid-State Controls Inverters are qualified to IEEE-344-1975. This is an acceptable means for evaluating the seismic adequacy of the equipment.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/20/95

Reviewed by GSB Date 08/07/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
INV-VITBUS-3	1.24-196							--
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5337								--
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38/UPS 3 (CYBEREI)

The Cyberex Inverters were seismically qualified when purchased (original plant equipment). If they fail the static switches will automatically begin carrying the load. The static switches are qualified to IEEE-344-1975.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA	-	Chatter acceptable.
NV	-	Not vulnerable (mechanically actuated contacts and solid state relays).
GERS	-	Seismically adequate based on GERS_____; include GERS number.
NA	-	Component not affected by relays.
CR	-	Corrective action required.
OA	-	Operator action.
DC	-	Direct control.
AS	-	See Assessment Sheet for details.
F	-	Fire Protection no QTR available.
-	-	No entry necessary.

Prepared by RPF Date 02/20/95

Reviewed by GSB Date 08/07/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
INV-VITBUS-4	1.24-196	----------	----------	----------	----------	----------	----------	--
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5338		----------	----------	----------	----------	----------	----------	--
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38/UPS 4 (CYBEREX)

The Cyberex Inverters were seismically qualified when purchased (original plant equipment). If they fail the static switches will automatically begin carrying the load. The static switches are qualified to IEEE-344-1975.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 02/20/95

Reviewed by GSB Date 08/07/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
SSW-VITBUS-1	1.24-181	----------	----------	----------	----------	----------	----------	--
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5339		----------	----------	----------	----------	----------	----------	--
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38/UPS BACKED VITAL INSTRUMENT BUS STATI

The static Switches are qualified to NRC approved IEEE-344-1975. This is an acceptable method for evaluating the seismic adequacy of relays.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA	-	Chatter acceptable.
NV	-	Not vulnerable (mechanically actuated contacts and solid state relays).
GERS	-	Seismically adequate based on GERS_____; include GERS number.
NA	-	Component not affected by relays.
CR	-	Corrective action required.
OA	-	Operator action.
DC	-	Direct control.
AS	-	See Assessment Sheet for details.
F	-	Fire Protection no QTR available.
-	-	No entry necessary.

Prepared by RPF Date 02/20/95

Reviewed by GSB Date 08/07/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
SSW-VITBUS-2	1.24-181	----------	----------	----------	----------	----------	----------	--
		----------	----------	----------	----------	----------	----------	--
5340		----------	----------	----------	----------	----------	----------	--
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38/UPS BACKED VITAL INSTRUMENT BUS STATI

The static Switches are qualified to NRC approved IEEE-344-1975. This is an acceptable method for evaluating the seismic adequacy of relays.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA	-	Chatter acceptable.
NV	-	Not vulnerable (mechanically actuated contacts and solid state relays).
GERS	-	Seismically adequate based on GERS_____; include GERS number.
NA	-	Component not affected by relays.
CR	-	Corrective action required.
OA	-	Operator action.
DC	-	Direct control.
AS	-	See Assessment Sheet for details.
F	-	Fire Protection no QTR available.
-	-	No entry necessary.

Prepared by RPF Date 02/20/95

Reviewed by GSB Date 08/07/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
SSW-VITBUS-3	1.24-181	----------	----------	----------	----------	----------	----------	--
		----------	----------	----------	----------	----------	----------	--
5341		----------	----------	----------	----------	----------	----------	--
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38/UPS BACKED VITAL INSTRUMENT BUS STATI

The static Switches are qualified to NRC approved IEEE-344-1975. This is an acceptable method for evaluating the seismic adequacy of relays.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/20/95

Reviewed by GSB Date 08/07/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
SSW-VITBUS-4	1.24-181	----------	----------	----------	----------	----------	----------	--
		----------	----------	----------	----------	----------	----------	--
5342		----------	----------	----------	----------	----------	----------	--
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38/UPS BACKED VITAL INSTRUMENT BUS STATI

The static Switches are qualified to NRC approved IEEE-344-1975. This is an acceptable method for evaluating the seismic adequacy of relays.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA	-	Chatter acceptable.
NV	-	Not vulnerable (mechanically actuated contacts and solid state relays).
GERS	-	Seismically adequate based on GERS_____; include GERS number.
NA	-	Component not affected by relays.
CR	-	Corrective action required.
OA	-	Operator action.
DC	-	Direct control.
AS	-	See Assessment Sheet for details.
F	-	Fire Protection no QTR available.
-	-	No entry necessary.

Prepared by RPF Date 02/20/95

Reviewed by GSB Date 08/07/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
BAT-CHG-1	--------	----------	----------	----------	----------	----------	----------	--
		----------	----------	----------	----------	----------	----------	--
5343		----------	----------	----------	----------	----------	----------	--
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39/BATTERY CHARGER #1

The Lamarsh Battery Chargers have no essential relays. See Tech. Manual 01.024-0065 and Lamarsh dwg. ER1029-39.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 02/13/95

Reviewed by GSB Date 08/07/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
BAT-CHG-2	--------	----------	----------	----------	----------	----------	----------	--
		----------	----------	----------	----------	----------	----------	--
5344		----------	----------	----------	----------	----------	----------	--
		----------	----------	----------	----------	----------	----------	--
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39/BATTERY CHARGER #2

The Lamarsh battery Chargers have no essential relay. See Tech. Manual 01.024-0065 and Lamarsh dwg. E1029-39.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 02/13/95

Reviewed by GSB Date 08/07/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
BAT-CHG-3	--------	----------	----------	----------	----------	----------	----------	--
		----------	----------	----------	----------	----------	----------	--
5345		----------	----------	----------	----------	----------	----------	--
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39/BATTERY CHARGER #3

The Lamarsh Battery Chargers have no essential relays. See Tech. Manual 01.024-0065 and Lamarsh dwg. E1029-39.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS _____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 02/13/95

Reviewed by GSB Date 08/07/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
BAT-CHG-4	--------	----------	----------	----------	----------	----------	----------	--
		----------	----------	----------	----------	----------	----------	--
5346		----------	----------	----------	----------	----------	----------	--
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39/BATTERY CHARGER #4

The Lamarsh Battery Chargers have no essential relays. See Tech. Manual 01.024-0065 and Lamarsh dwg. E1029-39.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 02/13/95

Reviewed by GSB Date 08/07/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
BAT-BKR-1	RE-21DJ	PB	W OT2	NO	LOCAL AT SWBD	pushbutton	NV	--
8007								--
								--
								--
								--
								--
								--

DC BUS #1 BATTERY CIRCUIT BREAKER

The battery output breakers are normally closed and must stay closed so that the DC Bus remains energized if offsite power is lost. For batteries 1 & 2 the diesel field flashing function relies upon power supplies thru these breakers from the batteries.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS _____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 12/04/95

Reviewed by GSB Date 12/04/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
BAT-BKR-2	RE-21DJ	PB	W OT2	NO	LOCAL AT SWBD	pushbutton	NV	--
		---	---	---	---	---	---	--
8008		---	---	---	---	---	---	--
		---	---	---	---	---	---	--
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DC BUS #1 BATTERY CIRCUIT BREAKER

The battery output breakers are normally closed and must stay closed so that the DC Bus remains energized if offsite power is lost. For batteries 1 & 2 the diesel field flashing function relies upon power supplies thru these breakers from the batteries.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 12/04/95

Reviewed by GSB Date 12/04/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
BAT-BKR-3	RE-21DJ	PB	W OT2	NO	LOCAL AT SWBD	pushbutton	NV	--
8009								

DC BUS #1 BATTERY CIRCUIT BREAKER

The battery output breakers are normally closed and must stay closed so that the DC Bus remains energized if offsite power is lost. For batteries 1 & 2 the diesel field flashing function relies upon power supplies thru these breakers from the batteries.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 12/04/95

Reviewed by GSB Date 12/04/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
BAT-BKR-4	RE-21DJ	PB	W OT2	NO	LOCAL AT SWBD	pushbutton	NV	--
8010								--
								--
								--
								--
								--
								--
								--

DC BUS #1 BATTERY CIRCUIT BREAKER

The battery output breakers are normally closed and must stay closed so that the DC Bus remains energized if offsite power is lost. For batteries 1 & 2 the diesel field flashing function relies upon power supplies thru these breakers from the batteries.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 12/04/95

Reviewed by GSB Date 12/04/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MCC-1-E1	RE-21DB	CS (1-)	W OT2	----------	MCC1-E1	W OT2	NV	--
		62-RH100X4	W MG-6	DE/NO/NC	480V BUS 1N	1163797	DC/CA	--
8018		69-AEX2	W MG-6	DE/NO	PNL-DG-SEQ-1	1163803	RLY-ARH.5	AS
		52H	GE AK25	----------	480VUS 1N/CUB 7	----------	NV	--
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37/480V MOTOR CONTROL CENTER

The MCC's are all energized and must remain energized after an earthquake. They must also load onto the Diesels if the Diesels are supplying power to the Emergency Busses.

The MCC-1-E1 feeder breaker will TRIP on undervltage on Loss of Power and be loaded on the Diesel.

If a Loss of Power does not occur during the earthquake, chatter of the undervoltage relay could trip the breaker.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA	-	Chatter acceptable.
NV	-	Not vulnerable (mechanically actuated contacts and solid state relays).
GERS	-	Seismically adequate based on GERS_____; include GERS number.
NA	-	Component not affected by relays.
CR	-	Corrective action required.
OA	-	Operator action.
DC	-	Direct control.
AS	-	See Assessment Sheet for details.
F	-	Fire Protection no QTR available.
-	-	No entry necessary.

Prepared by RPF Date 02/02/95

Reviewed by GSB Date 08/07/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MCC-1-E2	RE-21DB	CS (1-)	W OT2	----------	MCC1-E2	W OT2	NV	--
		62-RP100X4	W MG-6	DE/NO/NC	480V BUS 1P	1163797	DC/CA	--
8019		69-DFX2	W MG-6	DE/NO	PNL-DG-SEQ-2	1163803	RLY-ARH.5	AS
		52H	GE AK25	----------	480VUS 1P/CUB 8	----------	NV	--
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37/480V MOTOR CONTROL CENTER

The MCC's are all energized and must remain energized after an earthquake. They must also load onto the Diesels if the Diesels are supplying power to the Emergency Busses.

The MCC-1-E2 feeder breaker will TRIP on undervoltage on a Loss of Power and be loaded on the Diesel.

If a Loss of Power does not occur during the earthquake, chatter of the undervoltage relay could trip the breaker.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/02/95

Reviewed by GSB Date 08/07/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MCC-1-E3	RE-21DB	CS (1-)	W OT2	----------	MCC1-E3	W OT2	NV	--
		62-RN100X4	W MG-6	DE/NO/NC	480V BUS 1N	1163797	DC/CA	--
8020		69-AEX2	W MG-6	DE/NO	PNL-DG-SEQ-1	1163803	RLY-ARH.5	AS
		52H	GE K25	----------	480VUS 1N/CUB 8	----------	NV	--
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37/480V MOTOR CONTROL CENTER

The MCC's are all energized and must remain energized after an earthquake. They must also load onto the Diesels if the Diesels are supplying power to the Emergency Bussos.

The MCC-1-E3 feeder breaker will TRIP on undervoltage on a Loss of Power and be loaded on the Diesel.

If a Loss of Power does not occur during the earthquake, chatter of the undervoltage relay could trip the breaker.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/02/95

Reviewed by GSB Date 08/07/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MCC-1-E4	RE-21DB	CS (1-)	W OT2	----------	MCC1-E4	W OT2	NV	--
		62-RP100X4	W MG-6	DE/NO/NC	480V BUS 1P	1163797	DC/CA	--
8021		69-DFX2	W MG-6	DE/NO	PNL-DG-SEQ-2	1163803	RLY-ARH.5	AS
		52H	GE AK25	----------	480VUS 1P/CUB 9	----------	NV	--
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37/480V MOTOR CONTROL CENTER

The MCC's are all energized and must remain energized after an earthquake. They must also load onto the Diesels if the Diesels are supplying power to the Emergency Busses.

The MCC-1-E4 feeder breaker will TRIP on undervoltage on a Loss of Power and be loaded on the Diesel.

If a Loss of Power does not occur during the earthquake, chatter of the undervoltage relay could trip the breaker.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/02/95

Reviewed by GSB Date 08/07/96

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MCC-1-E5	RE-21DB	CS (1-)	W OT2	----------	MCC1-E5	W OT2	NV	--
		62-RN100X4	W MG-6	DE/NO/NC	480V BUS 1N	1163797	DC/CA	--
8022		69-AEX2	W MG-6	DE/NO	PNL-DG-SEQ-1	1163803	RLY-ARH.5	AS
		52H	GE AK25	----------	480VUS 1N/CUB 6	----------	NV	--
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37/480V MOTOR CONTROL CENTER

The MCC's are all energized and must remain energized after an earthquake. They must also load onto the Diesels if the Diesels are supplying power to the Emergency Busses.

The MCC-1-E5 feeder breaker will TRIP on undervoltage on a Loss of Power and be loaded on the Diesel.

If a Loss of Power does not occur during the earthquake, chatter of the undervoltage relay could trip the breaker.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/02/95

Reviewed by GSB Date 08/07/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MCC-1-E6	RE-21DB	CS (1-)	W OT2	----------	MCC1-E6	W OT2	NV	--
		62-RP100X4	W MG-6	DE/NO/NC	480V BUS 1P	1163797	DC/CA	--
8023		69-DFX2	W MG-6	DE/NO	PNL-DG-SEQ-2	1163603	RLY-ARH.5	AS
		52H	GE AK25	----------	480VUS 1P/CUB 1	----------	NV	--
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37/480V MOTOR CONTROL CENTER

The MCC's are all energized and must remain energized after an earthquake. They must also load onto the Diesels if the Diesels are supplying power to the Emergency Busses.

The MCC-1-E6 feeder breaker will TRIP on undervoltage on a Loss of Power and be loaded on the Diesel.

If a Loss of Power does not occur during the earthquake, chatter of the undervoltage relay could trip the breaker.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/02/95

Reviewed by GSB Date 08/07/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MCC-1-E7	RE-21DC	CS (1-)	W OT2	----------	MCC1-E7	W OT2	NV	--
		62-RK100X4	W MG-6	DE/NO/NC	480V BUS 1N	1163797	DC/CA	--
8024		69-AEX2	W MG-6	DE/NO	PNL-DG-SEQ-1	1163803	RLY-ARH.5	AS
		52H	GE AK25	----------	480VUS 1N/CUB 14	----------	NV	--
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37/480V MOTOR CONTROL CENTER

The MCC's are all energized and must remain energized after an earthquake. They must also load onto the Diesels if the Diesels are supplying power to the Emergency Busses.

The MCC-1-E7 feeder breaker will TRIP on undervoltage on a Loss of Power and be loaded on the Diesel.

If a Loss of Power does not occur during the earthquake, chatter of the undervoltage relay could trip the breaker.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 02/02/95

Reviewed by GSB Date 08/07/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MCC-1-E8	RE-21DC	CS (1-)	W OT2	----------	MCC1-E8	W OT2	NV	--
		62-RP100X4	W MG-6	DE/NO/NC	480V BUS 1P	1163797	DC/CA	--
8025		162-DFX2	W MG-6	DE/NO	PNL-DG-SEQ-2	1163803	RLY-ARH.5	AS
		52H	GE AK25	----------	480VUS 1N/CUB 7	----------	NV	--
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37/480V MOTOR CONTROL CENTER

The MCC's are all energized and must remain energized after an earthquake. They must also load onto the Diesels if the Diesels are supplying power to the Emergency Busses.

The MCC-1-E8 feeder breaker will TRIP on undervoltage on a Loss of Power and be loaded on the Diesel.

If a Loss of Power does not occur during the earthquake, chatter of the undervoltage relay could trip the breaker.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 02/02/95

Reviewed by GSB Date 08/07/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MCC-1-E9	RE-21DC	CS (1-)	W OT2	----------	MCC1-E9	W OT2	NV	--
		62-RM100X4	W NG-6	DE/NO/NC	480V BUS 1N	1163797	DC/CA	--
		162-AEX2	W NG-6	DE/NO	PML-DG-SEQ-1	1163803	RLY-ARH.5	AS
8026		52E	GE AK25	----------	480VUS 1N/CUB 11	----------	NV	--
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37/480V MOTOR CONTROL CENTER

The MCC's are all energized and must remain energized after an earthquake. They must also load onto the Diesels if the Diesels are supplying power to the Emergency Busses.

The MCC-1-E9 feeder breaker will TRIP on undervoltage on a Loss of Power and be loaded on the Diesel.

If a Loss of Power does not occur during the earthquake, chatter of the undervoltage relay could trip the breaker.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA	-	Chatter acceptable.
NV	-	Not vulnerable (mechanically actuated contacts and solid state relays).
GERS	-	Seismically adequate based on GERS_____; include GERS number.
NA	-	Component not affected by relays.
CR	-	Corrective action required.
OA	-	Operator action.
DC	-	Direct control.
AS	-	See Assessment Sheet for details.
F	-	Fire Protection no QTR available.
-	-	No entry necessary.

Prepared by RPF Date 02/02/95

Reviewed by GSB Date 08/07/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MCC-1-E10	RE-21DC	CS (1-)	W OT2	----------	MCC1-E10	W OT2	NV	--
		62-RP100X4	W MG-6	DE/NO/NC	480V BUS 1P	1163797	DC/CA	--
8027		162-DPX2	W MG-6	DE/NO	PNL-DG-SEQ-2	1163803	RLY-ARH.5	AS
		52H	GE AK25	----------	480VUS 1P/CUB	----------	NV	--
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37/480V MOTOR CONTROL CENTER

The MCC's are all energized and must remain energized after an earthquake. They must also load onto the Diesels if the Diesels are supplying power to the Emergency Busses.

The MCC-1-E10 feeder breaker will TRIP on undervoltage on a Loss of Power and be loaded on the Diesel.

If a Loss of Power does not occur during the earthquake, chatter of the undervoltage relay could trip the breaker.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 02/02/95

Reviewed by GSB Date 08/07/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MCC-1-E11	RE-21DC	CS (1-)	W OT2	----------	MCC1-E11	W OT2	NV	--
		62-RN1100X1	W MG-6	DE/NO/NC	480V BUS 1N	1163779	DC/CA	--
8028		162-AEX2	W MG-6	DE/NO	PNL-DG-SEQ-1	1163803	RLY-ARH.5	AS
		52H	GE AK25	----------	480VUS 1N/CUB 7	----------	NV	--
		52-8N16X	W MG-6	DE/NO	480VUS 1N	1163841	RLY-ARH.5	AS
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37/480V MOTOR CONTROL CENTER

The MCC's are all energized and must remain energized after an earthquake. They must also load onto the Diesels if the Diesels are supplying power to the Emergency Busses.

The MCC-1-E11 feeder breaker will TRIP on undervoltage on a Loss of Power and be loaded on the Diesel.

If a Loss of Power does not occur during the earthquake, chatter of the undervoltage relay could trip the breaker.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS _____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 02/02/95

Reviewed by GSB Date 08/07/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MCC-1-E12	RE-21DC	CS (1-)	W OT2	----------	MCC1-E12	W OT2	NV	--
		62-RP1100X1	W MG-6	DE/NO/NC	480V BUS 1P	1163797	DC/CA	--
8029		162-DFX2	W MG-6	DE/NO	PNL-DG-SEQ-2	1163803	RLY-ARH.5	AS
		52H	GE AK25	----------	480VUS 1P/CUB 7	----------	NV	--
		52-9P16X	W MG-6	DE/NO	480VUS 1P	1163801	RLY-ARH.5	AS
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37/480V MOTOR CONTROL CENTER

The MCC's are all energized and must remain energized after an earthquake. They must also load onto the Diesels if the Diesels are supplying power to the Emergency Busses.

The MCC-1-E12 feeder breaker will TRIP on undervoltage on a Loss of Power and be loaded on the Diesel.

If a Loss of Power does not occur during the earthquake, chatter of the undervoltage relay could trip the breaker.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/02/95

Reviewed by GSB Date 08/07/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MCC-1-E13	RE-21DB	CS (1-)	W OT2	----------	MCC1-E15	W OT2	NV	--
		52H	GE AK25	----------	480VUS 1P/CUB 15	----------	NV	--
8030		----------	----------	----------	----------	----------	----------	--
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37/480V MOTOR CONTROL CENTER

The MCC's are all energized and must remain energized after an earthquake. They must also load onto the Diesels if the Diesels are supplying power to the Emergency Busses.

The MCC-1-E13 feeder breaker will not TRIP on undervoltage and will be loaded on to the Diesel immediately upon closing of the Emergency Diesel output breaker.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/02/95

Reviewed by GSB Date 08/07/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
MCC-1-E14	RE-21DB	CS (1-)	W OT2	----------	MCC1-E14	W OT2	NV	--
		52H	GE AK25	----------	480VUS 1N/CUB 15	----------	NV	--
8031		----------	----------	----------	----------	----------	----------	--
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37/480V MOTOR CONTROL CENTER

The MCC's are all energized and must remain energized after an earthquake. They must also load onto the Diesels if the Diesels are supplying power to the Emergency Busses.

The MCC-1-E14 feeder breaker will not TRIP on undervoltage and will be loaded on to the Diesel immediately upon closing of the Emergency Diesel output breaker.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 02/02/95

Reviewed by GSB Date 08/07/96

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
FE-CDL-1A	RE-21GI	TS (HAD)	HAD	NO	DG BLDG CEILING	----------	OUTLIER	AS
		RH	HOLD RELAY	DENERGIZED	DG BLDG	----------	OUTLIER	AS
8133		62	TIMING RELAY	DE	DG BLDG	----------	OUTLIER	F
		MVR	MASTER VLV RELAY	ENERGIZED	MAST PLT CONT CB	----------	OUTLIER	F
		LS	LIMIT SWITCH MV	NC	MAST PLT CONT CB	----------	NV	--
		PE	PNEUMAT ELECT	DEENERGIZE	DG BLDG	----------	OUTLIER	F
		62-CX	MAST VLV AUI REL	DEENERGIZE	DG BLDG	----------	OUTLIER	F
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CO2 SYS FOR DIESEL GENERATOR #1

THIS RELAY EVALUATION IS DONE TO SHOW WHICH CONTACTORS CANNOT CHATTER IN ORDER TO PREVENT THE CO2 SYSTEM FROM DISCHARGING. A DISCHARGE MAY PREVENT THE DIESEL FROM STARTING OR RUNNING DUE TO POOR COMBUSTION.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 11/28/95

Reviewed by GSB Date 11/28/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
FE-CDL-1B	RE-21GI	TS (HAD)	HAD	NO	DG BLDG CEILING	----------	OUTLIER	AS
		RH	HOLD RELAY	DENERGIZED	DG BLDG	----------	OUTLIER	AS
8134		62	TIMING RELAY	DE	DG BLDG	----------	OUTLIER	F
		MVR	MASTER VLV RELAY	ENERGIZED	MAST FLT CONT CB	----------	OUTLIER	F
		LS	LIMIT SWITCH MV	NC	MAST FLT CONT CB	----------	NV	--
		PE	PNEUMAT ELECT	DEENERGIZE	DG BLDG	----------	OUTLIER	F
		62-CX	MAST VLV AUX REL	DEENERGIZE	DG BLDG	----------	OUTLIER	F
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CO2 SYS FOR DIESEL GENERATOR #1

THIS RELAY EVALUATION IS DONE TO SHOW WHICH CONTACTORS CANNOT CHATTER IN ORDER TO PREVENT THE CO2 SYSTEM FROM DISCHARGING. A DISCHARGE MAY PREVENT THE DIESEL FROM STARTING OR RUNNING DUE TO POOR COMBUSTION.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 11/28/95

Reviewed by GSB Date 11/28/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
4KVS-1AE	RE-21DL	27-VE2100 (A-B)	ABB 27N	E/NO	4KVS-1E, CUB 8A	27N	CA	--
		27-VE2100 (B-C	ABB 27N	E/NO	4KVS-1E, CUB 8A	27N	CA	--
9001		27-RN2100 (A-N)	ABB 27N	E/NO	480V BUS 1N	27N	CA	--
		27-RN2100 (C-N)	ABB 27N	E/NO	480V BUS 1N	27N	CA	--
		69-VE100	ASEA RIMVB2	DE/NC	4KVS-1E, CUB 8A	RK251204AP	CA	--
		62-VE2100	IT[illegible] 62K	DE/NO	4KVS-1E, CUB 8A	62K	CA	-
		62-VE2100X	A[illegible]SA RIMH2	DE/NO	4KVS-1E, CUB 8A	RK223067PAP	CA	--

4KV BUS 1AE DEGRADED GRID U/V

The Degraded Grid Unde[illegible]oltage Relaying operates to separate 4KV Emergency Bus 1AE from 4KV Normal Bus 1A if a sustained Bus Undervoltage (> 90 sec.) exists on 4KV Bus 1AE or 480V Bus 1N by tripping Breakers 1A10 and 1E7.

During an earthquake, relay chatter could cause the Emergency Bus tie breakers to trip even if an undervoltage condition does not exist. If this were to occur the Emergency Diesel Generator would start, the motor trip undervoltage relaying would strip the bus and the required Emergency Bus loads would be sequenced on to the bus.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
A3 - See Assessment Sheet for details.
[illegible] - Fire Protection no QTR available.
- - No entry necessary.

Prepared by GSB Date 09/01/95

Reviewed by RPF Date 10/17/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
4KVS-1AE	RE-21CT	27-VE1100	ITE 47H	E/NO	4KVS-1E, CUB 8A	211N017147H	CA	--
		46-VE100	GE NBV	E/NO	4KVS-1E, CUB 8A	12NBV11A1A	CA	--
9002		46-VE100I	GE HGA	DE/NC	4KVS-1E, CUB 8A	12HGA11K52	OUTLIER	AS
		62-VE1100	W TD-5	DE/NO	4KVS-1E, CUB 8A	293B301A25B	CA	--
		62-VE1100I	W MG-6	DE/NO	4KVS-1E, CUB 8A	288B977A19	CA	--
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4KV BUS 1AE EMERG DIESEL #1 START U/V

The Emergency Diesel Generator Start Undervoltage Relaying operates to start the Emergency Diesel.

Relay 46-VE100I chatter during an earthquake without a LOOP which could start the Emergency Diesel Generator is acceptable.

Relay 46-VE100I chatter during an earthquake with a LOOP could delay both stripping the loads off the bus and start of the Emergency Diesel Generator for the duration of the chatter (20-30 sec.), this is undesirable but acceptable because it is assumed that there is no accident concurrent with an earthquake.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by GSB Date 09/01/95

Reviewed by RPF Date 10/17/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
4KVS-1AE	RE-21CT	27-VE100	ITE 47H	E/NO	4KVS-1E, CUB 8A	211N0171	CA	--
		27-VE100X	GE HGA	DE/NC	4KVS-1E, CUB 8A	12HGA11K52	RLY-ARH.5	AS
9003		46-VE100	GE NBV	E/NO	4KVS-1E, CUB 8A	12NBV11A1A	CA	--
		46-VE100X	GE HGA	DE/NC	4KVS-1E, CUB 8A	12HGA11K52	CA	--
		62-VE100	W TD-5	DE/NO	4KVS-1E, CUB 8A	293B301A25B	CA	--
		62-VE100X1, X2	W MG-6	DE/NO/NC	4KVS-1E, CUB 8A	288B977A15	DC/CA	--
		62-VE100X3, X4	W MG-6	DE/NO/NC	4KVS-1E, CUB 8A	288B977A15	DC/CA	--
		62-VE100X5	W MG-6	DE/NO/NC	4KVS-1E, CUB 8A	288B977A15	DC/CA	--

4KV BUS 1AE MOTOR TRIP U/V

The Emergency Bus motor trip undervoltage relays trip the 4KV and 480V loads.

Relay 46-VE100 or 46-VE100X chatter during an earthquake with a LOOP could delay both stripping the loads off the bus and start of the Emergency Diesel Generator for the duration of the chatter (20-30 sec.), this is undesirable but acceptable because it is assummed that there is no accident concurrent with an earthquake.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS _____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by GSB Date 09/15/95

Reviewed by RPF Date 10/17/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
4KVS-1AE	RE-21DL	69-VE100	ASEA RXMVB2	OP/NC	4KVS-1E, CUB 8A	RK251204AP	CA	--
9004								--
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4KV BUS 1AE TRIP AND BLOCK CONTROL

The Undervoltage Trip and Block Control operates to block the Undervoltage trips when the Emergency Bus is being powered by the Emergency Diesel Generator.

During normal operation the coils of latching relay 69-VE100 are de-energized and the contacts are closed. During an earthquake the relay must remain in this state or the undervoltage trips will be blocked. If a LOOP occurred with the UV trips blocked, the Diesel would start but couldn't load because the output breaker E9 is interlocked with breakers A10 & E7 which also would have been prevented from tripping because 62-VE100X5 is prevented from energizing by 69-VE100 contact chatter.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by GSB Date 09/15/95

Peviewed by RPF Date 10/17/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
4KVS-1DF	RE-21DL	27-VF2100 (A-B)	ABB 27N	E/NO	4KVS-1F, CUB 8A	27N	CA	--
		27-VF2100 (B-C)	ABB27N	E/NO	4KVS-1F, CUB 8A	27N	CA	--
9005		27-RP2100 (A-N)	ABB 27N	E/NO	480V BUS 1P	27N	CA	--
		27-RP2100 (C-N)	ABB 27N	E/NO	480V BUS 1P	27N	CA	--
		69-VF100	ASEA RXMVB2	DE/NC	4KVS-1F, CUB 8A	RK251204AP	CA	--
		62-VF2100	ITE 62K	DE/NO	4KVS-1F, CUB 8A	62K	CA	--
		62-VF2100X	ASEA RXMH2	DE/NO	4KVS-1F, CUB 8A	RK223067AP	CA	--
								--

4KV BUS 1DF DEGRADED GRID U/V

The Degraded Grid Undervoltage Relaying operates to separate 4KV Emergency Bus 1DF from 4KV Normal Bus 1D if a sustained Bus Undervoltage (> 90 sec.) exists on 4KV Bus 1DF or 480V Bus 1P by tripping Breakers 1D10 and 1F7.

During an earthquake, relay chatter could cause the Emergency Bus tie breakers to trip even if an undervoltage condition does not exist. If this were to occur the Emergency Diesel Generator would start, the motor trip undervoltage relaying would strip the bus and the required Emergency Bus loads would be sequenced on to the bus.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by GSB Date 09/15/95

Reviewed by RPF Date 10/17/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
4KVS-1DF	RE-21CT	27-VF1100	ITE 47H	E/NO	4KVS-1F, CUB 8A	211N017147H	CA	--
		46-VF100	GE NBV	E/NO	4KVS-1F, CUB 8A	12NBV11A1A	CA	--
9006		46-VF100X	GE HGA	DE/NC	4KVS-1F, CUB 8A	12HGA11K52	CA	--
		62-VF1100	W TD-5	DE/NO	4KVS-1F, CUB 8A	293B301A25B	CA	--
		62-VF1100X	W MG-6	DE/NO	4KVS-1F, CUB 8A	288B977A19	CA	--
								--
								--
								--

4KV BUS 1DF EMERG DIESEL #2 START U/V

The Emergency Diesel Generator Start Undervoltage Relaying operates to start the Emergency Diesel.

