

Unresolved Safety Issue (USI) A-46

Relay Evaluation Report

(Attachment 2)

Davis-Besse Nuclear Power Station

Toledo Edison

August, 1995

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Section 1

INTRODUCTION

1.1 PURPOSE

This report documents the USI A-46 relay seismic functionality review for the Davis-Besse Nuclear Power Station. This work was performed 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).

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).

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) to older plants would not be practical since 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.

1.3 USI A-46 RELAY EVALUATION

For most equipment functionally required 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 5) and NP-7148-SL Volume 2: Addendum (Reference 8), 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 (Reference 5). Accordingly, the review of the relays associated with the USI A-46 safe shutdown equipment for the Davis-Besse Nuclear Power Station (DBNPS) was performed and documented in accordance with the requirements of the GIP, the NRC SSER for 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 DBNPS. 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.

Appendix A contains floor spectra used in the evaluation. Appendix B contains a list of essential relays, including the relay identification numbers, the manufacturers' model numbers, and plant location where the relay is mounted.

Appendix C contains a list of essential relays screened as seismically rugged using the switchgear Generic Equipment Ruggedness Spectrum (GERS). The enclosures containing essential relays are listed in Appendix D. This list was used as the basis for the list of enclosures housing essential relays included in the Safe Shutdown Equipment List for seismic verification. Appendix E contains the resumes of the lead relay reviewers.

Section 2

RESULTS AND PLANNED ACTIONS

2.0 SUMMARY OF RESULTS

This report documents the seismic functionality review of relays affecting USI A-46 safe shutdown components for DBNPS. The review was performed in accordance with the methodology and procedures established for plant specific resolution of USI A-46; specifically, the Generic Implementation Procedure (GIP), the NRC safety evaluation report for the GIP, and EPRI Report NP-7148-SL. This section of the report provides a summary of the results of the review.

The DBNPS safe shutdown earthquake (SSE) ground response spectrum is bounded by the SQUG Bounding Spectrum. The peak horizontal ground motion is 0.39 g and the Zero Period Acceleration (ZPA) is 0.15 g.

The DBNPS Safe Shutdown Equipment List (SSEL) items requiring a relay review are included in Section 4. Relay reviews were performed for each of these items. The reviews are documented in Section 5 of this report.

2.1.1 OVERALL APPROACH FOR SCREENING RELAYS

MOTOR CONTROL CENTER (MCC) GERS: All essential starters/contactors contained in MCCs were screened using GERS-MCC.9. MCCs containing essential contacts are located in four Plant Areas (Auxiliary Building Areas 6, 7, 8 and Intake) on elevations up to 603'. These MCCs all qualify for the "function during" GERS level. Peak and ZPA base accelerations for these MCCs are 0.88g and 0.34g respectively. In addition to starters, three models of essential relays are located in some MCC cubicals; Agastat E7024AC, Westinghouse AR440A and Westinghouse AR660A. As required by NP-5553-SL, GERS-MCC.9, these relays all have seismic capacities in excess of 4.5g (reference GERS-RLY-PNT.7 and GERS-RLY-AI1.4); therefore, GERS-MCC.9 was also used to screen these relays.

SWITCHGEAR GERS: GERS-MVS/LVS.7 was used to screen Westinghouse BFD22S and General Electric 116B719793 and 295B444P3 anti-pump/closing relays in both medium and low voltage switchgears. Screening of the General Electric relays is on hold until a modification (MOD 95-0030) to secure the low voltage breaker hoist hook is complete. Upon completion of this modification, the General Electric relays can be successfully screened. GERS-MVS/LVS.7 was also used to screen Westinghouse COM-5 and CO-11 overcurrent relays in medium voltage switchgear. Although equipped with an ITH or its SSC-T replacement unit, the COM-5 relays are not classified as "low ruggedness". This is due to the fact that the ITH unit or the SSC-T unit is connected in series with the COM-5 time-overcurrent unit (CO) contacts. Thus, neither the ITH nor the SSC-T unit can independently cause an undesired trip of the respective switchgear breaker. As required by Revision 2 to GIP Section 9, a list of these relays is included with this report.

LEVEL 1 SCREENING: This screening method was used to demonstrate seismic ruggedness for five relay models located in the Stations essential 4.16KV switchgears. As required by NP-7148-SL, these relays have GERS levels greater than 8g. The relay models are; Agastat 7012 and Agastat 7014 (GERS-RLY-PNT.7),

ITE 27D, and General Electric NGV13B52A (GERS-RLY-PPM.4) and Westinghouse MG-6 (GERS-RLY-ARH.5).

LEVEL 2 SCREENING: This method screened most of the Stations essential relays. With the exception of Deutsch models 4AP43AF and 4AX1603, seismic adequacy is demonstrated by using the relay GERS published in EPRI Report NP-7147-SL (Reference 6) or the low voltage contactor GERS (GERS-CON.3) in EPRI Report NP-5223-SL (Reference 7). Screening the Deutsch models is accomplished using specific qualification test data which is available through the sites Environmental Qualification Program. The GERS used and the type of relays screened at level 2 are as follows:

GERS	RELAY TYPES
GERS-RLY-ARS.4	AGASTAT EGPs, AGASTAT GPs
GERS-RLY-PNT.7	AGASTAT 7000s
GERS-RLY-ARH.5	GENERAL ELECTRIC HFAs and HGAs
GERS-CON.3	ALLEN BRADLEY 702 Contactors

GERS-PS.5 was used to screen Barton 289, Static-O-Ring 6V and 12V, and Allen Bradley 836 pressure switches. In the Steam and Feed Rupture Control System (SFRCS) GERS-RLY-PNT.7 and GERS-RLY-ARS.4 were used to screen Agastat 7012 and Struthers-Dunn 219 relays respectively. Specific capacity information was used to screen Barksdale T2H, Static-O-Ring 6TA and 9TA, ASCO SA11AR and United Electric J6-148 switches.

LEVEL 3 SCREENING: This method was not used.

LEVEL 4 SCREENING: This method was used for the 120VAC essential inverters YV1 and YV4, the Emergency Diesel Generator engine control cabinets C3621A and C3622A (note, cabinets C3621A and C3622A are not mounted on the engine skid), and for Asea Brown Boveri CO-11 overcurrent relays located in essential 4.16KV switchgears C1 and D1.

This method was also used to screen the Deutsch 4CP36AF relays in the Safety Features Actuation System (SFAS). Level 4 screening was used in addition to Level 2 Screening for those instruments with specific capacity information and qualification to IEEE 344-1975.

Relays and Switches mounted on the Emergency Diesel Generator skid are screened seismically adequate by referencing Section 17 in the SSRAP (Senior Seismic Review and Advisory Panel Report, Reference 9) and page B-69 in EPRI Report NP 7148-SL. The types of relays and switches screened by this method include; Square D KPD13s, Agastat E7012s, Syncro Start Speed Switches ESSB-4AT, Barksdale pressure switches E1H-M90-V and switches installed by Bruce GM, the engine manufacturer.

2.1.2 GENERAL SEISMIC DEMAND LEVELS AND RELAY CAPACITIES

Seismic Capability Engineers provided the Plant seismic demand levels to perform relay seismic capacity vs seismic demand calculations. These levels are included in Intra-Company Memorandum, "Floor Response Spectra", NED 93-10136. A copy is attached to this report as Appendix A.

Cabinets containing essential relays were walked down with the Seismic

Capability Engineers who determined the appropriate amplification factor based on the relay location, its mounting configuration and the cabinet itself. This amplification factor was then used in the capacity vs demand calculation.

Relay capacities are established by the following methods:

1. Consulting GERS reports (EPRI NP-7147, EPRI NP-7147 Volume 2: Addendum 1 and EPRI NP-5223-SL Revision 1).
2. Justifying use of GERS data for relays not listed in GERS reports.
3. Using relay specific qualification test data.

Specific application of Methods 2 and 3 are described below.

Some General Electric HGA17C52 auxiliary relays and the NGV13B undervoltage relays are classified as essential. The published GERS data does not include these specific model numbers. Vendor instruction manuals and Vendor parts list were reviewed to determine the differences between these relays and the similar General Electric relays (i.e. HGA17A and NGV13A) which appear in GERS-RLY-ARH.5 and GERS-RLY-PPM.4. Based on this review, it was determined that the seismic capacities published in the GERS are applicable to the HGA17C52 AND NGV13B relays. A justification sheet is included with the G.4 form when GERS-RLY-ARH.5 is used to screen a HGA17C52 and GERS-RLY-PPM.4 is used to screen a NGV13B.

Specific qualification test data (IEEE 344-1975) is used to establish a capacity for Deutsch type 4AP43AF and type 4AX1603 relays. These relays, which are common in DBNPS control circuits, were seismically qualified by Farwell & Hendricks, Inc. Justification and references are included when a capacity vs demand screening is required for these Deutsch relays.

GERS-PS.5 was used to screen Static-O-Ring 6V and 12V series pressure switches. These pressure switches are not listed in the GERS report. Current and historical vendor catalog model number specifications were reviewed to determine that the differences between the 6N and 12N model numbers listed in GERS and the 6V and 12V models would not affect the instrument seismic capacities per the GERS. Justification is provided as part of the G.4 form.

Specific qualification test data was used to establish capacities and qualification to current seismic standards (i.e. IEEE-344 1975) for United Electric J6-148, ASCO SA11AR and Static-O-Ring 6TA and 9TA pressure switches as well as Barksdale T2H temperature switches. These devices were screened as adequate based on qualification (level 4) and by capacity vs. demand comparison (level 2).

Qualification to current standards (IEEE 344-1975) was used to establish seismic adequacy for Deutsch 4CP36AF relays used in the Safety Features Actuation System.

2.1.3 CHATTER ACCEPTABLE SCREENING AND OPERATOR ACTIONS

Chatter acceptable screening is used in the following general situations:

1. When contact chatter only causes indication or alarm (Coded CA1).
2. When contact chatter may cause equipment to go to the desired state

These MCCs are Westinghouse type "W" or type "5 Star". Starters are mounted on the MCC cubical back panel, relays are mounted on this back panel or on a cubical side panel. Seismic Capability Engineers determined that the construction and anchorage for these MCCs met the criteria for the function during GERS level. Therefore, extensive use is made of GERS-MCC.9 to screen contacts in MCCs.

Low voltage switchgear are General Electric AKD-5 Powermaster Low Voltage Drawout Switchgear. This switchgear consists of several units which are mechanically and electrically joined to form a single load center. This load center substation is double ended with a power transformer on both ends. The essential relays are the closing and the anti-pump relays. Both General Electric relays are located on the circuit breaker chassis. Screening for these relays is on hold until a modification (MOD 95-0030) to secure the breaker lifting hoist is complete. When completed, these relays will be screened using GERS-LVS-MVS-7.

Medium voltage switchgear are "Porcel-lined metal-clad switchgear" by Westinghouse. Each switchgear consists of 13 units which are mechanically and electrically connected. The essential relays are either semi-flush mounted on the unit's door or surface mounted within the unit on side or back panels. Low ruggedness Westinghouse ITH and General Electric HGA17 (using NC contacts) were observed in medium voltage switchgear.

Protective and auxiliary relays associated with each emergency diesel generator are contained in walk-through cabinets. Essential relays are either semi-flush mounted on the cabinet's front or surface mounted to the cabinet's back plate. Low ruggedness General Electric CFD differential relays are semi-flush mounted in each cabinet.

Essential relays associated with the Auxiliary Feedwater Pump Turbines are contained in junction boxes with hinged front covers. These boxes are mounted on tube steel posts. The relays are mounted on the boxes' back panel.

The emergency diesel generator voltage regulator and exciter cabinet is a floor anchored walk in unit. This unit consist of four sections which are divided into high and low voltage sections. Relays occupy the two low voltage sections. Essential relays are flush mounted on cabinet side panels.

All inverters are floor mounted units with hinged front doors. Low ruggedness relays are not present in these units. The SCI inverters' seismic qualification is by current methods (IEEE 344-1974). Thus, screening is by level 4. The Cyberex inverters contain relays for which seismic adequacy can not be demonstrated, see outlier discussion.

The SFAS and SFRCS instrumentation control system cabinets were inspected as part of the spot checks. Proper relay mounting and part number verification was easily accomplished in the SFRCS. As a result of the SFRCS walkdown, additional ties were added to internal cabling and some loose covers were tightened down. Spot checks were also made in the SFAS cabinets to verify relay mounting. Part numbers were verified from vendor manuals and procurement documents. It was difficult to verify relay mountings and part numbers in the SFAS due to the modular nature of its construction. No potentially sensitive relays or sensitive switches, e.g., mercury switches, were observed.

2.2 RELAY OUTLIERS

Approximately 7% of the DBNPS essential contacts have been classified as outliers requiring corrective action. Within this population of outliers, the following catagories can be established:

1. 22% are outliers due to appearing on the low ruggedness list.
2. 15% are outliers because seismic capacity is less than seismic demand.
3. 32% are outliers because seismic capacity is unknown.
4. 5% are outliers due to being located in a cabinet which will not pass the seismic evaluation.

The following provides an explaination of these outliers, the proposed resolution and the Plant Modification (MOD) which will implement the proposed resolution.

GENERAL ELECTRIC CFD22B: These relays appear on the list of low ruggedness relays in NP-7148-SL. Each emergency diesel generator uses three (one per phase) CFD22Bs for differential protection. This use has been identified as an essential application (evaluated on G.4 numbers 283 and 291). Emergency diesel generator differential protection is not bypassed on emergency starts; therefore, CFD22B contact chatter has the potential of causing a shutdown and lockout of the respective emergency diesel generator. Resolution: Provide emergency diesel generator differential protection with seismically adequate relays (MOD 95-0020).

WESTINGHOUSE ITH: These relays appear on the list of low ruggedness relays in NP-7148-SL. As evaluated on G.4 numbers 110, 286, 287, 289, 294 and 295, six ITH relays are used in essential applications . These relays provide ground fault protection for 4KV loads which are required to operate during the earthquake's period of strong shaking. ITH contact chatter has the potential of tripping the load's supply breaker. Resolution: Provide ground fault protection with seismically adequate relays (MOD 95-0021).

GENERAL ELECTRIC HGA17C52: Per NP-7148-SL, use of normally closed contacts on a HGA17 constitutes a "low ruggedness" relay. As evaluated in G.4 numbers 284, 285, 292 and 293, four HGA17C52s classified as essential are used in this manner. These relays block an undervoltage trip of 4KV safety related bus supply breakers; thus, providing a 15-cycle window to accomplish a "fast transfer" to a startup transformer. Contact chatter has the potential of connecting the emergency diesel generators to their respective Non-1E 4KV bus and/or the 13.8KV/4.16KV transformer. Resolution: Remove low ruggedness relay either by replacing with seismically acceptable relay or modifying the circuit design (MOD 95-0022).

GENERAL ELECTRIC HGA17C52: As evaluated on G.4 numbers 284 and 292, two HGA17C relays with normally open contacts are classified as essential. These relays are located in Non-1E buses where cabinet anchorage is not appropriate for essential relays. Resolution: Relocate these relays into their respective train's 1E bus then screen using GERS-RLY-ARH.5 (MOD 95-0023).

WESTINGHOUSE CO-2 style 1875223A: Seismic capacity data is not available for

this particular style of overcurrent relay. As evaluated on G.4 numbers 283 and 291, twelve CO-2's are used in essential applications. These relays are used to detect and clear faults occurring on safety related 4KV buses. CO-2 contact chatter has the potential of tripping the safety related buses' source breakers and causing a bus lockout. Resolution: A CO-2 style 1875223A will be removed from service and replaced with a seismically adequate CO-2. The removed CO-2 will be submitted for seismic testing. If testing shows CO-2 style 1875223A seismically adequate, the remaining in-service CO-2's will be screened accordingly. Should testing show the relay does not meet SQUG criteria, the in-service style 1875223A CO-2's shall be replaced (MOD 95-0024).

WESTINGHOUSE CO-5 style 1875234A: Seismic capacity data is not available for this particular style of overcurrent relay. As evaluated on G.4 numbers 283 and 291, twelve CO-5's are used in essential applications. These relays are used to detect and clear faults occurring on safety related 4KV buses. CO-5 contact chatter has the potential of tripping the safety related buses' source breakers and causing a bus lockout. Resolution: A CO-5 style 1875234A will be removed from service and replaced with a seismically adequate CO-5. The removed CO-5 will be submitted for seismic testing. If testing shows CO-5 style 1875234A seismically adequate, the remaining inservice CO-5's will be screened accordingly. Should testing show the relay does not meet SQUG criteria, the in-service style 1875234A CO-5's shall be replaced (MOD 95-0024).

WESTINGHOUSE CO-9 style 264C91A05: Seismic capacity data is not available for this particular style of overcurrent relay. As evaluated on G.4 numbers 283 and 291, six CO-9's are used in essential applications. These relays are used to detect and clear faults occurring on safety related 4KV buses. CO-9 contact chatter has the potential of tripping the safety related buses source breakers and causing a bus lockout. Resolution: A CO-9 style 264C91A05 will be removed from service and replaced with a seismically adequate CO-9. The removed CO-9 will be submitted for seismic testing. If testing shows CO-9 style 264C91A05 seismically adequate, the remaining in-service CO-9's will be screened accordingly. Should testing show the relay does not meet SQUG criteria. the in-service style 264C91A05 CO-9's shall be replaced (MOD 95-0024).

GENERAL ELECTRIC HFA53K91F or HFA53K91H: Seismic capacity data is not available for these high-speed (0.5 cycle) auxiliary relays. As evaluated on G.4 numbers 283, 284, 291 and 292, ten HFA53K91's are classified as essential; two for each emergency diesel generator and three for each safety-related 4KV bus. These relays are used to trip and lockout equipment when faults are detected by the equipment's associated protective relay(s). Contact chatter has the potential of causing a trip and lockout of either emergency diesel generator and/or either safety-related 4KV bus. Resolution: Obtain seismic capacity on the General Electric HFA53K91 relay. Replace if relay does not meet SQUG criteria (MOD 95-0025 and MOD 95-0026).

ALLEN BRADLEY 700BR4-A1: Seismic capacity data is not available for this AC control relay. As evaluated on G.4 numbers 283 and 291, one 700BR4-A1 is classified as essential for each emergency diesel generator. This relay is used in the emergency diesel generator's voltage regulator and exciter circuitry and contact chatter has the potential of blocking an auto-close signal for the generator's output breaker. Resolution: This is an obsolete AC control relay; therefore, seismic testing is not proposed. Rather, the 700BR4-A1 will be replaced with a seismically adequate relay (MOD 95-0028).

- (Coded CA7).
3. When contact chatter is blocked by an upstream or downstream contact having sufficient seismic capacity (Coded CA4).
 4. When equipment will return to the desired state after the period of strong shaking and this load is accounted for in Step 1 of the Emergency Diesel Generator Loading Table. Examples are equipment controlled by temperature switches and level switches (Coded CA6).
 5. Contacts which are not connected (open circuit). This applied to many overload relay contacts shown in motor operated valve control circuits (Coded CA8).

Contacts using chatter acceptable screening which do not conform to the above situations are explained on the G.4 forms.

Operator action is not used to screen relays as nonessential.

2.1.4 GIP DEVIATIONS

The relay functionality review follows EPRI NP-7148-SL, "Procedure for Evaluating Nuclear Power Plant Relay Seismic Functionality" (Reference 5) including the changes issued in Volume 2: Addendum for NP-7148-SL (Reference 8). There were no significant or programmatic deviations from the GIP taken during the USI A-46 relay seismic functionality review.

As a matter of clarification, the GIP assumes that there is one Lead Relay Reviewer who has completed the SQUG Relay Evaluation Training Course and reviews the work of those G.4 preparers who are not SQUG trained. DBNPS utilized two trained Lead Relay Reviewers to prepare the G.4 forms. One reviewer concentrated primarily on Instrumentation and Control items while the other focused on Electrical Control items.