Relay chatter during an earthquake without a LOOP which could start the Emergency Diesel Generator is acceptable.

Relay 46-VF100 or 46-VF100X chatter during an earthquake with a LOOP could delay both stripping the loads off the bus and start of the Emergency Diesel Generator for the duration of the chatter (20-30 sec.), this is undesirable but acceptable because it is assummed that there is no accident concurrent with an earthquake.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by GSB Date 09/15/95

Reviewed by RPF Date 10/17/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
4KVS-1DF	RE-21CT	27-VF100	ITE 47H	E/NO	4KVS-1F, CUB 8A	211N0171	CA	--
		27-VF100X	GE HGA	DE/NO	4KVS-1F, CUB 8A	12HGA11K52	RLY-ARH.5	AS
9007		46-VF100	GE NBV	E/NO	4KVS-1F, CUB 8A	12NBV11A1A	CA	--
		46-VF100X	GE HGA	DE/NC	4KVS-1F, CUB 8A	12HGA11K52	OUTLIER	AS
		62-VF100	W TD-5	DE/NO	4KVS-1F, CUB 8A	293B301A25B	CA	--
		62-VF100X1, X2	W MG-6	DE/NO/NC	4KVS-1F, CUB 8A	288B977A15	DC/CA	--
		62-VF100X3, X4	W MG-6	DE/NO/NC	4KVS-1F, CUB 8A	288B977A15	DC/CA	--
		62-VF100X5	W MG-6	DE/NO/NC	4KVS-1F, CUB 8A	288B977A15	DC/CA	--

4KV BUS 1DF MOTOR TRIP U/V

The Emergency Bus motor trip undervoltage relays trip the 4KV and 480V loads.

Relay 46-VF100 or 46-VF100X chatter during an earthquake with a LOOP could delay both stripping the loads off the bus and start of the Emergency Diesel Generator for the duration of the chatter (20-30 sec.), this is undesirable but acceptable because it is assummed that there is no accident concurrent with an earthquake.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by GSB Date 09/15/95

Reviewed by RPF Date 10/17/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
4KVS-1DF	RE-21DL	69-VF100	ASEA RXMVB2	OP/NC	4KVS-1F, CUB 8A	RK251204AP	CA	--
9008								--
								--
								--
								--
								--
								--

4KV BUS 1DF TRIP AND BLOCK CONTROL

The Undervoltage Trip and Block Control operates to block the Undervoltage trips when the Emergency Bus is being powered by the Emergency Diesel Generator.

During normal operation the coils of latching relay 69-VF100 are de-energized and the contacts are closed. During an earthquake the relay must remain in this state or the undervoltage trips will be blocked. If a LOOP occurred with the UV trips blocked, the Diesel would start but couldn't load because the output breaker F9 is interlocked with breakers D10 & F7 which also would have been prevented from tripping because 62-VF100X5 is prevented from energizing by 69-VF100 contact chatter.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by GSB Date 09/15/95

Reviewed by RPF Date 10/17/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
480V BUS 1N	RE-21DA	27-RN100	ABB 47H	E/NO	480V BUS 1N	412NO175	CA	--
		46-RN100	GE NBV	E/NC	480V BUS 1N	12NBV11A1A	CA	--
9009		27-RN100X	GE HGA	DE/NO	480V BUS 1N	12HGA11K52	RLY-ARH.5	AS
		69-VE100	ASEA RXMVB2	DE/NC	4KVS-1E, CUB 8A	RK251204AP	CA	--
		62-RN100	W TD-5	DE/NO	480V BUS 1N	SPECIAL	QTR-SQURTS	AS
		62-RN100X1, X2	W MG-6	DE/NO/NC	480V BUS 1N	1163797	DC/CA	--
		62-RN100X4, X5	W MG-6	DE/NO/NC	480V BUS 1N	1163797	DC/CA	--

480V BUS 1N MOTOR TRIP U/V

The Emergency Bus motor trip undervoltage relays trip the 480V loads.

IF relay*27-RN100X or 62-RN100 chatter during an earthquake without a loss of power could cause the loads to trip.

Relay 69-VE100 is chatter acceptable because the diesel generator will not close onto a non-stripped bus because the A10 & E7 breakers will be prevented from opening by the same relay chattering(Ref RE-21CK & CT).

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA	-	Chatter acceptable.
NV	-	Not vulnerable (mechanically actuated contacts and solid state relays).
GERS	-	Seismically adequate based on GERS_____; include GERS number.
NA	-	Component not affected by relays.
CR	-	Corrective action required.
OA	-	Operator action.
DC	-	Direct control.
AS	-	See Assessment Sheet for details.
F	-	Fire Protection no QTR available.
-	-	No entry necessary.

Prepared by GSB Date 09/15/95

Reviewed by RPF Date 10/17/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memc
480V BUS 1N	RE-21DA							
9010								

480V BUS 1N DEGRADED GRID U/V

The Degraded Grid Undervoltage Relaying operates to separate 4KV Emergency Bus 1AE from 4KV Normal Bus 1A if a sustained Bus Undervoltage (> 90 sec.) exists on 4KV Bus 1AE or 480V Bus 1N by tripping Breakers 1A10 and 1E7.

During an earthquake, relay chatter could cause the Emergency Bus tie breakers to trip even if an undervoltage condition does not exist. If this were to occur the Emergency Diesel Generator would start, the motor trip undervoltage relaying would strip the bus and the required Emergency Bus loads would be sequenced on to the bus.

SEE LINE 9001

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by GSB Date 09/15/95

Reviewed by RPF Date 10/17/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
480V BUS 1P	RE-21DA	27-RP100	ABB 47H	E/NO	480V BUS 1P	412N0175	CA	--
		46-RP100	GE NBV	E/NC	480V BUS 1P	12NBV11A1A	CA	--
9011		27-RP100X	GE HGA	DE/NO	480V BUS 1P	12HGA11K52	RLY-ARH.5	AS
		69-VF100	ASEA RXMVB2	DE/NC	4KVS-1F, CUB 8A	RK251204AP	CA	--
		62-RP100	W TD-5	DE/NO	480V BUS 1P	SPECIAL	QTR-SQURTS	AS
		62-RP100X1, X2	W MG-6	DE/NO/NC	480V BUS 1P	1163797	DC/CA	--
		62-RN100X4, X5	W MG-6	DE/NO/NC	480V BUS 1P	1163797	DC/CA	--
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480V BUS 1P MOTOR TRIP U/V

The 480V Bus undervoltage relays trip, and in some cases, block start of the 480V Emergency Bus loads.

IF relay 27-RP100X or 62-RP100 chatter during an earthquake without a loss of power could cause the loads to trip.

Relay 69-VF100 is chatter acceptable because the diesel generator will not close onto a non-stripped bus because the D10 & F7 breakers will be prevented from opening by the same relay chattering(Ref RE-21CK & CT).Relay chatter during an earthquake could cause loads to trip without a loss of power condition or prevent loads from starting during the period of seismic movement.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by GSB Date 09/15/95

Reviewed by RPF Date 10/17/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
480V BUS 1P	RE-21DA							--
								--
9012								--
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								--
								--

480V BUS 1P DEGRADED GRID U/V

The Degraded Grid Undervoltage Relaying operates to separate 4KV Emergency Bus 1DF from 4KV Normal Bus 1D if a sustained Bus Undervoltage (> 90 sec.) exists on 4KV Bus 1DF or 480V Bus 1P by tripping Breakers 1D10 and 1F7.

During an earthquake, relay chatter could cause the Emergency Bus tie breakers to trip even if an undervoltage condition does not exist. If this were to occur the Emergency Diesel Generator would start, the motor trip undervoltage relaying would strip the bus and the required Emergency Bus loads would be sequenced on to the bus.

SEE LINE 9005

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS _____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by GSB Date 09/15/95

Reviewed by RPF Date 10/17/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
480V BUS 1N1	RE-21DA	27-RN1100	ABB 47H	E/NO	480V BUS 1NI	412NO175	CA	--
		46-RN1100	GE NBV	E/NC	480V BUS 1N1	12NBV11A1A	CA	--
9013		62-RN1100	W TD-5	DE/NO	480V BUS 1N1	MODIFIED	QTR SQURTS	AS
		62-RN1100X1, X2	W MG-6	DE/NO	480V BUS 1N1	1163797	DC/CA	--
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480V BUS 1N1 MOTOR TRIP U/V

480V Bus 1N1 undervoltage trips and blocks start of the 480V loads.

IF relay 62-RN1100 chatters during an earthquake without a loss of power could cause the loads to trip.

Relay 69-VE100 is chatter acceptable because the diesel generator will not close onto a non-stripped bus because the A10 & E7 breakers will be prevented from opening by the same relay chattering(Ref RE-21CK & CT).

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by GSB Date 09/15/95

Reviewed by RPF Date 10/17/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
480V BUS 1P1	RE-21DA	27-RP1100	ABB 47H	E/NO	480V BUS 1P1	412N0175	CA	--
		46-RP1100	GE NBV	E/NC	480V BUS 1P1	12NBV11A1A	CA	--
9014		62-RP1100	W TD-5	DE/NO	480V BUS 1P1	MODIFIED	QTR-SQURTS	AS
		62-RP1100X1, X2	W MG-6	DE/NO	480V BUS 1P1	1163797	DC/CA	--
		---	---	---	---	---	---	--
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		---	---	---	---	---	---	--
		---	---	---	---	---	---	--

480V BUS 1P1 MOTOR TRIP U/V

480V Bus 1P1 undervoltage trips and blocks start of bus loads.

IF relay*62-RP1100 chatters during an earthquake without a loss of power could cause the loads to trip.

Relay 69-VF100 is chatter acceptable because the diesel generator will not close onto a non-stripped bus because the D10 & F7 breakers will be prevented from opening by the same relay chattering(Ref RE-21CK & CT).

Relay chatter during an earthquake with a loss of power must not prevent the relays from tripping the loads.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by GSB Date 09/15/95

Reviewed by RPF Date 10/17/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
EE-EG-1	RE-21BU	STR1/2	VAPOR CORP	DE/NO	PNL-DIGEN-1	TYPE 12	OUTLIER	AS
		STLO1/2	SQUARE D CL 9050	DE/NO/NC	PNL-DIGEN-1	EQ1933	TEST GRP20	AS
9015		MSR1/2	SQUARE D CL 7001	DE/NO/NC	PNL-DIGEN-1	8269705	OUTLIER	AS
		SFD1/2	SQUARE D CL 9050	DE/NO/NC	PNL-DIGEN-1	EQ 19335	OUTLIER	AS
		PFD1/2	SQUARE D CL 9050	DE/NO/NC	PNL-DIGEN-1	EQ 19335	OUTLIER	AS
		ZSR1/2	SQUARE D CL 7001	DE/NO/NC	PNL-DIGEN-1	8269705	OUTLIER	AS
		ESR1/2	SQUARE D CL 7001	DE/NO/NC	PNL-DIGEN-1	8269705	OUTLIER	AS
		SFB1/2	SQUARE D CL 9050	DE/NC/NC	PNL-DIGEN-1	EQ 19335	OUTLIER	AS

EDG #1 START CIRCUIT #1

Because ofthe number of relays in the Emergency Diesel Generator starting and stopping circuits (approximately 40 per diesel generator), it is not possible to analyze the circuitry and determine effects of relay chatter for all possible conditions or combinations.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by GSB Date 10/02/95

Reviewed by RPF Date 10/17/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
EE-EG-1	RE-21BU	FSR1/2	SQUARE D CL 7001	DE/NO	PNL-DIGEN-1	8269705	OUTLIER	AS
		VSR1/2	SQUARE D CL 7001	DE/NO	PNL-DIGEN-1	8269705	OUTLIER	AS
9015C		52S-1A10X	W MG-6	DE/NC	PNL-DIGEN-1	288B977	RLY-ARH.5	AS
		OTR	SQUARE D CL 7001	DE/NO	PNL-DIGEN-1	8269705	OUTLIER	AS
		GP	VAPOR CORP.	DE/NO	PNL-DIGEN-1	UNMARKED	OUTLIER	AS
		SSP1/2	ELECT SPEED SWIT	DE/NO	PNL-DIGEN-1	ESS-B-4AT	OUTLIER	AS
		SFA	CO/TO	DE/NO	ENG CONT CABENIT	828-31-23	NV	--
		52S-1E7X/1E9X	W MG-6	DE/NC	PNL-DIGEN-1	288B977	RLY-ARH.5	AS

EDG #1 START CIRCUIT #1

Continued from line no. 9015.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by GSB Date 10/02/95

Reviewed by RPF Date 10/17/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
EE-EG-1	RE-21BU							--
								--
9016								--
								--
								--
								--
								--
								--

EDG #1 START CIRCUIT #2

The #2 start circuit is the same as #1 and contains the same quantity and type of relays.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by GSB Date 10/02/95

Reviewed by RPF Date 10/17/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
EE-EG-1	RE-21BU	52V	SQUARE D CL 9050	DE/NO	PNL-DIGEN-1	EQ 19335	OUTLIER	AS
		PFDA1/2	SQUARE D CL 9050	DE/NC	PNL-DIGEN-1	EQ 2423	OUTLIER	AS
9017		FFC	SQUARE D CL 8504	DE/NO	PNL-DIGEN-1	EQ 1965	OUTLIER	AS
		FPR	VAPOR CORP.	DE/NO	PNL-DIGEN-1	TYPE 12	OUTLIER	AS
		ESTR	SQUARE D CL 7001	DE/NC	PNL-DIGEN-1	8269705	OUTLIER	AS
		ESTD	AGASTAT 2422	DE/NO	PNL-DIGEN-1	2422	RLY-PNT.7	AS
		ECR	AGASTAT 2412	DE/NO	PNL-DIGEN-1	2412	RLY-PNT.7	AS
		GS	VAPOR CORP.	DE/NO/NC	PNL-DIGEN-1	UNMARKED	OUTLIER	AS

EDG #1 GOVERNOR & ENGINE CONTROL CIRCUIT

Because ofthe number of relays in the Emergency Diesel Generator circuits, it is not possible to analyze the circuitry and determine effects of relay chatter for all possible combinations and conditions.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
\- - No entry necessary.

Prepared by GSB Date 10/02/95

Reviewed by RPF Date 10/17/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
EE-EG-1	RE-21BU	ECRA	VAPOR CORP.	DE/NO/NC	PNL-DIGEN-1	UNMARKED	OUTLIER	AS
		27-VE109	ITE 47H	E/NO	PNL-DGEA-1	412N0175	QTR-ABB	AS
9017C		27-VE109X	ASEA RXME-1	DE/NC	PNL-DGEA-1	RK221052-AN	QTR-ABB	AS
		ESRXA	W MG-6	DE/NO/NC	PNL-DIGEN-1	1163801	RLY-ARH.5	AS
		40V	W AV	DE/NC	PNL-DIGEN-1	1600876H	TEST GRP20	AS
		NFLDA/B	CO/TO	DE/NC	ENG CONT CAB	828-31-23	NV	--
		CKT MAL	CO/TO	DE/NC	ENG CONT CAB	828-31-23	NV	--
		40T	SQUARE D CL 9050	DE/NC	PNL-DIGEN-1	EQ 19335	OUTLIER	AS

EDG #1 GOVERNOR & ENGINE CONTROL CIRCUIT

Continued from line no. 9017.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS _____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by GSB Date 10/02/95

Reviewed by RPF Date 10/17/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
EE-EG-2	RE-21BZ	STR1/2	VAPOR CORP.	DE/NO	PNL-DIGEN-2	TYPE 12	OUTLIER	AS
		STLO1/2	SQUARE D CL 9050	DE/NO/NC	PNL-DIGEN-2	EQ 1933	TEST GRP20	AS
9018		MSR1/2	SQUARE D CL 7001	DE/NO/NC	PNL-DIGEN-2	8269705	OUTLIER	AS
		SFD1/2	SQUARE D CL 9050	DE/NO/NC	PNL-DIGEN-2	EQ 19335	OUTLIER	AS
		PFD1/2	SQUARE D CL 9050	DE/NO/NC	PNL-DIGEN-2	EQ 19335	OUTLIER	AS
		ZSR1/2	SQUARE D CL 7001	DE/NO/NC	PNL-DIGEN-2	8269705	OUTLIER	AS
		ESR1/2	SQUARE D CL 7001	DE/NO/NC	PNL-DIGEN-2	8269705	OUTLIER	AS
		SFB1/2	SQUARE D CL 9050	DE/NO/NC	PNL-DIGEN-2	EQ 19335	OUTLIER	AS

EDG #2 START CIRCUIT #1

Because ofthe number of relays in the Emergency Diesel Generator starting and stopping circuits (approximately 40 per diesel generator), it is not possible to analyze the circuitry and determine effects of relay chatter for all possible conditions or combinations

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
\- - No entry necessary.

Prepared by GSB Date 10/02/95

Reviewed by RPF Date 10/17/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
EE-EG-2	RE-21BZ	FSR1/2	SQUARE D CL 7001	DE/NO/NC	PNL-DIGEN-2	8269705	OUTLIER	AS
		VSR1/2	SQUARE D CL 7001	DE/NO	PNL-DIGEN-2	8269705	OUTLIER	AS
9018C		SSP1/2	ELECT SPEED SWIT	DE/NO	PNL-DIGEN-2	ESS-B-4AT	OUTLIER	AS
		OTR	SQUARE D CL 7001	DE/NC	PNL-DIGEN-2	8269705	OUTLIER	AS
		GP	VAPOR CORP.	DE/NO/NC	PNL-DIGEN-2	UNMARKED	OUTLIER	AS
		SFA	CO/TO	DE/NO/NC	ENG CONT CAB	828-31-23	NV	--
		52S-1D10X	W MG-6	DE/NC	PNL-DIGEN-2	288B977	RLY-ARH.5	AS
		52S-1F7X/1F9X	W MG-6	DE/NC	PNL-DIGEN-2	288B977	RLY-ARH.5	AS

EDG #2 START CIRCUIT #1

Continued from Line No. 9018.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by GSB Date 10/02/95

Reviewed by RPF Date 10/17/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
EE-EG-2	RE-21BZ							
9019								

EDG #2 START CIRCUIT #2

THE #2 START CIRCUIT IS THE SAME AS #1 AND CONTAINS THE SAME QUANTITY AND TYPE OF RELAYS.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays)
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by GSB Date 10/02/95

Reviewed by RPF Date 10/17/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
EE-EG-2	RE-21BZ	52V	SQUARE D CL 9050	DE/NO	PNL-DIGEN-2	EQ 19335	OUTLIER	AS
		PFDA1/2	SQUARE D CL 9050	DE/NC	PNL-DIGEN-2	EQ 2423	OUTLIER	AS
9020		FFC	SQUARE D CL 8504	DE/NO	PNL-DIGEN-2	EQ 1965	OUTLIER	AS
		FPR	VAPOR CORP.	DE	PNL-DIGEN-2	TYPE 12	OUTLIER	AS
		ESTR	SQUARE D CL 7001	DE/NC	PNL-DIGEN-2	8269705	OUTLIER	AS
		ESTD	AGASTAT 2422	DE/NO	PNL-DIGEN-2	2422	RLY-PNT.7	AS
		ECR	AGASTAT 2412	DE/NO	PNL-DIGEN-2	2412	RLY-PNT.7	AS
		GS	VAPOR CORP.	DE/NO/NC	PNL-DIGEN-2	UNMARKED	OUTLIER	AS

EDG #2 GOVERNOR & ENGINE CONTROL CIRCUIT

Because ofthe number of relays in the Emergency Diesel Generator circuits,it is not possible to analyze the circuitry and determine effects of relay chatter for all possible combinations and conditions.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by GSB Date 10/02/95

Reviewed by RPF Date 10/17/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
EE-EG-2	RE-21BZ	ECRA	VAPOR CORP.	DE/NO/NC	PNL-DIGEN-2	UNMARKED	OUTLIER	AS
		27-VF109	ITE 47H	E/NO	PNL-DGEA-2	412N0175	QTR-ABB	AS
9020C		27-VF109X	ASEA RXME-1	DE/NO	PNL-DGEA-2	RK221052-AN	QTR-ABB	AS
		ESRXB	W MG-6	DE/NO/NC	PNL-DIGEN-2	1163801	RLY-ARH.5	AS
		NFLDA/B	CO/TO	DE/NC	ENG CONT CAB	828-31-23	NV	--
		CKT MAL	CO/TO	DE/NC	ENG CONT CAB	828-31-23	NV	--
		40T	SQUARE D CL 7001	DE/NO	PNL-DIGEN-2	8269705	OUTLIER	AS
		40V	W AV	DE/NC	PNL-DIGEN-2	1600876H	TEST GRP20	AS

EDG #2 GOVERNOR & ENGINE CONTROL CIRCUIT

Continued from Line No. 9020.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by GSB Date 10/02/95

Reviewed by RPF Date 10/17/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
EE-EG-2	RE-21AT	52S-1F7XX/1F9XX	ASEA RXME-1	DE/NO/NC	PNL-REL-DGI	RK221052-AN	QTR-ABB	AS
		52S-1D10XX	ASEA RXME-1	DE/NO/NC	PNL-REL-DGI	RK221052-AN	QTR-ABB	AS
9020D		K611-G2S	ASEA RXMH-2	DE/NO	PNL-REL-DGI	RK223068-AP	QTR-ABB	AS
		62-VF1100X	ASEA RXME-1	DE/NO	PNL-REL-DGI	RK221052-AN	QTR-ABB	AS
		SYNDG-2X	ASEA RXME-1	DE/NO	PNL-REL-DGI	RK221052-AN	QTR-ABB	AS
		FFX-REC	ASEA RXME-1	DE/NO	PNL-REL-DGI	RK221052-AN	QTR-ABB	AS
		RSX-REC	ASEA RXME-1	DE/NO	PNL-REL-DGI	RK221052-AN	QTR-ABB	AS
		RGRX-REC	ASEA RXME-1	DE/NO	PNL-REL-DGI	RK221052-AN	QTR-ABB	AS

EDG #2 INTERPOSING RELAYS

The interposing relay panel and associated relays were added for the No. 2 diesel for Appendix R protection.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by GSB Date 10/03/95

Reviewed by RPF Date 10/17/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
EE-EG-2	RE-21AT	RCLX-REC	ASEA RXME-1	DE/NO	PNL-REL-DGI	RK221052-AN	QTR-ABB	AS
		EXPBX-REC	ASEA RXME-1	DE/NO	PNL-REL-DGI	RK221052-AN	QTR-ABB	AS
9020E		FFSWX-REC	ASEA RXME-1	DE/NO/NC	PNL-REL-DGI	RK221052-AN	QTR-ABB	AS
		40VF-109X	ASEA RXME-1	DE/NO	PNL-REL-DGI	RK221052-AN	QTR-ABB	AS

EDG #2 INTERPOSING RELAYS

Continued from Line No. 9020D.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by GSB Date 10/03/95

Reviewed by RPF Date 10/17/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
4KVS-1AE-1E9	RE-21BW	62-1E9X	ASEA RXME1	DE/NO	4KVS-1E, CUB 9	RK-221-052-AN	QTR-ABB	AS
		51-VE107X	W WL	DE/NC	4KVS-1E, CUB 7	300P694G01	RLY-ALO.2	AS
9021		87-VE109XX	GE HEA	DE/NC	PNL-REL-19	12HEA[illegible]C240	RLY-ALO.2	AS
		62-VE112X	W WL	DE/NC	4KVS-1E, CUB 112	422D94[illegible]319	RLY-ALO.2	AS
		52S-1E7	BKR AUX SW	----------	4KVS-1E, CUB 7	----------	NV	--
		52S-1A10	BKR AUX SW	----------	4KVS-1A, CUB 10	----------	NV	--
		62-VE100X5	W MG-6	DE/NO	4KVS-1E, CUB 8A	288B977A15	RLY-ARH.5	AS
		62-1E9	W TD-5	DE/NO	4KVS-1E, CUB 9	295B301A25	QTR-SQURTS	AS

EMERGENCY DIESEL GENERATOR #1 OUTPUT BKR

In addition to interlocks from the Emergency Diesel Starting Circuits, the Diesel Generator Output breakers have interlocks from several lockout relays. Chatter from relays which could trip these lockout relays is not acceptable because the Diesel Generator Output breaker would be locked out.

Lockout relay 51-VE107X is operated by overcurrent relays 67/51-VE107A, B, C, and 50-VE107G. See Line 9027.

Lockout relay 87-VE109XX is operated by relays 87-VE109X, 21-VE109X, 51-VE109A, B, C, and 51-VE109G. See Line 9023.

Lockout relay 62-VE112X is operated by relays 51-VE112A,B,C, 51-VE1112A, B, C, 50-VE112G, 50-VE1112G, and 62-VE112. See Line 9025.

If these lockout relays trip they would have to be manually reset.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by GSB Date 10/09/95

Reviewed by RPF Date 10/17/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
4KVS-1AE-1E9	RE-21BW	FSR1/FSR2-DG1	SQ D CLASS 7001	DE/NO	PNL-DIGEN-1	8769705MA	OUTLIER	AS
		MSR1/MSR2-DG1	SQ D CLASS 7001	DE/NO	PNL-DIGEN-1	8769705MA	OUTLIER	AS
9021C		43-DG1-REC	W OT2	NO	BENCHBOARD	W OT2	NV	--
		OTR-DG1	SQ D CLASS 7001	DE/NC	PNL-DIGEN-1	8769705MA	OUTLIER	AS
		VSR1/VSR2-DG1	SQ D CLASS 7001	DE/NO	PNL-DIGEN-1	8269705MA	OUTLIER	AS
		27-VE109	ITE 47H	DE/NO	PNL-DGEA-1	412N0175	QTR-A&B	AS
		62-VE112X	W WL	DE/NO	4KVS-1E, CUB 12	293B301A25B	RLY-ALO.2	AS
		---	---	---	---	---	---	--

EMERGENCY DIESEL GENERATOR #1 OUTPUT BKR

In addition to interlocks form the Emergency Diesel Starting Circuits, the Diesel Generator Output breakers have interlocks from several lockout relays. Chatter from relays which could trip these lockout relays is not acceptable because the Diesel Generator Output breaker would be locked out.

Lockout relay 51-VE107X is operated by overcurrent relays 67/51-VE107A, B, C and 50-VE107G. See Line 9027.

Lockout relay 87-VE109XX is operated by relays 87-VE109X, 21-VE109X, 51-VE109A, B, C, and 51-VE109G. See Line 9023.

Lockout relay 62-VE112X is operated by relays 51-VE112A,B,C, 51-VE1112A, B, C, 50-VE112G, 50-VE1112G, and 62-VE112. See Line 9025.

If these lockout relays trip they would have to be manually reset.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA	-	Chatter acceptable.
NV	-	Not vulnerable (mechanically actuated contacts and solid state relays).
GERS	-	Seismically adequate based on GERS_____; include GERS number.
NA	-	Component not affected by relays.
CR	-	Corrective action required.
OA	-	Operator action.
DC	-	Direct control.
AS	-	See Assessment Sheet for details.
F	-	Fire Protection no QTR available.
-	-	No entry necessary.

Prepared by GSB Date 10/12/95

Reviewed by RPF Date 10/17/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
4KVS-1DF-1F9	RE-21CB	62-1F9X	ASEA RXME1	DE/NO	4KVS-1F, CUB 9	RK-221-052-AN	QTR-ABB	AS
		51-VF107X	W WL	DE/NC	4KVS-1F, CUB 7	300P694G01	RLY-ALO.2	AS
9022		87-VF109XX	GE HEA	DE/NC	PNL-REL-22	12HEA61C240	RLY-ALO.2	AS
		62-VF112X	W WL	DE/NC	4KVS-1F, CUB 112	422D949G19	RLY-ALO.2	AS
		52S-1F7	BKR AUX SW	----------	4KVS-1F, CUB 7	----------	NV	--
		52S-1D10	BKR AUX SW	----------	4KVS-1D, CUB 10	----------	NV	--
		62-VF100X5	W MG-6	DE/NO	4KVS-1F, CUB 8A	288B977A15	RLY-ARH.5	AS
		62-1F9	W TD-5	DE/NO	4KVS-1F, CUB 9	295B301A25	QTR-SQURTS	AS

EMERGENCY DIESEL GENERATOR #2 OUTPUT BKR

In addition to interlocks from the Emergency Diesel Starting Circuits, the Diesel Generator Output breakers have interlocks from several lockout relays. Chatter from relays which could trip these lockout relays is not acceptable because the Diesel Generator Output breaker would be locked out.

Lockout relay 51-VF107X is operated by overcurrent relays 67/51-VF107A, B, C and 50-VF107G. SEE Line 9028.

Lockout relay 87-VF109XX is operated by relays 87-VF109X, 21-VF109X, 51-VF109A, B, C, and 51-VF109G. See Line 9024.

Lockout relay 62-VF112X is operated by relays 51-VF112A,B,C, 51-VF1112A, B, C, 50-VF112G, 50-VF1112G, and 62-VF112. See Line 9026.

If these lockout relays trip they would have to be manually reset.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by GSB Date 10/09/95

Reviewed by RPF Date 10/17/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
4KVS-1AE-1F9	RE-21CB	FSR1/FSR2-DG2	SQ D CLASS 7001	DE/NO	PNL-DIGEN-2	8769705MA	OUTLIER	AS
		MSR1/MSR2-DG2	SQ D CLASS 7001	DE/NO	PNL-DIGEN-2	8769705MA	OUTLIER	AS
9022C		43-DG2-REC	W OT2	NO	BENCHBOARD	W OT2	NV	--
		OTR-DG2	SQ D CLASS 7001	DE/NC	PNL-DIGEN-2	8769705MA	OUTLIER	AS
		VSR1/VSR2-DG2	SQ D CLASS 7001	DE/NO	PNL-DIGEN-2	8269705MA	OUTLIER	AS
		27-VF109	ITE 47H	DE/NO	PNL-DGEA-2	412N0175	QTR-ABB	AS
		62-VF112X	W WL	DE/NO	4KVS-1F, CUB 12	293B301A25B	RLY-ALO.2	AS
								--

EMERGENCY DIESEL GENERATOR #2 OUTPUT BKR

In addition to interlocks form the Emergency Diesel Starting Circuits, the Diesel Generator Output breakers have interlocks from several lockout relays. Chatter from relays which could trip these lockout relays is not acceptable because the Diesel Generator Output breaker would be locked out.

Lockout relay 51-VF107X is operated by overcurrent relays 67/51-VF107A, B, C and 50-VF107G. See Line 9028.