2.1.5 RELAY CABINETS AND RELAY MOUNTINGS

Essential relays are located in the following general cabinet types: Relay Cabinets, Motor Control Centers, Low and Medium Voltage Switchgear, Walkthrough Cabinets and Junction Boxes. Essential relays are also located within enclosures containing the Emergency Diesel Generator Voltage Regulator/Exciter, and the 120VAC Inverters. Relay mountings conform with vendor details and no missing fasteners (screws) were observed. Amplification factors and natural frequencies for these cabinets were determined by the Seismic Capability Engineers during the walkdown and transmitted to relay reviewers via Intra-company Memorandum and documented in the SEWS sheet for that cabinet.

Relay cabinet were either floor anchored, wall mounted or rack mounted. These cabinets vary in height width and depth. Disconnect Switch Cabinets are similar to floor anchored relay cabinets. The types of essential relays contained within these cabinets are Agastat 7000 Series, Agastat GP and Deutsch Models 4AP43AF and 4AX1603. With the exception of the larger relay cabinets, relays are located on the cabinets back panel. The larger cabinets also have relays located on the cabinet side panels.

Motor Control Centers (MCC) contain both Starters/Contactors and control relays.

ALLEN BRADLEY 200-G110Z1: Seismic capacity data is not available for this DC control relay. As evaluated on G.4 numbers 283 and 291, one 200-G110Z1 is classified as essential for each emergency diesel generator. These relays combine with others to bypass several protective trips on an emergency engine start. Contact chatter has the potential of causing a generator trip and lockout. Resolution: This is an obsolete DC control relay; therefore, seismic testing is not proposed. Rather, the Allen Bradley 200-G10Z11 will be replaced with a seismically adequate relay (MOD 95-0028).

SQUARE D 8501 MODEL KPD13: Seismic capacity data is not available on this relay. As evaluated on G.4 form numbers 352 and 353, each emergency diesel generator has two KPD13's classified as essential. Contact chatter has the potential of preventing the electric governor control's transfer to the isochronous mode and the voltage regulator's transfer to the unit mode (i.e. the diesel generator is operating alone, sole source of power on the bus). Resolution: Seismic testing of the KPD13 will be obtained. If seismic capacity is adequate, this relay will also replace ALLEN BRADLEY 200-G10Z11 (discussed above). The KPD13's will be replaced if SQUG seismic adequacy cannot be demonstrated (MOD 95-0028).

DELTRO CONTROLS 105T1465: Seismic capacity data is not available on this relay. As evaluated on G.4 form numbers 352 and 353, each emergency diesel generator has two 105T1465's classified as essential in the generator's exciter circuitry. Contact chatter has the potential of prolonging generator field flash (field flash is terminated when voltage builds to approximately 75% rated). Resolution: Obtain seismic testing of these specialized relays. Replace relays if seismic adequacy is not demonstrated (MOD 95-0028).

ASCO 207E10: Seismic demand exceeds the seismic capacity of this relay. As evaluated on G.4 form numbers 352 and 353, each emergency diesel generator has one 207E10 in the voltage regulator/ exciter circuitry. These relays form a permissive circuit to close the generator output breaker after proper voltage is achieved. Contact chatter has the potential of delaying closure of the generator output breaker. Resolution: replace the ASCO 207E10 with a seismically adequate relay (MOD 95-0028).

POTTER & BRUMFIELD CLS 38 60010: Seismic demand exceeds the seismic capacity of this relay. As evaluated of G.4 numbers 58 and 76, four CLS 38 60010 relays are classified as essential. These relays provied undervoltage protection to four inverters (two Class 1E and two non-1E). Contact chatter has the potential of tripping the inverter's input breaker. Resolution: The Class 1E inverters are being replaced with inverters which meet current qualification standards, IEEE 344-1974, (ref. FCR 86-272 Supplement 3). Pending an evaluation, the CLS 38 60010 relays in the non-1E inverters will either be replaced or removed (MOD 95-0027).

CP-CLARE MRB1A24: These relays are contained in the Safety Features Acutation System (SFAS) as components of the 6N83 Output Module. These relays provide a remote trip capability. They input to a solid state latching circuit with a 30 millisecond (ms) delay. Chatter of these contacts in excess of 30 ms could cause the SFAS output relays to actuate. Since there is no capacity information available for these relays and spurious actuation of SFAS is unacceptable, these relays require corrective action. Resolution: Seismically test this relay to

establish capacity. If the relay is not seismically adequate then it will be replaced.

LAMBDA THERMAL SWITCHES: These contacts are contained in some Safety Features Actuation System (SFAS) power supplies where they provide thermal protection for the power supply. Chatter of this switch could cause loss of the output of the power supply and SFAS actuation. Since there is no capacity information available for these temperature switches and spurious actuation of SFAS is unacceptable, corrective action is required. Resolution: Seismically test a representative power supply to establish capacity. If the switch does not meet SQUG criteria, then it will be replaced or removed, or the power supply will be replaced.

POTTER BRUMFIELD R40-E044-2: This relay is a component of a bistable used to automatically open the Power Operated Relief Valve (PORV) on high Reactor Coolant System (RCS) pressure. Chatter of this contact would cause spurious operation of the PORV. There is no seismic capacity information for this relay and no information available for the cabinet it is contained in. Resolution: Relocate this PORV control function to a location with known seismic amplification using components with known seismic capacity.

2.2.1 SAFETY IMPLICATIONS OF UNRESOLVED OUTLIERS

This discussion is not applicable since a resolution is planned for all essential relay outliers.

2.3 COMPLETION ACTIVITIES

All relay outliers will be resolved by the end of the twelfth refueling outage.

Section 3

TECHNICAL APPROACH

3.1 INTRODUCTION

The relay evaluation methodology consists of a step-by-step procedure to screen and evaluate relays. The Safe Shutdown Equipment list (SSEL) identifies Systems which must remain functional during and immediately after an earthquake. Nonessential relays, e.g., those whose temporary malfunction (contact chatter or change of state) will not prevent safe shutdown of the plant or cause other unacceptable actions, are screened out utilizing systems and circuit evaluation techniques. Seismic capacity data is then used to assess the seismic adequacy of the remaining essential relays.

3.2 METHODOLOGY

The methodology for evaluating the seismic functionality of relays is based on a three-part screening and evaluation process. The first part of the screening process identifies 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 results in a subset of plant systems and associated electrical relays which are considered essential to plant safety in an earthquake. The second part of the evaluation process utilizes system and circuit evaluations to reduce the number of relays that are considered essential. The third part of the screening and evaluation process is to assess the seismic ruggedness of these 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. Important assumptions 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 are provided in References 5 and 8.

3.4 IDENTIFICATION OF ESSENTIAL FUNCTIONS AND SYSTEMS

Four functions were considered for achieving and maintaining a safe shutdown condition following a 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 identified and discussed in Section 4.

The supporting systems necessary to operate the safe shutdown equipment are identified as well. A SSEL was made for each system identified for safe shutdown. These SSELs are compiled into one composite SSEL. Separate SSELs are generated, for seismic walkdowns and for relay review. The basis for the SSEL selection is discussed in Section 4, which includes the relay review SSEL.

3.5 RELAY SCREENING AND EVALUATION

An overview summary of the relay screening and evaluation procedure is provided in the flow chart of Figure 5-1 of Reference 5. This chart identifies the steps followed in the evaluation.

In summary, the process used identify and evaluate the relays required to safely shutdown DBNPS in the event of a design basis earthquake was 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. The relays which affected operation of this set of systems and associated components, are the relays which were evaluated. Section 4 summarizes the identification of safe shutdown equipment.
- The relays 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 small group of relays and devices considered vulnerable to minor impact. Those relays which could not be so screened are designated "essential" and required evaluation to determine if they have adequate seismic capacity for their specific application.
- The seismic adequacy of essential relays is evaluated by comparing the seismic capacity of specific relay types with the plant-specific seismic demand. A data base of seismic ruggedness data (GERS) for various types and classes of relays, (References 6 and 7) is used for ruggedness checks. Section 5 documents the seismic adequacy evaluations.
- Corrective actions are specified where relay screening was unsuccessful. These actions are identified in Section 2.
- The results of this process are documented in this report. This report provides a traceable record that all relays (including contact devices)

or groups of relays which affect operation of safe shutdown components have been evaluated.

3.6 RELAY WALKDOWN

The Generic Implementation Procedure (GIP) for resolution of Unresolved Safety Issue (USI) A-46, 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 relay types and locations are consistent with documentation sources used to establish relay types and locations during the relay circuit reviews.

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 on a sample basis these assumptions. 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.

Seismic Qualification Utility Group (SQUG) Equipment List Notes

NOTE

1. Instrument device requires and includes all components (e.g. power supply, electronic devices, signal processors, instrument sensing tubing, interconnecting wiring, etc.) traced from the instrument to the process or controlled device which are required to support its operability. Due to the variance in the available level of details, it is not possible to show this by use of highlighting on an operational schematic.
2. MU-366 will have to be manually opened for the SSEL primary train flow path.
3. For the reactivity control function, position of this valve is not important.
4. These components have been added to the SSEL due to the relay evaluation determining they contain essential relays.
5. This note intentionally left blank.
6. This note intentionally left blank.
7.
 - a. Makeup (MU) tank level is required.
 - b. Control room indication has been chosen instead of local indication.
 - c. The Operations Department prefers use of the recorder instead of meter indication.
8.
 - a. Assume makeup pump 1-1 is off and makeup pump 1-2 is the running pump as the normal plant Seismic Qualification Utility Group (SQUG) lineup.
 - b. Includes component cooling water (CCW) cooling assembly and skid mounted lube oil systems.
9. "Desired State Open" is for both the normal supply from the MU tank and supply from the borated water storage tank (BWST).
10. The position of MU-19 may be as-is (throttled) or failed open for the SSEL primary train.
11. These valves are to be maintained open for the SSEL primary train and manually closed for the SSEL backup train.
12. This valve, due to a "latch in" control circuit, is to be manually throttled for the SSEL primary train.
13. High pressure injection (HPI) is not necessary for the reactivity control function. HPI pumps are included as a pressure boundary. Abrasive (cyclone) separators are considered as an integral part of the pumps.
14. No seismic evaluation is required for this function, as relief valve only serves as a boundary isolation.
15. Decay heat pump is not in operation for this function, but relay review is included to prevent inadvertent actuation.
16. No relay review required for this function. If valve spuriously closes or remains closed, it will then serve as the boundary isolation valve. If valve spuriously opens or remains open, an isolation boundary is still maintained.
17. Relay evaluation is required to prevent possible pump dead-head operation.

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 the DBNPS 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 DBE;
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 DBE;
4. Loss of off-site power may occur as a result of the earthquake; 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:

- Reactivity Control;
- Reactor-Coolant Pressure Control;
- Reactor-Coolant Inventory Control; and
- Decay-Heat Removal

The systems selected for controlling the four safe shutdown functions and other optional systems are as described in Section 4 of the Seismic Evaluation Report.

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 Safe Shutdown Equipment List (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 functionality 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 4-1 lists the SSEL equipment items requiring a relay review for the DBNPS. The relay evaluation of each of these items is contained in Section 5 of this report.

18. Since the breaker for the power supply is normally open, no relay review is required.
19. Valve is to be manually closed to preserve a flow boundary.
20. Manually open for the SSEL backup train flow path.
21. Manually open for the SSEL primary train flow path.
22. Manually open for the common flow path.
23. This note intentionally left blank.
24. Manually close for the common flow path.
25. For the primary train, SW-2929 & SW-2931 may have to be manually closed to ensure the service water (SW) return flow path is directed to the other end of the intake forebay for cooling.
26. For the backup train, SW-2932 may have to be manually closed and SW-2930 manually opened to ensure a SW return flow path to the forebay.
27. Manually close for the SSEL primary train.
28. Manually close for the SSEL backup train.
29. Valve position is of no consequence for SQUG purposes.
30. Air line between solenoid valve and service water (SW) valve is not included as a part of SQUG.
31. This note intentionally left blank.
32. Includes interlock to emergency diesel generator (EDG) CCW outlet valve as described in note "CL-6" on OS-21 SH1.
33. Air line is not included as a part of SQUG.
34. The necessary control room emergency ventilation system (CREVS) equipment is skid mounted, which includes the condensing unit (S33-1,2), the air cooled condenser (S61-1,2), and the cooling coil (E106-1,2).
35. This note intentionally left blank.
36. Associated piping/ductwork for air path is also included.
37. Manually open to cross-connect both boric acid addition tanks (BAATs).
38. Manually throttle MU-349 for the SSEL primary train, and MU-348 for the SSEL backup train.
39. Both boric acid addition tanks (BAATs) are required because there is no assurance that one alone will contain the necessary amount of boric acid.
40. This note intentionally left blank.
41. This panel needs to feed at least channel 1 steam and feedwater rupture control system (SFRCS) and safety features actuation system (SFAS) cabinets to prevent trips to support channel 2 (SSEL primary train).
42. This panel needs to feed at least channel 2 SFRCS & SFAS cabinets to prevent trips to support channel 1 (SSEL backup train).
43. This note intentionally left blank.

44. This note intentionally left blank.
45. This note intentionally left blank.
46. The 125 VDC shown at fuses FU-3P and FU-3N at C3621 (SSEL primary train) and C3622 (SSEL backup train) includes power traced back to the source.
47. This note intentionally left blank.
48. This note intentionally left blank.
49. This note intentionally left blank.
50. For the inventory control function, position of this valve is not important. However, if offsite power is still available, the desired position for RC-2 is closed to prevent the inadvertent lowering of reactor coolant system (RCS) pressure.
51. Manually open with local handwheel for backup path.
52. This note intentionally left blank.
53. This note intentionally left blank.
54. This note intentionally left blank.
55. This note intentionally left blank.
56. This note intentionally left blank.
57. This note intentionally left blank.
58. This note intentionally left blank.
59. This note intentionally left blank.
60. This note intentionally left blank.
61. This note intentionally left blank.
62. Instrument string is required to prevent spurious trips. In addition, SSEL note 1 also applies.
63. Includes panel breakers 13, 14, and 15.
64. The system boundary located downstream of this point is shown in the decay heat removal drawings. For the RCS pressure control function, there are no active components past this point in the system and no relay evaluations required since this flow path is not established until several hours following the seismic event.
65. Solenoid valves are assumed to be deenergized for the associated service water valve to be fully open.
66. This note intentionally left blank.
67. Includes associated air handling ductwork in containment.
68. HPI pump breakers must be racked out for DH-4849 to be able to provide low temperature overpressure protection (LTOP).
69. This note intentionally left blank.
70. This note intentionally left blank.

71. This note intentionally left blank.
72. This note intentionally left blank.
73. This note intentionally left blank.
74. This note intentionally left blank.
75. This note intentionally left blank.
76. This note intentionally left blank.
77. This note intentionally left blank.
78. This note intentionally left blank.
79. Additional equipment is shown on support systems drawings.
80. DH-21 and DH-23 are manually opened for the backup train.
81. Manually close for the SSEL primary train.
82. Operators to control decay heat removal (DHR) flow by throttling valve DH-1A via HIS DH1A.
83. Manually close for the SSEL backup train.
84. Operators to open DH-1518 for the SSEL primary train via HIS 1518. DH-1518 is to remain closed for the SSEL backup train.
85. This note intentionally left blank.
86. For SSEL primary train operation, MCC E11B may have to be powered via the cross tie from MCC F11A using breakers described in note 15 of OS-059. This is for the decay heat removal and pressure control functions only.
87. Operators to control DHR flow by throttling valve DH-1B via HIS DH1B.
88. Operators to open DH-1517 for the SSEL backup train via HIS 1517. DH-1517 is to remain closed for the SSEL primary train.
89. Includes control signal to LIC 6451 (OS-17A SH1).
90. Includes control signal to LIC 6452 (OS-17A SH1).
91.
 - a. Includes trip throttle valve & governor valve.
 - b. Includes equipment for steam exhaust path to atmosphere.
92. Includes associated fan intake & discharge path.
93. Includes associated reach rod and air tubing to bleed off the closing air supply. For decay heat removal, both ICS11A and ICS11B will be controlled by use of a manual handwheel.
94. The SQUG boundary for the piping extends to the S/I boundary outside the auxiliary building. Pipe integrity is not required past this point for the purposes of SQUG.
95. This note intentionally left blank.
96. This note intentionally left blank.
97. This note intentionally left blank.
98. This note intentionally left blank.

99. The BWST recirculation pump and heater are included only as a pressure boundary.
100. Steam traps are included for the decay heat removal function only as a pressure boundary. It is assumed that at the time of a seismic event, the steam traps have been functioning and any water drained from the steam lines. Therefore, the steam traps are not required to function following a seismic event because the auxiliary feed pump turbines (AFPTs) are expected to start soon after occurrence of the event.
101. Includes interlock to service water valve described in Note "CL-6" on OS-020 SH2.
102. Only consider those control circuits on panel C3615 (EDG 1-1) & C3616 (EDG 1-2) which will allow the EDG to auto start, auto load on the essential bus, and continue to run and provide power--e.g., control power, protective relays, etc. It will also be necessary to include the entire skid mounted portions of the EDG coolant, lube oil, air start, and fuel oil systems, including the combustion air supply flow path from the intake to the exhaust.

RJW:rjw
June 7, 1995

Relay Review Safe Shutdown Equipment List (SSEL)