Lockout relay 87-VF109XX is operate by relays 87-VE109X, 21-VF109X, 51-VF109A, B, C, and 51-VF109G. See Line 9024.

Lockout relay 62-VF112X is operated by relays 51-VF112A,B,C, 51-VF1112A, B, C, 50-VF112G, 50-VF1112G, and 62-VF112. See Line 9026.

If these lockout relays trip they would have to be manually reset.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by GSB Date 10/12/95

Reviewed by RPF Date 10/17/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
EDG #1	RE-21BW	87-VE109	W SA-1	----------	PNL-REL-19	646F115A07	NV	--
		87-VE109X	W ARS	DE/NO	PNL-REL-19	718B820A10	OUTLIER	AS
9023		21-VE109	W SP	----------	PNL-REL-19	606B650A27	NV	--
		21-VE109X	W ARS	DE/NO	PNL-REL-19	717B770A13	OUTLIER	AS
		51-VE109A,B & C	GE IAC	DE/NO	PNL-REL-19	12IAC60A12	OUTLIER	AS
		51-VE109G	GE IAC	DE/NO	PNL-REL-19	12IAC53A801A	RLY-PP1.5	AS
		87-VE109XX	GE HEA	DE/NC	PNL-REL-19	12HEA61C240	RLY-ALO.2	AS
		----------	----------	----------	----------	----------	----------	--

EMERGENCY DIESEL GENERATOR PROTECTION

Several Emergency Diesel Generator Protective relays operate a lockout relay. If any one of these relays chatters during a seismic event the lockout relay could operate disabling the Emergency Diesel Generator start circuits and locking out the Emergency Diesel Generator output breaker. Manual action would be required to reset the lockout relay at the relay panel.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS _____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by GSB Date 10/09/95

Reviewed by RPF Date 10/17/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
EDG #2	RE-21CB	87-VF109	W SA-1	----------	PNL-REL-32	646F115A07	NV	--
		87-VF109X	W ARS	DE/NO	PNL-REL-32	718B820A10	OUTLIER	AS
9024		21-VF109	W SP	----------	PNL-REL-22	606B650A27	NV	--
		21-VF109X	W ARS	DE/NO	PNL-REL-22	717B770A13	OUTLIER	AS
		51-VF109A, B ,C	GE IAC	DE/NO	PNL-REL-22	12IAC60A12	OUTLIER	AS
		51-VF109G	GE IAC	DE/NO	PNL-REL-22	12IAC53A801A	RLY-PP1.5	AS
		87-VF109XX	GE HEA	DE/NC	PNL-REL-32	12HEA61C240	RLY-ALO.2	AS
		----------	----------	----------	----------	----------	----------	--

EMERGENCY DIESEL GENERATOR PROTECTION

Several Emergency Diesel Generator Protective relays operate a lockout relay. If any one of these relays chatters during a seismic event the lockout relay could operate disabling the Emergency Diesel Generator start circuits. Manual action would be required to reset the lockout relay at the relay panel.

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CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by GSB Date 10/09/95

Reviewed by RPF Date 10/17/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
4KVS-1AE-1E12	RE-21CP	51-VE112A,B,C	W CO-11	DE/NO	4KVS-1E, CUB 112	1456CO5A13	GRPS 7&12	AS
		51-VE1112A,B,C	W CO-11	DE/NO	4KVS-1E, CUB 12	1456CO5A13	GRPS 7&12	AS
9025		50-VE112G	ITE GR-5	DE/NO	4KVS-1E, CUB 12	202D6141	NV	--
		62-VE112	W TD-5	DE/NO	4KVS-1E, CUB 12	293B301A24B	QTR-SQURTS	AS
		62-VE112X	W WL	DE/NO	4KVS-1E, CUB 12	422D949G19	RLY-ALO.2	AS
		CS (1-)	W TYPE W	----------	BENCHBOARD	W TYPE W	NV	--
		50-VE1112G	ITE GR-5	DE/NO	4KVS-1E, CUB 12	202D6141	NV	--

480V EMERGENCY BUS 1N AND 1N1 FDR BKR

The 4KV Emergency Bus to 480V Emergency Bus Feeder Breaker must remain CLOSED during an earthquake with or without a Loss of Power. The overcurrent relays must not chatter. Chatter could cause the lockout relay to trip which would not only trip the feeder breaker to the 480V Emergency Bus, it would also trip the 4KV Emergency Bus Supply breaker and block closing of the Emergency Diesel Generator Output breaker.

Relay 50-VE112G & 50-VE1112G are GR-5's which are solid state relays with an SCR output and therefore cannot chatter.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by GSB Date 10/12/95

Reviewed by RPF Date 10/17/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
4KVS-1DF-1F12	RE-21CP	51-VF112A,B,C	W CO-11	DE/NO	4KVS-1E, CUB 112	1456CO5A13	GRPS 7&12	AS
		51-VF1112A,B,C	W CO-11	DE/NO	4KVS-1F, CUB 12	1456CO5A13	GRPS 7&12	AS
9026		50-VF112G	ITE GR-5	DE/NO	4KVS-1F, CUB 12	202D6141	NV	--
		62-VF112	W TD-5	DE/NO	4KVS-1F, CUB 12	293B301A24B	QTR-SQURTS	AS
		62-VF112X	W WL	DE/NO	4KVS-1F, CUB 12	422D949G19	RLY-ALC.2	AS
		CS (1-)	W TYPE W	----------	BENCHROARD	W TYPE W	NV	--
		50-VF1112G	ITE GR-5	DE/NO	4KVS-1F, CUB 12	202D6141	NV	--

480V EMERGENCY BUS 1P AND 1P1 FDR BKR

The 4KV Emergency Bus to 480V Emergency Bus Feeder Breaker must remain CLOSED during an earthquake with or without a Loss of Power. The overcurrent relays must not chatter. Chatter could cause the lockout relay to trip which would not only trip the feeder breaker to the 480V Emergency Bus, it would also trip the 4KV Emergency Bus Supply breaker and block closing of the Emergency Diesel Generator Output breaker.

Relay 50-VF112G & 50-VF1112G are GR-5's which are solid state relays with an SCR output and therefore cannot chatter.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by GSB Date 10/12/95

Reviewed by RPF Date 10/17/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
4KVS-1AE-1E7	RE-21CK	67/51-VE107A,B,	W IRV	DE/NO	4KVS-1E, CUB 7	290B091A33	OUTLIER	AS
		50-VE107G	ITE GR-5	DE/NO	4KVS-1E, CUB 7	202D6141	NV	--
9027		51-VE107X	W WL	DE/NO/NC	4KVS-1E, CUB 7	300P694G01	RLY-ALO.2	AS
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4KV EMERGENCY BUS 1AE FDR BKR

The overcurrent relays for the 4kv Emergency Bus supply breakers operate a lockout relay which locks out the Emergency Diesel starting circuits and the Emergency Diesel Generator Output breaker. These relays must not chatter during an earthquake. Chatter could cause the lockout relay to trip diabling the Emergency Diesel. The lockout relay would have to be manually reset.

SEE LINE 9021

Relay 50-VE107G is a GR-5 which is a solid state relay with an SCR output and therefore cannot chatter.

If relays 50-VE107X, 51-VA110X or 87-VE107GX or any of the relays inputing to them chattered the non-Class 1E supply would be shed but the DG would start and carry the load, therefore chatter can be accepted by any of these relays.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by GSB Date 10/12/95

Reviewed by RPF Date 10/17/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
4KVS-1DF-1F7	RE-21	67/51-VF107A,B,	W IRV	DE/NO	4KVS-1F, CUB 7	290B091A33	OUTLIER	AS
		50-VF107G	ITE GR-5	DE/NO	4KVS-1F, CUB 7	202D6141	NV	--
9028		51-VF107X	W WL	DE/NO/NC	4KVS-1F, CUB 7	300P694G01	RLY-ALO.2	AS
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4KV EMERGENCY BUS 1DF FDR BKR

The overcurrent relays for the 4kv Emergency Bus supply breakers operate a lockout relay which locks out the Emergency Diesel starting circuits and the Emergency Diesel Generator Output breaker. These relay must not chatter during an earthquake. Chatter could cause the lockout relay to trip diabling the Emergency Diesel. The lockout relay would have to be manually reset.

SEE LINE 9022.

Relay 50-VF107G is a GR-5 which is a solid state relay with an SCR output and therefore cannot chatter.

If relays 50-VF107X, 51-DA110X or 87-VF107GX or any of the relays inputing to them chattered the non-Class 1E supply would be shed but the DG would start and carry the load, therefore chatter can be accepted by any of these relays.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by GSB Date 10/12/95

Reviewed by RPF Date 10/17/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
WR-P-9A	RE-21KY	CS (1-)	W TYPE W	----------	BENCHBOARD	W TYPE W	NV	--
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9029		---	---	---	---	---	---	--
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RW/AUX. RIVER WATER PUMP

The Auxiliary River Water Pumps are not normally running. The pumps must not start during a loss of power condition when the Emergency Diesel generator is feeding the Emergency bus.

The only interlock in the pump staring circuit is the control switch which is not vulnerable to chatter. Therefore, the pump cannot start as a result of chatter during an earthquake.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/15/95

Reviewed by GSB Date 08/07/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
WR-P-9B	RE-21KY	CS (1-)	W TYPE W	----------	BENCHBOARD	W TYPE W	NV	--
9030								--
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RW/AUX. RIVER WATER PUMP

The Auxiliary River Water Pumps are not normally running. The pumps must not start during a loss of power condition when the Emergency Diesel Generator is feeding the Emergency bus.

The only interlock in the pump starting circuit is the control switch which is not vulnerable to chatter. Therefore, the pump cannot start as a result of chatter during an earthquake.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/15/95

Reviewed by GSB Date 08/07/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
RH-P-1A	RE-21JU	CS (1-)	W TYPE W	----------	BENCHBOARD	W TYPE W	NV	--
9031								--
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								--
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RH/RESIDUAL HEAT REMOVAL PUMP

The RHR Pumps are normally not running. The pumps must not start during an earthquake to prevent overload of the Emergency Diesel Generator.

The RHR pumps can only be started manually. There is no automatic start. The control switch is not vulnerable to chatter. Therefore, the pumps cannot start as a result of chatter during an earthquake.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  CA - Chatter acceptable.
  NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  GERS - Seismically adequate based on GERS_____; include GERS number.
  NA - Component not affected by relays.
  CR - Corrective action required.
  OA - Operator action.
  DC - Direct control.
  AS - See Assessment Sheet for details.
  F - Fire Protection no QTR available.
  - - No entry necessary.

Prepared by RPF Date 02/15/95

Reviewed by GSB Date 08/07/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
RH-P-1B	RE-21JU	CS (1-)	W TYPE W	----------	BENCHBOARD	W TYPE W	NV	--
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9032		---	---	---	---	---	---	--
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RH/RESIDUAL HEAT REMOVAL PUMP

The RHR Pumps are normally not running. The pumps must not start during an earthquake to prevent overload of the Emergency Diesel Generator.

The RHR pumps can only be started manually. There is no automatic start. The control switch is not vulnerable to chatter. Therefore, the pumps cannot start as a result of chatter during an earthquake.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS _____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/15/95

Reviewed by GSB Date 08/07/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
SI-P-1A	RE-21KJ	CS (1-)	W TYPE W	----------	BENCHBOARD	W TYPE W	NV	--
		K609	W AR440AR	DE/NO	RK-REAC-PROT-3A	W AR440AR	DC/CA	--
9033		152A-BXAE	AGASTAT	DE/NC	PNL-DG-SEQ-1	EGPD002	DC/CA	--
		362-AEX	W MG-6	DE/NO	PNL-DG-SEQ-1	1163803	DC/CA	--
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SI/LOW HEAD SAFETY INJ PUMP

The Safety Injection Pumps are not normally running. The control switches are normally in AUTO and the pumps start on SI with or without a Loss of Power.

Chatter of relay K609 and 362-AEX could cause the pump to start if the chatter is of sufficient duration to cause the breaker to close.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 02/15/95

Reviewed by GSB Date 08/07/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
SI-P-1B	RE-21KJ	CS (1-)	W TYPE W	----------	BENCHBOARD	W TYPE W	NV	--
		K609	W AR440AR	DE/NO	RK REAC-PROT-3B	W AR440AR	DC/CA	--
9034		152A-BXDF	AGASTAT	DE/NC	PNL-DG-SEQ-2	EGPD002	DC/CA	--
		362-DFX	W MG-6	DE/NO	PNL-DG-SEQ-2	1163803	DC/CA	--
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SI/LOW HEAD SAFETY INJ PUMP

The Safety Injection Pumps are not normally running. The control switches are normally in AUTO and the pumps start on SI with or without a Loss of Power.

Chatter of relay K609 and 362-DFX could cause the pump to start if the chatter is of sufficient duration to cause the breaker to close.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/15/95

Reviewed by GSB Date 08/07/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
RS-P-2A	RE-21JW	CS (1-)	W TYPE W	----------	BENCHBOARD	W TYPE W	NV	--
		62-VE113	ATC TIMER	DE/NO	4KVS-1E, CUB 13	35D011L10UX	DC/CA	--
9035		362-AEX	W MG-6	DE/NO	PNL-DG-SEQ-1	1162803	DC/CA	--
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RS/OUTSIDE RECIRC SPRAY PUMP

The Outside Recirc Spray Pumps are normally not running. The pumps start automatically on a CIB signal and are loaded on the Emergency Bus during a Diesel Loading Sequence. During an earthquake, relay chatter cannot be permitted to cause the pumps to start when a loss of power condition exists because the Diesel Generator could be overloaded.

Chatter of relays 62-VE113 and 362-AEX could cause the pump to start if the chatter is of sufficient duration to cause the breaker to close.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS _____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/15/95

Reviewed by GSB Date 08/07/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
RS-P-2B	RE-21JW	CS (1-)	W TYPE W	----------	BENCHBOARD	W TYPE W	NV	--
		62-VF113	ATC TIMER	DE/NO	4KVS-1F, CUB 13	305D011L10UX	DC/CA	--
9036		362-DFX	W MG-6	DE/NO	PNL-DG-SEQ-2	1163803	DC/CA	--
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RS/OUTSIDE RECIRC SPRAY PUMP

The Outside Recirc Spray Pumps are normally not running. The pumps start automatically on a CIB signal and are loaded on the Emergency Bus during a Diesel Loading Sequence. During an earthquake, relay chatter cannot be permitted to cause the pumps to start when a loss of power condition exists because the Diesel Generator could be overloaded.

Chatter of relays 62-VF113 and 362-DFX could cause the pump to start if the chatter is of sufficient duration to cause the breaker to close.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/15/95

Reviewed by GSB Date 08/07/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
RS-P-1A	RE-21JX	CS (1-)	W TYPE W	----------	BENCHBOARD	W TYPE W	NV	--
		62-8N3	ATC TIMER	DE/NO	PNL-REL-37R	305D011L10UX	DC/CA	--
9037		462-AEX	W MG-6	DE/NO	PNL-DG-SEQ-1	1163803	DC/CA	--
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RS/INSIDE RECIRC SPRAY PUMP

The Inside Recirc Spray Pumps are normally not running. The pumps start automatically on a CIB signal and are loaded on the Emergency Bus during a Diesel Loading Sequence. During an earthquake, relay chatter cannot be permitted to cause the pumps to start when a loss of power condition exists because the Diesel Generator could be overloaded.

Chatter of relays 62-8N3 and 462-AEX could cause the pump to start if the chatter is of sufficient duration to cause the breaker to close.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 02/15/95

Reviewed by GSB Date 08/07/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
RS-P-1B	RE-21JX	CS (1-)	W TYPE W	----------	BENCHBOARD	W TYPE W	NV	--
		62-9P4	ATC TIMER	DE/NO	PNL-REL-38R	305D011L10UX	DC/CA	--
9038		462-DFX	W MG-6	DE/NO	PNL-DG-SEQ-1	1163803	DC/CA	--
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RS/INSIDE RECIRC SPRAY PUMP

The Inside Recirc Spray Pumps are normally notrunning. The pumps start automatically on a CIB signal and are loaded on the Emergency Bus during a Diesel Loading Sequence. During an earthquake, relay chatter cannot be permitted to cause the pumps to start when a loss of power condition exists because the Diesel Generator could be overloaded.

Chatter of relays 62-9P4 and 462-DFX could cause the pump to start if the chatter is of sufficient duration to cause the breaker to close.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/15/95

Reviewed by GSB Date 08/07/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
QS-P-1A	RE-21JK	CS (1-)	W TYPE W	----------	BENCHBOARD	W TYPE W	NV	--
		62-8N4	ATC TIMER	DE/NO	PNL-REL-37R	305D011L10UX	DC/CA	--
9039		K643	W AR440	DE/NO	RK-REAC-PROT-3A	W AR440	DC/CA	--
		362-AEX	W MG-6	DE/NO	PNL-DG-SEQ-1	1163803	DC/CA	--
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QS/QUENCH SPRAY PUMP

The Quench Spray Pumps are not normally running. For pump and Diesel Generator protection, they must not start during an earthquake.

Chatter of relays 62-8N4 and 362-AEX could cause the pump to start if the chatter is of sufficient duration for the breaker to close.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 02/15/95

Reviewed by GSB Date 08/07/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
QS-P-1B	RE-21JK	CS (1-)	W TYPE W	----------	BENCHBOARD	W TYPE W	NV	--
		62-9P5	ATC TIMER	DE/NO	PNL-REL-38R	305D011L10UX	DC/CA	--
9040		K643	W AR440	DE/NO	RK-REAC-PROT-3B	W AR440	DC/CA	--
		362-DFX	W MG-6	DE/NO	PNL-DG-SEQ-2	1163803	DC/CA	--
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QS/QUENCH SPRAY PUMP

The Quench Spray Pumps are not normally running. For pump and Emergency Diesel protection the pumps must not start during an earthquake.

Chatter of relays 62-9P5 and 362-DFX could cause the pump to start if the chatter is of sufficient duration to cause the breaker to close.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/15/95

Reviewed by GSB Date 08/07/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-F-1A	RE-21MF	CS (1-)	W TYPE W	----------	BENCHBOARD	W TYPE W	NV	--
		43-8N19X	GE HEA	NOP/NC	PNL-REL-33	12HEA61C238X2	RLY-ALO.2	AS
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VS/CONTAINMENT AIR RECIRC FAN

Normally one Containment Air Recirculation Fan is running on each stub bus. If an earthquake occurs the resulting loss of power will cause the fans to trip on an undervoltage. There is no auto start function for the fans to cause possible diesel overload. The fans will not restart.

The control switch contact in the fan start circuit is not vulnerable to chatter. A trip with no loss of offsite power is acceptable.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/15/95

Reviewed by GSB Date 08/07/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-F-1B	RE-21MF	CS (1-)	W TYPE W	----------	BENCHBOARD	W TYPE W	NV	--
		43-3P18X	GE HEA	NOP/NC	PNL-REL-34	12HEA61C238X2	RLY-ALO.2	AS
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VS/CONTAINMENT AIR RECIRC FAN

Normally one Containment Air Recirculation Fan is running on each stub bus. If an earthquake occurs the resulting loss of power will cause the fans to trip on an undervoltage. There is no auto start function for the fans to cause possible diesel overload. The fans will not restart.

The control switch contact in the fan start circuit is not vulnerable to chatter. A trip with no loss of offsite power is acceptable.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/15/95

Reviewed by GSB Date 08/07/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-F-1C	RE-21MF	CS (1-)	W TYPE W	----------	BENCHBOARD	W TYPE W	NV	--
		43-8N20X	GE HEA	NOP/NC	PNL-REL-33	12HEA61C238X2	RLY-ALO.2	AS
9043		43-9P17X	GE HEA	NOP/NC	PNL-REL-34	12HEA61C238X2	RLY-ALO.2	AS
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VS/CONTAINMENT AIR RECIRC FAN

Normally one Containment Air Recirculation fan is running on each stub bus. If an earthquake occurs the resulting loss of power will cause the fans to trip on an undervoltage. There is no auto start function for the fans to cause possible diesel overload. The fans will not restart.

The control switch contact in the fan start circuit is not vulnerable to chatter. A trip with no loss of offsite power is acceptable.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/15/95

Reviewed by GSB Date 08/07/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-F-2A	RE-21MG	CS (1-)	W TYPE W	----------	BENCHBOARD	W TYPE W	NV	--
		43-8N18X	GE HEA	NOP/NC	PNL-REL-33	12HEA61C238X2	RLY-ALO.2	AS
9044		362-AEX	W MG-6	DE/NO	PNL-DG-SEQ-1	1163803	DC/CA	--
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VS/CONTROL ROD DRIVE MECH SHROUD COOLING

Normally one CRDM Shroud Fan is running on each bus. If an earthquake occurs the resulting loss of power will cause the fans to trip on an undervoltage. The fan is designed to restart on a Diesel Loading Sequence signal.

Chatter of relay 362-AEX could cause the fan to start prematurely overloading the Emergency Diesel Generator.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by RPF Date 02/15/95

Reviewed by GSB Date 08/07/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-F-2B	RE-21MG	CS (1-)	W TYPE W	----------	BENCHBOARD	W TYPE W	NV	--
		43-9P19X	GE HEA	NOP/NC	PNL-REL-34	12HEA61C238X2	RLY-ALO.2	AS
9045		362-DFX	W MG-6	DE/NO	PNL-DG-SEQ-2	1163803	DC/CA	--
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VS/CONTRCL ROD DRIVE MECH SHROUD COOLING

Normally oen CRDM shroud Fan is running on esch bus. If an earthquake occurs the resulting loss of power will cause the fans to trip on an undervoltage. The fan is designed to restart on a Diesel Loading Sequence Signal.

Chatter of relay 362-DFX could cause the fan to start prematurely overloading the Emergency Diesel Generator.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by RPF Date 02/15/95

Reviewed by GSB Date 08/07/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
VS-F-2C	RE-21MG	CS (1-)	W TYPE W	----------	BENCHBOARD	W TYPE W	NV	--
		43-8N17X	GE HEA	NOP/NC	PNL-REL-33	12HEA61C238X2	RLY-ALO.2	AS
9046		43-9P20X	GE HEA	NOP/NC	PNL-REL-34	12HEA61C238X2	RLY-ALO.2	AS
		362-AEX/DFX	W MG-6	DE/NO	PNL-DG-SEQ-1/2	1163803	DC/CA	--
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VS/CONTROL ROD DRIVE MECH SHROUD COOLING

Normally one CRDM Shroud Fan is running on each bus. If an earthquake occurs the resulting loss of power will cause the fans to trip on an undervoltage. The fan is designed to restart on a Diesel Loading Sequence Signal.

Chatter of relay 362-AEX/DFX could cause the fan to start prematurely overloading the Emergency Diesel Generator.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by PPF Date 02/15/95

Reviewed by GSB Date 08/07/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
RK-REAC-PROT-1A								
9101								

SSPS TRAIN A CHANNEL I INPUT RELAYS

The SSPS Input Relays receive inputs from the Primary Process Racks. The relays are used to generate the logic required for actuation of Safety Injection (SI), Containment Isolation Phase A (CIA), Feedwater Isolation (FWI), Steamline Isolation (SLI), Containment Isolation Phase B and Containment Spray (CIB). Relays from the four channel input bays are interconnected to produce the required logic matrix for each ESF actuation signal. All relays except for those which actuate CIB are normally energized with the normally closed contacts held open. When a sufficient number of relays have been de-energized to generate an ESF actuation signal, the master relay is energized which in turn energizes all the output relays which are connected to the master relay. The input relays which generate the CIB signal are normally de-energized and the contacts are open.

The relays in the SSPS input channel compartments are C. P. Clare model GPIR61A6000 except for 1 relay in Channel III, Train A and 2 relays in Channel III, Train B which are Midtex/AEMCO model 156-14T300. The master relays in the output bay are C. P. Clare model GPIR21A3000 except for 4 relays in the Train A output bay and 1 in the Train B output bay which are Potter & Brumfield model KHU17D12. All Train A and B output relays are Westinghouse AR440 relays with the ARLA latch mechanism except for one relay in each output bay which are Potter & Brumfield MDR relays.

If the relays in the SSPS channel input bays (energized or de-energized), the master relays (normally de-energized) or the output relays (normally de-energized) are vulnerble to chatter, it must be assumed that an ESF actuation could occur.

The Solid-State Protection System Relays are provided on a separate listing.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA	-	Chatter acceptable.
NV	-	Not vulnerable (mechanically actuated contacts and solid state relays).
GERS	-	Seismically adequate based on GERS_____; include GERS number.
NA	-	Component not affected by relays.
CR	-	Corrective action required.
OA	-	Operator action.
DC	-	Direct control.
AS	-	See Assessment Sheet for details.
F	-	Fire Protection no QTR available.
-	-	No entry necessary.

Prepared by GSB Date 09/15/95

Reviewed by RPF Date 10/17/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
RK-REAC-PROT-1A								
9102								

SSPS TRAIN A CHANNEL II INPUT RELAYS

The SSPS Input Relays receive inputs from the Primary Process Racks. The relays are used to generate the logic required for actuation of Safety Injection (SI), Containment Isolation Phase A (CIA), Feedwater Isolation (FWI), Steamline Isolation (SLI), Containment Isolation Phase B and Containment Spray (CIB). Relays from the four channel input bays are interconnected to produce the required logic matrix for each ESF actuation signal. All relays except for those which actuate CIB are normally energized with the normally closed contacts held open. When a sufficient number of relays have been de-energized to generate an ESF actuation signal, the master relay is energized which in turn energizes all the output relays which are connected to the master relay. The input relays which generate the CIB signal are normally de-energized and the contacts are open.

The relays in the SSPS input channel compartments are C. P. Clare model GPIR61A6000 except for 1 relay in Channel III, Train A and 2 relays in Channel III, Train B which are Midtex/AEMCO model 156-14T300. The master relays in the output bay are C. P. Clare model GPIR21A3000 except for 4 relays in the Train A output bay and 1 in the Train B output bay which are Potter & Brumfield model KHU17D12. All train A and B output relays are Westinghouse AR440 relays with the ARLA latch mechanism except for one relay in each output bay which are Potter & Brumfield MDR relays.

If the relays in the SSPS channel input bays (energized or de-energized), the master relays (normally de-energized) or the output relays (normally de-energized) are vulnerble to chatter, it must be assumed that an ESF actuation could occur.

The Solid-State Protection System Relays are provided on a separate listing.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by GSB Date 09/15/95

Reviewed by RPF Date 10/17/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
RK-REAC-PROT-1A								
9103								

SSPS TRAIN A CHANNEL III INPUT RELAYS

The SSPS Input Relays receive inputs from the Primary Process Racks. The relays are used to generate the logic required for actuation of Safety Injection (SI), Containment Isolation Phase A (CIA), Feedwater Isolation (FWI), Steamline Isolation (SLI), Containment Isolation Phase B and Containment Spray (CIB). Relays from the four channel input bays are interconnected to produce the required logic matrix for each ESF actuation signal. All relays except for those which actuate CIB are normally energized with the normally closed contacts held open. When a sufficient number of relays have been de-energized to generate an ESF actuation signal, the master relay is energized which in turn energizes all the output relays which are connected to the master relay. The input relays which generate the CIB signal are normally de-energized and the contacts are open.

The relays in the SSPS input channel compartments are C. P. Clare model GPIR61A6000 except for 1 relay in Channel III, Train A and 2 relays in Channel III, Train B which are Midtex/AEMCO model 156-14T300. The master relays in the output bay are C. P. Clare model GPIR21A3000 except for 4 relays in the Train A output bay and 1 in the Train B output bay which are Potter & Brumfield model KHU17D12. All train A and B output relays are Westinghouse AR440 relays with the ARLA latch mechanism except for one relay in each output bay which are Potter & Brumfield MDR relays.

If the relays in the SSPS channel input bays (energized or de-energized), the master relays (normally de-energized) or the output relays (normally de-energized) are vulnerble to chatter, it must be assumed that an ESF actuation could occur.

The Solid-State Protection System Relays are provided on a separate listing.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by GSB Date 09/15/96

Reviewed by RPF Date 10/17/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
RK-REAC-PROT-1A								
9104								

SSPS TRAIN A CHANNEL IV INPUT RELAYS

The SSPS Input Relays receive inputs from the Primary Process Racks. The relays are used to generate the logic required for actuation of Safety Injection (SI), Containment Isolation Phase A (CIA), Feedwater Isolation (FWI), Steamline Isolation (SLI), Containment Isolation Phase B and Containment Spray (CIB). Relays from the four channel input bays are interconnected to produce the required logic matrix for each ESF actuation signal. All relays except for those which actuate CIB are normally energized with the normally closed contacts held open. When a sufficient number of relays have been de-energized to generate an ESF actuation signal, the master relay is energized which in turn energizes all the output relays which are connected to the master relay. The input relays which generate the CIB signal are normally de-energized and the contacts are open.

The relays in the SSPS input channel compartments are C. P. Clare model GPIR61A6000 except for 1 relay in Channel III, Train A and 2 relays in Channel III, Train B which are Midtex/AEMCO model 156-14T300. The master relays in the output bay are C. P. Clare model GPIR21A3000 except for 4 relays in the Train A output bay and 1 in the Train B output bay which are Potter & Brumfield model KHU17D12. All train A and B output relays are Westinghouse AR440 relays with the ARLA latch mechanism except for one relay in each output bay which are Potter & Brumfield MDR relays.

If the relays in the SSPS channel input bays (energized or de-energized), the master relays (normally de-energized) or the output relays (normally de-energized) are vulnerble to chatter, it must be assumed that an ESF actuation could occur.

The Solid-State Protection System Relays are provided on a separate listing.

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* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by GSB Date 09/15/95

Reviewed by KPF Date 10/17/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
RK-REAC-PROT-3A								
9105								

SSPS TRAIN A MASTER RELAYS

The SSPS Input Relays receive inputs from the Primary Process Racks. The relays are used to generate the logic required for actuation of Safety Injection (SI), Containment Isolation Phase A (CIA), Feedwater Isolation (FWI), Steamline Isolation (SLI), Containment Isolation Phase B and Containment Spray (CIB). Relays from the four channel input bays are interconnected to produce the required logic matrix for each ESF actuation signal. All relays except for those which actuate CIB are normally energized with the normally closed contacts held open. When a sufficient number of relays have been de-energized to generate an ESF actuation signal, the master relay is energized which in turn energizes all the output relays which are connected to the master relay. The input relays which generate the CIB signal are normally de-energized and the contacts are open.

The relays in the SSPS input channel compartments are C. P. Clare model GPIR61A6000 except for 1 relay in Channel III, Train A and 2 relays in Channel III, Train B which are Midtex/AEMCO model 156-14T300. The master relays in the output bay are C. P. Clare model GPIR21A3000 except for 4 relays in the Train A output bay and 1 in the Train B output bay which are Potter & Brumfield model KHU17D12. All train A and B output relays are Westinghouse AR440 relays with the ARLA latch mechanism except for one relay in each output bay which are Potter & Brumfield MDR relays.

If the relays in the SSPS channel input bays (energized or de-energized), the master relays (normally de-energized) or the output relays (normally de-energized) are vulnerble to chatter, it must be assumed that an ESF actuation could occur.

The Solid-State Protection System relays are provided on a separate listing.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by GSB Date 09/15/95

Reviewed by RPF Date 10/17/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
RK-REAC-PROT-3A								
9106								

SSPS TRAIN A OUTPUT RELAYS

The SSPS relays receive inputs from the Primary Process Racks. The relays are used to generate the logic required for actuation of Safety Injection (SI), Containment Isolation Phase A (CIA), Feedwater Isolation (FWI), Steamline Isolation (SLI), Containment Isolation Phase B and Containment Spray (CIB). Relays from the four channel input bays are interconnected to produce the required logic matrix for each ESF actuation signal. All relays except for those which actuate CIB are normally energized with the normally closed contacts held open. When a sufficient number of relays have been de-energized to generate an ESF actuation signal, the master relay is energized which in turn energizes all the output relays which are connected to the master relay. The input relays which generate the CIB signal are normally de-energized and the contacts are open.

The relays in the SSPS input channel compartments are C. P. Clare model GPIR61A6000 except for 1 relay in Channel III, Train A and 2 relays in Channel III, Train B which are Midtex/AEMCO model 156-14T300. The master relays in the output bay are C. P. Clare model GPIR21A3000 except for 4 relays in the Train A output bay and 1 in the Train B output bay which are Potter & Brumfield model KHU17D12. All train A and B output relays are Westinghouse AR440 relays with the ARLA latch mechanism except for one relay in each output bay which are Potter & Brumfield MDR relays.

If the relays in the SSPS channel input bays (energized or de-energized), the master relays (normally de-energized) or the output relays (normally de-energized) are vulnerble to chatter, it must be assumed that an ESF actuation could occur.

The Solid-State Protection System Relays are provided on a separate listing.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
\- - No entry necessary.

Prepared by GSB Date 09/15/95

Reviewed by RPF Date 10/17/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
RK-REAC-PROT-1B								
9107								

SSPS TRAIN B CHANNEL I INPUT RELAYS

The SSPS Input Relays receive inputs from the Primary Process Racks. The relays are used to generate the logic required for actuation of Safety Injection (SI), Containment Isolation Phase A (CIA), Feedwater Isolation (FWI), Steamline Isolation (SLI), Containment Isolation Phase B and Containment Spray (CIB). Relays from the four channel input bays are interconnected to produce the required logic matrix for each ESF actuation signal. All relays except for those which actuate CIB are normally energized with the normally closed contacts held open. When a sufficient number of relays have been de-energized to generate an ESF actuation signal, the master relay is energized which in turn energizes all the output relays which are connected to the master relay. The input relays which generate the CIB signal are normally de-energized and the contacts are open.

The relays in the SSPS input channel compartments are C. P. Clare model GPIR61A6000 except for 1 relay in Channel III, Train A and 2 relays in Channel III, Train B which are Midtex/AEMCO model 156-14T300. The master relays in the output bay are C. P. Clare model GPIR21A3000 except for 4 relays in the Train A output bay and 1 in the Train B output bay which are Potter & Brumfield model KHU17D12. All train A and B output relays are Westinghouse AR440 relays with the ARLA latch mechanism except for one relay in each output bay which are Potter & Brumfield MDR relays.

If the relays in the SSPS channel input bays (energized or de-energized), the master relays (normally de-energized) or the output relays (normally de-energized) are vulnerble to chatter, it must be assumed that an ESF actuation could occur.

The Solid-State Protection System Relays are provided on a separate listing.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA	-	Chatter acceptable.
NV	-	Not vulnerable (mechanically actuated contacts and solid state relays).
GERS	-	Seismically adequate based on GERS_____; include GERS number.
NA	-	Component not affected by relays.
CR	-	Corrective action required.
OA	-	Operator action.
DC	-	Direct control.
AS	-	See Assessment Sheet for details.
F	-	Fire Protection no QTR available.
-	-	No entry necessary.

Prepared by GSB Date 09/15/95

Reviewed by RPF Date 10/17/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
RK-REAC-PROT-1B								
9108								

SSPS TRAIN B CHANNEL II INPUT RELAYS

The SSPS Input Relays receive inputs from the Primary Process Racks. The relays are used to generate the logic required for actuation of Safety Injection (SI), Containment Isolation Phase A (CIA), Feedwater Isolation (FWI), Steamline Isolation (SLI), Containment Isolation Phase B and Containment Spray (CIB). Relays from the four channel input bays are interconnected to produce the required logic matrix for each ESF actuation signal. All relays except for those which actuate CIB are normally energized with the normally closed contacts held open. When a sufficient number of relays have been de-energized to generate an ESF actuation signal, the master relay is energized which in turn energizes all the output relays which are connected to the master relay. The input relays which generate the CIB signal are normally de-energized and the contacts are open.

The relays in the SSPS input channel compartments are C. P. Clare model GPIR61A6000 except for 1 relay in Channel III, Train A and 2 relays in Channel III, Train B which are Midtex/AEMCO model 156-14T300. The master relays in the output bay are C. P. Clare model GPIR21A3000 except for 4 relays in the Train A output bay and 1 in the Train B output bay which are Potter & Brumfield model KHU17D12. All train A and B output relays are Westinghouse AR440 relays with the ARLA latch mechanism except for one relay in each output bay which are Potter & Brumfield MDR relays.

If the relays in the SSPS channel input bays (energized or de-energized), the master relays (normally de-energized) or the output relays (normally de-energized) are vulnerble to chatter, it must be assumed that an ESF actuation could occur.

The Solid-State Protection System Relays are provided on a separate listing.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.
  - CA - Chatter acceptable.
  - NV - Not vulnerable (mechanically actuated contacts and solid state relays).
  - GERS - Seismically adequate based on GERS_____; include GERS number.
  - NA - Component not affected by relays.
  - CR - Corrective action required.
  - OA - Operator action.
  - DC - Direct control.
  - AS - See Assessment Sheet for details.
  - F - Fire Protection no QTR available.
  - - - No entry necessary.

Prepared by GSB Date 09/15/95

Reviewed by RPF Date 10/17/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
RK-REAC-PROT-1B								
9109								

SSPS TRAIN B CHANNEL III INPUT RELAYS

The SSPS Input Relays receive inputs from the Primary Process Racks. The relays are used to generate the logic required for actuation of Safety Injection (SI), Containment Isolation Phase A (CIA), Feedwater Isolation (FWI), Steamline Isolation (SLI), Containment Isolation Phase B and Containment Spray (CIB). Relays from the four channel input bays are interconnected to produce the required logic matrix for each ESF actuation signal. All relays except for those which actuate CIB are normally energized with the normally closed contacts held open. When a sufficient number of relays have been de-energized to generate an ESF actuation signal, the master relay is energized which in turn energizes all the output relays which are connected to the master relay. The input relays which generate the CIB signal are normally de-energized and the contacts are open.

The relays in the SSPS input channel compartments are C. P. Clare model GPIR61A6000 except for 1 relay in Channel III, Train A and 2 relays in Channel III, Train B which are Midtex/AEMCO model 156-14T300. The master relays in the output bay are C. P. Clare model GPIR21A3000 except for 4 relays in the Train A output bay and 1 in the Train B output bay which are Potter & Brumfield model KHU17D12. All train A and B output relays are Westinghouse AR440 relays with the ARLA latch mechanism except for one relay in each output bay which are Potter & Brumfield MDR relays.

If the relays in the SSPS channel input bays (energized or de-energized), the master relays (normally de-energized) or the output relays (normally de-energized) are vulnerble to chatter, it must be assumed that an ESF actuation could occur.

The Solid-State Protection System Relays are provided on a separate listing.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by GSB Date 09/15/95

Reviewed by RPF Date 10/17/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
RK-REAC-PROT-1B								
9110								

SSPS TRAIN B CHANNEL IV INPUT RELAYS

The SSPS Input Relays receive inputs from the Primary Process Racks. The relays are used to generate the logic required for actuation of Safety Injection (SI), Containment Isolation Phase A (CIA), Feedwater Isolation (FWI), Steamline Isolation (SLI), Containment Isolation Phase B and Containment Spray (CIB). Relays from the four channel input bays are interconnected to produce the required logic matrix for each ESF actuation signal. All relays except for those which actuate CIB are normally energized with the normally closed contacts held open. When a sufficient number of relays have been de-energized to generate an ESF actuation signal, the master relay is energized which in turn energizes all the output relays which are connected to the master relay. The input relays which generate the CIB signal are normally de-energized and the contacts are open.

The relays in the SSPS input channel compartments are C. P. Clare model GPIR61A6000 except for 1 relay in Channel III, Train A and 2 relays in Channel III, Train B which are Midtex/AEMCO model 156-14T300. The master relays in the output bay are C. P. Clare model GPIR21A3000 except for 4 relays in the Train A output bay and 1 in the Train B output bay which are Potter & Brumfield model KHU17D12. All train A and B output relays are Westinghouse AR440 relays with the ARLA latch mechanism except for one relay in each output bay which are Potter & Brumfield MDR relays.

If the relays in the SSPS channel input bays (energized or de-energized), the master relays (normally de-energized) or the output relays (normally de-energized) are vulnerble to chatter, it must be assumed that an ESF actuation could occur.

The Solid-State Protection System Relays are provided on a separate listing.

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
\- - No entry necessary.

Prepared by GSB Date 09/15/95

Reviewed by RPF Date 10/17/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
RK-REAC-PROT-3B								
9111								

SSPS TRAIN B MASTER RELAYS

The SSPS Input Relays receive inputs from the Primary Process Racks. The relays are used to generate the logic required for actuation of Safety Injection (SI), Containment Isolation Phase A (CIA), Feedwater Isolation (FWI), Steamline Isolation (SLI), Containment Isolation Phase B and Containment Spray (CIB). Relays from the four channel input bays are interconnected to produce the required logic matrix for each ESF actuation signal. All relays except for those which actuate CIB are normally energized with the normally closed contacts held open. When a sufficient number of relays have been de-energized to generate an ESF actuation signal, the master relay is energized which in turn energizes all the output relays which are connected to the master relay. The input relays which generate the CIB signal are normally de-energized and the contacts are open.

The relays in the SSPS input channel compartments are C. P. Clare model GPIR61A6000 except for 1 relay in Channel III, Train A and 2 relays in Channel III, Train B which are Midtex/AEMCO model 156-14T300. The master relays in the output bay are C. P. Clare model GPIR21A3000 except for 4 relays in the Train A output bay and 1 in the Train B output bay which are Potter & Brumfield model KHU17D12. All train A and B output relays are Westinghouse AR440 relays with the ARLA latch mechanism except for one relay in each output bay which are Potter & Brumfield MDR relays.

If the relays in the SSPS channel input bays (energized or de-energized), the master relays (normally de-energized) or the output relays (normally de-energized) are vulnerble to chatter, it must be assumed that an ESF actuation could occur.

The Solid-State Protection System Relays are provided on a separate listing.

---

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
- - No entry necessary.

Prepared by GSB Date 09/15/95

Reviewed by RPF Date 10/17/95

Mark No./ Line No.	Ref Dwg	Contact/ Contact Group	Relay Type	State	Location	Model	Sat*	Memo
RK-REAC-PROT-3B								
9112								

SSPS TRAIN B OUTPUT RELAYS

The SSPS Input Relays receive inputs from the Primary Process Racks. The relays are used to generate the logic required for actuation of Safety Injection (SI), Containment Isolation Phase A (CIA), Feedwater Isolation (FWI), Steamline Isolation (SLI), Containment Isolation Phase B and Containment Spray (CIB). Relays from the four channel input bays are interconnected to produce the required logic matrix for each ESF actuation signal. All relays except for those which actuate CIB are normally energized with the normally closed contacts held open. When a sufficient number of relays have been de-energized to generate an ESF actuation signal, the master relay is energized which in turn energizes all the output relays which are connected to the master relay. The input relays which generate the CIB signal are normally de-energized and the contacts are open.

The relays in the SSPS input channel compartments are C. P. Clare model GPIR61A6000 except for 1 relay in Channel III, Train A and 2 relays in Channel III, Train B which are Midtex/AEMCO model 156-14T300. The master relays in the output bay are C. P. Clare model GPIR21A3000 except for 4 relays in the Train A output bay and 1 in the Train B output bay which are Potter & Brumfield model KHU17D12. All train A and B output relays are Westinghouse AR440 relays with the ARLA latch mechanism except for one relay in each output bay which are Potter & Brumfield MDR relays.

If the relays in the SSPS channel input bays (energized or de-energized), the master relays (normally de-energized) or the output relays (normally de-energized) are vulnerble to chatter, it must be assumed that an ESF actuation could occur.

The Solid-State Protection System Relays are provided on a separate listing.

---

* Identify reason for Contact/ Contact Group being satisfactory or unsatisfactory; include comments and references if needed to explain conclusion.

CA - Chatter acceptable.
NV - Not vulnerable (mechanically actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS_____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
DC - Direct control.
AS - See Assessment Sheet for details.
F - Fire Protection no QTR available.
\- - No entry necessary.

Prepared by GSB Date 09/15/95

Reviewed by RPR Date 10/17/95

Appendix F

ESSENTIAL RELAY CABINETS

ESSENTIAL RELAY DATA & ASSESSMENT SHEET

REF: BARKSDALE B2T

Relay Type: Barksdale B2T Pressure Switch

EIN(s): PS-MS-101A,B & C (MEL EIN); 63-MS101A,B & C (Contactor No.)

Model/Style: B2T

State: NO

Location(s): Main Steam Valve House, El 768, direct column-mount.

Demand: Direct-mount to steel column; FRS PSA/ZPA = 0.703/0.207g @ 5% damping (for GERS comparison).

Capacity:
EPRI Ref.- NP-5223-SL, pg.C-73
GERS/Record - PS.5
PSA/ZPA g-levels are: NO= 3/1.2

SQUG-acceptability Issues:

1) No mercury used.

2) Setpoint should be greater than 10% of normal system pressure.

Resolution/Conclusion(s):

Component-related Issues:

1) No mercury present.

2) System pressure fluctuates following a reactor trip, during strong motion, reducing the switch's setpoint margin to within 10% of system pressure. The switch, therefore, can only be assured of function-after. This is acceptable since it will result in temporary, intermittent operation of the atmospheric dump valves.

Relay Reviewer: George S. Billmaier RPF

Capacity exceeds Demand and essential Barksdale B2T switches are acceptable.

Capacity/Demand Issues:

SCE: Glenn S. Rusty

ESSENTIAL RELAY DATA & ASSESSMENT SHEET

REF: BARTON 288A

Relay Type: Barton 288A Flow Indicating Switch

EIN(s): FIS-FW151A, FIS-FW151B

Model/Style: 288A

State: NOP/NC

Location(s): Short Pipe-stanchion attached to steel column; SFGD El 722

Demand: Stanchion judged to be rigid for device weight and cantilever length; => FRS @ 5% damping yields PSA/ZPA = 0.4928/0.149g

Capacity:
EPRI Ref.- NP-5223, pg.C-73
GERS/Record - GERS-RLY-PS.5
Record: Barton Seismic Test Report R3-288A-13, IEEE-344-75.
PSA/ZPA g-levels are: GERS - NOP/NC= 3/1.2g (function after)
QTR - OP/12g (function during)

SQUG-acceptability Issues:

1) No mercury used.

2) Setpoint margin should be greater than 10% of normal system pressure.

Resolution/Conclusion(s):

Component-related Issues:

1&2) No mercury is used; flow can vary with pump running, however, after Reactor trip (assumed to occur as a seismic consequence or shutdown action) flow would be at 350 gpm for which the 275 gpm switch setting is beyond a 10% margin. => Caveats are OK.

Relay Reviewer: George S. Bellamacina RPE

Capacity/Demand Issues:

QTR Capacity exceeds Demand, as does GERS Capacity. Barton 288A is acceptable for function during strong motion.

SCE: [signature]

ESSENTIAL RELAY DATA & ASSESSMENT SHEET

REF: BI-METALLIC SWITCH

Relay Type: HONEYWELL Bi-metallic Thermal Over-load Switch

EIN(s): 49

Model/Style: Unknown

State: NC

Location(s): Control Room Air Compressor & Air Dryer Unit Skids, SRVB El 713

Demand: FRS @ SRVB El 713 => PSA/ZPA = 0.778/0.117g @ 1%

Capacity:
EPRI Ref.- NP-5223-SL, pg.C-73
GERS/Record - GERS-RLY-PS.5 for function-after

PSA/ZPA g-levels are: 3/1.2g @ 5% damping (or factored by $\sqrt{\frac{5}{1}} = 2.236$ to convert to 1% damping level) 6.708/2.683g.

SQUG-acceptability Issues:

1) No use of mercury.

2) No system perturbations.

3) Function during assured if a listed switch; after only, if not.

4) Mounting is intact.

Resolution/Conclusion(s):

Component-related Issues:

1&2) Neither constraint applies.

Relay Reviewer: George S Bellamacina RPE

Capacity/Demand Issues:

3) Not listed => function after if Capacity > Demand.

4) Mounting is OK.

5) When the applicable FRS is compared to the GERS Capacity, available amplification is 8.622. This level should not be exceeded due to the host supports' stiffness. Function-after is, therefore, assured.
For function-during: Operation of the bi-metalic thermal overload switch - a concave-to-convex change of a curved metal strip - is such that the strip is self-stabilizing without thermal expansion due to increased temperature. Vibration acting on the strip's slight mass would not be sufficient to reverse the strip's curvature and cause a change-of-state. Both applications are regularly subjected to vibration without problem. The switch is, therefore, judged to be satisfactory.

SCE: Glenn S. Rhoff

ESSENTIAL RELAY DATA & ASSESSMENT SHEET

REF: CO-11

Relay Type: Westinghouse CO-11

EIN(s): 51-VE112A,B,C; 51-VF112A,B,C; 51-VE1112A,B,C; 51-VF1112A,B,C

Model/Style: 1456C05A13

State: DE/NO

Location(s): 4KVS @ SRVB El 713

Demand: 4KVS (AF=7.0) PSA/ZPA = 2.434/0.819g

Capacity:
EPRI Ref.- NP-7147-SL, pg.2-7
GERS/Record - GROUPS 7 & 12 (Style No.265C047A07)
Record (QTR): VTI 8700-01.050-0163, NTS Rpt.60227-94; IEEE 344-75.
PSA/ZPA g-levels are: EPRI(due to ICS) - NOP/NO= 6/2.4; NOP/NC= N/A; OP/NO&NC= 10/4
NTS QTR - PSA/ZPA = 14.25/5.70

SQUG-acceptability Issues:

1. EPRI time Dial Setting = 1.0 or 2.0 (NOTE: NP-7147-SL, V2-A1, pg.2-15 indicates time dial setting had no effect on Capacity),

Resolution/Conclusion(s):

Component-related Issues:

1. Model used in NTS testing is identical to plant model. EPRI models are similar enough to use GERS.

2. Time dial setting is 1.0 or 2.0 for EPRI GERS use.

Relay Reviewer: H J Bellamacina PE

Capacity/Demand Issues:

3. Essential CO-11 relays have Capacity greater than Demand based upon either GERS or QTR use.

SCE: Glenn S. Cruff

ESSENTIAL RELAY DATA & ASSESSMENT SHEET

REF: COM-5

Relay Type: Westinghouse COM-5

EIN(s): 51-VE110A,B,C; 51-VF110A,B,C; 51-VE111A,B,C; 51-VF111A,B,C; 51-
51-VE114A,B,C, 51-VF114A,B,C; 51-VE115A,B,C; 51-VF115A,B,C; 51-
VE116A,B,C; 51-VF116A,B,C

Model/Style: 289B456A19, 289B456A21`- with CO, IIT & ITH included.

State: DE/NO

Location: 4KVS-1E/1F; 713 SRVB

Demand: SWGR AF=7.0 applied to FRS; PSA/ZPA = 2.434/0.819

Capacity:
EPRI Ref. - NP-7147, V2, A1, Grp.7, pgs.1-1,2-1+; Model 289B355A11
GERS/Record - Table 2-1, Group 7 (C37.98 data)
PSA/ZPA g-levels are: NOP/NO= 3/1.2 ; NOP/NC= **NA** ; OP/NO&NC= 10/4

SQUG-Accetability Issues:

1. **SQUG BAD ACTOR for NOP/NC (DE/NC)**
2. Model equivalence - EPRI vs. installed?
3. Is ITH present versus IITH (IITH has higher capacity)?
4. Time Dial setting of 2.0 minimum?

Resolution/Conclusion(s):

Component-related Issues:

2. BV-1 essential COM-5 relays have a CO component, whereas the EPRI model does not.

3. The ITH is present, not the IITH.

4. The time dial settings have been verified as 2.0.

Relay Reviewer: George S Billmaier RPF

Capacity/Demand Issues:

1. The BVPS-1 essential COM-5 relays are not configured in the Bad Actor state. For the BVPS-1 use (NOP/NO), EPRI reports a 3g Capacity level based upon the COM-5's least rugged component - the ITH. The EPRI Capacity is a C37.98 test result, which means that the ZPA achieved is 40% of the 3g PSA, or 1.2g. The essential COM-5's, therefore, have a seismic Capacity that exceeds expected Demand (3/1.2g .2g vs.2.434/0.819g/ZPA) .
NOTE: The 3g "fragility" level is also found in the original 4KVS SWGR qualification (VTI 8700-01.015-0140±, BV-146, ITE Report R-09400, pgs. 5&7). The QTR limits the COM-5 to the CO's minimum Capacity of 2.4g - obviously lower than the ITH's 3.0g. However, the CO is now known to have a PSA of 6.0g, making the ITH controlling. Additional testing by Westinghouse under BV-844, 1975-76, was also acceptable)

SCE: Glenn S. Kelly

ESSENTIAL RELAY DATA & ASSESSMENT SHEET

REF: C.P.Clare

Relay Type: GP1

EIN(s): Solid State Protection Input & Output Bays (300± relays)

Model/Style: GP1R61A6000 & GP1R21D3000

State: OP/NO (Energized/ normally open contacts)

Location(s): RK-REAC-PROT-A & B Input & Output Bays; SRVB El 713

Demand: EPRI NP-7146-SL-R1, Method 1 (see "RP" Demand Evaluation Sheet), => PSA/ZPA = 2.087/0.702g.

Capacity:
EPRI Ref.- NP-7147-SL-V2, Add.2, pg. 2-4.
GERS/Record - Test Group 13.
PSA/ZPA g-levels are: NOP/NO&NC= OP/NO&NC= 9.0/5.4g

SQUG-acceptability Issues: NONE

Resolution/Conclusion(s):

Component-related Issues: NONE

Relay Reviewer: Ron Ferrel

Capacity/Demand Issues:

The essential Clare GP1 relays have high CAPACITY levels and are acceptable under SQUG.

SCE: Glenn S. Rau

ESSENTIAL RELAY DATA & ASSESSMENT SHEET

REF: HEA

Relay Type: General Electric HEA

EIN(s): 43-E11BX; 43-E12BX; 43-VE110X,111X,114,115X,116X; 43-VF110X,111X,114,115X,116X; 43-8N12X,17X,18X,19X,20X; 43-9P12X, 17X,18X,19X,20X; 87-VE109XX; 87-VF109XX

Model/Style: 12HEA61CRD238X2 (right-angle drive), 12HEA61C238X2, 12HEA61C240

State: DE/NC

Location(s): 4KVS-1E,1F; PNL-REL-19,22,33,34

Demand: 4KVS SWGR & RP's @ SRVB El 713 (USE AF=7 and see "RP Demand" Sheet) => PSA/ZPA = 2.434/0.819 and 2.304/0.936g

Capacity:
EPRI Ref.- NP-7147, pg.B-61, (AC/DC)
GERS/Record - GERS-RLY-ALO.2
PSA/ZPA g-levels are: HEA61A,-B,-C => NOP/NO&NC= 10/4; OP/NO&NC= 10/4
HEA61V => NOP/NO&NC= 10/6; OP/NO&NC= 10/6

SQUG-acceptability Issues:

1. Relay must be comparable to a HEA61A,B,C or V

Resolution/Conclusion(s):

Component-related Issues:

1. Essential HEA relays are models comparable to the HEA61A,B,C or V.

Relay Reviewer: [signature] RPF

Capacity/Demand Issues:

None - the essential HEA relays have a seismic Capacity that exceeds the Demand at the locations in which they are used.

SCE: [signature]

ESSENTIAL RELAY DATA & ASSESSMENT SHEET

REF: HGA

Relay Type: General Electric HGA

EIN(s): 46-VE100X, 46-VF100X, 27-VE100X, 27-VF100X, 27-RP100X, 27-RN100X

Model/Style: 12HGA11K52

State: DE/NO; DE/NC

Location(s): 480V SWGR; 4KVS SWGR; SRVB El 713

Demand: AF=7 => PSA/ZPA = 2.434/0.891g

Capacity:
EPRI Ref.- NP-7147, pg.B-19; HGA 11 (AC) & (DC); 120 V.
GERS/Record - RLY-ARH.5
PSA/ZPA g-levels are: (AC) NOP/NO= 10/6 ; NOP/NC= **NR** ; OP/NO&NC= 10/6
(DC) NOP/NO= 8.8/3.5 ; NOP/NC= **NR** ; OP/NO= 4.4/1.8 ;OP/NC= 10/4

SQUG-acceptability Issues:

1. **SQUG BAD ACTOR for NOP/NC** (our DE/NC).

2. AC version had high-tension spring setting.

3. DC version had 17 ms operation time.

Resolution/Conclusion(s):

Component-related Issues:

1. The NOP/NC configuration is not acceptable under SQUG. 46-VE100X & 46-VF100X are **OUTLIERS** since they are DE/NC (NOP/NC).

2. No AC HGA11's are essential.

3. DC HGA11's have minimum 17 ms time operation.

Relay Reviewer: George S. Billamacina RPF

Capacity/Demand Issues:

The NOP/NO essential HGA's satisfy the SQUG SWGR Demand levels, while the DE/NC (NOP/NC) configuration remains an **OUTLIER**.

SCE: Glenn S. Kelly

ESSENTIAL RELAY DATA & ASSESSMENT SHEET

REF: HONEYWELL RP403

Relay Type: Honeywell RP403; Electro-pnuematic Damper Control

EIN(s): EP-VS-101-15 & 16; EP-VS-140-1 & 2

Model/Style: RP403D; RP403-1058-3

State: Undefined

Location(s): RK-VS-AC-1A & 1B; wall-mounted panels; SRVB El 713

Demand: Use AF=8 based upon the panels being judged as no more flexible than a switchgear door panel for which AF=7; => PSA/ZPA = 2.782/0.936g

Capacity:
EPRI Ref.- NONE
GERS/Record - Record: BV-608 (BVS-463) HONEYWELL QTR No.EXC 4528. Sine sweep (0.2g 1-100Hz) and dwell (20sec.@ 0.5H/0.28V g's @ 30,31,51,72 Hz) testing
PSA/ZPA g-levels are: N/A

SQUG-acceptability Issues:

1) Original testing was to IEEE-344-71, which cannot be made equivalent to current qualification criteria.

Resolution/Conclusion(s):

Component-related Issues: NONE

Relay Reviewer: AS Bellamacina RPF

Capacity/Demand Issues:

1) Honeywell RP403 device was successfully tested to existing License basis of BVPS-1, IEEE-344-71, which caanot be taken as equivalent to current criteria. It is, therefore, considered an **OUTLIER** under SQUG.

SCE: Glenn S. Kelly

ESSENTIAL RELAY DATA & ASSESSMENT SHEET

REF: IAC53

Relay Type: GE IAC53

EIN(s): 51-VE109G; 51-VF109G

Model/Style: 12IAC53A801A

State: DE/NO

Location(s): PNL-REL-19 & 22; SRVB, El 713

Demand: See "RP Demand" Sheet - use of NP-7146-SL R1, Alternate Method yields a PSA/ZPA = 2.304/0.936g (Use of AF=7 yields 2.434/0.819g).

Capacity:
EPRI Ref.- NP-7147, pg.B-75.
GERS/Record - GERS-RLY-PP1.5
PSA/ZPA g-levels are: NOP/NO= 7/4.2 ; NOP/NC= NA ; OP/NO= 10/6; OP/NC= NA.

SQUG-acceptability Issues:

1) Relay is panel-mounted.

2) Time dial setting must be 1.0 or greater.

Resolution/Conclusion(s):

Component-related Issues:

1&2) Relays are panel-mounted and have dial setting of 4.0.

Relay Reviewer: George S Bellamarine, RPF

Capacity/Demand Issues:

NONE - Essential IAC 53 relays have Capacity exceeding Demand, and are acceptable under SQUG.

SCE: Glen S. Ortz

ESSENTIAL RELAY DATA & ASSESSMENT SHEET

REF: IAC60

Relay Type: GE IAC60

EIN(s): 51-VE109A,B.& C 51-VF109A,B & C

Model/Style: 12IAC60A12

State: DE/NO

Location(s): PNL-REL-19 & 22

Demand: Relay Panels
Use of NP-7146-SL-R1, Alternate method with Fn=9 Hz and a 4% damped PSA of 0.288g, yields DEM1 = 2.304g, PSA, 0.936g ZPA; (See "RP Demand" Sheet).

Capacity:
EPRI Ref.- NONE
GERS/Record - Record BV-647, Westinghouse/ITE QTR, used IEEE-344-71, with 2 ms monitored chatter during dwell tests at 0.38g for selected frequencies between 1 and 20 Hz; one test at 0.2g between 21 and 29 Hz; one test at 0.1g between 31 and 33 Hz.
PSA/ZPA g-levels are: NA

SQUG-acceptability Issues:

1) No GERS; IEEE-344-71 testing unacceptable.

Resolution/Conclusion(s):

Component-related Issues: NONE

Relay Reviewer: GS Bellamacina RPE

Capacity/Demand Issues:

1) SQUG-level Capacity cannot be determined using existing qualification data. Relay was qualified to existing licensed design basis, but is an **OUTLIER** under SQUG.

SCE: Glenn S. Orr

ESSENTIAL RELAY DATA & ASSESSMENT SHEET

REF: IRV

Relay Type: Westinghouse IRV

EIN(s): 51-VE107A,B & C 51-VF107A, B & C 67-VE107A, B & C 67-VF107A, B & C

Model/Style: 290B091A33

State: DE/NO

Location(s): 4KVS SWGR, SRVB El 713

Demand: SWGR AF=7 => PSA/ZPA = 2.434/0.819g

Capacity:
EPRI Ref.- NONE
GERS/Record - Record BV-844 had Westinghouse test the IRV-6 relay using biaxial sweep, dwell and sine-beat tests, while monitoring for 2 ms chatter. However, Stone & Webster's letter, dated 8-27-75, to Westinghouse, states that the IRV-6 failed the test, but is acceptable on a "system application" basis.
Test g-levels were: Scan @ 0.38g 1-35Hz; 2 Octaves/min. maximum
Dwell 20 sec each @ 1.15g @5&7Hz, 1.3g @15&19Hz
Sine Beat 5 beats @ 10 cycles per; g's levels as for dwell above

SQUG-acceptability Issues:

1) No GERS

2) Known to chatter at test levels imposed by original design.