Line No.	Equip Train Class	Equipment ID Number	System/Equipment Description	Drawing Number	Room Eval			Normal Desired Pwr		Support Number	G.4									
					Bldg	Elev	No.	Cat.	Note		RC	IC	PC	DH	SU					
1	P	20	0%ZRL	0% ZONE REF LIGHTS - PANEL Z13000	N/A	AUX	623	505	SR	ON	ON	Y	313	ELECTRICAL	1	0	0	0	0	
558	P	3	AACD1	BUS D1, CUB 2 BRKR FRM BUS...	OS-058 SH 2	AUX	585	323	SR	OPN	OPN	N	292		0	0	0	0	1	
559	B	3	ABDC1	BUS C1, CUB 2 BRKR FRM BUS...	OS-058 SH 1	AUX	585	325	SR	OPN	OPN	N	284		0	0	0	0	1	
560	B	3	AC-101	BREAKER FROM EDG 1	OS-041A SH 1	AUX	585	325	SR	OPN	CLS	Y	283	ELECTRICAL	0	0	0	0	1	
2	B	3	AC-105	BRKR, MUP MTR 1-1 MP37-1	OS-002 SH 3	AUX	585	325	SR	OPN	CLS	Y	106	ELECTRICAL	1	0	0	0	0	
184	B	3	AC-105	BRKR, MUP MTR 1-1 MP37-1	OS-002 SH 3	AUX	585	325	SR	OPN	CLS	Y	106	ELECTRICAL	0	1	0	0	0	
561	B	3	AC-107	BUS C1 CUB 7 FDR BRKR FR SWP1-1	OS-020 SH 1	AUX	585	325	SR	CLS	CLS	N	287		0	0	0	0	1	
562	B	3	AC-110	BUS C1, CUB 10 BRKR TO 4.16...	OS-058 SH 1	AUX	585	325	SR	CLS	OPN	Y	285	ELECTRICAL	0	0	0	0	1	
563	P	3	AC-111	BRKR, HP INJ PMP MOTOR 1-1	OS-058 SH 1	AUX	585	325	SR	68	OPN	R/O	Y	290	ELECTRICAL	0	0	0	0	1
308	B	3	AC-112	BUS C1 CBCL 12 FDR BRKR FOR DH PMP 1-1	OS-004 SH 1	AUX	585	325	SR	OFF	ON	Y	288	ELECTRICAL	0	0	0	1	0	
564	B	3	AC-113	BREAKER, CC PMP MTR 1-1 MP431	OS-021 SH 1	AUX	585	325	SR	CLS	CLS	N	289		0	0	0	0	1	
565	B	3	AC-1CE11	BUS C1, CUB 4-FEED BRKR FRM...	OS-058 SH 1	AUX	585	325	SR	CLS	CLS	N	286		0	0	0	0	1	
566	P	3	AD-101	BUS D1, CUB 1-FD BRKR FRM EDG2	OS-041A SH 2	AUX	585	323	SR	OPN	CLS	Y	291	ELECTRICAL	0	0	0	0	1	
3	P	3	AD-105	BRKR,MUP1-2 MP 37-2	OS-002 SH 3	AUX	585	323	SR	CLS	CLS	N	110		1	0	0	0	0	
185	P	3	AD-105	BRKR,MUP1-2 MP 37-2	OS-002 SH 3	AUX	585	323	SR	CLS	CLS	N	110		0	1	0	0	0	
567	P	3	AD-107	BUS D1 CBCLE 7-BRKR FR SWP1-2	OS-020 SH 1	AUX	585	323	SR	CLS	CLS	N	295		0	0	0	0	1	
568	P	3	AD-110	BUS D1, CUB 10 BRKR FOR SWGR..	OS-058 SH 2	AUX	585	323	SR	CLS	OPN	Y	293	ELECTRICAL	0	0	0	0	1	
569	P	3	AD-111	BUS D1 CUB 11-FD BRKR HPIP 1-2	OS-058 SH 2	AUX	585	323	SR	68	OPN	R/O	Y	297	ELECTRICAL	0	0	0	0	1
309	P	3	AD-112	BUS D1 CUB 12-FDR BRKR FR DH PMP 1-2	OS-004 SH 1	AUX	585	323	SR	OFF	ON	Y	296	ELECTRICAL	0	0	0	1	0	
570	P	3	AD-113	BUS D1 CUB 13 BRKR FR CCPMP1-2	OS-021 SH 1	AUX	585	323	SR	OPN	CLS	Y	298	ELECTRICAL	0	0	0	0	1	
571	P	3	AD-1DF12	BUS D1, CUB 4 BRKR FOR SUB...	OS-058 SH 2	AUX	585	323	SR	CLS	CLS	N	294		0	0	0	0	1	
310	B	BA	AF-3869	APP 1-1 TO STEAM GEN 1-2 STOP VALVE	OS-017A SH 1	AUX	565	237	R	CLS	CLS	N	169		0	0	0	1	0	
311	B	BA	AF-3870	APP 1-1 TO STEAM GEN 1-1 STOP VALVE	OS-017A SH 1	AUX	565	237	R	OPN	OPN	N	170		0	0	0	1	0	
312	P	BA	AF-3871	APP 1-2 TO STEAM GEN 1-1 STOP VALVE	OS-017A SH 1	AUX	565	238	R	CLS	CLS	N	171		0	0	0	1	0	
313	P	BA	AF-3872	APP 1-2 TO STEAM GEN 1-2 STOP VALVE	OS-017A SH 1	AUX	565	238	R	OPN	OPN	N	172		0	0	-2	1	0	
314	P	BA	AF-599	AUX FEED TO STEAM GEaf1-2 LINE STOP VLV	OS-017A SH 1	AUX	585	314	R	OPN	OPN	N	173		0	0	0	1	0	
315	B	BA	AF-608	AUX FEED TO STEAM GEN 1-1 LINE STOP VLV	OS-017A SH 1	AUX	585	303	R	OPN	OPN	N	174		0	0	0	1	0	
316	P	BB	AF-6451	APP 1-2 SOL CONTROL VALVE	OS-017A SH 1	AUX	565	238	SR	OPN	THR	Y	308	ELECTRICAL	0	0	0	1	0	
317	B	BB	AF-6452	APP 1-1 SOL CONTROL VALVE	OS-017A SH 1	AUX	565	237	SR	OPN	THR	Y	309	ELECTRICAL	0	0	0	1	0	
572	B	2	BCE 11	BUS E1 NORM FEED BRKR FROM....	OS-059 SH 1	AUX	603	429	SR	CLS	CLS	N	59		0	0	0	0	1	
573	P	2	BDF 12	BUS F1 NORM FEED BRKR FROM...	OS-059 SH 1	AUX	603	428	SR	CLS	CLS	N	60		0	0	0	0	1	
574	B	2	BE-106	FEEDER BREAKER FOR MCC E12A	OS-059 SH 1	AUX	603	429	SR	CLS	CLS	N	61		0	0	0	0	1	
575	B	2	BE-107	FEEDER BREAKER FOR MCC E11A	OS-059 SH 1	AUX	603	429	SR	CLS	CLS	N	62		0	0	0	0	1	
576	B	2	BE-110	FEEDER BREAKER FOR MCC E14	OS-059 SH 1	AUX	603	429	SR	CLS	CLS	N	63		0	0	0	0	1	
318	B	2	BE-1106	BREAKER FOR LP INJ 1 VALVE, MVDHTB	OS-004 SH 1	AUX	565	209	SR	ON	ON	Y	78	ELECTRICAL	0	0	0	1	0	
4	B	2	BE-1109	BREAKER FOR MVMU400	OS-002 SH 1	AUX	565	209	SR	CLS	CLS	N	80		1	0	0	0	0	
577	B	2	BE-1120	FEEDER BREAKER FOR MCC E11B	OS-059 SH 1	AUX	565	209	SR	CLS	CLS	N	1		0	0	0	0	1	
319	B	2	BE-1121	BREAKER FOR DH PUMP 1 SUC VALVE FRM BWST	OS-004 SH 1	AUX	565	209	SR	ON	ON	Y	81	ELECTRICAL	0	0	0	1	0	
320	B	2	BE-1126	BREAKER FOR DH NORM SUC LINE 1 ISO VLV	OS-004 SH 1	AUX	565	227	SR	ON	ON	Y	83	ELECTRICAL	0	0	0	1	0	
5	B	2	BE-1127	BRKR, RC MUP SUCTION VLV MOTOR	OS-002 SH 3	AUX	565	227	SR	CLS	CLS	N	85		1	0	0	0	0	
179	B	2	BE-1127	BRKR, RC MUP SUCTION VLV MOTOR	OS-002 SH 3	AUX	565	227	SR	CLS	CLS	N	85		0	1	0	0	0	
578	B	2	BE-1144	BRKR, CTRM EMERG VNT FAN1..VLV	OS-032B	AUX	585	304	SR	CLS	CLS	N	88		0	0	0	0	1	
579	B	2	BE-1148	BRKR, CTRM EMERG STND BYPAS...	OS-032B	AUX	603	402	SR	CLS	CLS	N	90		0	0	0	0	1	
580	B	2	BE-1150	FEEDER BREAKER TO MCC E11E	OS-059 SH 1	AUX	585	304	SR	CLS	CLS	N	4		0	0	0	0	1	
581	B	2	BE-1151	BREAKER FOR FEED FROM MCC E11C	OS-059 SH 1	AUX	603	402	SR	CLS	CLS	N	6		0	0	0	0	1	
582	B	2	BE-1154	BRKR, CC PMP RM VNT FAN 1...	OS-036 SH 1	AUX	585	304	SR	CLS	CLS	N	96		0	0	0	0	1	
583	B	2	BE-1166	BRKR FOR FEED TO MCC E11B	OS-059 SH 1	AUX	585	304	SR	CLS	CLS	N	3		0	0	0	0	1	
111	B	2	BE-1172	RC LETDOWN ISO VALVE	OS-002 SH 1	AUX	585	304	SR	CLS	CLS	N	98		0	1	0	0	0	
584	B	2	BE-1180	BREAKER FOR XYE2 FDR TO MCCYE2	OS-059 SH 1	AUX	585	304	SR	CLS	CLS	N	2		0	0	0	0	1	

Relay Review Safe Shutdown Equipment List (SSEL)

Line No.	Equip Train No.	Equipment Class	Equipment ID Number	System/Equipment Description	Drawing Number	Room Eval			Normal Desired		Pwr Reqd	Form Number	Support System	G.4					
						Bldg	Elev	No.	Cat.	Note	State	State		RC	IC	PC	DH	SU	
218	P	2	BE-1183	BREAKER FOR DH REMOVAL SUCT LN VLV MOTOR	OS-004 SH 1	AUX	585	304	SR	CLS	CLS	N	99		0	0	1	0	0
321	P	2	BE-1183	BREAKER FOR DH REMOVAL SUCT LN VLV MOTOR	OS-004 SH 1	AUX	585	304	SR	OFF	ON	Y	99	ELECTRICAL	0	0	0	1	0
6	B	2	BE-1185	BREAKER FOR BA PUMP 1 MP381	OS-046	AUX	565	227	SR	CLS	CLS	N	101		1	0	0	0	0
7	B	2	BE-1191	BRKR RC MUP1 MN OIL PMP MP371B	OS-002 SH 4	AUX	565	227	SR	CLS	CLS	N	103		1	0	0	0	0
194	B	2	BE-1191	BRKR RC MUP1 MN OIL PMP MP371B	OS-002 SH 4	AUX	565	227	SR	CLS	CLS	N	103		0	1	0	0	0
101	B	2	BE-1192	BKR FOR MUP1 AUX GEAR PMP MP371D	OS-002 SH 4	AUX	565	227	SR	CLS	CLS	N	105		1	0	0	0	0
196	B	2	BE-1192	BKR FOR MUP1 AUX GEAR PMP MP371D	OS-002 SH 4	AUX	565	227	SR	CLS	CLS	N	105		0	1	0	0	0
8	B	2	BE-1194	BRKR FOR CTMT IV MOTOR MU6421	OS-002 SH 3	AUX	565	227	SR	CLS	CLS	N	111		1	0	0	0	0
208	B	2	BE-1194	BRKR FOR CTMT IV MOTOR MU6421	OS-002 SH 3	AUX	565	227	SR	CLS	CLS	N	111		0	1	0	0	0
585	B	2	BE-1196	BREAKER FR FEEDER FRM MCC E11A	OS-059 SH 1	AUX	565	227	SR	CLS	CLS	N	5		0	0	0	0	1
586	B	2	BE-1201	BRKR, CR EMERG SYS STANDBY...	OS-032B	AUX	603	429	SR	CLS	CLS	N	92		0	0	0	0	1
587	B	2	BE-1202	FEEDER BREAKER TO MCC E12C	OS-059 SH 1	AUX	603	429	SR	CLS	CLS	N	7		0	0	0	0	1
588	B	2	BE-1205	BRKR, SW PMP VENT FAN 2 MC99-2	OS-038B	ITK	575	051	SR	CLS	CLS	N	118		0	0	0	0	1
589	B	2	BE-1208	BRKR, BAT RM 429B- ATM DAMP MO	OS-035	AUX	603	429	SR	CLS	CLS	N	112		0	0	0	0	1
590	B	2	BE-1209	BRKR, CTRL RM EMERG VENTILATN	OS-032B	AUX	603	429	SR	CLS	CLS	N	94		0	0	0	0	1
591	B	2	BE-1212	BRKR, SW PMP VENT FAN 1 MC99-1	OS-038B	ITK	575	051	SR	CLS	CLS	N	114		0	0	0	0	1
592	B	2	BE-1216	BRKR, CTRM EMERG COND UNT1 MTR	OS-032B	AUX	603	429	SR	CLS	CLS	N	74		0	0	0	0	1
593	B	2	BE-1217	BRKR, VNT FN 1 MTR L.V.S.G. RM	OS-035	AUX	603	429	SR	CLS	CLS	N	116		0	0	0	0	1
322	B	2	BE-1218	BREAKER FOR AFP . SUCTION VALVE MV1382	OS-017A SH 1	AUX	603	429	SR	CLS	CLS	N	120		0	0	0	1	0
323	B	2	BE-1222	BREAKR FOR AFP ROOM VENT FAN 1 MOTOR	OS-036 SH 1	AUX	603	429	SR	CLS	CLS	N	122		0	0	0	1	0
219	B	2	BE-1223	FEEDER BRKR FOR PRZR HTRS CH 1	OS-001A SH 2	AUX	603	429	SR	CLS	CLS	N	124		0	0	1	0	0
594	B	2	BE-1226	BREAKER, CCW DISCH LN ISO VLV	OS-021 SH 1	AUX	603	429	SR	CLS	CLS	N	126		0	0	0	0	1
595	B	2	BE-1232	BRKR, CTRM EMERG CNDS 1 VLV MO	OS-020 SH 1	AUX	603	429	SR	CLS	CLS	N	128		0	0	0	0	1
596	B	2	BE-1233	BREAKER FOR BATT CHARGER DBC1P	OS-060 SH 1	AUX	603	429	SR	CLS	CLS	N	10		0	0	0	0	1
597	B	2	BE-1234	FEEDER BREAKER FOR MCC E12E	OS-059 SH 1	AUX	603	429	SR	CLS	CLS	N	8		0	0	0	0	1
598	B	2	BE-1235	BREAKER FOR BATT CHARGER DBC1N	OS-060 SH 1	AUX	603	429	SR	CLS	CLS	N	9		0	0	0	0	1
599	B	2	BE-1240	BRKR, L.V.S.G. RM 429 VNT VLV	OS-035	AUX	603	429	SR	CLS	CLS	N	140		0	0	0	0	1
600	B	2	BE-1241	BRKR, L.V.S.G. RM VNT VLV MTR	OS-035	AUX	603	429	SR	CLS	CLS	N	141		0	0	0	0	1
601	B	2	BE-1255	BRKR, EDG RM 1 VENT FAN 1	OS-035	AUX	585	318	SR	CLS	CLS	N	130		0	0	0	0	1
602	B	2	BE-1256	BRKR, EDG RM 1 VENT FAN 2	OS-035	AUX	585	318	SR	CLS	CLS	N	131		0	0	0	0	1
1095	B	2	BE-1258	EDG 1 IMMERSION HEATER BREAKER	OS-041A	AUX	585	318	SR	CLS	CLS	N	276		0	0	0	0	1
603	B	2	BE-1259	BRKR, FDR TO 120VAC MCC YE1	OS-059 SH 1	AUX	585	318	SR	CLS	CLS	N	12		0	0	0	0	1
604	B	2	BE-1261	BRKR, EDG SOAK PMP MP1471	OS-041A SH 1	AUX	585	318	SR	CLS	CLS	N	132		0	0	0	0	1
1061	B	2	BE-1273	FEEDER BREAKER FOR MCC E12F	OS-059 SH 1	AUX	585	318	SR	CLS	CLS	N	11		0	0	0	0	1
605	B	2	BE-1274	BREAKER, SW PUMPSTRNR MF12-1	OS-020 SH 1	ITK	585	051	SR	CLS	CLS	N	134		0	0	0	0	1
606	B	2	BE-1275	BRKR, SW PMP STRNR DRAIN VALVE	OS-020 SH 1	ITK	585	051	SR	CLS	CLS	N	136		0	0	0	0	1
607	B	2	BE-1281	BREAKER, SW - INTAKE STRCT VLV	OS-020 SH 1	ITK	585	051	SR	CLS	CLS	N	138		0	0	0	0	1
608	B	2	BE-1282	BREAKER, SW TO CLNG TWR MU VLV	OS-020 SH 1	ITK	585	051	SR	CLS	CLS	N	139		0	0	0	0	1
609	B	2	BE-1284	BREAKER FR FEEDER FRM MCC E12A	OS-059 SH 1	ITK	585	051	SR	CLS	CLS	N	13		0	0	0	0	1
610	B	2	BE-1285	BRKR, BAT RM VENT FAN 1-1	OS-035	AUX	585	318	SR	CLS	CLS	N	142		0	0	0	0	1
611	B	2	BE-1289	BRKR, EDG1 AC TURBO OIL PMP MO	OS-041A SH 1	AUX	585	318	SR	CLS	CLS	N	144		0	0	0	0	1
612	B	2	BE-1291	BREAKER FOR FEEDER TO MCC E12A	OS-059 SH 1	AUX	545	101	SR	CLS	CLS	N	14		0	0	0	0	1
1070	B	2	BE-1292	BRKR FOR C31-4	OS-034 SH 2	AUX	545	101	SR	CLS	CLS	N	146		0	v	0	1	0
1071	B	2	BE-1293	BRKR FOR C31-5	OS-034 SH 2	AUX	545	101	SR	CLS	CLS	N	147		0	0	0	1	0
9	B	2	BE-1295	BRKR FOR MU-6419	OS-002 SH 3	AUX	545	101	SR	CLS	CLS	N	150		1	0	0	0	0
205	B	2	BE-1295	BRKR FOR MU-6419	OS-002 SH 3	AUX	545	101	SR	CLS	CLS	N	150		0	1	0	0	0
1062	B	2	BE-1297	FEEDER BREAKER TO MCC E12F	OS-059 SH 1	AUX	585	318	SR	CLS	CLS	N	15		0	0	0	0	1
613	B	2	BE-1298	BRKR, EDG FUEL OIL STRG & XFER	OS-041C	AUX	585	318	SR	CLS	CLS	N	151		0	0	0	0	1
220	B	2	BE-1401	H& LO SPD STARTER FR CTMT AIR CLR FANT	OS-033A	AUX	603	429	SR	CLS	CLS	N	167		0	0	1	0	0

Relay Review Safe Shutdown Equipment List (SSEL)