Resolution/Conclusion(s):

Component-related Issues:

2) The IRV Time Overcurrent (TOC) functioned properly during its original qualification testing, while the instantaneous overcurrent failed. However, since an ITE 50 relay and a non-vulnerable breaker contactor that will be open, are in series with the IRV, the problem contact's chatter can be accepted.

Relay Reviewer: JS Bellamacina, RPT

Capacity/Demand Issues:

Original qualification to the license-basis IEEE-344-71 is scan, dwell and sine beat testing which cannot be made to meet current standards. The IRV is, therefore, considered an **OUTLIER** under SQUG.

SCE: Glenn S. Rix

ESSENTIAL RELAY DATA & ASSESSMENT SHEET

REF: MG-6

Relay Type: Westinghouse MG-6

EIN(s): ESRXA; ESRXB; 52-8N16X *; 52-9P16X *; 52S-1A10X; 52S-1D10X; 52S-1E7X; ↄ2S-1F7X; 52S-1E9X; 52S-1F9X; 52X-1AFWRA *; 52X-1AFWRB *; 62-AEX2; 62-DFX; 62-ACAX3; 62-ACBX3; 62-VE100X5; 62-VF100X5; 69-AEX2; 69-DFX2; 69-E3VX *; 69-E4VX *; 69-E7E; 69-E8E; 162-AEX2; 162-DFX2; - "*" indicates latching relay

Model/Style: 1163801, 1163803, 1163828, 1163841, 288B977A15

State: DE/NO; DE/NC

Location(s): 4KVS-1AE,1DF,1E8A,1F8A; 480VUS-1N,1P; PNL-DG-SEQ-1 & 2; PNL-DIGEN-1 & 2; PNL-REL-35F,35R,36F,36R,37R,38R

Demand: 4KVS SWGR (AF=7) @ SRVB El 713 => PSA/ZPA = 2.434/0.819
PNL-REL (See "RP Demand" Sheet) => PSA/ZPA = 2.304/0.936g
PNL-DG-SEQ @ SRVB El 713 w/AF=7.0 => PSA/ZPA = 2.434/0.819g
PNL-DIGEN MG-6's are located @ floor level => AF=1.0 and PSA/ZPA = 0.445/0.125g.

Capacity:
EPRI Ref.- NP-7147, pg.B-18; Model MG-6(DC)
GERS/Record - RLY-ARH.5
PSA/ZPA g-levels are: NOP/NO= 10/4 ; NOP/NC= 3/1.2 ; OP/NO&NC= 10/4

SQUG-acceptability Issues:

1. Model comparability - 120V DC model.

2. 3 NC contacts maximum.

3. Compliance with Westinghouse Instruction Leaflet IL.41-753.1 for NO gap & NO/NC wipe, including 80 ms time adjustment. NOTE: NP-7147,V2,A1, p.3-1, addresses comparability issues, including effects of relay adjustments. It concludes that only the HFA151 NC is affected.

Resolution/Conclusion(s):

Component-related Issues:

1. Models in use are both 120 VAC & **125 VDC; some are latching. The 125 VDC and latching have no effect on equivalence.**

2. All relays have 3 or fewer NC contacts.

3. No known adjustments from factory settings exist.

Relay Reviewer: Ron Ferrie

Capacity/Demand Issues:

4. The essential MG-6 relays have Capacity exceeding Demand.

SCE: Glenn Kelly

ESSENTIAL RELAY DATA & ASSESSMENT SHEET

REF: Midtex/AEMCO 156

Relay Type: Midtex/AEMCO 156

EIN(s): Solid State Protection Channel 3 (3 relays)

Model/Style: 156-14T300

State: OP/NO (Energized/ normally open contacts)

Location(s): RK-REAC-PROT-A & B Input Bays; SRVB El 713

Demand: EPRI NP-7146-SL-R1, Method 1 (see "RP" Demand Evaluation Sheet), => PSA/ZPA = 2.087/0.702g.

Capacity:
EPRI Ref.- NP-7147-SL-V2, Add.2, pg. 2-5
GERS/Record - Test Group 17.
PSA/ZPA g-levels are: NOP/NO&NC= OP/NO&NC= 10.0/6.0g

SQUG-acceptability Issues: NONE

Resolution/Conclusion(s):

Component-related Issues: NONE

Relay Reviewer: Ron Ferrie

Capacity/Demand Issues:

The essential Midtex/AEMCO relays have sufficient CAPACITY levels and are acceptable under SQUG.

SCE: Glenn S. Kelly

ESSENTIAL RELAY DATA & ASSESSMENT SHEET

REF: Potter-Brumfield KHU17

Relay Type: Potter-Brumfield KHU17

EIN(s): Solid State Protection Output Bays (5 relays)

Model/Style: KHU17D12

State: OP/NO (Energized/ normally open contacts)

Location(s): RK-REAC-PROT-A & B Output Bay; SRVB El 713

Demand: EPRI NP-7146-SL-R1, Method 1 (see "RP" Demand Evaluation Sheet), => PSA/ZPA = 2.087/0.702g.

Capacity:
EPRI Ref.- NP-7147-SL-V2, Add.2, pg. 2-4.
GERS/Record - Test Group 14.
PSA/ZPA g-levels are: NOP/NO&NC= OP/NO&NC= 10.0/6.0g

SQUG-acceptability Issues: NONE

Resolution/Conclusion(s):

Component-related Issues: NONE

Relay Reviewer: Ron Ferre

Capacity/Demand Issues:

The essential Potter-Brumfield KHU17 relays have sufficient CAPACITY levels and are acceptable under SQUG.

SCE: Edmund S. Reis

ESSENTIAL RELAY DATA & ASSESSMENT SHEET

REF: Potter-Brumfield MDR

Relay Type: Potter-Brumfield MDR

EIN(s): Solid State Protection Output Bays (2 relays)

Model/Style: MDR (latching)

State: DE/NO

Location(s): RK-REAC-PROT-A & B Output Bay; SRVB El 713

Demand: EPRI NP-7146-SL-R1, Method 1 (see "RP" Demand Evaluation Sheet), => PSA/ZPA = 2.087/0.702g.

Capacity:
EPRI Ref.- NP-7147, pg. B-53.
GERS/Record - RLY-ARR.3.
PSA/ZPA g-levels are: Non-latching - NOP/NO&NC= 10/6 & 9/5.4g;
OP/NO&NC= 10/6
Latching - NOP/NO&NC= OP/NO&NC = 6/3.6g

SQUG-acceptability Issues:

1. Relay has 24 or fewer poles of double-throw contacts.

Resolution/Conclusion(s):

Component-related Issues:

1. Contacts number less than 24.

Relay Reviewer: Ron Ferrie

Capacity/Demand Issues:

The essential Potter-Brumfield MDR (latching) relays have sufficient CAPACITY levels and are acceptable under SQUG.

SCE: Glenn S. Kelly

ESSENTIAL RELAY DATA & ASSESSMENT SHEET

REF: RM-RIS-218A & B

Relay Type: Victoreen Radiation Monitor Readout

EIN(s): RM-RIS-218A & B

Model/Style: 956-100

State: NO

Location(s): RK-RAD-MON- SRVB El 735; PSA/ZPA of FRS @ 5% damping = 0.358/0.131g.

Demand: Record QTR (DCP-711, Calc.8700-DMC-886) established a frequency-dependent, kinematic AF varying from 1 to 14.4 side-to-side (6.93 Hz); 1 (22.17 Hz, rigid) front-to-back. The transmissibility was based on earlier testing (VTI 8700-1.56-225-A1, Victoreen Rpt.#950.303) of the rad monitor cabinet for DCP-303. Both DCP's used IEEE-344-75. The 14.4 AF yields a 5.152/1.886g Demand level.

Capacity:
EPRI Ref.- NONE
GERS/Record - Record DCP-711, VTI 8700-07.503-137, Victoreen/Farwell & Hendricks QTR No.10372.
PSA/ZPA g-levels are: Figure 6.5, PSA/ZPA = 7.83/3.82g @ 5% damping.

SQUG-acceptability Issues: NONE

Resolution/Conclusion(s):

Component-related Issues: NONE

Relay Reviewer: JS Bellamacina RPF

Capacity/Demand Issues: NONE - acceptable by DCP-711 IEEE 344-75 testing.

SCE: Glenn A. Kelly

ESSENTIAL RELAY DATA & ASSESSMENT SHEET

REF: RXME-1

Relay Type: ASEA RXME-1

EIN(s): 3A-PASA; 3A-PASB; 40VF-109X; 52S-1F7XX; 52S-1D10XX; 52S-1F9XX; 62VF-110XX; 62-1E9X; 62-1F9X; EXPBX-REC; FFX-REC; FFSWX-REC; RGRX-REC; RGLX-REC; RSX-REC; SYNDG-2X

Model/Style: RK-221-052-AN, 125 VDC

State: DE/NO; DE/NC

Location(s): 4KVS SWGR, SRVB El 713; PNL-REL-DGI, DGBX El 735.

Demand: 4KVS (AF=7.0) PSA/ZPA = 2.434/0.819g
PNL-REL-DGI (see "RP Evaluation" Sheet) PSA/ZPA = (above)

Capacity:
EPRI Ref.- NONE
GERS/Record - Record QTR: ASEA AB Relay Division, Test Report 7911.373 (ANSI C37.98 testing).
PSA/ZPA g-levels are: RK 221 052-AN (Data Sheet RK 21-10) NOP&OP/NC = 6/2.4; NOP/OP/NO = 6.5/6.5 (Table limits).

SQUG-acceptability Issues:

NONE

Resolution/Conclusion(s):

Component-related Issues

NONE

Relay Reviewer: Ron Fenice

Capacity/Demand Issues:

Capacity of essential RXME-1 relay exceeds Demand and relay is acceptable.

SCE: Glenn R. [illegible]

ESSENTIAL RELAY DATA & ASSESSMENT SHEET

REF: RXMH-2

Relay Type: ASEA RXMH-2

EIN(s): Group 1 - 3-HVCA; 3-HVCB; 3-HVCC; 3-HVCD
Group 2 - 3-LDA; 3-LDB; K611X-GSP; K613YA-LDA; K613YB-LDB; K613XA-E3V; K613XB-E4V
Group 3 - 43X-PASA; 43X-PASB

Model/Style: Grp.1 = RK-223-069-EN, 110V; Grp.2 = RK-223-068-EN, 120V; Grp.3 = RK-223-069-AP, 125V.

State: DE/NO

Location(s): PNL-PAS-RA,RB; PNL-REL-35R,36R; TB-348A; TB-349A; PNL-REL-DGI.

Demand:
RP's 35R,36R & PAS @ SRVB El 713 (See "RP Demand" Sheet) => PSA/ZPA = 2.304/0.936g and 2.434/0.819g;
TB's @ AXLB El 768 (AF=7.0, see below) => PSA/ZPA = 3.750/1.232;
PNL-REL-DGI @ DGBX El 735 (See "RP Demand Sheet) => 2.434/0.819g.

Capacity:
EPRI Ref.- NONE
GERS/Record - RECORD: Calculation 8700-DQC-0075; ASEA AB Report 7911.373 (ANSI C37.98 testing).
PSA/ZPA g-levels are: RK 223 069-AN (Data Sheet RK 21-10): NOP/NO=6.5/6.1; NOP/NC= 5.25/2.1; OP/NO&NC $\geq$ NOP/NO&NC

SQUG-acceptability Issues:

1. Cabinet amplification for wall-mounted panel is not provided in SQUG/EPRI guidance. If an AF=7 is used, the RXMH-2 Capacity exceeds all location-of-use Demand levels.

2. Use of ASEA Test Report is based upon RXMH-2 being a RK 223 069-AN or equivalent.

Resolution/Conclusion(s):

Component-related Issues:

2. Relays are RK 223 069-**AN (120 VAC)**, **-EN (110 VAC) & -AP (125 VDC)**. No difference exists that would make the AN's Capacity greater than the EN's and AP's.

Relay Reviewer: Ron Ferris

Capacity/Demand Issues:

1. Walkdown of the TB panels justifies AF=7 as conservative - the load path to the relay internal support is non-amplifying (low on main column, robust welds & rigid enclosure). Therefore, essential RXMH-2 relays have sufficient Capacity and are acceptable.

SCE: Glenn Rau

ESSENTIAL RELAY DATA & ASSESSMENT SHEET

REF: SG

Relay Type: Westinghouse SG

EIN(s): 62-ACAX1,2; 62-ACBX1,2 - 120 VAC
3-1AFWRA,B - 125 VAC

Model/Style: 1163803; 293B255A26

State: DE/NO

Location(s): PNL-REL-35F, 36F, 37R, 38R

Demand: RP's @ SRVB El 713 (See "RP Demand" Sheet) => PSA/ZPA = 2.304/0.936g

Capacity:
EPRI Ref.- NP-7147, pg.B-19, Group 4
GERS/Record - RLY-ARH.5
PSA/ZPA g-levels are: NOP/NO= 9, 3.6 ; NOP/NC= **NR** ; OP/NO= 8/5.2; OP/NC= 5/2

SQUG-acceptability Issues:

1. **SQUG BAD ACTOR FOR NOP/NC (DE/NC)**

2. Model is 120VDC

Resolution/Conclusion(s):

Component-related Issues:

2.Essential relays are both 120 VAC **& 125 VAC, which are physically equivalent.**

Relay Reviewer: GS Bellamacina RPF

Capacity/Demand Issues:

1. Essential SG relays are configured NOP/NO (i.e., DE/NO), for which the SG has sufficient capacity to satisfy the Demand levels imposed.

SCE: Glenn S. Kelly

ESSENTIAL RELAY DATA & ASSESSMENT SHEET

REF: SQD 7001

Relay Type: SQUARE D Class 7001

EIN(s): ESRX1 & 2; MSR1 & 2; FSR1 & 2; ESR1 & 2; ESTR; VSR1 & 2; ZSR1 & 2; OTR.

Model/Style:

State: DE/NO; DE/NC

Location(s): PNL-DIGEN-1 & 2; DGBX El 735.

Demand: (see "RP" Demand Evaluation Sheet), => PSA/ZPA = 1.338/0.458g.

Capacity:
EPRI Ref.- NONE
GERS/Record - BV-116; WYLE Laboratories QTR No. 42531-1 (VTI 8700-01.030-43D).
PSA/ZPA g-levels are: Original test levels produced a mounting surface ZPA = 2.60g during a sine dwell test of 0.44g at the table surface.

SQUG-acceptability Issues:

Resolution/Conclusion(s):

Component-related Issues:

Relay Reviewer: Ron Ferris

Capacity/Demand Issues:

Relays were originally tested to IEEE-344-71 requirements as part of a full-scale cabinet shaketable test by WYLE Laboratories (VTI 8700-01.030-43D, Report 42531-1). Table motion was 0.44g horizontal/ 0.28g vertical, which exceeds the ZPA at the DGBX floor of 0.152g. The cabinet was oriented at 45° to the table axis, so that each of the three (3) cabinet axes was excited. A 0.2g H/0.1g V, sine sweep was performed for 1-33 Hz to determine cabinet response, which occurred at 9, 12 and 19 Hz. The 0.44 H/0.28 V full sine dwell tests then followed at these frequencies. Six (6) circuits were monitored to a one (1) ms chatter limit. All devices functioned properly, except for four (4) MG-6 relays, which were then relocated to the floor level to eliminate amplification.

The essential SQUARE D Class 7001 relays satisfied the license basis qualification test as described above. However, there is no SQUG basis for acceptance, and the relays will be considered **OUTLIERS**.

SCE: [signature]

ESSENTIAL RELAY DATA & ASSESSMENT SHEET

REF: SQD 8504

Relay Type: SQUARE D Class 8504

EIN(s): FI

Model/Style: EQ1965G13

State: DE/NO

Location(s): PNL-DIGEN-1 & 2; DGBX El 735.

Demand: (see "RP" Demand Evaluation Sheet), => PSA/ZPA = 1.338/0.458g.

Capacity:
EPRI Ref.- NP-7147 pg.
GERS/Record - BV-116; WYLE Laboratories QTR No. 42531-1 (VTI 8700-01.030-43D).
PSA/ZPA g-levels are: Original test levels produced a mounting surface ZPA = 2.60g during a sine dwell test of 0.44g at the table surface.

SQUG-acceptability Issues:

Resolution/Conclusion(s):

Component-related Issues:

Relay Reviewer: Ron Ferrie

Capacity/Demand Issues:

Relays were originally tested to IEEE-344-71 requirements as part of a full-scale cabinet shaketable test by WYLE Laboratories (VTI 8700-01.030-43D, Report 42531-1). Table motion was 0.44g horizontal/ 0.28g vertical, which exceeds the ZPA at the DGBX floor of 0.152g. The cabinet was oriented at 45° to the table axis, so that each of the three (3) cabinet axes was excited. A 0.2g H/0.1g V, sine sweep was performed for 1-33 Hz to determine cabinet response, which occurred at 9, 12 and 19 Hz. The 0.44 H/0.28 V full sine dwell tests then followed at these frequencies. Six (6) circuits were monitored to a one (1) ms chatter limit. All devices functioned properly, except for four (4) MG-6 relays, which were then relocated to the floor level to eliminate amplification.

The essential SQUARE D Class 8504 relays satisfied the license basis qualification test as described above. However, there is no SQUG basis for acceptance, and the relays will be considered **OUTLIERS**.

SCE: Glenn A. Rief

ESSENTIAL RELAY DATA & ASSESSMENT SHEET

REF: SQD 9050 - EQ1933G2

Relay Type: SQUARE D Class 9050

EIN(s): 52"; STL01 & 2

Model/Style: EQ1933G2

State: DE/NO; DE/NC

Location(s): PNL-DIGEN-1 & 2; DGBX El 735.

Demand: (see "RP" Demand Evaluation Sheet), => PSA/ZPA = 1.338/0.458g.

Capacity:
EPRI Ref.- NP-7147-SL-V2, A2; pg. 2-6.
GERS/Record - Test Group 20.
PSA/ZPA g-levels are: NOP/NO&NC = OP/NO&NC= 10/4g.

SQUG-acceptability Issues: NONE

Resolution/Conclusion(s):

Component-related Issues: NONE

Relay Reviewer: Ron Ferrie

Capacity/Demand Issues:

The essential SQUARE D Class 9050, Model EQ1933G2 relays have CAPACITY greater than DEMAND and are acceptable under SQUG.

SCE: Eileen S. Kiff

ESSENTIAL RELAY DATA & ASSESSMENT SHEET

REF: SQD 9050 - EQ19335G4

Relay Type: SQUARE D Class 9050

EIN(s): 40T; PFD1 & 2; SFB1 & 2; SFD1 & 2; VSD1 & 2.

Model/Style: EQ19335G4

State: DE/NO; DE/NC

Location(s): PNL-DIGEN-1 & 2; DGBX El 735.

Demand: (see "RP" Demand Evaluation Sheet), => PSA/ZPA = 1.338/0.458g.

Capacity:
EPRI Ref.- NONE
GERS/Record - BV-116; WYLE Laboratories QTR No. 42531-1 (VTI 8700-01.030-43D).
PSA/ZPA g-levels are: Original test levels produced a mounting surface ZPA = 2.60g during a sine dwell test of 0.44g at the table surface.

SQUG-acceptability Issues:

Resolution/Conclusion(s):

Component-related Issues:

Relay Reviewer: Ron Ferrie

Capacity/Demand Issues.

Relays were originally tested to IEEE-344-71 requirements as part of a full-scale cabinet shaketable test by WYLE Laboratories (VTI 8700-01.030-43D, Report 42531-1). Table motion was 0.44g horizontal/ 0.28g vertical, which exceeds the ZPA at the DGBX floor of 0.152g. The cabinet was oriented at 45° to the table axis, so that each of the three (3) cabinet axes was excited. A 0.2g H/0.1g V, sine sweep was performed for 1-33 Hz to determine cabinet response, which occurred at 9, 12 and 19 Hz. The 0.44 H/0.28 V full sine dwell tests then followed at these frequencies. Six (6) circuits were monitored to a one (1) ms chatter limit. All devices functioned properly, except for four (4) MG-6 relays, which were then relocated to the floor level to eliminate amplification.

The essential SQUARE D Class 9050, Model EQ19335G4 relays satisfied the license basis qualification test as described above. However, there is no SQUG basis for acceptance, and the relays will be considered **OUTLIERS**.

SCE: Glenn S. Kelly

ESSENTIAL RELAY DATA & ASSESSMENT SHEET

REF: SQD 9050 - EQ2423G1

Relay Type: SQUARE D Class 9050

EIN(s): PFDA1 & 2

Model/Style: EQ2423G1

State: DE/NC

Location(s): PNL-DIGEN-1 & 2; DGBX El 735.

Demand: (see "RP" Demand Evaluation Sheet), => PSA/ZPA = 1.338/0.458g.

Capacity:
EPRI Ref.- NONE
GERS/Record - BV-116; WYLE Laboratories QTR No. 42531-1 (VTI 8700-01.030-43D).
PSA/ZPA g-levels are: Original test levels produced a mounting surface ZPA = 2.60g during a sine dwell test of 0.44g at the table surface.

SQUG-acceptability Issues:

Resolution/Conclusion(s):

Component-related Issues:

Relay Reviewer: Ron Ferrie

Capacity/Demand Issues:

Relays were originally tested to IEEE-344-71 requirements as part of a full-scale cabinet shaketable test by WYLE Laboratories (VTI 8700-01.030-43D, Report 42531-1). Table motion was 0.44g horizontal/ 0.28g vertical, which exceeds the ZPA at the DGBX floor of 0.152g. The cabinet was oriented at 45° to the table axis, so that each of the three (3) cabinet axes was excited. A 0.2g H/0.1g V, sine sweep was performed for 1-33 Hz to determine cabinet response, which occurred at 9, 12 and 19 Hz. The 0.44 H/0.28 V full sine dwell tests then followed at these frequencies. Six (6) circuits were monitored to a one (1) ms chatter limit. All devices functioned properly, except for four (4) MG-6 relays, which were then relocated to the floor level to eliminate amplification.

The essential SQUARE D Class 9050, Model EQ2423G1 relays satisfied the license basis qualification test as described above. However, there is no SQUG basis for acceptance, and the relays will be considered **OUTLIERS**.

SCE: Glenn S. Rief

ESSENTIAL RELAY DATA & ASSESSMENT SHEET

REF: SYNCRO-START Electronic Speed Switch

Relay Type: Syncro-Start Products Electronic Speed Switch

EIN(s): SS?1 & 2

Model/Style: ESS-B-4AT

State: DE/NO

Location(s): PNL-DIGEN-1 & 2; DGBX El 735.

Demand: (see "RP" Demand Evaluation Sheet), => PSA/ZPA = 1.338/0.458g. These relays are mounted low on the relay panel.

Capacity:
EPRI Ref.- NONE
GERS/Record - BV-116; WYLE Laboratories QTR No. 42531-1 (VTI 8700-01.030-43D).
PSA/ZPA g-levels are: Original testing is described below.

SQUG-acceptability Issues:

Resolution/Conclusion(s):

Component-related Issues:

Relay Reviewer: Ron Ferne

Capacity/Demand Issues:

Relays were originally tested to IEEE-344-71 requirements as part of a full-scale cabinet shaketable test by WYLE Laboratories (VTI 8700-01.030-43D, Report 42531-1). Table motion was 0.44g horizontal/ 0.28g vertical, which exceeds the ZPA at the DGBX floor of 0.152g. The cabinet was oriented at 45° to the table axis, so that each of the three (3) cabinet axes was excited. A 0.2g H/0.1g V, sine sweep was performed for 1-33 Hz to determine cabinet response, which occurred at 9, 12 and 19 Hz. The 0.44 H/0.28 V full sine dwell tests then followed at these frequencies. Six (6) circuits were monitored to a one (1) ms chatter limit. All devices functioned properly, except for four (4) MG-6 relays, which were then relocated to the floor level to eliminate amplification.

The essential SYNCRO-START Electronic Speed Switch satisfied the license basis qualification test as described above. However, there is no SQUG basis for acceptance, and the devices will be considered **OUTLIERS**.

SCE: Edward L. Rapp

ESSENTIAL RELAY DATA & ASSESSMENT SHEET

REF: TD-5

Relay Type: Westinghouse TD-5

EIN(s): 62-1E9, 62-1F9, 62-VE112, 62-VF112; 62-RN100, 62-RP100

Model/Style: 293B301A24B, 295B301A25

State: DE/NO

Location(s): 4KVS & 480V SWGR @ SRVB El 713

Demand: SWGR AF=7 => PSA/ZPA = 2.434/0.819g

Capacity:
EPRI Ref.- NONE
GERS/Record - (1) DLCo TER 9641, Calc. 8700-DQC-0104, ABB C37.98 Test.
(2) EPRI SQURTS Test Report 50093.6 for Duke Power, Model 293B301A25.
PSA/ZPA g-levels are: (1) C37.98-1987 ZPA = 8g (=> PSA = 20g)
(2) minimum OP/NOP/NO/NC= 3.95/2.42g

SQUG-acceptability Issues:

1. NONE

Resolution/Conclusion(s):

Component-related Issues:

1. NONE

Relay Reviewer: Ron Furnie

Capacity/Demand Issues:

2. TER 9641 upgraded the 4KVS TD-5 commercial-grade relays to ABB-qualified (C37.98-87) relays. That QTR, as well as the EPRI SQURTS data demonstrate that Capacity for the essential TD-5 relays exceeds Demand.

SCE: Glenn S. Kelly

ESSENTIAL RELAY DATA & ASSESSMENT SHEET

REF: VAPOR

Relay Type: VAPOR

EIN(s): ECTA, GP, GS

Model/Style: UNKNOWN

State: DE/NO; DE/NC

Location(s): PNL-DIGEN-1 & 2; DGBX El 735.

Demand: (see "RP" Demand Evaluation Sheet), => PSA/ZPA = 1.338/0.458g

Capacity:
EPRI Ref.- NONE
GERS/Record - BV-116; WYLE Laboratories QTR No. 42531-1 (VTI 8700-01.030-43D).
PSA/ZPA g-levels are: Original test levels produced a mounting surface ZPA = 2.60g during a sine dwell test of 0.44g at the table surface.

SQUG-acceptability Issues:

Resolution/Conclusion(s):

Component-related Issues:

Relay Reviewer: Ron Ferrie

Capacity/Demand Issues:

Relays were originally tested to IEEE-344-71 requirements as part of a full-scale cabinet shaketable test by WYLE Laboratories (VTI 8700-01.030-43D, Report 42531-1). Table motion was 0.44g horizontal/ 0.28g vertical, which exceeds the ZPA at the DGBX floor of 0.152g. The cabinet was oriented at 45° to the table axis, so that each of the three (3) cabinet axes was excited. A 0.2g H/0.1g V, sine sweep was performed for 1-33 Hz to determine cabinet response, which occurred at 9, 12 and 19 Hz. The 0.44 H/0.28 V full sine dwell tests then followed at these frequencies. Six (6) circuits were monitored to a one (1) ms chatter limit. All devices functioned properly, except for four (4) MG-6 relays, which were then relocated to the floor level to eliminate amplification.

The essential VAPOR relays satisfied the license basis qualification test as described above. No SQUG acceptance basis exists, however, and the relays will be considered **OUTLIERS**.

SCE: Glenn S. Kelly

ESSENTIAL RELAY DATA & ASSESSMENT SHEET

REF: VAPOR 12

Relay Type: VAPOR 12-8336

EIN(s): FPC; STR1 & 2

Model/Style: UNKNOWN

State: DE/NO

Location(s): PNL-DIGEN-1 & 2; DGBX El 735.

Demand: (see "RP" Demand Evaluation Sheet), => PSA/ZPA = 1.338/0.458g

Capacity:
EPRI Ref.- NONE
GERS/Record - BV-116; WYLE Laboratories QTR No. 42531-1 (VTI 8700-01.030-43D).
PSA/ZPA g-levels are: Original test levels produced a mounting surface ZPA = 2.60g during a sine dwell test of 0.44g at the table surface.

SQUG-acceptability Issues:

Resolution/Conclusion(s):

Component-related Issues:

Relay Reviewer: Ron Ferrie

Capacity/Demand Issues:

Relays were originally tested to IEEE-344-71 requirements as part of a full-scale cabinet shaketable test by WYLE Laboratories (VTI 8700-01.030-43D, Report 42531-1). Table motion was 0.44g horizontal/ 0.28g vertical, which exceeds the ZPA at the DGBX floor of 0.152g. The cabinet was oriented at 45° to the table axis, so that each of the three (3) cabinet axes was excited. A 0.2g H/0.1g V, sine sweep was performed for 1-33 Hz to determine cabinet response, which occurred at 9, 12 and 19 Hz. The 0.44 H/0.28 V full sine dwell tests then followed at these frequencies. Six (6) circuits were monitored to a one (1) ms chatter limit. All devices functioned properly, except for four (4) MG-6 relays, which were then relocated to the floor level to eliminate amplification.

The essential VAPOR 12 relays satisfied the license basis qualification test as described above. No SQUG acceptance basis exists, however, and the relays will be considered **OUTLIERS**.

SCE: Glenn S. Rief

ESSENTIAL RELAY DATA & ASSESSMENT SHEET

REF: WL

Relay Type: Westinghouse WL

EIN(s): 51-VE107X; 51-VF107X; 51-VE116X; 51-VF116X; 62-VE112X; 62-VF112X

Model/Style: 293B301A25B; 300P694G0; 422D949G19

State: DE/NO, DE/NC

Location(s): 4KVS-1E; 4KVS-1F

Demand: 4KVS SWGR (AF=7) @SRVB El 713 => PSA/ZPA = 2.434/0.891

Capacity:
EPRI Ref.- NP-7147, pg.B-61
GERS/Record - RLY-ALO.2
PSA/ZPA g-levels are: NOP/NO&NC= 10/4 ; OP/NO&NC= 10/4

SQUG-acceptability Issues:

NONE

Resolution/Conclusion(s):

Component-related Issues: NONE

Relay Reviewer: RPFerraro

Capacity/Demand Issues:

Essential WL relays have sufficient seismic Capacity to perform.

SCE: Glenn S. Kelly

Relay Panel "RP" Demand Evaluation

The relay enclosures that do not fall within the MCC, Switchgear or Control Panel groupings, such as the Relay Panels, require separate determinations of the demand levels they generate. Existing qualification data provides frequency response and amplification factors for most enclosures. However, the amplification factors, while kinematic, were often derived from low excitation levels. Where such data would indicate enclosure rigidity for relay panels (RP) and similar type enclosures, EPRI publication NP-7146-SL-R1 is taken as guidance on establishing more conservative demand levels.

PNL-REL-32 thru 38:

These panels were tested by Westinghouse/Systems Control Corp, under Purchase Order BV-647. Testing (VTI 8700-01.060-107A) established the minimum fundamental response frequencies as 8 Hz front-to-back and 23 Hz side-to-side (single units standing alone). The 8 Hz level was taken from transmissibility plots with a response ratio of only 1.49 versus the common response level requirement of two (2). They meet all NP-7146-SL caveats regarding material type, thickness, and size aspect ratios. The 9 Hz limit is considered met since the responsiveness of the cabinet is low (1.49) at 8 Hz and drops back to 1.0 thru 19 Hz.

PNL-REL-19 & 22:

These panels were tested by Westinghouse/Systems Control Corp, under Purchase Order BV-647. Testing (VTI 8700-01.060-107A) established the minimum fundamental response frequencies as 23.5 Hz front-to-back and 9 Hz side-to-side (single units standing alone). The 9 Hz level was taken from transmissibility plots with a response ratio of two (2). They meet all NP-7146-SL caveats regarding material type and thickness, and size aspect ratios.

RK-REAC-PROT-A & B:

These panels are three-bay units with individual 30" X 30" bay dimensions, and a height of 91". The RP caveats are considered to be met except that the fundamental frequency is unknown.

RK-AUX-REL-A & B:

These panels are single-bay units with 30" deep by 24.5" wide dimensions, and a height of 91". The RP caveats are considered to be met except that the fundamental frequency is unknown.

The above panels are all located on El 713 of the Service Building, and are governed by the following determination of amplification:

Amplification Factor Method of NP-7146-SL R1:

DEM = 6.0(0.4378g) = 2.087g PSA; ZPA = 6.0(0.117) = 0.702g.

Alternate Method 2 , with f_{d1}=9HZ, ξ_d=4% and DF_e=8.0g/g (F_n unknown for some RP's) results in the following DEMAND levels:

DEM1 = $DF_e\ S_{ad}$
DEM2 = $S_{ao}(f,5\%)$ for $f \geq 4Hz$

DEM1 = (8.0)(0.122) = 0.976g; ZPA =(8.0)(0.117)=0.936g
DEM2 = 0.2575g
(Note: 4% & 5% FRS are attached)

The DEMAND of 2.087/0.702g = PSA/ZPA, will be used for the above relay panels. (Note: Original testing of several of these panels resulted in a determination of near-rigidity and amplification of 1.6. The use of AF=6.0 is conservative)

PNL-DIGEN-1 & 2:

These panels were purchased from General Motors under BV-116, Emergency Diesel Generators. Testing by WYLE Laboratories (VTI 8700-01.030-43D, QTR No. 4242531-1), resulted in accelerometer data for two (2) horizontal/vertical table motion levels (0.2/0.1g & 0.44/0.28g) for sine sweep and dwell input, respectively. The tested cabinet was oriented at 45° to the table's axes to excite both of the cabinet's horizontal axes simultaneously (an independent vertical excitation was also applied simultaneously). Transmissibility data at both table levels indicated cabinet and internal panel resonance at 9, 12 and 19 Hz.

The panels are located at El 735 of the Diesel Generator Building, which has a 5% damping FRS PSA/ZPA of 0.4445/0.152g. An item at that location, having a fundamental response of 9 Hz, and subjected to the site's licensed SSE motion, will have a PSA_g = 0.22852g. When compared to the maximum base (floor ZPA) acceleration of 0.152g, this yields an AF=1.503. Applying a factor of 2.0 for multi-modal participation and F_n error, raises the "AF" to 3.01 and the PSA/ZPA to 1.338/0.458g. However, four (4) MG-6 relays in each panel are mounted at the floor level, and an AF = 1.0 applies so that PSA/ZPA = 0.4445/0.152g for these MG-6's.

PNL-DG-SEQ-1 & 2

These panels are wall-mounted at El 713 of the Service Building, with the relays attached to an internal, rear sub-panel. There is essentially no amplifying, intervening structure (connectors only) between the sub-panel and the wall surface. The wall's motion can be taken as the FRS, which has a 5% damping PSA/ZPA of 0.348/0.117g. Since the mounting panel's response should be no higher than the PSA, these values could be taken as the panel's Demand level. However, for conservatism, an AF = 7.0 will be used, and PSA/ZPA = 2.434/0.819g @ 5% damping.

PNL-PAS-RA & RB

These panels are wall-mounted at El 713 of the Service Building, with the relays attached to an internal, rear sub-panel. There is essentially no amplifying, intervening structure (connectors only) between the sub-panel and the wall surface. The wall's motion can be taken as the FRS, which has a 5% damping PSA/ZPA of 0.348/0.117g. Since the mounting panel's response should be no higher than the PSA, these values could be taken as the panel's Demand level. However, for conservatism, an AF = 7.0 will be used, and PSA/ZPA = 2.434/0.819g @ 5% damping.

DEM1 = (8.0)(0.122) = 0.976g; ZPA =(8.0)(0.117)=0.936g
DEM2 = 0.2575g
(Note: 4% & 5% FRS are attached)

The DEMAND of 2.087/0.702g = PSA/ZPA, will be used for the above relay panels. (Note: Original testing of several of these panels resulted in a determination of near-rigidity and amplification of 1.6. The use of AF=6.0 is conservative)

PNL-DIGEN-1 & 2:

These panels were purchased from General Motors under BV-116, Emergency Diesel Generators. Testing by WYLE Laboratories (VTI 8700-01.030-43D, QTR No. 4242531-1), resulted in accelerometer data for two (2) horizontal/vertical table motion levels (0.2/0.1g & 0.44/0.28g) for sine sweep and dwell input, respectively. The tested cabinet was oriented at 45° to the table's axes to excite both of the cabinet's horizontal axes simultaneously (an independent vertical excitation was also applied simultaneously). Transmissibility data at both table levels indicated cabinet and internal panel resonance at 9, 12 and 19 Hz.

The panels are located at El 735 of the Diesel Generator Building, which has a 5% damping FRS PSA/ZPA of 0.4445/0.152g. An item at that location, having a fundamental response of 9 Hz, and subjected to the site's licensed SSE motion, will have a PSA_9 = 0.22852g, which when compared to the maximum base (floor) acceleration of 0.152g, yields an AF=1.503. Applying a factor of 2.0 for multi-modal participation and F_n error, raises the "AF" to 3.01 and the PSA/ZPA to 1.338/0.458g. However, four (4) MG-6 relays in each panel are mounted at the floor level, and an AF = 1.0 applies so that PSA/ZPA = 0.4445/0.152g for these MG-6's.

PNL-DG-SEQ-1 & 2

These panels are wall-mounted at El 713 of the Service Building, with the relays attached to an internal, rear sub-panel. There is essentially no amplifying, intervening structure (connectors only) between the sub-panel and the wall surface. The wall's motion can be taken as the FRS, which has a 5% damping PSA/ZPA of 0.348/0.117g. Since the mounting panel's response should be no higher than the PSA, these values could be taken as the panel's Demand level. However, for conservatism, an AF = 7.0 will be used, and PSA/ZPA = 2.434/0.819g @ 5% damping.

PNL-PAS-RA & RB

These panels are wall-mounted at El 713 of the Service Building, with the relays attached to an internal, rear sub-panel. There is essentially no amplifying, intervening structure (connectors only) between the sub-panel and the wall surface. The wall's motion can be taken as the FRS, which has a 5% damping PSA/ZPA of 0.348/0.117g. Since the mounting panel's response should be no higher than the PSA, these values could be taken as the panel's Demand level. However, for conservatism, an AF = 7.0 will be used, and PSA/ZPA = 2.434/0.819g @ 5% damping.

PNL-DGEA-1 & 2

These panels are wall-mounted at El 735 of the Diesel Generator Building, with essential relays mounted in both the face panel and a rear sub-panel.

For the rear sub-panel, there is essentially no amplifying, intervening structure (connectors only) between the sub-panel and the wall surface. The wall's motion can be taken as the FRS, which has a 5% damping PSA/ZPA of 0.348/0.117g. Since the mounting panel's response should be no higher than the PSA, these values could be taken as the panel's Demand level. However, for conservatism, an AF = 7.0 will be used, and PSA/ZPA = 3.112/1.064g @ 5% damping for the sub-panel relays.

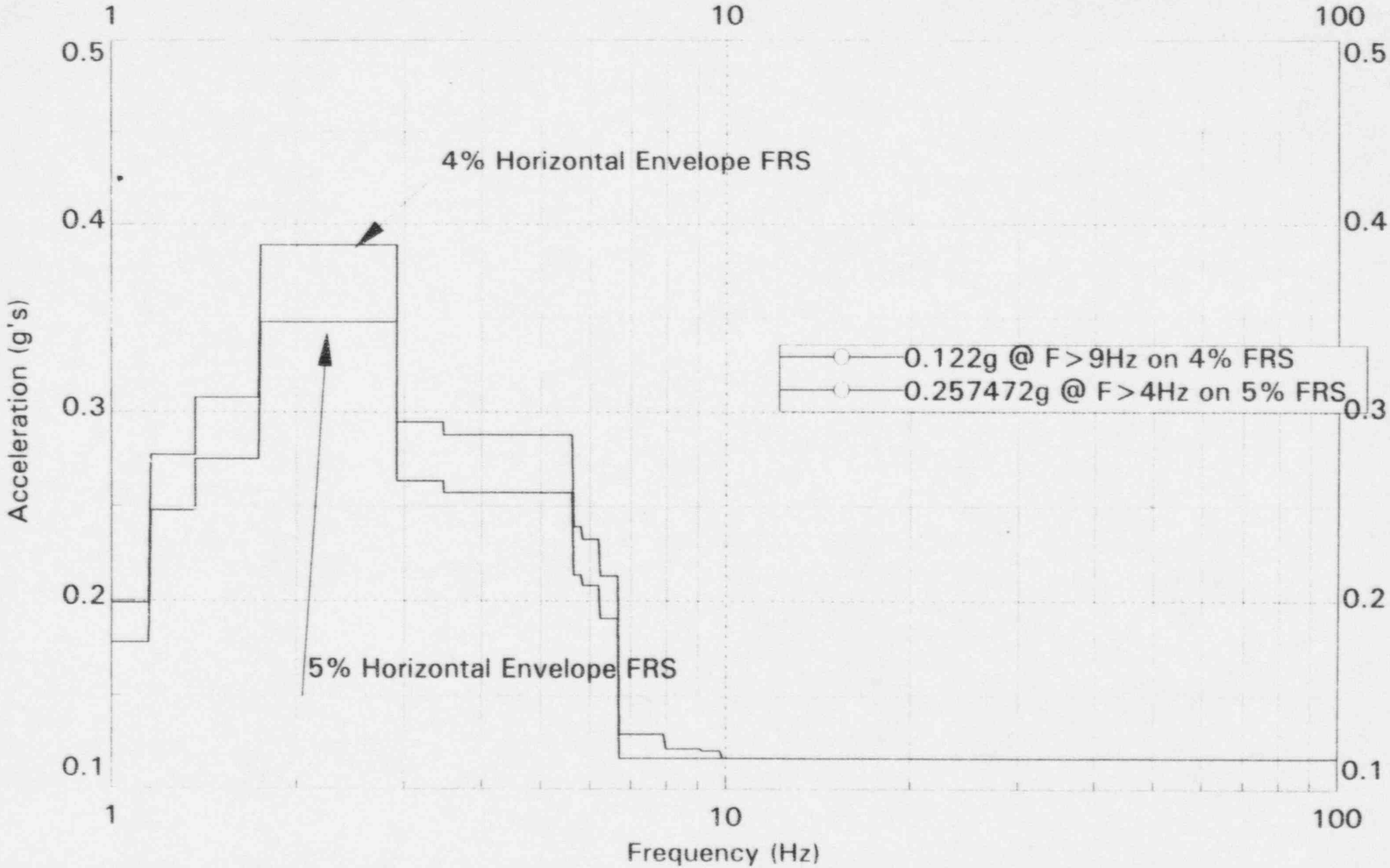
For the relays mounted on the panel's face, there is no amplifying, intervening structure between the panel and the wall surface. The side panels that form the box are rigid in-plane, and act as diaphrams. The face panel's out-of-plane response would, therefore, control(1). Motion in the lateral and/or vertical plane of the face panel - would be resisted by the top & bottom and/or sidewalls in-plane. The face panel will experience essentially no-amplification. The wall's motion can be taken as the floor response spectrum, which has a 1% damping (rigid) PSA/ZPA of 0.348/0.117g. Since the in-plane motion is non-amplifying, and the out-of-plane panel response should be no higher than the PSA, the 1% FRS could be taken as the DEMAND level curve. Alternatively, a very conservative amplification factor could be taken as seven (7) applied to a 5% damped FRS. The resulting Demand level is higher than the 1% FRS and produces a PSA/ZPA = 3.112/1.064g. This alternative will be used for the panel's face-mounted relays.

(1) NOTE: The overall panel is a NEMA 12 according to the applicable drawing AA-8700-RE-25AW-7. Its face panel's natural frequency, with two (2) 47H relays mounted on it, is 31.74 Hz (calculated using Roark & Young as a plate with all sides simply-supported). Possible amplification of orthogonal motion is, therefore, minimal and an AF=7 extremely conservative.

PNL-REL-DGI

This panel is a wall-mounted enclosure, at El 735 of the Diesel Generator Building, with the relays mounted on a rear sub-panel. There is essentially no amplifying, intervening structure (connectors only) between the sub-panel and the wall surface. The wall's motion can be taken as the FRS, which has a 5% damping PSA/ZPA of 0.348/0.117g. Since the mounting panel's response should be no higher than the PSA, these values could be taken as the panel's Demand level. However, for conservatism, an AF = 7.0 will be used, and PSA/ZPA = 2.434/0.819g @ 5% damping.

SERVICE BUILDING (SRVB) El 713
SSE Horizontal Envelope FRS @ 4% & 5% Damping



Appendix H

RESUMES OF LEAD RELAY REVIEWER, ASSISTANT & SEISMIC CAPABILITY ENGINEERS

Resume of Lead Relay Reviewer

RONALD FERRIE

EDUCATION:

B. S. - Electrical Engineering, University of Pittsburgh School of Engineering, 1981
MBA - Robert Morris College, 1988

PROFESSIONAL HISTORY:

Duquesne Light Co., Training Instructor 1981-1990, Senior Engineer 1990-present

PROFESSIONAL EXPERIENCE:

Mr. Ferrie joined Duquesne Light Co. in 1981 as a Training Instructor. He obtained a NRC Senior Reactor Ope[illegible]. [illegible]ertificate in 1984. He developed plant specific Beaver Valley Emergency Operating [illegible]dures and validated them on the newly acquired BV1 simulator in 1985/6.

Mr. Ferrie transferred to the Nuclear Engineering Department, Management Services section in 1990 and developed the initial draft of the SQUG Safe Shutdown Equipment List. In 1995 he was transferred to the electrical engineering section and began working on the SQUG relay evaluation for Beaver Valley Unit 1.

TRAINING:

SQUG/EPRI Equipment Selection and Relay Evaluation Training Courses.

Resume of Relay Reviewer Assistant

GEORGE S. BELLAMACINA

EDUCATION:

Associate - Electrical Engineering, Wentworth Institute, Boston, Ma., 1965
B. S. - Electrical Engineering, Northeastern University, Boston, Ma., 1969

PROFESSIONAL HISTORY:

Stone & Webster Engineering Corporation,
- Principal Control Engineer 1987 - 1995
- Senior Control Engineer 1978 - 1987
- Control Engineer 1972 - 1978
- Electrical Engineer 1969 - 1972
- Electrical Draftsman/designer 1965 - 1969

PROFESSIONAL EXPERIENCE:

Mr. Bellamacina joined Stone & Webster Engineering in 1965 in the Electrical Design Division in the Boston office. He was a Principal Control Engineer. He was at the Beaver Valley Power Station in Shippingport, Pennsylvania providing staff augmentation to Duquesne Light Company.

Mr. Bellamacina participated in the design and construction of several fossil and nuclear power stations, including Surry Units 1 & 2, Millstone Unit 3 and Beaver Valley Unit 2.

Mr. Bellamacina was supervisor of the Electrical Controls Engineering Group for the Beaver Valley Unit No. 2 Project.

TRAINING:

SQUG/EPRI Relay Evaluation Training Course.

Resume of Seismic Capability Engineer

GLENN S. RITZ

EDUCATION:

1986 - MS-IE, University of Pittsburgh
1970 - 1971 - Candidate for MS-CE, University of Pittsburgh
1969 - BS-CE, University of Pittsburgh
1965 - 1966 - Candidate for BS Mathematics, Alderson-Broaddus College

REGISTRATION:

Registered Professional Engineer, State of Pennsylvania, No. PE-024749-E

PROFESSIONAL HISTORY:

1970 - Present; Employee of Duquesne Light Co., Pittsburgh, PA

PROFESSIONAL EXPERIENCE:

Mr. Ritz is currently a Principal Engineer with the Nuclear Engineering Department, Corporate Nuclear Services Unit, Nuclear Group, at Beaver Valley Nuclear Power Station. He is the Project Manager for the Beaver Valley Unit No. 1 USI A-46 Project. He concurrently acts as a civil/structural staff engineer, seismic engineer, and internal consultant to associate engineers. Duties include design and analysis of structural systems (e.g., buildings, equipment supports), specifying and evaluating seismic equipment qualification, and advising associate engineers on issues such as bolting, analytical techniques, and failure assessments. He has held this position since 1984, when he was reassigned from the former Engineering & Construction Division due to Corporate reorganization.

Prior to 1984, Mr. Ritz worked in the former Structural Engineering Department, where he held the positions of Engineer, Project Engineer and Senior Project Engineer. His work assignments included review of Architect/Engineer design documents for both Units of the Beaver Valley Power Station. Additionally, he worked on civil/structural projects involving the Utility's fossil fuel generating stations, power transmission system, waste disposal/compliance issues, and subsidiary steam heating system for the city of Pittsburgh.

TRAINING:

Severe Loading Symposium, Dr. John D. Stevenson, Case Western Reserve, 1973.
PWR Specialty Training, Westinghouse Nuclear Training Services.
Structural Dynamics Lecture Series, February thru May, 1981.
Advanced Frame and Finite Element Analysis, Georgia Institute of Technology, 1988.
Seismic Seminar, WYLE Laboratories, 1989.
EPRI/SQUG SSEL, Relay Review, IPEEE Add-on and Seismic Capability Engineer (walkdown) training, September/October, 1992.

Location	Contact	Relay type	Model/Style	State	EIN	Line #
DG BLDG	PE	PNEUMAT	----------	DEENERGIZE	FE-CDL- A	8133
DG BLDG	62-CX	MAST VLV AUX	----------	DEENERGIZE	FE-CDL-1A	8133
DG BLDG	RH	HOLD RELAY	----------	DENERGIZED	FE-CDL-1B	8134
DG BLDG	62	TIMING RELAY	----------	DE	FE-CDL-1B	8134
DG BLDG	PE	PNEUMAT	----------	DEENERGIZE	FE-CDL-1B	8134
DG BLDG	62-CX	MAST VLV AUX	----------	DEENERGIZE	FE-CDL-1B	8134
DG BLDG CEILING	TS (HAD)	HAD	----------	NO	FE-CDL-1A	8133
DG BLDG CEILING	TS (HAD)	HAD	----------	NO	FE-CDL-1B	8134
FE-WS-3A	K1	----------	----------	DE/NO	DV-FP-8	5231C
FE-WS-3B	K1	----------	----------	DE/NO	DV-FP-9	5133C
INSIDE MFB	HD-FP-8-16	HAD	302	NO	DV-FP-8	5231C
INSIDE MFB	HD-FP-9-18	HAD	302	NO	DV-FP-9	5133C
INTAKE CUB #1	42	ALLIS TY2	ALLIS CHALMERS	----------	VS-F-57A	5101C
INTAKE CUB #1	49	ALLIS TY2	ALLIS CHALMERS	NC	VS-F-57A	5101C
INTAKE CUB #1	42	ALLIS TY2	ALLIS CHALMERS	----------	VS-D-57A1	5101D
INTAKE CUB #1	49	ALLIS TY2	ALLIS CHALMERS	NC	VS-D-57A1	5101D
INTAKE CUB #1	42	ALLIS TY2	ALLIS CHALMERS	----------	VS-D-57A2	5101E
INTAKE CUB #1	49	ALLIS TY2	ALLIS CHALMERS	NC	VS-D-57A2	5101E
INTAKE CUB #2	42	ALLIS TY2	ALLIS CHALMERS	----------	VS-F-57B	5102C
INTAKE CUB #2	49	ALLIS TY2	ALLIS CHALMERS	NC	VS-F-57B	5102C
INTAKE CUB #2	42	ALLIS TY2	ALLIS CHALMERS	----------	VS-D-57B1	5102D
INTAKE CUB #2	49	ALLIS TY2	ALLIS CHALMERS	NC	VS-D-57B1	5102D
INTAKE CUB #2	42	ALLIS TY2	ALLIS CHALMERS	----------	VS-D-57B2	5102E
INTAKE CUB #2	49	ALLIS TY2	ALLIS CHALMERS	NC	VS-D-57B2	5102E
INTAKE CUB #3	42	ALLIS TY2	ALLIS CHALMERS	----------	VS-F-57C	5103C
INTAKE CUB #3	49	ALLIS TY2	ALLIS CHALMERS	NC	VS-F-57C	5103C
INTAKE CUB #3	42	ALLIS TY2	ALLIS CHALMERS	----------	VS-D-57C1	5103D
INTAKE CUB #3	49	ALLIS TY2	ALLIS CHALMERS	NC	VS-D-57C1	5103D
INTAKE CUB #3	42	ALLIS TY2	ALLIS CHALMERS	----------	VS-D-57C2	5103E
INTAKE CUB #3	49	ALLIS TY2	ALLIS CHALMERS	NC	VS-D-57C2	5103E
LOCALLY MTD	FIS-FW151A	BARTON	288A	NOP/NC	FCV-FW-103A	4107C
LOCALLY MTD	FIS-FW151B	BARTON	288A	NOP/NC	FCV-FW-103B	4108C
MAST PLT CONT CB	MVR	MASTER VLV	----------	ENERGIZED	FE-CDL-1A	8133

Location	Contact	Relay type	Model/Style	State	EIN	Line #
4KVS-1E, CUB 9	62-1E9X	ASEA RXME1	RK-221-052-AN	DE/NO	4KVS-1AE-1E	9021
4KVS-1E, CUB 9	62-1E9	W TD-5	295B301A25	DE/NO	4KVS-1AE-1E	9021
4KVS-1E/F, CUB14	43-VE/F114X	GE HEA	12HEA61CRD238X2	NOP/NC	WR-P-1C	5103
4KVS-1E/F,CUB 14	51-VE/F114A,B,C	W COM-5	289B456A19	DE/NO	WR-P-1C	5103
4KVS-1E/F,CUB 15	51-VE/F115A	W COM-5	289B456A19	DE/NO	CH-P-1C	1214
4KVS-1E/F,CUB 15	51-VE/F115B	W COM-5	289B456A19	DE/NO	CH-P-1C	1214
4KVS-1E/F,CUB 15	51-VE/F115C	W COM-5	289B456A19	DE/NO	CH-P-1C	1214
4KVS-1E/F,CUB 15	43-VE/F115X	GE HEA	12HEA61CRD238X2	NOP/NC	CH-P-1C	1214
4KVS-1F, CUB 10	43-VF111X	GE HEA	12HEA61CRD238X2	NOP/NC	CH-P-1B	1213
4KVS-1F, CUB 10	51-VF110A,B,C	W COM-5	289B456A19	DE/NO	WR-P-1B	5102
4KVS-1F, CUB 10	43-VF110X	GE HEA	12HEA61CRD238X2	NOP/NC	WR-P-1B	5102
4KVS-1F, CUB 11	51-VF111A	W COM-5	289B456A19	DE/NO	CH-P-1B	1213
4KVS-1F, CUB 11	51-VF111B	W COM-5	289B456A19	DE/NO	CH-P-1B	1213
4KVS-1F, CUB 11	51-VF111C	W COM-5	289B456A19	DE/NO	CH-P-1B	1213
4KVS-1F, CUB 112	62-VF112X	W WL	422D949G19	DE/NC	4KVS-1DF-1F	9022
4KVS-1F, CUB 12	51-VF1112A,B,C	W CO-11	1456CO5A13	DE/NO	4KVS-1DF-1F	9026
4KVS-1F, CUB 12	62-VF112	W TD-5	293B301A24B	DE/NO	4KVS-1DF-1F	9026
4KVS-1F, CUB 12	62-VF112X	W WL	422D949G19	DE/NO	4KVS-1DF-1F	9026
4KVS-1F, CUB 12	62-VF112X	W WL	293F301A25B	DE/NO	4KVS-1AE-1F	9022C
4KVS-1F, CUB 16	51-VF116X	W WL	122D949G45	NOP/NC	FW-P-3B	4108
4KVS-1F, CUB 16	51-VF116A	W COM-5	289B456A21	DE/NO	FW-P-3B	4108
4KVS-1F, CUB 16	51-VF116B	W COM-5	289B456A21	DE/NO	FW-P-3B	4108
4KVS-1F, CUB 16	51-VF116C	W COM-5	289B456A21	DE/NO	FW-P-3B	4108
4KVS-1F, CUB 7	51-VF107X	W WL	300P694G01	DE/NC	4KVS-1DF-1F	9022
4KVS-1F, CUB 7	67/51-VF107A,B,C	W IRV	290B091A33	DE/NO	4KVS-1DF-1F	9028
4KVS-1F, CUB 7	51-VF107X	W WL	300P694G01	DE/NO/NC	4KVS-1DF-1F	9028
4KVS-1F, CUB 8A	27-VF100X	GE HGA	12HGA11K52	DE/NO	4KVS-1DF	9007
4KVS-1F, CUB 8A	62-VF100X5	W MG-6	288B977A15	DE/NO	4KVS-1DF-1F	9022
4KVS-1F, CUB 9	62-1F9X	ASEA RXME1	RK-221-052-AN	DE/NO	4KVS-1DF-1F	9022
4KVS-1F, CUB 9	62-1F9	W TD-5	295B301A25	DE/NO	4KVS-1DF-1F	9022
AUX FEED PUMP RM	HD-FP-9-1	HAD	302	NO	DV-FP-12	4108E
DG BLDG	RH	HOLD RELAY	----------	DENERGIZED	FE-CDL-1A	8133
DG BLDG	62	TIMING RELAY	----------	DE	FE-CDL-1A	8133

Location	Contact	Relay type	Model/Style	State	EIN	Line #
480V BUS 1N	27-RN100X	GE HGA	12HGA11K52	DE/NO	480V BUS 1N	9009
480V BUS 1N	62-RN100	W TD-5	SPECIAL	DE/NO	480V BUS 1N	9009
480V BUS 1N1	62-RN1100	W TD-5	MODIFIED	DE/NO	480V BUS	9013
480V BUS 1P	27-RP100X	GE HGA	12HGA11K52	DE/NO	480V BUS 1P	9011
480V BUS 1P	62-RP100	W TD-5	SPECIAL	DE/NO	480V BUS 1P	9011
480V BUS 1P1	62-RP1100	W TD-5	MODIFIED	DE/NO	480V BUS	9014
480V BUS 1N	52-8N16X	W MG-6	1163841	DE/NO	MCC-1-E11	8028
480V BUS 1P	52-9P16X	W MG-6	1163801	DE/NO	MCC-1-E12	8029
4KVS-1E, CUB 10	43-VE111X	GE HEA	12HEA61CRD238X2	NOP/NC	CH-P-1A	1212
4KVS-1E, CUB 10	51-VE110A,B,C	W COM-5	289B456A19	DE/NO	WR-P-1A	5101
4KVS-1E, CUB 10	43-VE110X	GE HEA	12HEA61CRD238X2	NOP/NC	WR-P-1A	5101
4KVS-1E, CUB 11	51-VE111A	W COM 5	289B456A19	DE/NO	CH-P-1A	1212
4KVS-1E, CUB 11	51-VE111B	W COM-5	289B456A19	DE/NO	CH-P-1A	1212
4KVS-1E, CUB 11	51-VE111C	W COM-5	289B456A19	DE/NO	CH-P-1A	1212
4KVS-1E, CUB 112	62-VE112X	W WL	422D949G19	DE/NC	4KVS-1AE-1E	9021
4KVS-1E, CUB 112	51-VE112A,B,C	W CO-11	1456CO5A13	DE/NO	4KVS-1AE-1E	9025
4KVS-1E, CUB 112	51-VF112A,B,C	W CO-11	1456CO5A13	DE/NO	4KVS-1DF-1F	9026
4KVS-1E, CUB 12	51-VE1112A,B,C	W CO-11	1456CO5A13	DE/NO	4KVS-1AE-1E	9025
4KVS-1E, CUB 12	62-VE112	W TD-5	293B301A24B	DE/NO	4KVS-1AE-1E	9025
4KVS-1E, CUB 12	62-VE112X	W WL	422D949G19	DE/NO	4KVS-1AE-1E	9025
4KVS-1E, CUB 12	62-VE112X	W WL	293B301A25B	DE/NO	4KVS-1AE-1E	9021C
4KVS-1E, CUB 16	51-VE116X	W WL	422D949G45	NOP/NC	FW-P-3A	4107
4KVS-1E, CUB 16	51-VE116A	W COM-5	289B456A21	DE/NO	FW-P-3A	4107
4KVS-1E, CUB 16	51-VE116B	W COM-5	289B456A21	DE/NO	FW-P-3A	4107
4KVS-1E, CUB 16	51-VE116C	W COM-5	289B456A21	DE/NO	FW-P-3A	4107
4KVS-1E, CUB 16	43-VE116X	GE HEA	12HEA61CRD238X2	NOP/NC	FW-P-3A	4107
4KVS-1E, CUB 16	43-VF116X	GE HEA	12HEA61CRD238X2	NOP/NC	FW-P-3B	4108
4KVS-1E, CUB 7	51-VE107X	W WL	300P694G01	DE/NC	4KVS-1AE-1E	9021
4KVS-1E, CUB 7	67/51-VE107A,B,C	W IRV	290B091A33	DE/NO	4KVS-1AE-1E	9027
4KVS-1E, CUB 7	51-VE107X	W WL	300P694G01	DE/NO/NC	4KVS-1AE-1E	9027
4KVS-1E, CUB 8A	46-VE100X	GE HGA	12HGA11K52	DE/NC	4KVS-1AE	9002
4KVS-1E, CUB 8A	27-VE100X	GE HGA	12HGA11K52	DE/NO	4KVS-1AE	9003
4KVS-1E, CUB 8A	62-VE100X5	W MG-6	288B977A15	DE/NO	4KVS-1AE-1E	9021