Line No.	Equip Equipment			Drawing Number	Room Eval			Normal Desired Pwr		Form Reqd Number	Support System	G.4					
	Train	Class	ID Number		Bldg	Elev	No.	Cat.	Note	State		RC	IC	PC	DH	SU	
221	B	14	BE12	ESNTL PZR HTR BNK 1 SPLY PNL	OS-001A	SH 2	AUX	603	429	SR	63	ON	ON	Y	124	ELECTRICAL	0 0 1 0 0
614	P	2	BF-110	BRKR, MCC F14 (CTMT AIR CLR 2)	OS-059	SH 1	AUX	603	428	SR		CLS	CLS	N	65		0 0 0 0 1
1063	P	2	BF-1101	BRKR FOR FEEDER TO MCC YF2	OS-059	SH 1	AUX	603	427	SR		CLS	CLS	N	18		0 0 0 0 1
615	P	2	BF-1103	BRKR, CTRM EMERG SYS STNBY...	OS-032B		AUX	603	427	SR		CLS	CLS	N	91		0 0 0 0 1
616	P	2	BF-1106	BRKR, CC WTR DISCH LN 2 ISOVLV	OS-021	SH 1	AUX	603	427	SR		CLS	CLS	N	127		0 0 0 0 1
617	P	2	BF-1112	BRKR, CC PMP RM VENT FAN 2	OS-036	SH 1	AUX	603	427	SR		CLS	CLS	N	97		0 0 0 0 1
324	P	2	BF-1124	BREAKER FOR AFP TURB 1-2 MS INLET ISOVLV	OS-017B	SH 1	AUX	603	427	SR		CLS	CLS	N	153		0 0 0 1 0
222	P	2	BF-1126	BREAKER FOR PRZR VAPOR SAMPLE LINE VALVE	OS-001A	SH 2	AUX	603	427	SR		CLS	CLS	N	154		0 0 1 0 0
325	P	2	BF-1129	BREAKER FOR DH NORM SUCT LINE 2 ISO VLV	OS-004	SH 1	AUX	565	236	SR		ON	ON	Y	84	ELECTRICAL	0 0 0 1 0
223	P	2	BF-1130	BREAKER FOR DH REMOVAL SUCTION LN VALVE	OS-004	SH 1	AUX	603	427	SR		CLS	CLS	N	100		0 0 1 0 0
326	P	2	BF-1130	BREAKER FOR DH REMOVAL SUCTION LN VALVE	OS-004	SH 1	AUX	603	427	SR		OFF	ON	Y	100	ELECTRICAL	0 0 0 1 0
618	P	2	BF-1131	BRKR, CTRM EMERG COND UNT 2	OS-032B		AUX	603	427	SR		CLS	CLS	N	75		0 0 0 0 1
619	P	2	BF-1132	BREAKER, CTRM EMERG COND 2 VLV	OS-020	SH 1	AUX	603	427	SR		CLS	CLS	N	129		0 0 0 0 1
327	P	2	BF-1134	BREAKER FOR DH PMP 2 SUC VLV FRM BWST	OS-004	SH 1	AUX	565	236	SR		ON	ON	Y	82	ELECTRICAL	0 0 0 1 0
328	P	2	BF-1136	BREAKER FOR LP INJ 2 VALVE MVDH1A	OS-004	SH 1	AUX	565	236	SR		ON	ON	Y	79	ELECTRICAL	0 0 0 1 0
620	P	2	BF-1137	BREAKER FOR FEEDER TO MCC F11B	OS-059	SH 1	AUX	603	427	SR		CLS	CLS	N	19		0 0 0 0 1
621	P	2	BF-114	BREAKER FOR MCC F12A	OS-059	SH 1	AUX	603	428	SR		CLS	CLS	N	67		0 0 0 0 1
622	P	2	BF-1146	BREAKER FOR FEEDER TO MCC F11D	OS-059	SH 1	AUX	603	427	SR		CLS	CLS	N	17		0 0 0 0 1
623	P	2	BF-1149	BRKR, CTRM EMERG VENT SYS FAN2	OS-032B		AUX	603	427	SR		CLS	CLS	N	95		0 0 0 0 1
624	P	2	BF-115	BREAKER FOR MCC F11A	OS-059	SH 1	AUX	603	428	SR		CLS	CLS	N	68		0 0 0 0 1
625	P	2	BF-1162	BREAKER FOR FEEDER FRM MCCF11A	OS-059	SH 1	AUX	603	405	SR		CLS	CLS	N	20		0 0 0 0 1
10	P	2	BF-1167	BRKR FR RC MUP2 MN OIL PMP MOT	OS-002	SH 4	AUX	565	236	SR		CLS	CLS	N	107		1 0 0 0 0
197	P	2	BF-1167	BRKR FR RC MUP2 MN OIL PMP MOT	OS-002	SH 4	AUX	565	236	SR		CLS	CLS	N	107		0 1 0 0 0
102	P	2	BF-1168	BKR FOR MUP2 AUX GEAR PMP MP372D	OS-002	SH 4	AUX	565	236	SR		CLS	CLS	N	109		1 0 0 0 0
199	P	2	BF-1168	BKR FOR MUP2 AUX GEAR PMP MP372D	OS-002	SH 4	AUX	565	236	SR		CLS	CLS	N	109		0 1 0 0 0
11	P	2	BF-1169	BRKR FOR BA PMP 1-2 MP382	OS-046		AUX	565	227	SR		CLS	CLS	N	102		1 0 0 0 0
626	P	2	BF-1175	BREAKER FR FEEDER FRM MCC F11A	OS-059	SH 1	AUX	565	227	SR		CLS	CLS	N	21		0 0 0 0 1
329	P	2	BF-1177	BREAKER FOR AFP 2 SUC VLV MOTOR MV1383	OS-017A	SH 1	AUX	565	236	SR		CLS	CLS	N	121		0 0 0 1 0
627	P	2	BF-1118	BREAKER FOR MCC F16A	OS-059	SH 1	AUX	603	428	SR		CLS	CLS	N	69		0 0 0 0 1
628	P	2	BF-1186	BRKR, CTRM EMERG VENT FAN..VLV	OS-032B		AUX	603	405	SR		CLS	CLS	N	89		0 0 0 0 1
1085	P	2	BF-1189	BRKR FOR FEEDER TO MCC F11E	OS-059	SH 1	AUX	603	427	SR		CLS	CLS	N	16		0 0 0 0 1
1086	P	2	BF-1191	FEEDER BRKR FOR MCC F11E	OS-059	SH 1	AUX	545	101	SR		CLS	CLS	N	22		0 0 0 0 1
1068	P	2	BF-1192	BRKR FOR C31-1	OS-034	SH 2	AUX	545	101	SR		CLS	CLS	N	148		0 0 0 1 0
1069	P	2	BF-1193	BRKR FOR C31-2	OS-034	SH 2	AUX	545	101	SR		CLS	CLS	N	149		0 0 0 1 0
629	P	2	BF-1204	BRKR, VENT FAN 2 L.V.S.G. RM	OS-035		AUX	603	428	SR		CLS	CLS	N	117		0 0 0 0 1
330	P	2	BF-1205	BREAKER FOR AFP ROOM VENT FAN 2	OS-036	SH 1	AUX	603	428	SR		CLS	CLS	N	123		0 0 0 1 0
630	P	2	BF-1209	BREAKER FOR BATT CHARGER DBC2P	OS-060	SH 1	AUX	603	428	SR		CLS	CLS	N	23		0 0 0 0 1
631	P	2	BF-1210	BRKR, BATT RM 428A TO ATM DPR	OS-035		AUX	603	428	SR		CLS	CLS	N	113		0 0 0 0 1
632	P	2	BF-1211	BRKR, SW PMP VENT FAN 3 MC99-3	OS-038B		ITK	575	051	SR		CLS	CLS	N	115		0 0 0 0 1
633	P	2	BF-1212	BREAKER FOR BATT CHARGER DBC2N	OS-060	SH 1	AUX	603	428	SR		CLS	CLS	N	24		0 0 0 0 1
224	P	2	BF-1217	BREAKER FOR PRZR HTRS CH 2	OS-001A	SH 2	AUX	428	603	SR		CLS	CLS	N	125		0 0 1 0 0
634	P	2	BF-1229	BRKR, CTRM EMERG SYS STNBY...	OS-032B		AUX	603	428	SR		CLS	CLS	N	93		0 0 0 0 1
635	P	2	BF-1230	BRKR, EDG FUEL OIL STOR & XFER	OS-041C		AUX	603	428	SR		CLS	CLS	N	152		0 0 0 0 1
636	P	2	BF-1236	BRKR, SW PMP VENT FAN 4 MC99-4	OS-038B		ITK	575	051	SR		CLS	CLS	N	119		0 0 0 0 1
112	P	2	BF-1237	RC LETDOWN COOLER 1-1 INLET ISO VALVE	OS-002	SH 1	AUX	603	428	SR		CLS	CLS	N	155		0 1 0 0 0
113	P	2	BF-1238	BREAKER FR LETDOWN COOLER 2 INLT VLV MTR	OS-002	SH 1	AUX	603	428	SR		CLS	CLS	N	156		0 1 0 0 0
637	P	2	BF-1239	BRKR, LOW VOLT SWGR RM VENT...	OS-035		AUX	603	428	SR		CLS	CLS	N	157		0 0 0 0 1
638	P	2	BF-1255	BRKR, EDG RM 2 VNTL FAN 3	OS-035		AUX	585	319	SR		CLS	CLS	N	158		0 0 0 0 1
639	P	2	BF-1256	BRKR, EDG RM 2 VNTL FAN 4	OS-035		AUX	585	319	SR		CLS	CLS	N	159		0 0 0 0 1

Relay Review Safe Shutdown Equipment List (SSEL)

Line No.	Equip Train Class	Equipment ID Number	System/Equipment Description	Drawing Number	Room Eval			Normal State	Desired State	Pwr Reqd	Form Number	Support System	G.4				
					Bldg	Elev	No.	Cat.	Note	State	RC	IC	PC	DH	SU		
1096 P 2 BF-1258	EDG 2 IMMERSION HEATER BREAKER	OS-041A	AUX	585	319	SR	CLS	CLS	N	277	0	0	0	0	1		
640 P 2 BF-1259	BRKR, BATT RM VENT FAN 1-2	OS-035	AUX	585	319	SR	CLS	CLS	N	143	0	0	0	0	1		
641 P 2 BF-1261	BRKR, EDG 2 SOAK PUMP MP1472	OS-041A SH 2	AUX	585	319	SR	CLS	CLS	N	133	0	0	0	0	1		
642 P 2 BF-1270	BREAKER FOR FEEDER TO MCC YF1	OS-059 SH 1	AUX	585	319	SR	CLS	CLS	N	25	0	0	0	0	1		
643 P 2 BF-1274	BRKR, SW PUMP STRAINER MF15-2	OS-020 SH 1	ITK	585	052	SR	CLS	CLS	N	135	0	0	0	0	1		
644 P 2 BF-1275	BRKR, SW PMP STRNR DRAIN VALVE	OS-020 SH 1	ITK	585	052	SR	CLS	CLS	N	137	0	0	0	0	1		
645 P 2 BF-1277	BRKR, SW ISO VLV - COOLING WTR	OS-020 SH 1	ITK	585	052	SR	CLS	CLS	N	160	0	0	0	0	1		
646 P 2 BF-1278	BREAKER FR FEEDER TO MCC F12D	OS-059 SH 1	ITK	585	052	SR	CLS	CLS	N	27	0	0	0	0	1		
647 P 2 BF-1281	BREAKER, SW - INTK FOREBAY VLV	OS-020 SH 1	ITK	585	052	SR	CLS	CLS	N	161	0	0	0	0	1		
648 P 2 BF-1282	BRKER, SW - COLLECT BASIN VLV	OS-020 SH 1	ITK	585	052	SR	CLS	CLS	N	162	0	0	0	0	1		
649 P 2 BF-1284	BREAKER FR FEEDER FRM MCC F12A	OS-059 SH 1	ITK	585	052	SR	CLS	CLS	N	26	0	0	0	0	1		
225 P 2 BF-1285	BREAKER FOR PRZR SMPL LINE TO...HDR VLV	OS-001A SH 2	AUX	603	428	SR	CLS	CLS	N	163	0	0	1	0	0		
650 P 2 BF-1289	BRKR, EDG 2 AC TURBO OIL PUMP ¹	OS-041A SH 2	AUX	585	319	SR	CLS	CLS	N	145	0	0	0	0	1		
226 P 2 BF-1401	H/I/LO SPD STARTER FOR CAC FAN 2	OS-033A	AUX	603	428	SR	CLS	CLS	N	168	0	0	1	0	0		
12 P 2 BF-1617	BRKR FOR MUP SUCT VLV MV3971	OS-002 SH 3	AUX	603	428	SR	CLS	CLS	N	164	1	0	0	0	0		
180 P 2 BF-1617	BRKR FOR MUP SUCT VLV MV3971	OS-002 SH 3	AUX	603	428	SR	CLS	CLS	N	164	0	1	0	0	0		
227 P 14 BF12	ESNTL PZR HTR BNK 2 SPLY PNL	OS-001A SH 2	AUX	603	428	SR	63	ON	ON	Y	125	ELECTRICAL	0	0	1	0	
13 P 2 BRKR-A	CRDM TRIP BRKR-A C4606	E-65B SH 14	AUX	603	428	SR	CLS	OPN	Y	183	ELECTRICAL	1	0	0	0	0	
14 P 2 BRKR-B	CRDM TRIP BRKR-B C4603	E-65B SH 13	AUX	603	429	SR	CLS	OPN	Y	183	ELECTRICAL	1	0	0	0	0	
15 B 2 BRKR-C	CRDM TRIP BRKR-C C4612	E-65B SH 16	AUX	603	428	SR	CLS	OPN	Y	183	ELECTRICAL	1	0	0	0	0	
16 B 2 BRKR-D	CRDM TRIP BRKR-D C4806	E-65B SH 15	AUX	603	402	SR	CLS	OPN	Y	183	ELECTRICAL	1	0	0	0	0	
462 P 20 C 5755C	SFAS CHANNEL 2	OS-001A SH 1	AUX	623	502	SR	ON	ON	Y	311	ELECTRICAL	0	0	0	1	0	
463 B 20 C 5761A	SFRCS ACTUATION CHANNEL 1	N/A	AUX	623	502	SR	ON	ON	Y	312	ELECTRICAL	0	0	0	1	0	
552 B 20 C 5762A	SFRCS ACTUATION CHANNEL 1	N/A	AUX	623	502	SR	ON	ON	Y	312	ELECTRICAL	0	0	0	1	0	
461 B 20 C 5762C	SFAS CHANNEL 1	OS-001A SH 1	AUX	623	502	SR	ON	ON	Y	311	ELECTRICAL	0	0	0	1	0	
464 P 20 C 5792	SFRCS ACTUATION CHANNEL 2	N/A	AUX	623	502	SR	ON	ON	Y	312	ELECTRICAL	0	0	0	1	0	
553 P 20 C 5792A	SFRCS ACTUATION CHANNEL 2	N/A	AUX	623	502	SR	ON	ON	Y	312	ELECTRICAL	0	0	0	1	0	
1043 B 3 C1	4.16 KV SWITCH GEAR	OS-058 SH 1	AUX	585	325	SR	ON	ON	Y	299	ELECTRICAL	0	0	0	0	1	
228 B 10 C1-1	CAC 1-1 (AIR SIDE FUNCTION)	OS-033A	CTM	585	217	SR	66	FAST	FAST	Y	167	ELECTRICAL	0	0	1	0	0
229 P 10 C1-2	CAC 1-2 (AIR SIDE FUNCTION)	OS-033A	CTM	585	217	SR	66	FAST	FAST	Y	168	ELECTRICAL	0	0	1	0	0
651 P 9 C133	VENT FAN FOR L.V.S.G. ROOM	OS-035	AUX	603	428	SR	36	STB	O/O	Y	117	ELECTRICAL	0	0	0	0	1
652 B 10 C21-1	CNTRL RM EMERG VENT SYS FAN1-1	OS-032B	AUX	638	603	SR	36	OFF	ON	Y	94	ELECTRICAL	0	0	0	0	1
653 P 10 C21-2	CNTRL RM EMERG VENT SYS FAN1-2	OS-032B	AUX	638	603	SR	36	OFF	ON	Y	95	ELECTRICAL	0	0	0	0	1
654 B 9 C25-1	SUPPLY FAN 1-1	OS-035	AUX	585	318	SR	36	OFF	ON	Y	130	ELECTRICAL	0	0	0	0	1
655 B 9 C25-2	SUPPLY FAN 1-2	OS-035	AUX	585	318	SR	36	OFF	ON	Y	131	ELECTRICAL	0	0	0	0	1
656 P 9 C25-3	EDG RM SUPPLY FAN	OS-035	AUX	585	319	SR	36	OFF	ON	Y	158	ELECTRICAL	0	0	0	0	1
657 P 9 C25-4	EDG SUPPLY FAN 1-4	OS-035	AUX	585	319	SR	36	OFF	ON	Y	159	ELECTRICAL	0	0	0	0	1
658 B 20 C3017	SW STRNR 1-1 DRAIN/BCKWASH VLV CABINET	OS-020 SH 1	ITK	576	052	SR	AUT	AUT	Y	134	ELECTRICAL	0	0	0	0	1	
659 P 20 C3018	SW STRNR 1-2 DRAIN/BCKWASH VLV CABINET	OS-020 SH 1	ITK	576	052	SR	AUT	AUT	Y	135	ELECTRICAL	0	0	0	0	1	
1064 P 10 C31-1	ECCS RM CLR 1-1 FAN	OS-034 SH 2	AUX	545	115	SR	36	STB	O/O	Y	148	ELECTRICAL	0	0	0	1	0
1065 P 10 C31-2	ECCS RM CLR 1-2 FAN	OS-034 SH 2	AUX	545	115	SR	36	STB	O/O	Y	149	ELECTRICAL	0	0	0	1	0
1066 B 10 C31-4	ECCS RM CLR 1-4 FAN	OS-034 SH 2	AUX	545	105	SR	36	STB	O/O	Y	146	ELECTRICAL	0	0	0	1	0
1067 B 10 C31-5	ECCS RM CLR 1-5 FAN	OS-034 SH 2	AUX	545	105	SR	36	STB	O/O	Y	147	ELECTRICAL	0	0	0	1	0
1041 B 20 C3615	EDG 1 CONTROL PANEL	OS-041A SH 1	AUX	585	318	SR	102	ON	ON	Y	356	ELECTRICAL	0	0	0	0	1
1042 P 20 C3616	EDG 2 CONTROL PANEL	OS-041A SH 2	AUX	585	319	SR	102	ON	ON	Y	355	ELECTRICAL	0	0	0	0	1
1097 B 20 C3617	EDG 1-1 STATIC EXCITER VOLTAGE REG PNL	OS-041A	AUX	585	318	SR	ON	ON	Y	352	ELECTRICAL	0	0	0	0	1	
1098 P 20 C3618	EDG 1-1 STATIC EXCITER VOLTAGE REG PNL	OS-041A	AUX	585	319	SR	ON	ON	Y	354	ELECTRICAL	0	0	0	0	1	
660 B 20 C3621	EDG 1-1 ENGINE MNTD CTRL PNL	OS-041C	AUX	585	318	SR	46	ON	ON	Y	351	ELECTRICAL	0	0	0	0	1
1099 B 20 C3621A	EDG 1-1 IDLE START/STOP CONTROL PNL	OS-041B	AUX	585	318	SR	ON	ON	Y	351	ELECTRICAL	0	0	0	0	1	

Relay Review Safe Shutdown Equipment List (SSEL)