Location	Contact	Relay type	Model/Style	State	EIN	Line #
MAST PLT CONT CB	MVR	MASTER VLV	----------	ENERGIZED	FE-CDL- B	8134
MCC1-14, CUB AC	CONTACTOR 42C	ALLIS TY2	ALLIS CHALMERS	DE/NO	MOV-CH-370	1228
MCC1-18, CUB AK	CONTACTOR 42C	ALLIS TY2	ALLIS CHALMERS	DE/NO	MOV-CH-303C	1232
MCC1-19, CUB AK	CONTACTOR 42C	ALLIS TY2	ALLIS CHALMERS	DE/NO	MOV-CH-303B	1231
MCC1-43, CUB 3J	CONTACTOR 42O	ALLIS TY2	ALLIS CHALMERS	DE/NO	MOV-FW-160	4115
MCC1-E1, CUB D	CONTACTOR 420&C	ALLIS TY2	ALLIS CHALMERS	DE/NO	MOV-RW-102A	5104
MCC1-E1, CUB D	49	ALLIS TY2	ALLIS CHALMERS	NC	MOV-RW-102A	5104
MCC1-E1, CUB G	CONTACTOR 420&C	ALLIS TY2	ALLIS CHALMERS	DE/NO	MOV-RW-102A	5105
MCC1-E1, CUB G	49	ALLIS TY2	ALLIS CHALMERS	NC	MOV-RW-102A	5105
MCC1-E1, CUB H	CONTACTOR 420&C	ALLIS TY2	ALLIS CHALMERS	DE/NO	MOV-RW-102C	5108
MCC1-E1, CUB H	49	ALLIS TY2	ALLIS CHALMERS	NC	MOV-RW-102C	5108
MCC1-E1, CUB H	CONTACTOR 420&C	ALLIS TY2	ALLIS CHALMERS	DE/NO	MOV-RW-102C	5109
MCC1-E1, CUB H	49	ALLIS TY2	ALLIS CHALMERS	NC	MOV-RW-102C	5109
MCC1-E10, CUB AC	CONTACTOR 42	ALLIS TY3	ALLIS CHALMERS	DE/NC	VS-F-16B	5204
MCC1-E10, CUB AC	49	ALLIS TY3	ALLIS CHALMERS	NC	VS-F-16B	5204
MCC1-E10, CUB AC	CONTACTOR 42	ALLIS TY3	ALLIS CHALMERS	DE/NO	VS-D-16B	5206
MCC1-E10, CUB AC	49	ALLIS TY3	ALLIS CHALMERS	NV	VS-D-16B	5206
MCC1-E10, CUB C	CONTACTOR 42	ALLIS TY3	ALLIS CHALMERS	DE/NO	VS-F-40B	5238
MCC1-E10, CUB C	49	ALLIS TY3	ALLIS CHALMERS	NC	VS-F-40B	5238
MCC1-E10, CUB C	42-E10C	ALLIS TY2	ALLIS CHALMERS	NO	VS-AD-8	5240
MCC1-E10, CUB C	42-E10C	ALLIS TY2	ALLIS CHALMERS	NO	VS-AD-10	5242
MCC1-E10, CUB J	CONTACTOR 42C	ALLIS TY2	ALLIS CHALMERS	DE/NO	VS-D-40-1B	5244
MCC1-E10, CUB K	CONTACTOR 42C	ALLIS TY2	ALLIS CHALMERS	DE/NO	VS-D-40-1D	5246
MCC1-E10, CUB X	CONTACTOR 42	ALLIS TY3	ALLIS CHALMERS	DE/NO	VS-F-55B	5202
MCC1-E10, CUB X	49	ALLIS TY3	ALLIS CHALMERS	NC	VS-F-55B	5202
MCC1-E11, CUB B	CONTACTOR 42F	ALLIS TY3	ALLIS CHALMERS	DE/NO	CH-P-2A	1246
MCC1-E11, CUB B	49S	ALLIS TY3	ALLIS CHALMERS	NC	CH-P-2A	1246
MCC1-E11, CUB B	49FX	ALLIS TY3	ALLIS CHALMERS	NC	CH-P-2A	1246
MCC1-E11, CUB B	CONTACTOR 42FX	ALLIS TY2	ALLIS CHALMERS	DE/NO	CH-P-2A	1246
MCC1-E12, CUB B	CONTACTOR 42S	ALLIS TY3	ALLIS CHALMERS	DE/NO	CH-P-2A	1246
MCC1-E12, CUB B	CONTACTOR 42S	ALLIS TY3	ALLIS CHALMERS	DE/NO	CH-P-2B	1247
MCC1-E12, CUB B	CONTACTOR 42F	ALLIS TY3	ALLIS CHALMERS	DE/NO	CH-P-2B	1247
MCC1-E12, CUB B	49S	ALLIS TY3	ALLIS CHALMERS	NC	CH-P-2B	1247

Location	Contact	Relay type	Model/Style	State	EIN	Line #
MCC1-E12, CUB B	49FX	ALLIS TY3	ALLIS CHALMERS	NC	CH-P-2B	1247
MCC1-E12, CUB B	CONTACTOR 42FX	ALLIS TY2	ALLIS CHALMERS	DE/NO	CH-P-2B	1247
MCC1-E2, CUB D	CONTACTOR 420&C	ALLIS TY2	ALLIS CHALMERS	DE/NO	MOV-RW-102B	5106
MCC1-E2, CUB D	49	ALLIS TY2	ALLIS CHALMERS	NC	MOV-RW-102B	5106
MCC1-E2, CUB G	CONTACTOR 420&C	ALLIS TY2	ALLIS CHALMERS	DE/NO	MOV-RW-102B	5107
MCC1-E2, CUB G	49	ALLIS TY2	ALLIS CHALMERS	NC	MOV-RW-102B	5107
MCC1-E3, CUB AC	CONTACTOR 420&C	ALLIS TY2	ALLIS CHALMERS	DE/NO	MOV-RW-114B	5126
MCC1-E3, CUB AC	49	ALLIS TY2	ALLIS CHALMERS	NC	MOV-RW-114B	5126
MCC1-E3, CUB AD	CONTACTOR 42O	ALLIS TY2	ALLIS CHALMERS	DE/NO	MOV-RW-116	5127
MCC1-E3, CUB AE	CONTACTOR 42C	ALLIS TY2	ALLIS CHALMERS	DE/NO	MOV-CH-308A	1225
MCC1-E3, CUB AF	CONTACTOR 42C	ALLIS TY2	ALLIS CHALMERS	DE/NO	MOV-CH-308B	1226
MCC1-E3, CUB AN	CONTACTOR 42C	ALLIS TY2	ALLIS CHALMERS	DE/NO	MOV-CH-308C	1227
MCC1-E3, CUB B	CONTACTOR 42O/C	ALLIS TY2	ALLIS CHALMERS	DE/NO	MOV-RW-103A	4116
MCC1-E3, CUB B	49	ALLIS TY2	ALLIS CHALMERS	NC	MOV-RW-103A	4116
MCC1-E3, CUB B	CONTACTOR 42O	ALLIS TY2	ALLIS CHALMERS	DE/NO	MOV-RW-103A	5133
MCC1-E3, CUB B	49	ALLIS TY2	ALLIS CHALMERS	NC	MOV-RW-103A	5133
MCC1-E3, CUB C	CONTACTOR 42O	ALLIS TY2	ALLIS CHALMERS	DE/NO	MOV-RW-103C	5135
MCC1-E3, CUB C	49	ALLIS TY2	ALLIS CHALMERS	NC	MOV-RW-103C	5135
MCC1-E3, CUB G	CONTACTOR 42O	ALLIS TY2	ALLIS CHALMERS	DE/NO	MOV-RW-117	5128
MCC1-E3, CUB H	CONTACTOR (C)	ALLIS TY2	ALLIS CHALMERS	DE/NO	MOV-CH-275A	1217
MCC1-E3, CUB J	CONTACTOR 42O/C	ALLIS TY2	ALLIS CHALMERS	DE/NO	MOV-CH-115B	1208
MCC1-E3, CUB J	49	ALLIS TY2	ALLIS CHALMERS	NC	MOV-CH-115B	1208
MCC1-E3, CUB K	CONTACTOR 42O/C	ALLIS TY2	ALLIS CHALMERS	DE/NO	MOV-CH-115C	1209
MCC1-E3, CUB K	49	ALLIS TY2	ALLIS CHALMERS	NC	MOV-CH-115C	1209
MCC1-E3, CUB P	CONTACTOR (C)	ALLIS TY2	ALLIS CHALMERS	DE/NO	MOV-CH-275B	1218
MCC1-E3, CUB Q	CONTACTOR (C)	ALLIS TY2	ALLIS CHALMERS	DE/NO	MOV-CH-275C	1219
MCC1-E3, CUB V	CONTACTOR 42C	ALLIS TY2	ALLIS CHALMERS	DE/NO	VS-D-4-1A	5207
MCC1-E4, CUB B	CONTACTOR 42O/C	ALLIS TY2	ALLIS CHALMERS	DE/NO	MOV-RW-103B	4117
MCC1-E4, CUB B	49	ALLIS TY2	ALLIS CHALMERS	NC	MOV-RW-103B	4117
MCC1-E4, CUB B	CONTACTOR 42O	ALLIS TY2	ALLIS CHALMERS	DE/NO	MOV-RW-103B	5134
MCC1-E4, CUB B	49	ALLIS TY2	ALLIS CHALMERS	NC	MOV-RW-103B	5134
MCC1-E4, CUB C	CONTACTOR 42O	ALLIS TY2	ALLIS CHALMERS	DE/NO	MOV-RW-103D	5136
MCC1-E4, CUB C	49	ALLIS TY2	ALLIS CHALMERS	NC	MOV-RW-103D	5136

Location	Contact	Relay type	Model/Style	State	EIN	Line #
MCC1-E8, CUB E	42-E3E	ALLIS TY3	ALLIS CHALMERS	DE/NO	VS-D-22-2C	5331
MCC1-E8, CUB F	42-E8E	ALLIS TY3	ALLIS CHALMERS	DE/NO	VS-D-22-2D	5332
MCC1-E8, CUB H	CONTACTOR 420&C	ALLIS TY2	ALLIS CHALMERS	DE/NO	MOV-RW-113C	5123
MCC1-E8, CUB H	49	ALLIS TY2	ALLIS CHALMERS	NC	MOV-RW-113C	5123
MCC1-E8, CUB J	CONTACTOR 420&C	ALLIS TY2	ALLIS CHALMERS	DE/NO	MOV-RW-113D	5124
MCC1-E8, CUB J	49	ALLIS TY2	ALLIS CHALMERS	NC	MOV-RW-113D	5124
MCC1-E8, CUB N	CONTACTOR 42	ALLIS TY3	ALLIS CHALMERS	DE/NO	EE-C-1B	5300E
MCC1-E8, CUB N	49	ALLIS TY3	ALLIS CHALMERS	NC	EE-C-1B	5300E
MCC1-E8, CUB P	CONTACTOR 42	ALLIS TY3	ALLIS CHALMERS	DE/NO	EE-C-2B	5300F
MCC1-E8, CUB P	49	ALLIS TY3	ALLIS CHALMERS	NC	EE-C-2B	5300F
MCC1-E8, CUB Q	CONTACTOR 42	ALLIS TY3	ALLIS CHALMERS	DE/NO	EE-P-1C	5305
MCC1-E8, CUB Q	49	ALLIS TY3	ALLIS CHALMERS	NC	EE-P-1C	5305
MCC1-E8, CUB R	CONTACTOR 42	ALLIS TY3	ALLIS CHALMERS	DE/NO	EE-P-1D	5306
MCC1-E8, CUB R	49	ALLIS TY3	ALLIS CHALMERS	NC	EE-P-1D	5306
MCC1-E8, CUB Z	CONTACTOR 42O	ALLIS TY2	ALLIS CHALMERS	DE/NO	MOV-RW-116B	5132
MCC1-E9, CUB AF	CONTACTOR 42	ALLIS TY3	ALLIS CHALMERS	DE/NC	VS-F-16A	5203
MCC1-E9, CUB AF	49	ALLIS TY3	ALLIS CHALMERS	NC	VS-F-16A	5203
MCC1-E9, CUB AF	CONTACTOR 42	ALLIS TY3	ALLIS CHALMERS	DE/NC	VS-D-16A	5205
MCC1-E9, CUB AF	49	ALLIS TY3	ALLIS CHALMERS	NC	VS-D-16A	5205
MCC1-E9, CUB C	CONTACTOR 42	ALLIS TY3	ALLIS CHALMERS	DE/NO	VS-F-40A	5237
MCC1-E9, CUB C	49	ALLIS TY3	ALLIS CHALMERS	NC	VS-F-40A	5237
MCC1-E9, CUB C	42-E9C	ALLIS TY2	ALLIS CHALMERS	NC	VS-AD-7	5239
MCC1-E9, CUB P	CONTACTOR 42	ALLIS TY3	ALLIS CHALMERS	DE/NO	VS-F-55A	5201
MCC1-E9, CUB P	49	ALLIS TY3	ALLIS CHALMERS	NC	VS-F-55A	5201
MCC1-E9, CUB U	CONTACTOR 42C	ALLIS TY2	ALLIS CHALMERS	DE/NO	VS-D-40-1A	5243
MCC1-E9, CUB V	CONTACTOR 42C	ALLIS TY2	ALLIS CHALMERS	DE/NO	VS-D-40-1C	5245
MCCI-17, CUB AQ	CONTACTOR 42C	ALLIS TY2	ALLIS CHALMERS	DE/NO	MOV-CH-303A	1230
PNL-DG-SEQ-1	62-AEX	W MG-6	1163803	DE/NO	WR-P-1A	5101
PNL-DG-SEQ-1	162-AEX2	W MG-6	1163803	DE/NO	VS-AC-1A	5235
PNL-DG-SEQ-1	162-DFX2	W MG-6	1163803	DE/NO	VS-AC-1B	5236
PNL-DG-SEQ-1	69-AEX2	W MG-6	1163803	DE/NO	MCC-1-E1	8018
PNL-DG-SEQ-1	69-AEX2	W MG-6	1163803	DE/NO	MCC-1-E3	8020
PNL-DG-SEQ-1	69-AEX2	W MG-6	1163803	DE/NO	MCC-1-E5	8022

Location	Contact	Relay type	Model/Style	State	EIN	Line #
MCC1-E4, CUB D	CONTACTOR 42O&C	ALLIS TY2	ALLIS CHALMERS	DE/NO	MOV-RW-106A	5119
MCC1-E4, CUB D	49	ALLIS TY2	ALLIS CHALMERS	NC	MOV-RW-106A	5119
MCC1-E4, CUB D	CONTACTOR 42O&C	ALLIS TY2	ALLIS CHALMERS	DE/NO	MOV-RW-106B	5120
MCC1-E4, CUB D	49	ALLIS TY2	ALLIS CHALMERS	NC	MOV-RW-106B	5120
MCC1-E4, CUB J	CONTACTOR (O)	ALLIS TY2	ALLIS CHALMERS	DE/NO	MOV-CH-115D	1210
MCC1-E4, CUB J	49	ALLIS TY2	ALLIS CHALMERS	NC	MOV-CH-115D	1210
MCC1-E4, CUB K	CONTACTOR (C)	ALLIS TY2	ALLIS CHALMERS	DE/NO	MOV-CH-115E	1211
MCC1-E4, CUB K	49	ALLIS TY2	ALLIS CHALMERS	NC	MOV-CH-115E	1211
MCC1-E4, CUB S	CONTACTOR 42O	ALLIS TY2	ALLIS CHALMERS	DE/NO	MOV-CH-350	1248
MCC1-E4, CUB S	49	ALLIS TY2	ALLIS CHALMERS		MOV-CH-350	1248
MCC1-E4, CUB V	CONTACTOR 42C	ALLIS TY2	ALLIS CHALMERS	DE/NO	VS-D-4-1B	5208
MCC1-E4, CUB W	CONTACTOR 42O	ALLIS TY2	ALLIS CHALMERS	DE/NO	VS-D-4-3B	5211
MCC1-E5, CUB AB	CONTACTOR 42O	ALLIS TY2	ALLIS CHALMERS	DE/NO	MOV-SI-836	1236
MCC1-E5, CUB AG	CONTACTOR 42C	ALLIS TY2	ALLIS CHALMERS	DE/NO	MOV-FW-151B	4110
MCC1-E5, CUB AH	CONTACTOR 42C	ALLIS TY2	ALLIS CHALMERS	DE/NO	MOV-FW-151D	4112
MCC1-E5, CUB AJ	CONTACTOR 42C	ALLIS TY2	ALLIS CHALMERS	DE/NO	MOV-FW-151F	4114
MCC1-E5, CUB BA	CONTACTOR 42O/C	ALLIS TY2	ALLIS CHALMERS	DE/NO	MOV-CH-378	3209
MCC1-E5, CUB BA	49	ALLIS TY2	ALLIS CHALMERS	NC	MOV-CH-378	3209
MCC1-E5, CUB BB	CONTACTOR (C)	ALLIS TY2	ALLIS CHALMERS	DE/NO	MOV-CH-289	1215
MCC1-E5, CUB BE	CONTACTOR 42O/C	ALLIS TY2	ALLIS CHALMERS	DE/NO	MOV-RC-535	2104
MCC1-E5, CUB BE	49	ALLIS TY2	ALLIS CHALMERS	NC	MOV-RC-535	2104
MCC1-E5, CUB D	CONTACTOR 42O&C	ALLIS TY2	ALLIS CHALMERS	DE/NO	MOV-RW-114A	5125
MCC1-E5, CUB D	49	ALLIS TY2	ALLIS CHALMERS	NC	MOV-RW-114A	5125
MCC1-E5, CUB P	CONTACTOR 42O	ALLIS TY2	ALLIS CHALMERS	DE/NO	MOV-RH-700	3219
MCC1-E5, CUB Q	CONTACTOR 42O	ALLIS TY2	ALLIS CHALMERS	DE/NO	MOV-RH-720A	3320
MCC1-E5, CUB U	CONTACTOR 42O	ALLIS TY2	ALLIS CHALMERS	DE/NO	MOV-SI-863A	1237
MCC1-E5, CUB W	CONTACTOR (O)	ALLIS TY2	ALLIS CHALMERS	DE/NO	MOV-SI-867A	1222
MCC1-E6, CUB AG	CONTACTOR 42C	ALLIS TY2	ALLIS CHALMERS	DE/NO	MOV-FW-151A	4109
MCC1-E6, CUB AH	CONTACTOR 42C	ALLIS TY2	ALLIS CHALMERS	DE/NO	MOV-FW-151C	4111
MCC1-E6, CUB AJ	CONTACTOR 42C	ALLIS TY2	ALLIS CHALMERS	DE/NO	MOV-FW-151E	4113
MCC1-E6, CUB AW	CONTACTOR 42O/C	ALLIS TY2	ALLIS CHALMERS	DE/NO	MOV-CH-381	3210
MCC1-E6, CUB AW	49	ALLIS TY2	ALLIS CHALMERS	NC	MOV-CH-381	3210
MCC1-E6, CUB AX	CONTACTOR (C)	ALLIS TY2	ALLIS CHALMERS	DE/NO	MOV-CH-310	1216

Location	Contact	Relay type	Model/Style	State	EIN	Line #
RK-REAC-PROT-3B	K613	W AR440AR	W AR440AR	DE/NO	VS-D-4-1B	5208
RK-REAC-PROT-3B	K614	W AR440AR	W AR440AR	DE/NO	VS-D-4-2B	5210
RK-REAC-PROT-3B	K626	W AR440AR	W AR440AR	DE/NO	VS-D-40-1B	5244
RK-REAC-PROT-3B	K630	W AR440AR	W AR440AR	DE/NO	VS-D-40-1B	5244
RK-REAC-PROT-3B	K626	W AR440AR	W AR440 AR	DE/NO	VS-D-40-1D	5246
RK-REAC-PROT-3B	K630	W AR440AR	W AR440AR	DE/NO	VS-D-40-1D	5246
RK-VS-AC-1A	EP-VS-140-1	HONEYWELL	HNY RP403D	ENERGIZED	VS-AD-7	5239
RK-VS-AC-1A	EP-VS-140-2	HONEYWELL	HNY RP403D	ENERGIZED	VS-AD-10	5242
RK-VS-AC-1A	EP-VS-101-15	HONEYWELL	RP403-1058-3	ENERGIZED	VS-AD-3	5252
RK-VS-AC-1A	EP-VS-101-15	HONEYWELL	RP403-1058-3	ENERGIZED	VS-AD-5	5254
RK-VS-AC-1B	EP-VS-140-2	HONEYWELL	HNY RP403D	ENERGIZED	VS-AD-8	5240
RK-VS-AC-1B	EP-VS-140-1	HONEYWELL	HNY RP403D	ENERGIZED	VS-AD-9	5241
RK-VS-AC-1B	EP-VS-101-16	HONEYWELL	RP403-1058-3	ENERGIZED	VS-AD-4	5253
RK-VS-AC-1B	EP-VS-101-16	HONEYWELL	RP403-1058-3	ENERGIZED	VS-AD-6	5255
STEAM LINE	63-MS101A	BARKSDALE	BARKSDALE B2T	NO	PCV-MS-101A	4205
STEAM LINE	63-MS101B	BARKSDALE	BARKSDALE B2T	NO	PCV-MS-101B	4206
STEAM LINE	63-MS101C	BARKSDALE	BARKSDALE B2T	NO	PCV-MS-101C	4207
TB-348A	3-LDA	ASEA RXMH2	RK-223-068-EN	DE/NO	VS-D-4-4A	5212
TB-349A	3-LDB	ASEA RXMH2	RK-223-068-EN	DE/NO	VS-D-4-4B	5213
VS-C-1A	49	BI-METALLIC	BI-METALLIC	NC	VS-C-1A	5271
VS-C-1A1	49	BI-METALLIC	BI-METALLIC	NC	VS-C-1A1	5273
VS-C-1B	49	BI-METALLIC	BI-METALLIC	NC	VS-C-1B	5272
VS-C-1B1	49	BI-METALLIC	BI-METALLIC	NC	VS-C-1B1	5274

Location	Contact	Relay type	Model/Style	State	EIN	Line #
RK-RAD-MON-7	RM-RIS-218A	CONTACTOR	942-501/90	NO	VS-D-40-1C	5245
RK-RAD-MON-7	RM-RIS-218B	CONTACTOR	942-501/90	NO	VS-D-40-1D	5246
RK-REAC-PROT 3A	K628	W AR440AR	W AR440AR	DE/NC	PCV-RC-455D	2109
RK-REAC-PROT-3A	K603	W AR440AR	W AR440AR	DE/NO	MOV-CH-289	1215
RK-REAC-PROT-3A	K604	W AR440AR	W AR440AR	DE/NO	MOV-SI-867A	1222
RK-REAC-PROT-3A	K641	W AR440AR	W AR440AR	DE/NO	MOV-SI-863A	1237
RK-REAC-PROT-3A	K642	W AR440AR	W AR440AR	DE/NO	MOV-SI-863A	1237
RK-REAC-PROT-3A	K640	W AR440AR	W AR440AR	DE/NO	MOV-SI-863A	1237
RK-REAC-PROT-3A	K607	W AR440AR	W AR440AR	DE/NC	TV-SS-105A1	1240
RK-REAC-PROT-3A	K628	W AR440AR	W AR440AR	DE/NC	PCV-RC-456	2107
RK-REAC-PROT-3A	K643	W AR440AR	W AR440AR	DE/NO	MOV-RW-103A	4116
RK-REAC-PROT-3A	K643	W AR440AR	W AR440AR	DE/NO	MOV-RW-114A	5125
RK-REAC-PROT-3A	K643	W AR440AR	W AR440AR	DE/NO	MOV-RW-103A	5133
RK-REAC-PROT-3A	K645	W AR440AR	W AR440AR	DE/NO	MOV-RW-103C	5135
RK-REAC-PROT-3A	K613	W AR440AR	W AR440AR	DE/NO	VS-D-4-1A	5207
RK-REAC-PROT-3A	K614	W AR440AR	W AR440AR	DE/NO	VS-D-4-2A	5209
RK-REAC-PROT-3A	K626	W AR440AR	W AR440AR	DE/ON	VS-D-40-1A	5243
RK-REAC-PROT-3A	K630	W AR440AR	W AR440AR	DE/NO	VS-D-40-1A	5243
RK-REAC-PROT-3A	K626	W AR440AR	W AR440AR	DE/NO	VS-D-40-1C	5245
RK-REAC-PROT-3A	K630	W AR440AR	W AR440AR	DE/NO	VS-D-40-1C	5245
RK-REAC-PROT-3B	K603	W AR440AR	W AR440AR	DE/NO	MOV-CH-310	1216
RK-REAC-PROT-3B	K604	W AR440AR	W AR440AR	DE/NO	MOV-SI-867B	1223
RK-REAC-PROT-3B	K641	W AR440AR	W AR440AR	DE/NO	MOV-SI-863B	1238
RK-REAC-PROT-3B	K642	W AR440AR	W AR440AR	DE/NO	MOV-SI-863B	1238
RK-REAC-PROT-3B	K640	W AR440AR	W AR440AR	DE/NO	MOV-SI-863B	1238
RK-REAC-PROT-3B	K607	W AR440AR	W AR440AR	DE/NC	TV-SS-105A2	1241
RK-REAC-PROT-3B	K628	W AR440AR	W AR440AR	DE/NC	PCV-RC-455C	2105
RK-REAC-PROT-3B	K643	W AR440AR	W AR440AR	DE/NO	MOV-RW-103B	4117
RK-REAC-PROT-3B	K643	W AR440AR	W AR440AR	DE/NO	MOV-RW-106A	5119
RK-REAC-PROT-3B	K645	W AR440AR	W AR440AR	DE/NO	MOV-RW-106B	5120
RK-REAC-PROT-3B	K645	W AR440AR	W AR440AR	DE/NO	MOV-RW-114B	5126
RK-REAC-PROT-3B	K643	W AR440AR	W AR440AR	DE/NO	MOV-RW-103B	5134
RK-REAC-PROT-3B	K645	W AR440AR	W AR440AR	DE/NO	MOV-RW-103D	5136

ESSENTIAL RELAY DATA & ASSESSMENT SHEET

REF: AGASTAT 7022

Relay Type: AGASTAT 7022PD

EIN(s): 62-1AFWRA,RB

Model/Style: 7022PD

State: DE/NO

Location(s): PNL-REL-37R,38R

Demand: RP's @ SRVB El 713 (See "RP Demand" Sheet) => PSA/ZPA = 2.304/0.936g.

Capac...
EPRI Ref.- NP-7147, pg.B-8
GERS/Record - RLY-PNT.7
PSA/ZPA g-levels are: NOP/NO&NC= 6/2.4; OP/NO&NC= 10/4; Transition= 4/1.6

SQUG-acceptability Issues:

1. "Time-out" setting must be greater than 0.3 sec.

2. Must be mounted in vertical position.

Resolution/Conclusion(s):

Component-related Issues:

1. Time setting is 10 sec.

2. Vertically mounted.

Relay Reviewer: George S Bilhimeier RPF

Capacity/Demand Issues:

Capacity exceeds Demand and essential AGASTAT 7022 relays are acceptable.