Line No.	Equip Equipment			Drawing Number	Room Eval			Normal Desired Pwr		Form Reqd	Support System	G.4							
	Train	Class	ID Number		Bldg	Elev	No.	Cat.	Note	State	State	RC	IC	PC	DH	SU			
661	P	20	C3622	EDG 1-2 ENGINE MNTD CTRL PNL	OS-041C	AUX	585	319	SR	46	ON	ON	Y	353	ELECTRICAL	0	0	0	1
1100	P	20	C3622A	EDG 1-2 IDLE START/STOP CONTROL PNL	OS-041B	AUX	585	319	SR		ON	ON	Y	353	ELECTRICAL	0	0	0	1
281	C	20	C5755C	SFAS CHANNEL 2	OS-001A SH 1	AUX	623	502	SR		ON	ON	Y	311	ELECTRICAL	0	0	1	0
283	C	20	C57560	SFAS CHANNEL 4	OS-001A SH 1	AUX	623	502	SR		ON	ON	Y	311	ELECTRICAL	0	0	1	0
280	C	20	C5762C	SFAS CHANNEL 1	OS-001A SH 1	AUX	623	502	SR		ON	ON	Y	311	ELECTRICAL	0	0	1	0
282	C	20	C57630	SFAS CHANNEL 3	OS-001A SH 1	AUX	623	502	SR		ON	ON	Y	311	ELECTRICAL	0	0	1	0
662	B	9	C71-1	L.V.S.G. RM VENT FAN 1-1	OS-035	AUX	603	429	SR	36	STB	0/0	Y	116	ELECTRICAL	0	0	0	1
331	B	9	C73-1	AFP ROOM EXHAUST FAN	OS-036 SH 1	AUX	565	237	SR	92	STB	ON	Y	122	ELECTRICAL	0	0	0	1
332	P	9	C73-2	AFP ROOM EXHAUST FAN	OS-036 SH 1	AUX	565	238	SR	92	STB	ON	Y	123	ELECTRICAL	0	0	0	1
663	B	9	C75-1	CC PMP RM VENT FAN 1-1	OS-036 SH 1	AUX	585	328	SR	36	0/0	0/0	Y	96	ELECTRICAL	0	0	0	1
664	P	9	C75-2	CC PMP RM VENT FAN 1-2	OS-036 SH 1	AUX	585	328	SR	36	0/0	0/0	Y	97	ELECTRICAL	0	0	0	1
665	B	9	C78-1	BATTERY ROOM VENT FAN 1-1	OS-035	AUX	603	429B	SR	36	STB	0/0	Y	142	ELECTRICAL	0	0	0	1
666	P	9	C78-2	BATTERY ROOM VENT FAN 1-2	OS-035	AUX	603	428A	SR	36	STB	0/0	Y	143	ELECTRICAL	0	0	0	1
667	B	9	C99-1	EXHAUST FAN 1-1	OS-038B	ITK	585	52A	SR	36	0/0	0/0	Y	114	ELECTRICAL	0	0	0	1
668	B	9	C99-2	EXHAUST FAN 1-2	OS-038B	ITK	585	52A	SR	36	0/0	0/0	Y	118	ELECTRICAL	0	0	0	1
669	P	9	C99-3	EXHAUST FAN 1-3	OS-038B	ITK	585	52A	SR	36	0/0	0/0	Y	115	ELECTRICAL	0	0	0	1
670	P	9	C99-4	EXHAUST FAN 1-4	OS-038B	ITK	585	52A	SR	36	0/0	0/0	Y	119	ELECTRICAL	0	0	0	1
671	B	7	CC-1467	CCW FRM DH RMVL CLR 1-1...VLV	OS-021 SH 1	AUX	545	113	SR	33	CLS	OP/CL	Y	175	ELECTRICAL	0	0	0	1
672	P	7	CC-1469	CCW FRM DH RMVL CLR 1-2....VLV	OS-021 SH 1	AUX	545	113	SR	33	CLS	OP/CL	Y	176	ELECTRICAL	0	0	0	1
673	B	7	CC-1471	CC FRM EDG 1-1 SOL OUTLET VLV	OS-021 SH 1	AUX	585	318	SR	33	CLS	OP/CL	Y	177	ELECTRICAL	0	0	0	1
674	P	7	CC-1474	CC FRM EDG 1-2 SOL OUTLET VLV	OS-021 SH 1	AUX	585	319	SR	33	CLS	OP/CL	Y	178	ELECTRICAL	0	0	0	1
675	B	8A	CC-5095	CC LN 1 DISCH ISO VALVE	OS-021 SH 1	AUX	585	328	SR		OPN	OP/CL	Y	126	ELECTRICAL	0	0	0	1
676	P	8A	CC-5096	CC LN 2 DISCH ISO VALVE	OS-021 SH 1	AUX	585	328	SR		CLS	OP/CL	Y	127	ELECTRICAL	0	0	0	1
677	B	4	CE1-1	4.16 KV-480V TRANSFORMER	OS-059 SH 1	AUX	603	429	SR		ON	ON	Y	278	ELECTRICAL	0	0	0	1
230	B	8A	CV-2000B	RPS SFAS CH1 CTMT PRESS SWT CTMT ISO VLV	OS-033F	AUX	585	303	R		OPN	OPN	N	179		0	0	1	0
231	P	8A	CV-2001B	RPS SFAS CH2 CTMT PRESS SWT CTMT ISO VLV	OS-033F	AUX	603	427	R		OPN	OPN	N	180		0	0	1	0
300	C	8A	CV-2002B	RPS SFAS CH3 CTMT PRESS SWT CTMT ISO VLV	OS-033F	AUX	603	402	R		OPN	OPN	N	181		0	0	1	0
301	C	8A	CV-2003B	RPS SFAS CH4 CTMT PRESS SWT CTMT ISO VLV	OS-033F	AUX	585	314	R		OPN	OPN	N	182		0	0	1	0
1060	P	3	D1	4.16 KV SWITCH GEAR	OS-058 SH 2	AUX	585	323	SR		ON	ON	Y	350	ELECTRICAL	0	0	0	1
678	B	2	D101	BRKR FOR +125VDC DIST PNL D1P	OS-060 SH 1	AUX	603	429	SR		CLS	CLS	N	30		0	0	0	1
679	B	2	D102	BRKR FOR +125VDC DIST PNL D2P	OS-060 SH 1	AUX	603	429	SR	42	OPN	CLS	Y	31	ELECTRICAL	0	0	0	1
680	B	2	D103	BREAKER FOR + SUPPLY FRM DBC1P	OS-060 SH 1	AUX	603	429	SR		CLS	CLS	N	29		0	0	0	1
681	B	2	D104	BREAKER FOR STATION BATT 1P	OS-060 SH 1	AUX	603	429	SR		CLS	CLS	N	28		0	0	0	1
682	B	2	D111	BRKR FR EMERG LIGHT XFER SWT 1	OS-060 SH 1	AUX	603	429	SR		CLS	CLS	N	32		0	0	0	1
684	B	2	D112	BRKR FR EMERG LIGHT XFER SWT 3	OS-060 SH 1	AUX	603	429	SR		CLS	CLS	N	33		0	0	0	1
683	B	2	D116	BREAKER FOR INVERTER YVA	OS-060 SH 1	AUX	603	429	SR		CLS	CLS	N	34		0	0	0	1
103	B	2	D117	BKR FOR MUP1 DC OIL PMP	OS-002 SH 4	AUX	603	429	SR		CLS	CLS	N	104		1	0	0	0
195	B	2	D117	BKR FOR MUP1 DC OIL PMP	OS-002 SH 4	AUX	603	429	SR		CLS	CLS	N	104		0	1	0	0
685	B	2	D131	BREAKER FOR STATION BATT 1N	OS-060 SH 1	AUX	603	429	SR		CLS	CLS	N	35		0	0	0	1
686	B	2	D132	BRKR FOR -125VDC DIST PNL	OS-060 SH 1	AUX	603	429	SR		CLS	CLS	N	36		0	0	0	1
687	B	2	D133	BRKR FOR -125VDC DIST PNL D2N	OS-060 SH 1	AUX	603	429	SR	42	OPN	CLS	Y	37	ELECTRICAL	0	0	0	1
688	B	2	D134	BRKR FOR - SUPPLY FROM DBC1N	OS-060 SH 1	AUX	603	429	SR		CLS	CLS	N	43		0	0	0	1
333	B	2	D135	BREAKER FOR AFP TURB 1 MS INLT ISO VALVE	OS-017B SH 1	AUX	603	429	SR		CLS	CLS	N	250		0	0	0	1
703	B	2	D145	BRKR FOR D1NA	OS-060 SH 1	AUX	603	429	SR		CLS	CLS	N	38		0	0	0	1
689	C	14	D1N	ESSEN DIST PNL "D1N"	OS-060 SH 2	AUX	603	429A	SR		ON	ON	Y	53	ELECTRICAL	0	0	0	1
690	B	2	D1N 01	BREAKER FOR INCOMING DC MCC 1	OS-060 SH 2	AUX	603	429A	SR		CLS	CLS	N	53		0	0	0	1
691	P	2	D1N 02	BRKR FOR INCOMNG FRM DC MCC 2	OS-060 SH 2	AUX	603	429A	SR	41	OPN	CLS	Y	53	ELECTRICAL	0	0	0	1
692	C	2	D1N 03	BREAKER FOR INVERTER YV3	OS-060 SH 2	AUX	603	429A	SR		CLS	CLS	N	53		0	0	0	1
1103	P	20	D1N09	DISC SW FOR EDG 1-1 FUNCTION C3615 (ALT)		AUX	603	429A	SR		CLS	CLS	N	53		0	0	0	1

Relay Review Safe Shutdown Equipment List (SSEL)

Line No.	Equip Train Class	Equipment ID Number	System/Equipment Description	Drawing Number	Room Eval			Normal State	Desired State	Pwr Reqd	Form Number	Support System	G.4								
					Bldg	Elev	No.	Cat.	Note	State	RC	IC	PC	DH	SU						
706	B	2	D1NA	ESSENTIAL -125VDC DIST PNL CH1	OS-060	SH 1	AUX	603	429	SR	ON	ON	Y	38	ELECTRICAL	0	0	0	0	1	
694	C	14	D1P	ESSEN DIST PNL "D1P"	OS-060	SH 2	AUX	603	429	SR	ON	ON	Y	55	ELECTRICAL	0	0	0	0	1	
695	B	2	D1P 01	BREAKER FOR DC MCC 1	OS-060	SH 2	AUX	603	429	SR	CLS	CLS	N	55		0	0	0	0	1	
696	P	2	D1P 02	BREAKER FOR DC MCC 2	OS-060	SH 2	AUX	603	429	SR	41	OPN	CLS	Y	55	ELECTRICAL	0	0	0	0	1
697	C	2	D1P 03	BREAKER FOR INVERTER YV1	OS-060	SH 2	AUX	603	429	SR	CLS	CLS	N	55		0	0	0	0	1	
1102	B	20	D1P09	DISC SW FOR EDG 1-1 FUNCTION C3615	OS-060	SH 2	AUX	603	429	SR	CLS	CLS	N	55		0	0	0	0	1	
334	B	2	D1P20	CIRCUIT D1P20	OS-017B	SH 1	AUX	603	429	SR	CLS	CLS	N	72		0	0	0	1	0	
699	P	2	D201	BRKR FOR +125VDC DISTR PNL D1P	OS-060	SH 1	AUX	603	428	SR	41	OPN	CLS	Y	41	ELECTRICAL	0	0	0	0	1
700	P	2	D202	BRKR FR +125VDC DIST PNL D2P	OS-060	SH 1	AUX	603	428	SR	CLS	CLS	N	42		0	0	0	0	1	
701	P	2	D203	BREAKER FOR + SUPPLY FRM DBC2P	OS-060	SH 1	AUX	603	428	SR	CLS	CLS	N	40		0	0	0	0	1	
702	P	2	D204	BRKR FOR INC/M PW FRM BATT 2P	OS-060	SH 1	AUX	603	428	SR	CLS	CLS	N	39		0	0	0	0	1	
704	P	2	D212	BRKR FR EMERG LIGHT XFER SWT 4	OS-060	SH 1	AUX	603	428	SR	CLS	CLS	N	44		0	0	0	0	1	
705	P	2	D216	BREAKER FOR INVERTER YVB	OS-060	SH 1	AUX	603	428	SR	CLS	CLS	N	45		0	0	0	0	1	
104	P	2	D217	BKR FOR MUP2 DC OIL PMP	OS-002	SH 4	AUX	603	428	SR	CLS	CLS	N	108		1	0	0	0	0	
198	P	2	D217	BKR FOR MUP2 DC OIL PMP	OS-002	SH 4	AUX	603	428	SR	CLS	CLS	N	108		0	1	0	0	0	
707	P	2	D231	BREAKER FOR BATT STATION ZN	OS-060	SH 1	AUX	603	428	SR	CLS	CLS	N	49		0	0	0	0	1	
708	P	2	D232	BRKR FR -125V DC DIST PNL D1N	OS-060	SH 1	AUX	603	428	SR	41	OPN	CLS	Y	46	ELECTRICAL	0	0	0	0	1
709	P	2	D233	BRKR FR -125V DC DIST PNL D2N	OS-060	SH 1	AUX	603	428	SR	CLS	CLS	N	47		0	0	0	0	1	
710	P	2	D234	BRKR FOR - SUPPLY FRM DBC2N	OS-060	SH 1	AUX	603	428	SR	CLS	CLS	N	48		0	0	0	0	1	
711	C	14	D2N	ESSEN DIST PNL "D2N"	OS-060	SH 2	AUX	603	428B	SR	ON	ON	Y	56	ELECTRICAL	0	0	0	0	1	
712	P	2	D2N 01	BREAKER FOR DC MCC D1	OS-060	SH 2	AUX	603	428	SR	CLS	CLS	N	56		0	0	0	0	1	
713	B	2	D2N 02	BREAKER FOR DC MCC D2	OS-060	SH 2	AUX	603	428	SR	42	OPN	CLS	Y	56	ELECTRICAL	0	0	0	0	1
714	C	2	D2N 03	BREAKER FOR INVERTER YV4	OS-060	SH 2	AUX	603	428	SR	CLS	CLS	N	56		0	0	0	0	1	
1104	P	20	D2N09	DISC SW FOR EDG 1-2 FUNCTION C3616 (ALT)	OS-060	SH 2	AUX	603	428	SR	ON	ON	Y	56	ELECTRICAL	0	0	0	0	1	
715	C	14	D2P	ESSNTL +125VDC DISTBTN PNL CH2	OS-060	SH 2	AUX	603	428	SR	ON	ON	Y	54	ELECTRICAL	0	0	0	0	1	
716	P	2	D2P 01	BREAKER FOR DC MCC 2	OS-060	SH 2	AUX	603	428	SR	CLS	CLS	N	54		0	0	0	0	1	
717	B	2	D2P 02	BREAKER FOR DC MCC 1	OS-060	SH 2	AUX	603	428	SR	42	OPN	CLS	Y	54	ELECTRICAL	0	0	0	0	1
718	C	2	D2P 03	BREAKER FOR INVERTER YV2	OS-060	SH 2	AUX	603	428	SR	CLS	CLS	N	54		0	0	0	0	1	
1101	P	20	D2P09	DISC SW FOR EDG 1-2 FUNCTION C3616	OS-060	SH 2	AUX	603	428	SR	ON	ON	Y	54	ELECTRICAL	0	0	0	0	1	
335	P	2	D2P20	CIRCUIT D2P20	OS-017B	SH 1	AUX	603	428	SR	CLS	CLS	N	73		0	0	0	1	0	
719	B	BB	DA-3783	EDG AIR RCVR 1-1-1 TO AIR..VLV	OS-041B		AUX	585	318	SR	OPN	CLS	Y	186	ELECTRICAL	0	0	0	0	1	
720	B	BB	DA-3784	EDG AIR RCVR 1-1-2 TO AIR..VLV	OS-041B		AUX	585	318	SR	OPN	CLS	Y	187	ELECTRICAL	0	0	0	0	1	
721	P	BB	DA-3785	EDG AIR RCVR 1-2-1 TO AIR..VLV	OS-041B		AUX	585	319	SR	OPN	CLS	Y	188	ELECTRICAL	0	0	0	0	1	
722	P	BB	DA-3786	EDG AIR RCVR 1-2-2 TO AIR..VLV	OS-041B		AUX	585	319	SR	OPN	CLS	Y	189	ELECTRICAL	0	0	0	0	1	
723	B	16	DBC1N	BATTERY CHARGER -125V dc	OS-060	SH 1	AUX	603	429	SR	ON	ON	Y	57	ELECTRICAL	0	0	0	0	1	
724	B	16	DBC1P	BATT CHARGER FOR BATT 1P +125V	OS-060	SH 1	AUX	603	429	SR	ON	ON	Y	57	ELECTRICAL	0	0	0	0	1	
725	P	16	DBC2N	BATTERY CHARGER 125V dc	OS-060	SH 1	AUX	603	428	SR	ON	ON	Y	57	ELECTRICAL	0	0	0	0	1	
726	P	16	DBC2P	BATTERY CHARGER +125V	OS-060	SH 1	AUX	603	428	SR	ON	ON	Y	57	ELECTRICAL	0	0	0	0	1	
693	B	14	DC MCC-1	DC BUS TRAIN 1	OS-060	SH 1	AUX	603	429	SR	ON	ON	Y	28	ELECTRICAL	0	0	0	0	1	
698	P	14	DC MCC-2	DC BUS TRAIN 2	OS-060	SH 1	AUX	603	428	SR	ON	ON	Y	39	ELECTRICAL	0	0	0	0	1	
727	P	4	DF1-2	4.16kV-480V TRANSFORMER	OS-059	SH 1	AUX	603	428	SR	ON	ON	Y	279	ELECTRICAL	0	0	0	0	1	
17	C	8A	DH-11	RCS TO DH SYSTEM ISO VALVE	OS-004	SH 1	CTM	565	290	R	CLS	CLS	N	100		1	0	0	0	0	
232	P	8A	DH-11	RCS TO DH SYSTEM ISO VALVE	OS-004	SH 1	CTM	565	290	SR	64	CLS	OPN	Y	100	ELECTRICAL	0	0	1	0	0
337	C	8A	DH-11	RCS TO DH SYSTEM ISO VALVE	OS-004	SH 1	CTM	565	290	SR	CLS	OPN	Y	100	ELECTRICAL	0	0	0	1	0	
114	C	8A	DH-12	RCS TO DH SYSTEM ISO VALVE	OS-004	SH 1	CTM	565	290	R	CLS	CLS	N	99		0	1	0	0	0	
233	P	8A	DH-12	RCS TO DH SYSTEM ISO VALVE	OS-004	SH 1	CTM	565	290	SR	CLS	OPN	Y	99	ELECTRICAL	0	0	1	0	0	
338	C	8A	DH-12	RCS TO DH SYSTEM ISO VALVE	OS-004	SH 1	CTM	565	290	SR	CLS	OPN	Y	99	ELECTRICAL	0	0	0	1	0	
339	P	7	DH-13A	DH COOLER 1-2 BYPASS FLOW CTRL VALVE	OS-004	SH 1	AUX	545	113	R	CLS	CLS	N	190		0	0	0	1	0	
340	B	7	DH-13B	DH COOLER 1-1 BYPASS FLOW CTRL VALVE	OS-004	SH 1	AUX	545	113	R	CLS	CLS	N	191		0	0	0	1	0	

Relay Review Safe Shutdown Equipment List (SSEL)

Line No.	Equip Train Class			Equipment ID Number	System/Equipment Description	Drawing Number	Room Eval			Normal Cat.	Desired Note	Pwr State	Form Reqd	Support Number	G.4					
	Bldg	Elev	No.				Bldg	Elev	No.						RC	IC	PC	DH	SU	
341	P	7	DH-14A	DH COOLER 1-2 OUTLET FLOW CTRL VALVE	OS-004 SH 1	AUX	545	113	R	OPN	OPN	N	192		0	0	0	1	0	
342	B	7	DH-14B	DH COOLER 1-1 OUTLET FLOW CTRL VAVLE	OS-004 SH 1	AUX	545	113	R	OPN	OPN	N	193		0	0	0	1	0	
343	C	8A	DH-1517	DH PUMP 1-1 SUCTION FROM RCS VALVE	OS-004 SH 1	AUX	565	236	SR	88	CLS	OP/CL	Y	83	ELECTRICAL	0	0	0	1	0
344	C	8A	DH-1518	DH PUMP 1-2 SUCTION FROM RCS	OS-004 SH 1	AUX	565	236	SR	84	CLS	OP/CL	Y	84	ELECTRICAL	0	0	0	1	0
345	P	8A	DH-1A	DH COOLER 1-2 DISCH TO RCS ISO VALVE	OS-004 SH 1	AUX	565	236	SR	82	OPN	THR	Y	79	ELECTRICAL	0	0	0	1	0
346	B	8A	DH-1B	DH COOLER 1-1 DISCH TO RCS ISO VALVE	OS-004 SH 1	AUX	565	208	SR	87	OPN	THR	Y	78	ELECTRICAL	0	0	0	1	0
350	B	8A	DH-2733	DH PMP 1-1 SUC (BWST OR EMERG SUMP) VLV	OS-004 SH 1	AUX	545	105	SR		OPN	CLS	Y	81	ELECTRICAL	0	0	0	1	0
351	P	8A	DH-2734	DH PMP 1-2 SUC (BWST OR EMERG SUMP) VLV	OS-004 SH 1	AUX	545	113	SR		OPN	CLS	Y	82	ELECTRICAL	0	0	0	1	0
18	C	8A	DH-2736	DH AUX SPRAY THRTL VALVE	OS-004 SH 1	AUX	484	314	R		CLS	CLS	N	194		1	0	0	0	0
352	P	8A	DH-2736	DH AUX SPRAY THRTL VALVE	OS-004 SH 1	AUX	484	314	R		CLS	CLS	N	194		0	0	0	1	0
353	P	8A	DH-63	DH PMP 1-2 DISCH TO HPI PMP 1-2 SUC VLV	OS-004 SH 1	AUX	545	115	R		CLS	CLS	N	195		0	0	0	1	0
354	B	8A	DH-64	DH PMP 1-1 DISCH TO HPI PUMP 1-1 SUL VLV	OS-004 SH 1	AUX	545	105	R		CLS	CLS	N	196		0	0	0	1	0
19	C	8A	DH-7A	BWST ISO VALVE (LN 2)	OS-004 SH 1	YRD	585	901	R		OPN	OPN	N	197		1	0	0	0	0
20	C	8A	DH-7B	BWST ISO VALVE (LN 1)	OS-004 SH 1	YRD	585	901	R		OPN	OPN	N	198		1	0	0	0	0
355	P	8A	DH-830	DH COOLER 1-1/1-2 XCONNECTION VALVE	OS-004 SH 1	AUX	545	113	R		CLS	CLS	N	199		0	0	0	1	0
356	B	8A	DH-831	DH COOLER 1-1/1-2 XCONNECTION VALVE	OS-004 SH 1	AUX	545	113	R		CLS	CLS	N	200		0	0	0	1	0
728	P	7	DW-2643	DEMIN WTR MU VLV TO CCW SYS MU	OS-021 SH 3	AUX	623	501	R		CLS	CLS	N	201		0	0	0	0	1
729	B	2	E1	480V ESSENTIAL UNIT SUBSTATION	OS-059 SH 1	AUX	603	429	SR		ON	ON	Y	59	ELECTRICAL	0	0	0	0	1
1044	B	1	E11A	480V ESSENTIAL MCC	OS-059 SH 1	AUX	565	209	SR		ON	ON	Y	62	ELECTRICAL	0	0	0	0	1
865	B	1	E11B	480V ESSENTIAL MCC	OS-059 SH 1	AUX	585	304	SR	86	ON	ON	Y	1	ELECTRICAL	0	0	0	0	1
1218	B	1	E11B	480V ESSENTIAL MCC	OS-059 SH 1	AUX	585	304	SR	86	ON	ON	Y	3	ELECTRICAL	0	0	0	0	1
866	B	1	E11C	480V ESSENTIAL MCC	OS-059 SH 1	AUX	585	304	SR		ON	ON	Y	62	ELECTRICAL	0	0	0	0	1
1046	B	1	E11D	480V ESSENTIAL MCC	OS-059 SH 1	AUX	565	227	SR		ON	ON	Y	5	ELECTRICAL	0	0	0	0	1
867	B	1	E11E	480V ESSENTIAL MCC	OS-059 SH 1	AUX	603	402	SR		ON	ON	Y	4	ELECTRICAL	0	0	0	0	1
1219	B	1	E11E	480V ESSENTIAL MCC	OS-059 SH 1	AUX	603	402	SR		ON	ON	Y	6	ELECTRICAL	0	0	0	0	1
868	B	1	E12A	480V ESSENTIAL MCC	OS-059 SH 1	AUX	603	429	SR		ON	ON	Y	61	ELECTRICAL	0	0	0	0	1
869	B	1	E12B	480V ESSENTIAL MCC	OS-059 SH 1	AUX	585	318	SR		ON	ON	Y	282	ELECTRICAL	0	0	0	0	1
870	B	1	E12C	480V ESSENTIAL MCC	OS-059 SH 1	ITK	576	051	SR		ON	ON	Y	7	ELECTRICAL	0	0	0	0	1
1220	B	1	E12C	480V ESSENTIAL MCC	OS-059 SH 1	ITK	576	051	SR		ON	ON	Y	13	ELECTRICAL	0	0	0	0	1
1048	B	1	E12E	480V ESSENTIAL MCC	OS-059 SH 1	AUX	545	101	SR		ON	ON	Y	8	ELECTRICAL	0	0	0	0	1
1221	B	1	E12E	480V ESSENTIAL MCC	OS-059 SH 1	AUX	545	101	SR		ON	ON	Y	14	ELECTRICAL	0	0	0	0	1
871	B	1	E12F	480V ESSENTIAL MCC	OS-059 SH 1	AUX	585	318	SR		ON	ON	Y	11	ELECTRICAL	0	0	0	0	1
1222	B	1	E12F	480V ESSENTIAL MCC	OS-059 SH 1	AUX	585	318	SR		ON	ON	Y	15	ELECTRICAL	0	0	0	0	1
872	B	1	E14	480V ESSENTIAL MCC	OS-059 SH 1	AUX	603	429	SR		ON	ON	Y	63	ELECTRICAL	0	0	0	0	1
749	B	20	EI-4553	BUS Y1A VOLTMETER	OS-060 SH 2	AUX	623	505	SR		ON	ON	Y	52	ELECTRICAL	0	0	0	0	1
750	P	20	EI-4554	BUS Y2A VOLTMETER	OS-060 SH 2	AUX	623	505	SR		ON	ON	Y	52	ELECTRICAL	0	0	0	0	1
1057	B	20	EI-6271	BUS D1P VOLTMETER	OS-060 SH 2	AUX	623	505	SR		ON	ON	Y	52	ELECTRICAL	0	0	0	0	1
1058	P	20	EI-6272	BUS D2N VOLTMETER	OS-060 SH 2	AUX	623	505	SR		ON	ON	Y	52	ELECTRICAL	0	0	0	0	1
751	B	20	EI-6273	BUS 1P-BUS INCOMING VOLTMETER	OS-060 SH 1	AUX	623	502	SR		ON	ON	Y	52	ELECTRICAL	0	0	0	0	1
752	P	20	EI-6274	BUS 2P-BUS 2N VOLTMETER	OS-060 SH 1	AUX	623	502	SR		ON	ON	Y	52	ELECTRICAL	0	0	0	0	1
1059	B	20	EI-6275	BUS D1N VOLTMETER	OS-060 SH 2	AUX	623	505	SR		ON	ON	Y	52	ELECTRICAL	0	0	0	0	1
753	P	20	EI-6276	BUS D2P VOLTMETER	OS-060 SH 2	AUX	623	502	SR		ON	ON	Y	52	ELECTRICAL	0	0	0	0	1
754	B	20	EI-6277	BUS Y1 VOLTMETER	OS-060 SH 2	AUX	623	505	SR		ON	ON	Y	52	ELECTRICAL	0	0	0	0	1
755	P	20	EI-6278	BUS Y4 VOLTMETER	OS-060 SH 2	AUX	623	505	SR		ON	ON	Y	52	ELECTRICAL	0	0	0	0	1
756	B	20	EI-6281	BUS Y3 VOLTMETER	OS-060 SH 2	AUX	623	505	SR		ON	ON	Y	52	ELECTRICAL	0	0	0	0	1
757	P	20	EI-6282	BUS Y2 VOLTMETER	OS-060 SH 2	AUX	623	505	SR		ON	ON	Y	52	ELECTRICAL	0	0	0	0	1
758	B	20	EI-6297	BUS YAU VOLTMETER	OS-060 SH 1	AUX	623	505	SR		ON	ON	Y	52	ELECTRICAL	0	0	0	0	1
759	P	20	EI-6298	BUS YBU VOLTMETER	OS-060 SH 1	AUX	623	505	SR		ON	ON	Y	52	ELECTRICAL	0	0	0	0	1
760	P	2	F1	480V ESSENTIAL UNIT SUBSTATION	OS-059 SH 1	AUX	603	428	SR		ON	ON	Y	60	ELECTRICAL	0	0	0	0	1

Relay Review Safe Shutdown Equipment List (SSEL)

Line No.	Equip No.	Equip Class	Equip ID Number	System/Equipment Description	Drawing Number	Room Eval			Normal State	Desired State	Pwr Reqd	Form Number	Support System	G.4						
						Bldg	Elev	No.	Cat.	Note	State	RC	ID	PC	DH	SU				
873	P	1	F11A	480V ESSENTIAL MCC	OS-059 SH 1	AUX	603	427	SR	ON	ON	Y	68	ELECTRICAL	0	0	0	0	1	
874	P	1	F11B	480V ESSENTIAL MCC	OS-059 SH 1	AUX	603	405	SR	ON	ON	Y	19	ELECTRICAL	0	0	0	0	1	
1223	P	1	F11B	480V ESSENTIAL MCC	OS-059 SH 1	AUX	603	405	SR	ON	ON	Y	20	ELECTRICAL	0	0	0	0	1	
1049	P	1	F11C	480V ESSENTIAL MCC	OS-059 SH 1	AUX	565	236	SR	ON	ON	Y	281	ELECTRICAL	0	0	0	0	1	
1045	P	1	F11D	480V ESSENTIAL MCC	OS-059 SH 1	AUX	565	227	SR	ON	ON	Y	17	ELECTRICAL	0	0	0	0	1	
1224	P	1	F11D	480V ESSENTIAL MCC	OS-059 SH 1	AUX	565	227	SR	ON	ON	Y	21	ELECTRICAL	0	0	0	0	1	
1084	P	1	F11E	480V ESSENTIAL MCC	OS-059 SH 1	AUX	545	101	SR	ON	ON	Y	16	ELECTRICAL	0	0	0	0	1	
1225	P	1	F11E	480V ESSENTIAL MCC	OS-059 SH 1	AUX	545	101	SR	ON	ON	Y	22	ELECTRICAL	0	0	0	0	1	
875	P	1	F12A	480V ESSENTIAL MCC	OS-059 SH 1	AUX	603	428	SR	ON	ON	Y	67	ELECTRICAL	0	0	0	0	1	
876	P	1	F12B	480V ESSENTIAL MCC	OS-059 SH 1	AUX	585	319	SR	ON	ON	Y	280	ELECTRICAL	0	0	0	0	1	
877	P	1	F12C	480V ESSENTIAL MCC	OS-059 SH 1	ITK	576	052	SR	ON	ON	Y	25	ELECTRICAL	0	0	0	0	1	
878	P	1	F12D	480V ESSENTIAL MCC	OS-059 SH 1	ITK	576	052	SR	ON	ON	Y	27	ELECTRICAL	0	0	0	0	1	
879	P	1	F14	480V ESSENTIAL MCC	OS-059 SH 1	AUX	603	428	SR	ON	ON	Y	65	ELECTRICAL	0	0	0	0	1	
761	B	0	F15-1	SERVICE WATER STRAINER 1-1	OS-020 SH 1	ITK	576	052	SR	STB	O/O	Y	134	ELECTRICAL	0	0	0	0	1	
762	P	0	F15-2	SERVICE WATER STRAINER 1-2	OS-020 SH 1	ITK	576	052	SR	STB	O/O	Y	135	ELECTRICAL	0	0	0	0	1	
1047	P	1	F16A	480V ESSENTIAL MCC	OS-059 SH 1	AUX	603	428	SR	ON	ON	Y	69	ELECTRICAL	0	0	0	0	1	
763	B	18	F18 1422C	CC PMP 1-1 DISCH FLOW INDIC SW	OS-021 SH 1	AUX	585	328	SR	1	ON	ON	Y	289	ELECTRICAL	0	0	0	0	1
764	P	18	F18 1432D	CC PMP 1-2 DISCH FLOW INDIC SW	OS-021 SH 1	AUX	585	328	SR	1	ON	ON	Y	298	ELECTRICAL	0	0	0	0	1
359	P	18	FT DH2A	LO PRESSURE INJ LINE 2 FLOW TRANSMITTER	OS-004 SH 1	AUX	565	236	SR	ON	ON	Y	310	ELECTRICAL	0	0	0	1	0	
360	B	18	FT DH2B	LP INJ LINE 1 FLOW TRANSMITTER	OS-004 SH 1	AUX	545	105	SR	ON	ON	Y	310	ELECTRICAL	0	0	0	1	0	
361	P	20	FYI-DH2A	LP INJECTION LINE 2 FLOW RELAY INDICATOR	OS-004 SH 1	AUX	623	505	R	1	ON	ON	Y	310	ELECTRICAL	0	0	0	1	0
362	B	20	FYI-DH2B	LP INJECTION LINE 1 FLOW RELAY INDICATOR	OS-004 SH 1	AUX	623	505	SR	1	ON	ON	Y	310	ELECTRICAL	0	0	0	1	0
45	B	20	GRP IN LMT	ROD GROUP IN LIMIT LIGHTS	N/A - CBNT	AUX	623	505	SR	ON	ON	Y	313	ELECTRICAL	1	0	0	0	0	
					C5706															
542	P	20	HIS 100	HS FOR MSIV 100	OS-008 SH 1	AUX	623	505	SR	ON	ON	Y	303	ELECTRICAL	0	0	0	1	0	
548	C	20	HIS 100B	SFRCS CH 2 BLOCK SW	N/A	AUX	623	505	SR	ON	ON	Y	312	ELECTRICAL	0	0	0	1	0	
549	C	20	HIS 100C	SFRCS CH 4 BLOCK SW	N/A	AUX	623	505	SR	ON	ON	Y	312	ELECTRICAL	0	0	0	1	0	
543	B	20	HIS 101	HS FOR MSIV 101	OS-008 SH 1	AUX	623	505	SR	ON	ON	Y	303	ELECTRICAL	0	0	0	1	0	
550	C	20	HIS 101B	SFRCS CH 1 BLOCK SW	N/A	AUX	623	505	SR	ON	ON	Y	312	ELECTRICAL	0	0	0	1	0	
551	C	20	HIS 101C	SFRCS CH 3 BLOCK SW	N/A	AUX	623	505	SR	ON	ON	Y	312	ELECTRICAL	0	0	0	1	0	
363	B	20	HIS 106A	AHP TURB 1-1 MS ISO VALVE SG 1-1 HIS	OS-017B SH 1	AUX	623	505	SR	ON	ON	Y	250	ELECTRICAL	0	0	0	1	0	
364	P	20	HIS 107A	AHP TURB 1-2 MS ISO VALVE SG 1-2 HIS	OS-017B SH 1	AUX	623	505	SR	ON	ON	Y	153	ELECTRICAL	0	0	0	1	0	
1019	B	20	HIS 1356	CTMT CLR 1 SW OUTLET VALVE HIS IN C5716	OS-020 SH 1	AUX	623	505	SR	ON	ON	Y	265	ELECTRICAL	0	0	0	0	1	
1020	P	20	HIS 1357	CTMT CLR 2 SW OUTLET VALVE HIS IN C5716	OS-020 SH 1	AUX	623	505	SR	ON	ON	Y	266	ELECTRICAL	0	0	0	0	1	
1021	B	20	HIS 1366	CTMT CLR 1 SW INLT ISO VALVE HIS, C5716	OS-020 SH 1	AUX	623	505	SR	ON	ON	Y	86	ELECTRICAL	0	0	0	0	1	
1022	P	20	HIS 1367	CTMT CLR 2 SW INLT ISO VALVE HIS, C5716	OS-020 SH 1	AUX	623	505	SR	ON	ON	Y	87	ELECTRICAL	0	0	0	0	1	
765	B	20	HIS 1370	SW PMP 1 HAND INDIC SWITCH	OS-020 SH 1	AUX	623	505	SR	ON	ON	Y	287	ELECTRICAL	0	0	0	0	1	
766	P	20	HIS 1371	SW PUMP 2 HIS	OS-020 SH 1	AUX	623	505	SR	ON	ON	Y	295	ELECTRICAL	0	0	0	0	1	
365	B	20	HIS 1382	HIS FOR ISO VALVE SW1382	OS-017A SH 1	AUX	623	505	SR	ON	ON	Y	120	ELECTRICAL	0	0	0	1	0	
366	B	20	HIS 1382B	HIS FOR ISO VALVE SW1382 LOC IN C3630	OS-017A SH 1	AUX	585	324	SR	ON	ON	Y	120	ELECTRICAL	0	0	0	1	0	
367	P	20	HIS 1383	HIS FOR ISO VALVE SW1383	OS-017A SH 1	AUX	623	505	SR	ON	ON	Y	121	ELECTRICAL	0	0	0	1	0	
368	P	20	HIS 1383B	HIS FOR ISO VALVE SW1383 LOC IN C3630	OS-017A SH 1	AUX	585	324	SR	ON	ON	Y	121	ELECTRICAL	0	0	0	1	0	
767	P	20	HIS 1395	SW TO CLNG HDR HIS IN C5717	OS-020 SH 1	AUX	623	505	SR	ON	ON	Y	160	ELECTRICAL	0	0	0	0	1	
768	B	20	HIS 1399	SW TO CLNG WTR HDR HIS	OS-020 SH 1	AUX	623	505	SR	ON	ON	Y	267	ELECTRICAL	0	0	0	0	1	
769	B	20	HIS 1414	CCW PMP 1 HAND INDIC SWITCH	OS-021 SH 1	AUX	623	505	SR	ON	ON	Y	289	ELECTRICAL	0	0	0	0	1	
770	P	20	HIS 1418	CC PMP 2 HIS	OS-021 SH 1	AUX	623	505	SR	ON	ON	Y	298	ELECTRICAL	0	0	0	0	1	
771	B	20	HIS 1424	CC HX 1 SW OUT ISO VLV HIS	OS-020 SH 1	AUX	623	505	SR	ON	ON	Y	268	ELECTRICAL	0	0	0	0	1	
772	P	20	HIS 1434	CC HX2 SW SW OUT VLV HIS	OS-020 SH 1	AUX	623	505	SR	ON	ON	Y	269	ELECTRICAL	0	0	0	0	1	
1030	B	20	HIS 1467	DH RMVL CLR 1 CCW OUT HIS	OS-021 SH 1	AUX	623	505	SR	ON	ON	Y	175	ELECTRICAL	0	0	0	0	1	

Relay Review Safe Shutdown Equipment List (SSEL)