SCE: Glenn S. Roy

Location	Contact	Relay type	Model/Style	State	EIN	Line #
PNL-REL-36F	62-ACBX3	W MG-6	1168303	DE/NO	VS-D-40-1B	5244
PNL-REL-36F	3-HVCD	ASEA RXMH2	RK-223-069-EN	DE/NO	VS-D-40-1D	5246
PNL-REL-36F	62-ACBX2	W MG-6	1163803	DE/NO	VS-D-40-1D	5246
PNL-REL-36F	62-ACBX3	W MG-6	1168303	DE/NO	VS-D-40-1D	5246
PNL-REL-36F	69-E3E	W MG-6	1163803	DE/NO	VS-D-22-2C	5331
PNL-REL-36F	69-E8E	W MG-6	1163803	DE/NO	VS-D-22-2D	5332
PNL-REL-36R	69-E4VX	W MG-6	1163803	DE/NO	VS-D-4-1B	5208
PNL-REL-36R	K613XB-E4V	ASEA RXMH2	RK-223-068-EN	DE/NO	VS-D-4-1B	5208
PNL-REL-36R	K613YB-LDB	ASEA RXMH2	RK-223-068-EN	DE/NO	VS-D-4-2B	5210
PNL-REL-36R	69-E4VX	W MG-6	1163803	DE/NO	VS-D-4-2B	5210
PNL-REL-37R	52X-1AFWRA	W MG-6	1163828	NC	FCV-FW-103A	4107C
PNL-REL-37R	62-1AFWRA	AGASTAT	7022PD	DE/NO	FCV-FW-103A	4107C
PNL-REL-37R	3-1AFWRA	W SG	1163803	DE/NO	FCV-FW-103A	4107C
PNL-REL-38R	52X-1AFWRB	W MG-6	1163828	NC	FCV-FW-103B	4108C
PNL-REL-38R	62-1AFWRB	AGASTAT	7022PD	DE/NO	FCV-FW-103B	4108C
PNL-REL-38R	3-1AFWRB	W SG	1163803	DE/NO	FCV-FW-103B	4108C
PNL-REL-DGI	52S-1F7XX/1F9XX	ASEA RXME-1	RK221052-AN	DE/NO/NC	EE-EG-2	9020D
PNL-REL-DGI	52S-1D10XX	ASEA RXME-1	RK221052-AN	DE/NO/NC	EE-EG-2	9020D
PNL-REL-DGI	K611-G2S	ASEA RXMH-2	RK223068-AP	DE/NO	EE-EG-2	9020D
PNL-REL-DGI	62-VF1100X	ASEA RXME-1	RK221052-AN	DE/NO	EE-EG-2	9020D
PNL-REL-DGI	SYNDG-2X	ASEA RXME-1	RK221052-AN	DE/NO	EE-EG-2	9020D
PNL-REL-DGI	FFX-REC	ASEA RXME-1	RK221052-AN	DE/NO	EE-EG-2	9020D
PNL-REL-DGI	RSX-REC	ASEA RXME-1	RK221052-AN	DE/NO	EE-EG-2	9020D
PNL-REL-DGI	RGRX-REC	ASEA RXME-1	RK221052-AN	DE/NO	EE-EG-2	9020D
PNL-REL-DGI	RCLX-REC	ASEA RXME-1	RK221052-AN	DE/NO	EE-EG-2	9020E
PNL-REL-DGI	EXPBX-REC	ASEA RXME-1	RK221052-AN	DE/NO	EE-EG-2	9020E
PNL-REL-DGI	FFSWX-REC	ASEA RXME-1	RK221052-AN	DE/NO/NC	EE-EG-2	9020E
PNL-REL-DGI	40VF-109X	ASEA RXME-1	RK221052-AN	DE/NO	EE-EG-2	9020E
RK-AUX-REL-A	PC-445AXA	W AR440AR	W AR440AR	DE/NO	PCV-RC-456	2107
RK-AUX-REL-A	PC-445AXA	W AR440AR	W AR440AR	DE/NO	PCV-RC-455D	2109
RK-AUX-REL-B	PC-444BXB	W AR440AR	W AR440AR	DE/NO	PCV-RC-455C	2105
RK-RAD-MON-7	RM-RIS-218A	CONTACTOR	942-501/90	NO	VS-D-40-1A	5243
RK-RAD-MON-7	RM-RIS-218B	CONTACTOR	942-501/90	NO	VS-D-40-1B	5244

Location	Contact	Relay type	Model/Style	State	EIN	Line #
PNL-REL-22	21-VF109X	W ARS	717B770A13	DE/NO	EDG #2	9024
PNL-REL-22	51-VF109A, B ,C	GE IAC	12IAC60A12	DE/NO	EDG #2	9024
PNL-REL-22	51-VF109G	GE IAC	12IAC53A801A	DE/NO	EDG #2	9024
PNL-REL-32	87-VF109X	W ARS	718B820A10	DE/NO	EDG #2	9024
PNL-REL-32	87-VF109XX	GE HEA	12HEA61C240	DE/NC	EDG #2	9024
PNL-REL-33	43-E11BX	GE HEA	12HEAC61238X2	NOP/NC	CH-P-2A	1246
PNL-REL-33	43-8N12X	GE HEA	12HEA61C238X2	NOP/NC	PRZ-HTR-A	2224
PNL-REL-33	43-8N19X	GE HEA	12HEA61C238X2	NOP/NC	VS-F-1A	9041
PNL-REL-33	43-8N20X	GE HEA	12HEA61C238X2	NOP/NC	VS-F-1C	9043
PNL-REL-33	43-8N18X	GE HEA	12HEA61C238X2	NOP/NC	VS-F-2A	9044
PNL-REL-33	43-8N17X	GE HEA	12HEA61C238X2	NOP/NC	VS-F-2C	9046
PNL-REL-34	43-E12BX	GE HEA	12HEAC61238X2	NOP/NC	CH-P-2B	1247
PNL-REL-34	43-9P12X	GE HEA	12HEA61C238X2	NOP/NC	PZR-HTR-B	2225
PNL-REL-34	43-9P18X	GE HEA	12HEA61C238X2	NOP/NC	VS-F-1B	9042
PNL-REL-34	43-9P17X	GE HEA	12HEA61C238X2	NOP/NC	VS-F-1C	9043
PNL-REL-34	43-9P19X	GE HEA	12HEA61C238X2	NOP/NC	VS-F-2B	9045
PNL-REL-34	43-9P20X	GE HEA	12HEA61C238X2	NOP/NC	VS-F-2C	9046
PNL-REL-35F	52-8N10X	W MG-6	1167803	DE/NO	VS-F-40A	5237
PNL-REL-35F	3-HVCA	ASEA RXMH2	RK-223-069-EN	DE/NO	VS-D-40-1A	5243
PNL-REL-35F	62-ACAX1	W SG	293B255A26	DE/NO	VS-D-40-1A	5243
PNL-REL-35F	62-ACAX3	W MG-6	1168303	DE/NO	VS-D-40-1A	5243
PNL-REL-35F	3-HVCC	ASEA RXMH2	RK-223-069-EN	DE/NO	VS-D-40-1C	5245
PNL-REL-35F	62-ACAX2	W MG-6	1163803	DE/NO	VS-D-40-1C	5245
PNL-REL-35F	62-ACAX3	W MG-6	1168303	DE/NO	VS-D-40-1C	5245
PNL-REL-35F	69-E7E	W MG-6	1168303	DE/NO	VS-D-22-2A	5329
PNL-REL-35F	69-E7E	W MG-6	1163803	DE/NO	VS-D-22-2B	5330
PNL-REL-35R	69-E3VX	W MG-6	1163803	DE/NO	VS-D-4-1A	5207
PNL-REL-35R	K613XA-E3V	ASEA RXMH2	RK-223-068-EN	DE/NO	VS-D-4-1A	5207
PNL-REL-35R	K613YA-LDA	ASEA RXMH2	RK-223-068-EN	DE/NO	VS-D-4-2A	5209
PNL-REL-35R	69-E3VX	W MG-6	1163803	DE/NO	VS-D-4-2A	5209
PNL-REL-36F	52-9P10X	W MG-6	1167803	DE/NO	VS-F-40B	5238
PNL-REL-36F	3-HVCB	ASEA RXMH2	RK-223-069-EN	DE/NO	VS-D-40-1B	5244
PNL-REL-36F	62-ACBX1	W SG	293B255A26	DE/NO	VS-D-40-1B	5244

Location	Contact	Relay type	Model/Style	State	EIN	Line #
PNL-DIGEN-2	FFC	SQUARE D CL	EQ 1965	DE/NO	EE-EG-2	9020
PNL-DIGEN-2	FPR	VAPOR CORP.	TYPE 12	DE	EE-EG-2	9020
PNL-DIGEN-2	ESTR	SQUARE D CL	8269705	DE/NC	EE-EG-2	9020
PNL-DIGEN-2	ESTD	AGASTAT 2422	2422	DE/NO	EE-EG-2	9020
PNL-DIGEN-2	ECR	AGASTAT 2412	2412	DE/NO	EE-EG-2	9020
PNL-DIGEN-2	GS	VAPOR CORP.	UNMARKED	DE/NO/NC	EE-EG-2	9020
PNL-DIGEN-2	FSR1/FSR2-DG2	SQ D CLASS	8769705MA	DE/NO	4KVS-1AE-1F	9022C
PNL-DIGEN-2	MSR1/MSR2-DG2	SQ D CLASS	8769705MA	DE/NO	4KVS-1AE-1F	9022C
PNL-DIGEN-2	OTR-DG2	SQ D CLASS	8769705MA	DE/NC	4KVS-1AE-1F	9022C
PNL-DIGEN-2	VSR1/VSR2-DG2	SQ D CLASS	8269705MA	DE/NO	4KVS-1AE-1F	9022C
PNL-DIGEN-2	FSR1/2	SQUARE D CL	8269705	DE/NO/NC	EE-EG-2	9018C
PNL-DIGEN-2	VSR1/2	SQUARE D CL	8269705	DE/NO	EE-EG-2	9018C
PNL-DIGEN-2	SSP1/2	ELECT SPEED	ESS-B-4AT	DE/NO	EE-EG-2	9018C
PNL-DIGEN-2	OTR	SQUARE D CL	8269705	DE/NC	EE-EG-2	9018C
PNL-DIGEN-2	GP	VAPOR CORP.	UNMARKED	DE/NO/NC	EE-EG-2	9018C
PNL-DIGEN-2	52S-1D10X	W MG-6	288B977	DE/NC	EE-EG-2	9018C
PNL-DIGEN-2	52S-1F7X/1F9X	W MG-6	288B977	DE/NC	EE-EG-2	9018C
PNL-DIGEN-2	ECRA	VAPOR CORP.	UNMARKED	DE/NO/NC	EE-EG-2	9020C
PNL-DIGEN-2	ESRXB	W MG-6	1163801	DE/NO/NC	EE-EG-2	9020C
PNL-DIGEN-2	40T	SQUARE D CL	8269705	DE/NO	EE-EG-2	9020C
PNL-DIGEN-2	40V	W AV	1600876H	DE/NC	EE-EG-2	9020C
PNL-FE-WS-12A	AK1	CURTIS RS8	CURTIS RS8	NO	DV-FP-12	4108E
PNL-PAS-RA	43X-PASA	ASEA RXMH2	RK-223-069-AP	DE/NO	TV-SS-105A1	1240
PNL-PAS-RA	3A-PASA	ASEA RXME1	RK-221-025-AN	DE/NO	TV-SS-105A1	1240
PNL-PAS-RB	43X-PASB	ASEA RXMH2	RK-223-069-AP	DE/NO	TV-SS-105A2	1241
PNL-PAS-RB	3A-PASB	ASEA RXME1	RK-221-025-AN	DE/NO	TV-SS-105A2	1241
PNL-REL-19	87-VE109XX	GE HEA	12HEA61C240	DE/NC	4KVS-1AE-1E	9021
PNL-REL-19	87-VE109X	W ARS	718B820A10	DE/NO	EDG #1	9023
PNL-REL-19	21-VE109X	W ARS	717B770A13	DE/NO	EDG #1	9023
PNL-REL-19	51-VE109A,B & C	GE IAC	12IAC60A12	DE/NO	EDG #1	9023
PNL-REL-19	51-VE109G	GE IAC	12IAC53A801A	DE/NO	EDG #1	9023
PNL-REL-19	87-VE109YX	GE HEA	12HEA61C240	DE/NC	EDG #1	9023
PNL-REL-22	87-VF109XX	GE HEA	12HEA61C240	DE/NC	4KVS-1DF-1F	9022

Location	Contact	Relay type	Model/Style	State	EIN	Line #
PNL-DIGEN-1	ESTR	SQUARE D CL	8269705	DE/NC	EE-EG-1	9017
PNL-DIGEN-1	ESTD	AGASTAT 2422	2422	DE/NO	EE-EG-1	9017
PNL-DIGEN-1	ECR	AGASTAT 2412	2412	DE/NO	EE-EG-1	9017
PNL-DIGEN-1	GS	VAPOR CORP.	UNMARKED	DE/NO/NC	EE-EG-1	9017
PNL-DIGEN-1	FSR1/FSR2-DG1	SQ D CLASS	8769705MA	DE/NO	4KVS-1AE-1E	9021C
PNL-DIGEN-1	MSR1/MSR2-DG1	SQ D CLASS	8769705MA	DE/NO	4KVS-1AE-1E	9021C
PNL-DIGEN-1	OTR-DG1	SQ D CLASS	8769705MA	DE/NC	4KVS-1AE-1E	9021C
PNL-DIGEN-1	VSR1/VSR2-DG1	SQ D CLASS	8269705MA	DE/NO	4KVS-1AE-1E	9021C
PNL-DIGEN-1	FSR1/2	SQUARE D CL	8269705	DE/NO	EE-EG-1	9015C
PNL-DIGEN-1	VSR1/2	SQUARE D CL	8269705	DE/NO	EE-EG-1	9015C
PNL-DIGEN-1	52S-1A10X	W MG-6	288B977	DE/NC	EE-EG-1	9015C
PNL-DIGEN-1	OTR	SQUARE D CL	8269705	DE/NO	EE-EG-1	9015C
PNL-DIGEN-1	GP	VAPOR CORP.	UNMARKED	DE/NO	EE-EG-1	9015C
PNL-DIGEN-1	SSP1/2	ELECT SPEED	ESS-B-4AT	DE/NO	EE-EG-1	9015C
PNL-DIGEN-1	52S-1E7X/1E9X	W MG-6	288B977	DE/NC	EE-EG-1	9015C
PNL-DIGEN-1	ECRA	VAPOR CORP.	UNMARKED	DE/NO/NC	EE-EG-1	9017C
PNL-DIGEN-1	ESRXA	W MG-6	1163801	DE/NO/NC	EE-EG-1	9017C
PNL-DIGEN-1	40V	W AV	1600876H	DE/NC	EE-EG-1	9017C
PNL-DIGEN-1	40T	SQUARE D CL	EQ 19335	DE/NC	EE-EG-1	9017C
PNL-DIGEN-2	ESRXB	W MG-6	1163801	DE/NO	MOV-RW-113C	5123
PNL-DIGEN-2	ESRXB	W MG-6	1163801	DE/NO	MOV-RW-113D	5124
PNL-DIGEN-2	ESRXB	W MG-6	1163828	DE/NO	VS-D-22-2C	5331
PNL-DIGEN-2	ESRXB	W MG-6	1163828	DE/NO	VS-D-22-2D	5332
PNL-DIGEN-2	STR1/2	VAPOR CORP.	TYPE 12	DE/NO	EE-EG-2	9018
PNL-DIGEN-2	STLO1/2	SQUARE D CL	EQ 1933	DE/NO/NC	EE-EG-2	9018
PNL-DIGEN-2	MSR1/2	SQUARE D CL	8269705	DE/NO/NC	EE-EG-2	9018
PNL-DIGEN-2	SFD1/2	SQUARE D CL	EQ 19335	DE/NO/NC	EE-EG-2	9018
PNL-DIGEN-2	PFD1/2	SQUARE D CL	EQ 19335	DE/NO/NC	EE-EG-2	9018
PNL-DIGEN-2	ZSR1/2	SQUARE D CL	8269705	DE/NO/NC	EE-EG-2	9018
PNL-DIGEN-2	ESR1/2	SQUARE D CL	8269705	DE/NO/NC	EE-EG-2	9018
PNL-DIGEN-2	SFB1/2	SQUARE D CL	EQ 19335	DE/NO/NC	EE-EG-2	9018
PNL-DIGEN-2	52V	SQUARE D CL	EQ 19335	DE/NO	EE-EG-2	9020
PNL-DIGEN-2	PFDA1/2	SQUARE D CL	EQ 2423	DE/NC	EE-EG-2	9020

Location	Contact	Relay type	Model/Style	State	EIN	Line #
PNL-DG-SEQ-1	69-AEX2	W MG-6	1163803	DE/NO	MCC-1-E7	8024
PNL-DG-SEQ-1	162-AEX2	W MG-6	1163803	DE/NO	MCC-1-E9	8026
PNL-DG-SEQ-1	162-AEX2	W MG-6	1163803	DE/NO	MCC-1-E11	8028
PNL-DG-SEQ-1/2	62-AEX/DFX	W MG-6	1163803	DE/NO	WR-P-1C	5103
PNL-DG-SEQ-2	62-DFX	W MG-6	1163803	DE/NO	WR-P-1B	5102
PNL-DG-SEQ-2	69-DFX2	W MG-6	1163803	DE/NO	MCC-1-E2	8019
PNL-DG-SEQ-2	69-DFX2	W MG-6	1163803	DE/NO	MCC-1-E4	8021
PNL-DG-SEQ-2	69-DFX2	W MG-6	1163803	DE/NO	MCC-1-E6	8023
PNL-DG-SEQ-2	162-DFX2	W MG-6	1163803	DE/NO	MCC-1-E8	8025
PNL-DG-SEQ-2	162-DFX2	W MG-6	1163803	DE/NO	MCC-1-E10	8027
PNL-DG-SEQ-2	162-DFX2	W MG-6	1163803	DE/NO	MCC-1-E12	8029
PNL-DGEA-1	27-VE109	ITE 47H	412N0175	DE/NO	4KVS-1AE-1E	9021C
PNL-DGEA-1	27-VE109	ITE 47H	412N0175	E/NO	EE-EG-1	9017C
PNL-DGEA-1	27-VE109X	ASEA RXME-1	RK221052-AN	DE/NC	EE-EG-1	9017C
PNL-DGEA-2	27-VF109	ITE 47H	412N0175	DE/NO	4KVS-1AE-1F	9022C
PNL-DGEA-2	27-VF109	ITE 47H	412N0175	E/NO	EE-EG-2	9020C
PNL-DGEA-2	27-VF109X	ASEA RXME-1	RK221052-AN	DE/NO	EE-EG-2	9020C
PNL-DIGEN-1	ESRXA	W MG-6	1163801	DE/NO	MOV-RW-113A	5121
PNL-DIGEN-1	ESRXA	W MG-6	1163801	DE/NO	MOV-RW-113B	5122
PNL-DIGEN-1	ESRXA	W MG-6	1163801	DE/NO	VS-D-22-2A	5329
PNL-DIGEN-1	ESRXA	W MG-6	1163801	DE/NO	VS-D-22-2B	5330
PNL-DIGEN-1	STR1/2	VAPOR CORP	TYPE 12	DE/NO	EE-EG-1	9015
PNL-DIGEN-1	STLO1/2	SQUARE D CL	EQ1933	DE/NO/NC	EE-EG-1	9015
PNL-DIGEN-1	MSR1/2	SQUARE D CL	8269705	DE/NO/NC	EE-EG-1	9015
PNL-DIGEN-1	SFD1/2	SQUARE D CL	EQ 19335	DE/NO/NC	EE-EG-1	9015
PNL-DIGEN-1	PFD1/2	SQUARE D CL	EQ 19335	DE/NO/NC	EE-EG-1	9015
PNL-DIGEN-1	ZSR1/2	SQUARE D CL	8269705	DE/NO/NC	EE-EG-1	9015
PNL-DIGEN-1	ESR1/2	SQUARE D CL	8269705	DE/NO/NC	EE-EG-1	9015
PNL-DIGEN-1	SFB1/2	SQUARE D CL	EQ 19335	DE/NO/NC	EE-EG-1	9015
PNL-DIGEN-1	52V	SQUARE D CL	EQ 19335	DE/NO	EE-EG-1	9017
PNL-DIGEN-1	PFDA1/2	SQUARE D CL	EQ 2423	DE/NC	EE-EG-1	9017
PNL-DIGEN-1	FFC	SQUARE D CL	EQ 1965	DE/NO	EE-EG-1	9017
PNL-DIGEN-1	FPR	VAPOR CORP.	TYPE 12	DE/NO	EE-EG-1	9017

Appendix G

CAPACITY VERSUS DEMAND ASSESSMENT SHEETS
for
Essential Relay Types

ESSENTIAL RELAY DATA & ASSESSMENT SHEET

REF: ARS

Relay Type: Westinghouse ARS

EIN(s): 21-VE109X; 21-VF109X; 87-VE109X; 87-VF109X

Model/Style: 717B770A13; 718B820A10

State: DE/NO

Location(s): PNL-REL-19,22,32; SRVB El 713.

Demand: Relay Panels (See "RP Demand" Sheet); PSA/ZPA = 2.304/0.936g

Capacity:
EPRI Ref.- None
GERS/Record - Record: BV-647, Westinghouse/ITE QTR, VTI 8700-01.0160-107A; scan and dwell testing.
Record: 2BVS-731 (Unit 2 Specification) for Model 718B820A10 ARS, resulted in QTR by NTS, No.20047-84N, Rev.1.
PSA/ZPA g-levels are: BV-647 2 ms monitored chatter during dwell tests at 0.38g for selected frequencies between 1 and 20 Hz; one at 0.2g between 21 and 29 Hz; one at 0.1g between 31 and 33 Hz.

SQUG-acceptability Issues:

1) Existing ARS qualification on BV-1 is IEEE-344-71, and was not comprehensive enough to satisfy current qualification standards.

2) BV-2 qualification is to IEEE-344-75, but provides only a BRS not an ICRS which could be taken as the Capacity level of the 717B770A13 Model ARS relay. The BRS was used because the BV-2 panel was analytically shown to be rigid and non-amplifying. The BRS was considered to be the relay's Demand level on BV-2.

Resolution/Conclusion(s):

Component-related Issues: NONE

Relay Reviewer: GS Bellamarine RPE

Capacity/Demand Issues:

1) The existing QTR satisfies the BV-1 licensing commitment, not SQUG guidelines.

2) The BV-2 ARS relay QTR's base TRS does envelope the Demand levels calculated for the BV-1 panels using NP-7146-SL-R1. The TRS minimums are 3g PSA @ 4-16 Hz and a 2.3g ZPA @ 33 Hz. However, as noted above, the actual in-cabinet demand is unknown. For BV-2 this is immaterial since the cabinet was the actual enclosure to be installed, but it precludes the application of the test results to the BV-1 panels, which have lower response levels.

CONCLUSION: The essential ARS relays are considered **OUTLIERS** for 21-VE109X, 21-VF109X, 87-VE109X & 87-VF109X .

SCE: Glenn S. Rau

ESSENTIAL RELAY DATA & ASSESSMENT SHEET

REF: AV

Relay Type: Westinghouse AV

EIN(s): 40"

Model/Style: 1600876H

State: DE/NC

Location(s): PNL-DIGEN-1 & 2; DGBX El 735.

Demand: (see "RP" Demand Evaluation Sheet), => PSA/ZPA = 1.338/0.458g.

Capacity:
EPRI Ref.- NP-7147-SL-V2, A2; pg. 2-6.
GERS/Record - Test Group 20
PSA/ZPA g-levels are: NOP/NO= 10/4; NOP/NC= 2/0.8; OP/NO= 5/2; OP/NC= 10/4g.

SQUG-acceptability Issues: NONE

Resolution/Conclusion(s):

Component-related Issues: NONE

Relay Reviewer: Ron Ferris

Capacity/Demand Issues:

Relays were originally tested to IEEE-344-71 requirements as part of a full-scale cabinet shaketable test by WYLE Laboratories (VTI 8700-01.030-43D, Report 42531-1). Table motion was 0.44g horizontal/ 0.28g vertical, which exceeds the ZPA at the DGBX floor of 0.152g. The cabinet was oriented at 45° to the table axis, so that each of the three (3) cabinet axes was excited. A 0.2g H/0.1g V, sine sweep was performed for 1-33 Hz to determine cabinet response, which occurred at 9, 12 and 19 Hz. The 0.44 H/0.28 V full sine dwell tests then followed at these frequencies. Six (6) circuits were monitored to a one (1) ms chatter limit. All devices functioned properly, except for four (4) MG-6 relays, which were then relocated to the floor level to eliminate amplification.

The essential AV relays satisfied the license basis qualification test as described above. They also possess an EPRI CAPACITY level that exceeds the DEMAND level generated thru the use of the original QTR's resonance data and the SSE FRS at the relay's location.

SCE: Glenn S. Fry

ESSENTIAL RELAY DATA & ASSESSMENT SHEET

REF: AGASTAT 2412

Relay Type: AGASTAT 2412

EIN(s): EC[illegible]

Model/Style: 2412

State: DE/NO

Location(s): PNL-DIGEN-1 & 2; DGBX El 735.

Demand: (See "RP Demand Evaluation" Sheet), => PSA/ZPA = 1.338/0.458g.

Capacity:
EPRI Ref.- NP-7147, pg.B-8
GERS/Record - RLY-PNT.7
PSA/ZPA g-levels are: NOP/NO&NC= 12.5/5.0g; OP/NO&NC= 12.5/5.0g.

SQUG-acceptability Issues:

1. Time delay > 0.3 seconds.

2. Vertically mounted.

Resolution/Conclusion(s):

Component-related Issues:

1.Time-delay is 11.5 minutes.

Relay Reviewer: Ron Ferrie

Capacity/Demand Issues:

2. Relays are mounted vertically.

3. Essential AGASTAT 2412 relays have CAPACITY greater than DEMAND and are acceptable under SQUG.

SCE: Glenn S. Kelly

ESSENTIAL RELAY DATA & ASSESSMENT SHEET

REF: 47H

Relay Type: ITE 47H

EIN(s): 27-VE109, 27-VF109

Model/Style: 412N0175, (412 Series)

State: DE/NO

Location(s): PNL-DGEA-1 & 2 (Wall-mounted) @ DGBX El 735

Demand: Relays are panel-mounted on a wall-mount cabinet of substantial construction (See "RP Demand" Sheet). The use of AF = 7.0 is sufficiently conservative: => PSA/ZPA = 2.434/0.819g.

Capacity:
EPRI Ref.- None, however, the vendor's (ABB) QTR (below) considers the ITE 47/D/H, 27/D/H, 59/D/H/G, & 60Q, Series 210,211,212,410,411,& 412, to be equivalent devices. NP-7147, pg.B-92, includes identical GERS data for the ITE 27 and 59 relays, which could also be extended to the 47H.
GERS/Record - ABB QTR No. RC-5514-A (ANSI C37.98 testing) for ITE 47H. RLY-PPM.4 for ITE 27 & 59 relays.
NOTE - The ITE 47H was also tested and certified to the requirements of BV-146, 4KVS, (IEEE 344-71 testing).
PSA/ZPA g-levels are: minimum OP/NOP/NO/NC= 15/6g (C37.98) for both the GERS level and the ABB QTR (likely source of the GERS data).

SQUG-acceptability Issues:

1. None, the ABB QTR applies to the essential ITE 47H relays.

Resolution/Conclusion(s):

Component-related Issues: NONE

Relay Reviewer: Ron Terrie

Capacity/Demand Issues:

The essential ITE 47H relays have Capacity exceeding Demand based upon the ABB QTR, and confirmed by similar relay GERS levels.

SCE: Glenn S. Rusz

ESSENTIAL RELAY DATA & ASSESSMENT SHEET

REF: AGASTAT 2422

Relay Type: AGASTAT 2422

EIN(s): ESTD

Model/Style: 2422

State: DE/NO

Location(s): PNL-DIGEN-1 & 2; DGBX El 735.

Demand: (See "RP Demand Evaluation" Sheet), => PSA/ZPA = 1.338/0.458g.

Capacity:
EPRI Ref.- NP-7147, pg.B-8
GERS/Record - RLY-PNT.7
PSA/ZPA g-levels are: NOP/NO&NC= 6.0/2.4g; OP/NO&NC= 10.0/4.0g.

SQUG-acceptability Issues:

1. Time delay > 0.3 seconds.

2. Vertically mounted.

Resolution/Conclusion(s):

Component-related Issues:

1.Time-delay is 15 minutes.

Relay Reviewer: Ron Ferrie

Capacity/Demand Issues:

2. Relays are mounted vertically.

3. Essential AGASTAT 2412 relays have CAPACITY greater than DEMAND and are acceptable under SQUG.

SCE: Glenn S. Rau

Location	Contact	Relay type	Model/Style	State	EIN	Line #
MCC1-E6, CUB BA	CONTACTOR 42C	ALLIS TY2	ALLIS CHALMERS	DE/NO	MOV-MS- 05	4214
MCC1-E6, CUB BA	49	ALLIS TY2	ALLIS CHALMERS	NC	MOV-MS-105	4214
MCC1-E6, CUB BC	CONTACTOR 42O/C	ALLIS TY2	ALLIS CHALMERS	DE/NO	MOV-RC-536	2106
MCC1-E6, CUB BC	49	ALLIS TY2	ALLIS CHALMERS	NC	MOV-RC-536	2106
MCC1-E6, CUB BD	CONTACTOR 42O/C	ALLIS TY2	ALLIS CHALMERS	DE/NO	MOV-RC-537	2108
MCC1-E6, CUB BD	49	ALLIS TY2	ALLIS CHALMERS	NC	MOV-RC-537	2108
MCC1-E6, CUB BM	CONTACTOR 42O	ALLIS TY2	ALLIS CHALMERS	DE/NO	MOV-MS-101A	4208
MCC1-E6, CUB BN	CONTACTOR 42O	ALLIS TY2	ALLIS CHALMERS	DE/NO	MOV-MS-101B	4209
MCC1-E6, CUB BP	CONTACTOR 42O	ALLIS TY2	ALLIS CHALMERS	DE/NO	MOV-MS-101C	4210
MCC1-E6, CUB Q	CONTACTOR 42O	ALLIS TY2	ALLIS CHALMERS	DE/NO	MOV-RH-720B	3321
MCC1-E6, CUB U	CONTACTOR 42O	ALLIS TY2	ALLIS CHALMERS	DE/NO	MOV-SI-863B	1238
MCC1-E6, CUB W	CONTACTOR (O)	ALLIS TY2	ALLIS CHALMERS	DE/NO	MOV-SI-867B	1223
MCC1-E7, CUB E	CONTACTOR 42	ALLIS TY3	ALLIS CHALMERS	DE/NO	VS-F-22A	5325
MCC1-E7, CUB E	49	ALLIS TY3	ALLIS CHALMERS	NC	VS-F-22A	5325
MCC1-E7, CUB E	42-E7E	ALLIS TY3	ALLIS CHALMERS	DE/NO	VS-D-22-1A	5327
MCC1-E7, CUB E	42-E7E	ALLIS TY3	ALLIS CHALMERS	DE/NO	VS-D-22-2A	5329
MCC1-E7, CUB E	42-E7E	ALLIS TY3	ALLIS CHALMERS	DE/NO	VS-D-22-2B	5330
MCC1-E7, CUB H	CONTACTOR 42O&C	ALLIS TY2	ALLIS CHALMERS	DE/NO	MOV-RW-113A	5121
MCC1-E7, CUB H	49	ALLIS TY2	ALLIS CHALMERS	NC	MOV-RW-113A	5121
MCC1-E7, CUB J	CONTACTOR 42O&C	ALLIS TY2	ALLIS CHALMERS	DE/NO	MOV-RW-113B	5122
MCC1-E7, CUB J	49	ALLIS TY2	ALLIS CHALMERS	NC	MOV-RW-113B	5122
MCC1-E7, CUB N	CONTACTOR 42	ALLIS TY3	ALLIS CHALMERS	DE/NO	EE-C-1A	5300C
MCC1-E7, CUB N	49	ALLIS TY3	ALLIS CHALMERS	NC	EE-C-1A	5300C
MCC1-E7, CUB P	CONTACTOR 42	ALLIS TY3	ALLIS CHALMERS	DE/NO	EE-C-2A	5300D
MCC1-E7, CUB P	49	ALLIS TY3	ALLIS CHALMERS	NC	EE-C-2A	5300D
MCC1-E7, CUB Q	CONTACTOR 42	ALLIS TY3	ALLIS CHALMERS	DE/NO	EE-P-1A	5303
MCC1-E7, CUB Q	49	ALLIS TY3	ALLIS CHALMERS	NC	EE-P-1A	5303
MCC1-E7, CUB R	CONTACTOR 42	ALLIS TY3	ALLIS CHALMERS	DE/NO	EE-P-1B	5304
MCC1-E7, CUB R	49	ALLIS TY3	ALLIS CHALMERS	NC	EE-P-1B	5304
MCC1-E7, CUB Y	CONTACTOR 420	ALLIS TY2	ALLIS CHALMERS	DE/NO	MOV-RW-116A	5131
MCC1-E8, CUB E	CONTACTOR 42	ALLIS TY3	ALLIS CHALMERS	DE/NO	VS-F-22B	5326
MCC1-E8, CUB E	49	ALLIS TY3	ALLIS CHALMERS	NC	VS-F-22B	5326
MCC1-E8, CUB E	42-E8E	ALLIS TY3	ALLIS CHALMERS	DE/NO	VS-D-22-1B	5328

ESSENTIAL RELAY DATA & ASSESSMENT SHEET

REF: AR

Relay Type: Westinghouse AR440AR

EIN(s): K603,604,607,613,614,626,628,630,640,641,642,645; - all with ARLA (non-magnetic) latching
PC-444BXB; PC-445AXA - non-latching

Model/Style: AR440

State: DE/NO & DE/NC

Location(s): RK-AUX-REL-A & B; RK-REAC-PROT A & B

Demand: RP's @ SRVB El 713 (See "RP Demand" Sheet) => PSA/ZPA = 2.304/0.936g

Capacity:
EPRI Ref.- NP-7147, pg.B-37, Model 766A025G01
GERS/Record - RLY-AI1.4
PSA/ZPA g-levels are: NOP/NO= 10/4 ; NOP/NC= 7.5/3 ; OP/NO&NC= 10/4

SQUG-acceptability Issues:

1. Relays must be AR440

Resolution/Conclusion(s):

Component-related Issues:

1. Relays are type AR440

Relay Reviewer: Ron Ferrie

Capacity/Demand Issues:

Seismic Capacity exceeds Demand for the essential AR440 relays.

SCE: Glenn S. Kirk