Line No.	Equip Train Class	Equipment ID Number	System/Equipment Description	Drawing Number	Room Eval			Normal Cat.	Desired Note	Pwr State	Form Reqd	G.4 Number	Support System	RC IC PC DH SU							
					Bidg	Elev	No.							RC	IC	PC	DH	SU			
773	P	20	HIS 1469	DH RMVL CLR 2 CCW OUT HIS	OS-021	SH 1	AUX	623	505	SR	ON	ON	Y	176	ELECTRICAL	0	0	0	0	1	
1031	B	20	HIS 1471	EDG 1 CCW OUT HIS	OS-021	SH 1	AUX	623	505	SR	ON	ON	Y	177	ELECTRICAL	0	0	0	0	1	
1032	P	20	HIS 1474	EDG 2 CCW OUT HIS	OS-021	SH 1	AUX	623	505	SR	ON	ON	Y	178	ELECTRICAL	0	0	0	0	1	
369	B	20	HIS 1517	DH PMP 1-1 NORM SUC ISO VLV HIS IN C5704	OS-004	SH 1	AUX	623	505	SR	88	ON	ON	Y	83	ELECTRICAL	0	0	0	1	0
370	P	20	HIS 1518	DH PMP 1-2 NORM SUC ISO VLV HIS IN C5704	OS-004	SH 1	AUX	623	505	SR	84	ON	ON	Y	84	ELECTRICAL	0	0	0	1	0
237	P	20	HIS 200A	PRZR VNT VLV TO CTMT VNT VLV HIS	OS-001A	SH 2	AUX	623	505	SR	ON	ON	Y	163	ELECTRICAL	0	0	1	0	0	
238	P	20	HIS 239A	PRZR VAPOR SAMPLE ISO VALVE HIS	OS-001A	SH 2	AUX	623	505	SR	ON	ON	Y	154	ELECTRICAL	0	0	1	0	0	
371	B	20	HIS 2733	DH PMP 1-1 SUCT FRM LP INJ LINE HIS	OS-004	SH 1	AUX	623	505	SR	ON	ON	Y	81	ELECTRICAL	0	0	0	1	0	
372	P	20	HIS 2734	DH PMP 1-2 SUCT FRM LP INJ LINE HIS	OS-004	SH 1	AUX	623	505	SR	ON	ON	Y	82	ELECTRICAL	0	0	0	1	0	
774	B	20	HIS 2927	CTRM EMERG COND 1 SW OUTLT VLV	OS-020	SH 1	AUX	623	505	SR	ON	ON	Y	128	ELECTRICAL	0	0	0	0	1	
775	P	20	HIS 2928	CTRM EMER COND 2 SW OUT VNT VLV	OS-020	SH 1	AUX	623	505	SR	ON	ON	Y	129	ELECTRICAL	0	0	0	0	1	
776	B	20	HIS 2929	SW TO INTAKE STRUCTURE VLV HIS	OS-020	SH 1	AUX	623	505	SR	ON	ON	Y	138	ELECTRICAL	0	0	0	0	1	
777	P	20	HIS 2930	SW TO INTK FOREBAY VALVE HIS	OS-020	SH 1	AUX	623	505	SR	ON	ON	Y	161	ELECTRICAL	0	0	0	0	1	
778	B	20	HIS 2931	SW TO CLNG TWR MU VLV HIS	OS-020	SH 1	AUX	623	505	SR	ON	ON	Y	139	ELECTRICAL	0	0	0	0	1	
779	P	20	HIS 2932	SW - COLLECTION BASIN VLV HIS	OS-020	SH 1	AUX	623	505	SR	ON	ON	Y	162	ELECTRICAL	0	0	0	0	1	
28	P	20	HIS 3971	RC MUP SCTN HIS IN C5703	OS-002	SH 3	AUX	623	505	SR	ON	ON	Y	164	ELECTRICAL	1	0	0	0	0	
182	P	20	HIS 3971	RC MUP SCTN HIS IN C5703	OS-002	SH 3	AUX	623	505	SR	ON	ON	Y	164	ELECTRICAL	0	1	0	0	0	
1119	B	20	HIS 4823	CTRL RM EMER SYS COND 1 IN HIS (C6708)	OS-032B		AUX	643	603	SR	ON	ON	Y	90	ELECTRICAL	0	0	0	0	1	
1120	B	20	HIS 4823A	CTRL RM EMER SYS COND 1 IN HIS	OS-032B		AUX	643	603	SR	ON	ON	Y	90	ELECTRICAL	0	0	0	0	1	
1121	B	20	HIS 4824	CTRL RM EMER SYS COND 1 OUT HIS (C6708)	OS-032B		AUX	643	603	SR	ON	ON	Y	90	ELECTRICAL	0	0	0	0	1	
1122	P	20	HIS 4827	CTRL RM EMER SYS COND 2 IN HIS (C6709)	OS-032B		AUX	643	603	SR	ON	ON	Y	91	ELECTRICAL	0	0	0	0	1	
1123	P	20	HIS 4827A	CTRL RM EMER SYS COND 2 IN HIS	OS-032B		AUX	643	603	SR	ON	ON	Y	91	ELECTRICAL	0	0	0	0	1	
1124	P	20	HIS 4828	CTRL RM EMER SYS COND 2 OUT HIS (C6709)	OS-032B		AUX	643	603	SR	ON	ON	Y	91	ELECTRICAL	0	0	0	0	1	
239	B	20	HIS 5031	CTMT COOLER FAN 1 HIS	OS-033A		AUX	623	505	SR	ON	ON	Y	167	ELECTRICAL	0	0	1	0	0	
240	P	20	HIS 5032	CTMT COOLER FAN 2 HIS	OS-033A		AUX	623	505	SR	ON	ON	Y	168	ELECTRICAL	0	0	1	0	0	
780	B	20	HIS 5095	CCW LN 1 TO NON-ESSEN HDR HIS	OS-021	SH 1	AUX	623	505	SR	ON	ON	Y	126	ELECTRICAL	0	0	0	0	1	
781	P	20	HIS 5096	CCW LN 2 HAND INDIC SWITCH	OS-021	SH 1	AUX	623	505	SR	ON	ON	Y	127	ELECTRICAL	0	0	0	0	1	
373	B	20	HIS 520A	AFP 1-1 GOV CTRL HIS, LOC IN C5709	OS-017B	SH 1	AUX	623	505	SR	ON	ON	Y	72	ELECTRICAL	0	0	0	1	0	
374	P	20	HIS 521A	AFP GOV CTRL HIS, LOCATED IN C5709	OS-017B	SH 1	AUX	623	505	SR	ON	ON	Y	73	ELECTRICAL	0	0	0	1	0	
782	B	20	HIS 5261	EMERG VENT FAN 1-1 HIS	OS-032B		AUX	623	505	SR	ON	ON	Y	94	ELECTRICAL	0	0	0	0	1	
783	B	20	HIS 5261A	HIS FR EMERG VENT FAN INLT VLV	OS-032B		AUX	623	505	SR	ON	ON	Y	88	ELECTRICAL	0	0	0	0	1	
784	C	20	HIS 5262	HIS FOR EMERG VENT FAN 2 1-2	OS-032B		AUX	623	505	SR	ON	ON	Y	95	ELECTRICAL	0	0	0	0	1	
785	P	20	HIS 5262A	HIS FR EMER VENT FANZ IN C5720	OS-032B		AUX	623	505	SR	ON	ON	Y	89	ELECTRICAL	0	0	0	0	1	
786	B	20	HIS 5301	HIS FOR AUX BLDG CTRM DMPR AIR	OS-032A		AUX	623	505	SR	ON	ON	Y	270	ELECTRICAL	0	0	0	0	1	
787	P	20	HIS 5311	HIS FOR AUX BLDG CTRM DAMP AIR	OS-032A		AUX	623	505	SR	ON	ON	Y	271	ELECTRICAL	0	0	0	0	1	
375	B	20	HIS 5889A	AFP TURB 1-1 STEAM INLET VALVE	OS-017B	SH 1	AUX	623	505	SR	ON	ON	Y	225	ELECTRICAL	0	0	0	1	0	
376	P	20	HIS 5889B	AFP 1-2 HAND INDICATING SWITCH, IN C5709	OS-017B	SH 1	AUX	623	505	SR	ON	ON	Y	226	ELECTRICAL	0	0	0	1	0	
377	P	20	HIS 598	STEAM GEN ISO VALVE HIS, IN C5717	OS-051	SH 2	AUX	623	505	SR	ON	ON	Y	272	ELECTRICAL	0	0	0	1	0	
378	B	20	HIS 607	SG 1-1 SAMPLE ISO VALVE HIS, IN C5717	OS-051	SH 2	AUX	623	505	SR	ON	ON	Y	273	ELECTRICAL	0	0	0	1	0	
379	B	20	HIS 6403	SFRCS/AFW MANUAL INITIATION SWITCH TRN 1	N/A		AUX	623	505	SR	ON	ON	Y	208	ELECTRICAL	0	0	0	1	0	
380	P	20	HIS 6404	SFRCS/AFW MANUAL INITIATION SWITCH TRN 2	N/A		AUX	623	505	SR	ON	ON	Y	209	ELECTRICAL	0	0	0	1	0	
29	B	20	HIS 6405	RC MUP SUCTION VALVE 1	OS-002	SH 3	AUX	623	505	SR	ON	ON	Y	85	ELECTRICAL	1	0	0	0	0	
181	B	20	HIS 6405	RC MUP SUCTION VALVE 1	OS-002	SH 3	AUX	623	505	SR	ON	ON	Y	85	ELECTRICAL	0	1	0	0	0	
30	B	20	HIS 6419	RC MU DISCH VALVE 1	OS-002	SH 3	AUX	623	505	SR	ON	ON	Y	150	ELECTRICAL	1	0	0	0	0	
206	B	20	HIS 6419	RC MU DISCH VALVE 1	OS-002	SH 3	AUX	623	505	SR	ON	ON	Y	150	ELECTRICAL	0	1	0	0	0	
31	B	20	HIS 6421	RC MU DISCH VALVE	OS-002	SH 3	AUX	623	505	SR	ON	ON	Y	111	ELECTRICAL	1	0	0	0	0	
209	B	20	HIS 6421	RC MU DISCH VALVE	OS-002	SH 3	AUX	623	505	SR	ON	ON	Y	111	ELECTRICAL	0	1	0	0	0	
304	C	20	HIS 7528	SFAS CHANNEL 1 BLOCK SW	OS-001A	SH 1	AUX	623	505	SR	ON	ON	Y	311	ELECTRICAL	0	0	1	0	0	
305	C	20	HIS 7529	SFAS CHANNEL 2 BLOCK SW	OS-001A	SH 1	AUX	623	505	SR	ON	ON	Y	311	ELECTRICAL	0	0	1	0	0	

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Line No.	Equip Train No.	Equipment Class	Equipment ID Number	System/Equipment Description	Drawing Number	Room Eval			Normal State	Desired State	Pwr Reqd.	Form Number	Support System	G.4					
						Bldg	Elev	No.	Cat.	Note	State	RC	IC	PC	DH	SU			
306	C	20	HIS 7530	SFAS CHANNEL 3 BLOCK SW	OS-001A SH 1	AUX	623	505	SR	ON	ON	Y	311	ELECTRICAL	0	0	1	0	0
307	C	20	HIS 7531	SFAS CHANNEL 4 BLOCK SW	OS-001A SH 1	AUX	623	505	SR	ON	ON	Y	311	ELECTRICAL	0	0	1	0	0
241	P	20	HIS DH11	NORM DH SUCTN ISO VLV DH 11 HIS IN C5704	OS-004 SH 1	AUX	623	505	SR	ON	ON	Y	100	ELECTRICAL	0	0	1	0	0
381	P	20	HIS DH11	NORM DH SUCTN ISO VLV DH 11 HIS IN C5704	OS-004 SH 1	AUX	623	505	SR	ON	ON	Y	100	ELECTRICAL	0	0	0	1	0
242	P	20	HIS DH11A	NORM DH SUCTN ISO VLV HIS IN 5704	OS-004 SH 1	AUX	623	505	SR	OFF	ON	Y	100	ELECTRICAL	0	0	1	0	0
382	P	20	HIS DH11A	NORM DH SUCTN ISO VLV HIS IN 5704	OS-004 SH 1	AUX	623	505	SR	ON	ON	Y	100	ELECTRICAL	0	0	0	1	0
243	P	20	HIS DH12	NORM DH SUCTN ISO VLV DH12 HIS IN C5704	OS-004 SH 1	AUX	623	505	SR	ON	ON	Y	99	ELECTRICAL	0	0	1	0	0
383	P	20	HIS DH12	NORM DH SUCTN ISO VLV DH12 HIS IN C5704	OS-004 SH 1	AUX	623	505	SR	ON	ON	Y	99	ELECTRICAL	0	0	0	1	0
244	P	20	HIS DH12A	NORM DH SUCTN ISO VLV HIS IN C5704	OS-004 SH 1	AUX	623	505	SR	OFF	ON	Y	99	ELECTRICAL	0	0	1	0	0
384	P	20	HIS DH12A	NORM DH SUCTN ISO VLV HIS IN C5704	OS-004 SH 1	AUX	623	505	SR	ON	ON	Y	99	ELECTRICAL	0	0	0	1	0
385	P	20	HIS DHTA	HIS FOR DH1A	OS-004 SH 1	AUX	623	505	SR	ON	ON	Y	79	ELECTRICAL	0	0	0	1	0
386	P	20	HIS DHTA-2	ISO VLV HVHDHTA HIS LOCATED IN C5716	OS-004 SH 1	AUX	623	505	SR	ON	ON	Y	79	ELECTRICAL	0	0	0	1	0
387	B	20	HIS DH1B	HIS FOR DH1B	OS-004 SH 1	AUX	623	505	SR	ON	ON	Y	78	ELECTRICAL	0	0	0	1	0
388	B	20	HIS DH1B-2	ISO VLV HVHDH1B DISCONN HIS IN C5716	OS-004 SH 1	AUX	623	505	SR	ON	ON	Y	78	ELECTRICAL	0	0	0	1	0
389	P	20	HIS DH6A	DH PUMP 1-2 HAND INDICATING SWITCH	OS-004 SH 1	AUX	623	505	SR	ON	ON	Y	296	ELECTRICAL	0	0	0	1	0
390	B	20	HIS DH6B	DH PUMP 1-1 HAND INDICATING SWITCH	OS-004 SH 1	AUX	623	505	SR	ON	ON	Y	288	ELECTRICAL	0	0	0	1	0
540	P	20	HIS ICS11A	HS FOR ICS11A	OS-008 SH 1	AUX	623	505	SR	ON	ON	Y	202	ELECTRICAL	0	0	0	1	0
541	B	20	HIS ICS11B	HS FOR ICS11B	OS-008 SH 1	AUX	623	505	SR	ON	ON	Y	203	ELECTRICAL	0	0	0	1	0
115	P	20	HIS MU1A	RC LETDOWN COOLER 1 INLET VALVE HIS	OS-002 SH 1	AUX	623	505	SR	ON	ON	Y	155	ELECTRICAL	0	1	0	0	0
116	P	20	HIS MU1B	RC LETDOWN COOLER 2 INLET VALVE HIS	OS-002 SH 1	AUX	623	505	SR	ON	ON	Y	156	ELECTRICAL	0	1	0	0	0
32	B	20	HIS MU24A	RC MUP1 HAND INDICATING SWITCH	OS-002 SH 3	AUX	623	505	SR	ON	ON	Y	106	ELECTRICAL	1	0	0	0	0
186	B	20	HIS MU24A	RC MUP1 HAND INDICATING SWITCH	OS-002 SH 3	AUX	623	505	SR	ON	ON	Y	106	ELECTRICAL	0	1	0	0	0
33	B	20	HIS MU24A1	MUP1 AC OIL PMP E11D HIS	OS-002 SH 4	AUX	623	505	SR	ON	ON	Y	103	ELECTRICAL	1	0	0	0	0
188	B	20	HIS MU24A1	MUP1 AC OIL PMP E11D HIS	OS-002 SH 4	AUX	623	505	SR	ON	ON	Y	103	ELECTRICAL	0	1	0	0	0
105	B	20	HIS MU24A2	HS FOR MUP1 DC OIL PMP	OS-002 SH 4	AUX	623	505	SR	ON	ON	Y	104	ELECTRICAL	1	0	0	0	0
189	B	20	HIS MU24A2	HS FOR MUP1 DC OIL PMP	OS-002 SH 4	AUX	623	505	SR	ON	ON	Y	104	ELECTRICAL	0	1	0	0	0
106	B	20	HIS MU24A3	HS FOR MUP1 GEAR OIL PMP	OS-002 SH 4	AUX	623	505	SR	ON	ON	Y	105	ELECTRICAL	1	0	0	0	0
190	B	20	HIS MU24A3	HS FOR MUP1 GEAR OIL PMP	OS-002 SH 4	AUX	623	505	SR	ON	ON	Y	105	ELECTRICAL	0	1	0	0	0
34	P	20	HIS MU24B	RC MUP2 HAND INDICATING SWITCH	OS-002 SH 3	AUX	623	505	SR	ON	ON	Y	110	ELECTRICAL	1	0	0	0	0
187	P	20	HIS MU24B	RC MUP2 HAND INDICATING SWITCH	OS-002 SH 3	AUX	623	505	SR	ON	ON	Y	110	ELECTRICAL	0	1	0	0	0
35	P	20	HIS MU24B1	MUP2 AC OIL PMP F11C HIS	OS-002 SH 4	AUX	623	505	SR	ON	ON	Y	107	ELECTRICAL	1	0	0	0	0
191	P	20	HIS MU24B1	MUP2 AC OIL PMP F11C HIS	OS-002 SH 4	AUX	623	505	SR	ON	ON	Y	107	ELECTRICAL	0	1	0	0	0
107	P	20	HIS MU24B2	HS FOR MUP2 DC OIL PMP	OS-002 SH 4	AUX	623	505	SR	ON	ON	Y	108	ELECTRICAL	1	0	0	0	0
192	P	20	HIS MU24B2	HS FOR MUP2 DC OIL PMP	OS-002 SH 4	AUX	623	505	SR	ON	ON	Y	108	ELECTRICAL	0	1	0	0	0
108	P	20	HIS MU24B3	HS FOR MUP2 GEAR OIL PMP	OS-002 SH 4	AUX	623	505	SR	ON	ON	Y	109	ELECTRICAL	1	0	0	0	0
193	P	20	HIS MU24B3	HS FOR MUP2 GEAR OIL PMP	OS-002 SH 4	AUX	623	505	SR	ON	ON	Y	109	ELECTRICAL	0	1	0	0	0
117	B	20	HIS MU28	RC LETDOWN COOLERS INLET VALVE HIS	OS-002 SH 1	AUX	623	505	SR	ON	ON	Y	98	ELECTRICAL	0	1	0	0	0
118	P	20	HIS MU38	RCP SEAL RETURN ISO VALVE HIS IN C5717	OS-002 SH 2	AUX	623	505	SR	ON	ON	Y	231	ELECTRICAL	0	1	0	0	0
36	B	20	HIS MU40	BA BATCH STOP VLV HIS	OS-002 SH 1	AUX	623	505	SR	ON	ON	Y	80	ELECTRICAL	1	0	0	0	0
37	B	20	HIS MU50A	BA PMP 1-1 HIS	OS-046	AUX	623	505	SR	ON	ON	Y	101	ELECTRICAL	1	0	0	0	0
38	P	20	HIS MU50B	BA PMP 1-2 HIS	OS-046	AUX	623	505	SR	ON	ON	Y	102	ELECTRICAL	1	0	0	0	0
156	P	20	HIS MU66A	HS FOR MU-66A	OS-002 SH 2	AUX	623	505	SR	ON	ON	Y	227	ELECTRICAL	0	1	0	0	0
157	P	20	HIS MU66B	HS FOR MU-66B	OS-002 SH 2	AUX	623	505	SR	ON	ON	Y	228	ELECTRICAL	0	1	0	0	0
158	P	20	HIS MU66C	HS FOR MU-66C	OS-002 SH 2	AUX	623	505	SR	ON	ON	Y	229	ELECTRICAL	0	1	0	0	0
159	P	20	HIS MU66D	HS FOR MU-66D	OS-002 SH 2	AUX	623	505	SR	ON	ON	Y	230	ELECTRICAL	0	1	0	0	0
788	P	20	HIS NC133	LOW VOLT. SWGR RM VEN FAM 1-2 LCL	OS-035	AUX	603	428	SR	ON	ON	Y	117	ELECTRICAL	0	0	0	0	1
789	B	20	HIS NC251	EDG RM VENTILATION FAN 1 LCL	OS-035	AUX	585	318	SR	ON	ON	Y	130	ELECTRICAL	0	0	0	0	1
790	B	20	HIS NC252	EDG RM VENTILATION FAN 2 LCL	OS-035	AUX	585	318	SR	ON	ON	Y	131	ELECTRICAL	0	0	0	0	1
791	P	20	HIS NC253	EDG RM 2 VNTL FAN 3 LCL HIS	OS-035	AUX	585	319	SR	ON	ON	Y	158	ELECTRICAL	0	0	0	0	1

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Line No.	Equip Train	Equipment Class	Equipment ID Number	System/Equipment Description	Drawing Number	Room Eval			Normal State	Desired State	Pwr Reqd	Form Number	Support System	G.4						
						Bldg	Elev	No.	Cat.	Note	State			RC	IC	PC	DH	SU		
792	P	20	HIS NC254	EDG RM 2 VNTL FAN 4 LCL HIS	OS-035	AUX	585	319	SR	ON	ON	Y	159	ELECTRICAL	0	0	0	0	1	
1072	P	20	HIS NC311	ECCS RM CLR FAN 1-1 SW	OS-034 SH 2	AUX	545	115	SR	ON	ON	Y	148	ELECTRICAL	0	0	0	1	0	
1073	P	20	HIS NC312	ECCS RM CLR FAN 1-2 SW	OS-034 SH 2	AUX	545	115	SR	ON	ON	Y	149	ELECTRICAL	0	0	0	1	0	
1074	B	20	HIS NC314	ECCS RM CLR FAN 1-4 SW	OS-034 SH 2	AUX	545	105	SR	ON	ON	Y	146	ELECTRICAL	0	0	0	1	0	
1075	B	20	HIS NC315	ECCS RM CLR FAN 1-5 SW	OS-034 SH 2	AUX	545	105	SR	ON	ON	Y	147	ELECTRICAL	0	0	0	1	0	
793	B	20	HIS NC711	LOW VOLT. SWGR RM VENT FAN 101 LCL	OS-035	AUX	603	429	SR	ON	ON	Y	116	ELECTRICAL	0	0	0	0	1	
794	B	20	HIS NC751	CCW PMP RM VNT FAN 1-1 LOC....	OS-036 SH 1	AUX	585	328	SR	AUT	AUT	Y	96	ELECTRICAL	0	0	0	0	1	
795	P	20	HIS NC752	CCW PMP RM FAN 1-2 LOCAL....	OS-036 SH 1	AUX	585	328	SR	AUT	AUT	Y	97	ELECTRICAL	0	0	0	0	1	
796	B	20	HIS NC781	BATTERY RM VENT FAN 1-1 LCL	OS-035	AUX	603	429	SR	ON	ON	Y	142	ELECTRICAL	0	0	0	0	1	
797	P	20	HIS NC782	BATTERY RM VENT FAN 1-2 LCL	OS-035	AUX	603	428	SR	ON	ON	Y	143	ELECTRICAL	0	0	0	0	1	
1105	B	20	HIS NP1951	EDG FUEL OIL ST TK 1-1 HAND IND SW	OS-041C	AUX	585	321A	SR	ON	ON	Y	151	ELECTRICAL	0	0	0	0	1	
1106	B	20	HIS	EDG FUEL OIL ST TK 1-1 HAND IND SW	OS-041C	AUX	585	321A	SR	ON	ON	Y	151	ELECTRICAL	0	0	0	0	1	
			NP1951A																	
1107	P	20	HIS NP1952	EDG FUEL OIL STOR TK 1-2 PUMP IND SW	OS-041C	AUX	585	320A	SR	ON	ON	Y	152	ELECTRICAL	0	0	0	0	1	
1108	P	20	HIS	EDG FUEL OIL STOR TK 1-2 PUMP IND SW	OS-041C	AUX	585	320A	SR	ON	ON	Y	152	ELECTRICAL	0	0	0	0	1	
			NP1952A																	
245	B	20	HIS RC2-6	RC PRZR AUTO VENT TO QUENCH TANK HIS	OS-001A SH 2	AUX	623	505	SR	ON	ON	Y	255	ELECTRICAL	0	0	1	0	0	
246	B	20	HIS RC2-7	PRESSURIZER HEATER CTRL SELECT HIS	OS-001A SH 2	AUX	585	324	SR	ON	ON	Y	124	ELECTRICAL	0	0	1	0	0	
247	P	20	HIS RC2-8	PRESSURIZER HEATER CONTROL SELECT HIS	OS-001A SH 2	AUX	585	324	SR	ON	ON	Y	125	ELECTRICAL	0	0	1	0	0	
248	B	20	HIS RC2-A	RC PRESSURIZER ESSEN BNK 1 HTR CTRL HIS	OS-001A SH 2	AUX	623	505	SR	ON	ON	Y	124	ELECTRICAL	0	0	1	0	0	
249	P	20	HIS RC2-B	RC PRESSURIZER ESSEN BNK 2 HTR CTRL HIS	OS-001A SH 2	AUX	623	505	SR	ON	ON	Y	125	ELECTRICAL	0	0	1	0	0	
39	C	8A	HP-2A	HPI LN2-1 ISO VALVE	OS-003	AUX	565	236	R	CLS	CLS	N	204		1	0	0	0	0	
40	C	8A	HP-2B	HP1 LN2-2 ISO VALVE	OS-003	AUX	565	236	R	CLS	CLS	N	205		1	0	0	0	0	
119	C	8A	HP-2B	HP1 LN2-2 ISO VALVE	OS-003	AUX	565	236	R	CLS	CLS	N	205		0	1	0	0	0	
41	C	8A	HP-2C	HPI LINE 1-1 VALVE	OS-003	AUX	565	208	R	CLS	CLS	N	206		1	0	0	0	0	
120	C	8A	HP-2C	HPI LINE 1-1 VALVE	OS-003	AUX	565	208	R	CLS	CLS	N	206		0	1	0	0	0	
42	C	8A	HP-2D	HPI LINE 1-1 VALVE	OS-003	AUX	565	208	R	CLS	CLS	N	207		1	0	0	0	0	
391	B	20	HS-4627	INCORE TEMP HAND SWITCH	OS-001A SH 1	AUX	623	505	SR	ON	ON	Y	305	ELECTRICAL	0	0	0	1	0	
392	P	20	HS-4628	INCORE TEMP HAND SWITCH	OS-001A SH 1	AUX	623	505	SR	ON	ON	Y	305	ELECTRICAL	0	0	0	1	0	
798	B	20	HS-4688	H. S. FR XHAUST FAN 1-1 NC 9901	OS-038B	ITK	576	052	SR	AUT	AUT	Y	114	ELECTRICAL	0	0	0	0	1	
799	P	20	HS-4689	H. S. FR XHAUST FAN 99-3 NC 9903	OS-038B	ITK	576	052	SR	AUT	AUT	Y	115	ELECTRICAL	0	0	0	0	1	
800	B	20	HS-4698	H. S. FR XHAUST FN C99-2 NC 9901	OS-038B	ITK	576	052	SR	AUT	AUT	Y	118	ELECTRICAL	0	0	0	0	1	
801	P	20	HS-4699	H. S. FR VENT FAN C99-4 NC 9903	OS-038B	ITK	576	052	SR	AUT	AUT	Y	119	ELECTRICAL	0	0	0	0	1	
393	B	20	HS-5902	H. S. FOR AFP ROOM 1 VENT FAN NC 0731	OS-036 SH 1	AUX	565	237	SR	ON	ON	Y	122	ELECTRICAL	0	0	0	1	0	
394	P	20	HS-5903	H. S. FOR AFP RM 2 VENT FAN NC 0732	OS-036 SH 1	AUX	565	238	SR	ON	ON	Y	123	ELECTRICAL	0	0	0	1	0	
395	B	20	HS-6453A	SG LVL/TEST SLCT HS FOR AFP 1-1 DISCH	OS-017A SH 1	AUX	585	324	SR	ON	ON	Y	309	ELECTRICAL	0	0	0	1	0	
396	P	20	HS-6454A	SG LVL/TEST SLCT HS FOR AFP 1-2 DISCH	OS-017A SH 1	AUX	585	324	SR	ON	ON	Y	308	ELECTRICAL	0	0	0	1	0	
397	P	20	HS-ICS38A	AFP TURB 1-2 GOV CTRL SELECT HIS, C3630	OS-017B SH 1	AUX	585	324	SR	ON	ON	Y	73	ELECTRICAL	0	0	0	1	0	
398	B	20	HS-ICS38B	AFP TURB 1-1 CTRL SELECT HIS, IN C3630	OS-017B SH 1	AUX	585	324	SR	ON	ON	Y	72	ELECTRICAL	0	0	0	1	0	
43	B	20	HS-NI45	MANUAL TRIP SWITCH	E-65B SH	AUX	623	505	SR	ON	ON	Y	183	ELECTRICAL	1	0	0	0	0	
					15A/16A															
44	P	20	HS-NI46	MANUAL TRIP SWITCH	E-65B SH	AUX	623	505	SR	ON	ON	Y	183	ELECTRICAL	1	0	0	0	0	
					13A/14A															
1125	B	0	HV-4906	CTRM EVS STBY COND 1 MOTOR OPER	OS-032B	AUX	656	N/A	SR	CLS	OP/CL	Y	90	ELECTRICAL	0	0	0	0	1	
1126	P	0	HV-4907	CTRM EVS STBY COND 2 MOTOR OPER	OS-032B	AUX	656	N/A	SR	CLS	OP/CL	Y	91	ELECTRICAL	0	0	0	0	1	
802	B	8A	HV-5261	CTRM EMERG VENT FAN 1 INLT MDO	OS-032B	AUX	638	603	SR	CLS	OPN	Y	88	ELECTRICAL	0	0	0	0	1	
803	P	8A	HV-5262	CTRM EMERG VENT FAN 2 INLT MDO	OS-032B	AUX	638	603	SR	CLS	OPN	Y	89	ELECTRICAL	0	0	0	0	1	
804	B	7	HV-5301A	CTRM COMPUT CONFER&COMPT SUP..	OS-032A	AUX	638	603	SR	33	OPN	CLS	Y	270	ELECTRICAL	0	0	0	0	1
805	B	7	HV-5301B	CTRM CTRL CABNET RM Q PNEU OP	OS-032A	AUX	638	603	SR	33	OPN	CLS	Y	270	ELECTRICAL	0	0	0	0	1

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						Bldg	Elev	No.	Cat.	Note	State	RC	IC	PC	DH	SU				
806	B	7	HV-5301C	CTRM CABLE SPRDNG RM Q PNEU OP	OS-032A	AUX	638	603	SR	33	OPN	CLS	Y	270	ELECTRICAL	0	0	0	0	1
807	B	7	HV-5301D	CTRM I&C SHOP&KTCHN Q PNEU OP	OS-032A	AUX	638	603	SR	33	OPN	CLS	Y	270	ELECTRICAL	0	0	0	0	1
808	B	7	HV-5301E	CTRM RTRN AIR FANS IN PNEU..OP	OS-032A	AUX	638	603	SR	33	OPN	CLS	Y	270	ELECTRICAL	0	0	0	0	1
809	B	7	HV-5301F	CTRM TOILET 2 EXH FAN PNEU OP	OS-032A	AUX	638	603	SR	33	OPN	CLS	Y	270	ELECTRICAL	0	0	0	0	1
810	B	7	HV-5301G	CTRM TOILET EXH FAN PNEU OP	OS-032A	AUX	638	603	SR	33	OPN	CLS	Y	270	ELECTRICAL	0	0	0	0	1
811	B	7	HV-5301H	CTRM KITCHEN EXH FAN PNEU OP	OS-032A	AUX	638	603	SR	33	OPN	CLS	Y	270	ELECTRICAL	0	0	0	0	1
812	B	0	HV-5305	L.V.S.G. RM 429 VENT DAMP OPER	OS-035	AUX	603	429	SR	36	OP/CL	OP/CL	Y	210	ELECTRICAL	0	0	0	0	1
813	B	0	HV-5305A	L.V.S.G. RM 429 INTK A DAMP OP	OS-035	AUX	603	429	SR	36	OP/CL	OP/CL	Y	140	ELECTRICAL	0	0	0	0	1
814	B	0	HV-5305B	L.V.S.G. RM INTK B DAMP OPER	OS-035	AUX	603	429	SR	36	OP/CL	OP/CL	Y	141	ELECTRICAL	0	0	0	0	1
815	P	7	HV-5311A	CTRM AREA HVAC DMPR PNEU VLV..	OS-032A	AUX	638	603	SR	33	OPN	CLS	Y	271	ELECTRICAL	0	0	0	0	1
816	P	7	HV-5311B	CTRM CTRL CABNET RM Q PNEU VO	OS-032A	AUX	638	603	SR	33	OPN	CLS	Y	271	ELECTRICAL	0	0	0	0	1
817	P	7	HV-5311C	CTRM SPRDNG CABLE RM Q PNEU VO	OS-032A	AUX	638	603	SR	33	OPN	CLS	Y	271	ELECTRICAL	0	0	0	0	1
818	P	7	HV-5311D	CTRM I&C LB&KTCHN Q PNE VLV OP	OS-032A	AUX	638	603	SR	33	OPN	CLS	Y	271	ELECTRICAL	0	0	0	0	1
819	P	7	HV-5311E	CTRM RTRN AIR FANS IN PNEU OP	OS-032A	AUX	638	603	SR	33	OPN	CLS	Y	271	ELECTRICAL	0	0	0	0	1
820	P	7	HV-5311F	CTRM TOILET 2 EXH FAN PNEU VO	OS-032A	AUX	638	603	SR	33	OPN	CLS	Y	271	ELECTRICAL	0	0	0	0	1
821	P	7	HV-5311G	CTRM TOILET EXH FAN PVO	OS-032A	AUX	638	603A	SR	33	OPN	CLS	Y	271	ELECTRICAL	0	0	0	0	1
822	P	7	HV-5311H	CTRM KITCHEN EXH FAN PVO	OS-032A	AUX	638	603	SR	33	OPN	CLS	Y	271	ELECTRICAL	0	0	0	0	1
823	P	0	HV-5314	L.V.S.G. RM 428 VENT DAMPER OP	OS-035	AUX	623	515	SR		OP/CL	OP/CL	Y	211	ELECTRICAL	0	0	0	0	1
824	P	0	HV-5314A	L.V.S.G RM 428 INTKE DMPR OPER	OS-035	AUX	603	428	SR	36	OP/CL	OP/CL	Y	157	ELECTRICAL	0	0	0	0	1
825	B	0	HV-5329A	EDG RM 318 AIR DAMP OPERATOR	OS-035	AUX	585	318	SR		OP/CL	OP/CL	Y	212	ELECTRICAL	0	0	0	0	1
826	B	0	HV-5329B	EDG RM 318 AIR DAMP OPERATOR	OS-035	AUX	585	318	SR		OP/CL	OP/CL	Y	213	ELECTRICAL	0	0	0	0	1
827	B	0	HV-5329C	EDG RM 318 AIR DAMP OPERATOR	OS-035	AUX	585	318	SR	36	OP/CL	OP/CL	Y	214	ELECTRICAL	0	0	0	0	1
828	P	0	HV-5336A	EDG RM 2 OTSD AIR CTRL DAMP OP	OS-035	AUX	585	319	SR		OP/CL	OP/CL	Y	215	ELECTRICAL	0	0	0	0	1
829	P	0	HV-5336B	EDG RM 2 RECIRC CTRL DAMP OPER	OS-035	AUX	585	319	SR		OP/CL	OP/CL	Y	216	ELECTRICAL	0	0	0	0	1
830	P	0	HV-5336C	EDG RM 2 XHST AIR CTRL DAMP OP	OS-035	AUX	585	319	SR	36	OP/CL	OP/CL	Y	217	ELECTRICAL	0	0	0	0	1
831	B	7	HV-5361A	CABLE SPRDNG RM DMPR INLT OPER	OS-032A	AUX	623	506	SR	33	OPN	CLS	Y	270	ELECTRICAL	0	0	0	0	1
832	B	7	HV-5361B	CABLE SPRDNG RM INLT DMPR OPER	OS-032A	AUX	623	501	SR	33	OPN	CLS	Y	270	ELECTRICAL	0	0	0	0	1
833	P	7	HV-5362A	CABLE SPRDNG RM DMPR OUTLT DMPR	OS-032A	AUX	623	506	SR	33	OPN	CLS	Y	271	ELECTRICAL	0	0	0	0	1
834	P	7	HV-5362B	CABLE SPRDNG RM OUTLT DMPR DMPR	OS-032A	AUX	623	501	SR	33	OPN	CLS	Y	271	ELECTRICAL	0	0	0	0	1
835	B	0	HV-5443A	CCP RM VNT FN 1 RM OUT DAMP OP	OS-036 SH 1	AUX	585	328	SR		OP/CL	OP/CL	Y	218	ELECTRICAL	0	0	0	0	1
836	B	0	HV-5443B	CCP RM VNT FN 1 RM IN DAMP OP	OS-036 SH 1	AUX	585	328	SR		OP/CL	OP/CL	Y	219	ELECTRICAL	0	0	0	0	1
837	B	0	HV-5443C	CCP RM VNT FN1-1 RM IN DAMP OP	OS-036 SH 1	AUX	585	328	SR	36	OP/CL	OP/CL	Y	222	ELECTRICAL	0	0	0	0	1
838	P	0	HV-5444A	CCP RM VNT FN 2 RM OUT DAMP OP	OS-036 SH 1	AUX	585	328	SR		OP/CL	OP/CL	Y	220	ELECTRICAL	0	0	0	0	1
839	P	0	HV-5444B	CCP RM VNT FN RM INLT DAMP OPR	OS-036 SH 1	AUX	585	328	SR		OP/CL	OP/CL	Y	221	ELECTRICAL	0	0	0	0	1
840	P	0	HV-5444C	CCP RM VNT FN2 RM INLT DAMP OP	OS-036 SH 1	AUX	585	328	SR	36	OP/CL	OP/CL	Y	223	ELECTRICAL	0	0	0	0	1
841	B	3	HV-5597	BAT RM A VENT TO ATM DAMP OPER	OS-035	AUX	603	429B	SR		OP/CL	OP/CL	Y	112	ELECTRICAL	0	0	0	0	1
842	P	0	HV-5598	OPER,DMPR FRM BAT RM VENT -ATM	OS-035	AUX	603	428A	SR		OP/CL	OP/CL	Y	113	ELECTRICAL	0	0	0	0	1
399	P	7	ICS-11A	MS LINE 2 ATMOSPHERIC VENT VALVE	OS-008 SH 1	AUX	643	602	SR	93	CLS	OP/CL	Y	202	ANUAL					
400	B	7	ICS-11B	MS LINE 1 ATMOSPHERIC VENT VALVE	OS-008 SH 1	AUX	643	601	SR	93	CLS	OP/CL	Y	203	ELECTRICAL/M	0	0	1	0	0
1053	B	20	II-6283	DBC1P AMMETER	OS-060 SH 1	AUX	623	505	SR		ON	ON	Y	52	ELECTRICAL	0	0	0	0	1
1054	P	20	II-6284	DBC2N AMMETER	OS-060 SH 1	AUX	623	505	SR		ON	ON	Y	52	ELECTRICAL	0	0	0	0	1
1055	B	20	II-6285	DBC1N AMMETER	OS-060 SH 1	AUX	623	505	SR		ON	ON	Y	52	ELECTRICAL	0	0	0	0	1
1056	P	20	II-6286	DBC2P AMMETER	OS-060 SH 1	AUX	623	505	SR		ON	ON	Y	52	ELECTRICAL	0	0	0	0	1
843	B	20	II-6289	BATT 1P TO BUS 1P AMMETER	OS-060 SH 1	AUX	623	502	SR		ON	ON	Y	52	ELECTRICAL	0	0	0	0	1
844	P	20	II-6290	BATT 2N TO BUS 2N AMMETER	OS-060 SH 1	AUX	623	502	SR		ON	ON	Y	52	ELECTRICAL	0	0	0	0	1
845	B	20	II-6291	BATT 1N TO BUS 1N AMMETER	OS-060 SH 1	AUX	623	502	SR		ON	ON	Y	52	ELECTRICAL	0	0	0	0	1
846	P	20	II-6292	BATT 2P TO BUS 2P AMMETER	OS-060 SH 1	AUX	623	502	SR		ON	ON	Y	52	ELECTRICAL	0	0	0	0	1

Relay Review Safe Shutdown Equipment List (SSEL)

Line No.	Equip Train No.	Equipment Class ID Number	System/Equipment Description	Drawing Number	Room Eval			Normal Desired Pwr		Form Reqd	Support Number	G.4										
					Bldg	Elev	No.	Cat.	Note	State	State	System	RC	IC	PC	DH	SU					
401	B	5	K3-1	AUXILIARY FEED PMP TURBINE 1-1	OS-017B	SH	1	AUX	565	237	SR	91	STB	ON	Y	72	ELECTRICAL	0	0	0	1	0
402	P	5	K3-2	AUXILIARY FEED PMP TURBINE 1-2	OS-017B	SH	1	AUX	565	237	SR	91	STB	ON	Y	73	ELECTRICAL	0	0	0	1	0
851	B	17	K5-1	EDG 1-1 (all skidmounted)	OS-041A	SH	1	AUX	585	310	SR	102	STB	ON	Y	351	ELECTRICAL	0	0	0	0	1
852	P	17	K5-2	EDG 1-2 (all skidmounted)	OS-041A	SH	2	AUX	585	319	SR	102	STB	ON	Y	353	ELECTRICAL	0	0	0	0	1
403	P	18	LC-6451	STEAM GEN 1/2 LVL CTRL FR AFP 2 CTRL VLV	OS-017A	SH	1	AUX	603	428	SR		ON	ON	Y	308	ELECTRICAL	0	0	0	1	0
404	B	18	LC-6452	STEAM GEN 1/2 LVL CTRL FR AFP 1 CTRL VLV	OS-017A	SH	1	AUX	585	325	SR		ON	ON	Y	309	ELECTRICAL	0	0	0	1	0
853	B	20	LI-1402	CC SRG TNK SIDE 1 LV INDIC	OS-021	SH	3	AUX	623	505	SR	1	ON	ON	Y	315	ELECTRICAL	0	0	0	0	1
854	P	20	LI-1403	CC SRG TNK SIDE 2 LV INDIC	OS-021	SH	3	AUX	623	505	SR	1	ON	ON	Y	315	ELECTRICAL	0	0	0	0	1
46	B	20	LI-1525A	BWST LEVEL INDICATOR SFAS CH1	OS-004	SH	1	AUX	623	502	SR	1	ON	ON	Y	300	ELECTRICAL	1	0	0	0	0
47	P	20	LI-1525B	BWST LEVEL INDICATOR SFAS CH2	OS-004	SH	1	AUX	623	502	SR	1	ON	ON	Y	300	ELECTRICAL	1	0	0	0	0
855	B	20	LI-2787B	EDG DAY TANK 1-1 LV INDICATOR	OS-041C			AUX	623	505	SR	1	ON	ON	Y	316	ELECTRICAL	0	0	0	0	1
856	P	20	LI-2788B	EDG DAY TANK 1-2 LVL INDICATOR	OS-041C			AUX	623	505	SR	1	ON	ON	Y	316	ELECTRICAL	0	0	0	0	1
109	B	20	LI-MU16-2	MUT LVL INDICATOR	OS-002	SH	3	AUX	623	505	SR	1	ON	ON	Y	314	ELECTRICAL	1	0	0	0	0
175	B	20	LI-MU16-2	MUT LVL INDICATOR	OS-002	SH	3	AUX	623	505	SR	1	ON	ON	Y	314	ELECTRICAL	0	1	0	0	0
48	B	20	LI-RC14-3	RC COOLANT PRESSURIZER CH 1	OS-001A	SH	2	AUX	623	505	SR	1	ON	ON	Y	317	ELECTRICAL	1	0	0	0	0
121	B	20	LI-RC14-3	RC COOLANT PRESSURIZER CH 1	OS-001A	SH	2	AUX	623	505	SR	1	ON	ON	Y	317	ELECTRICAL	0	1	0	0	0
250	B	20	LI-RC14-3	RC COOLANT PRESSURIZER CH 1	OS-001A	SH	2	AUX	623	505	SR	1	ON	ON	Y	317	ELECTRICAL	0	0	1	0	0
405	B	20	LI-RC14-3	RC COOLANT PRESSURIZER CH 1	OS-001A	SH	2	AUX	623	505	SR	1	ON	ON	Y	317	ELECTRICAL	0	0	0	1	0
49	P	20	LI-RC14-4	RC PRESSURIZER CHANNEL 2	OS-001A	SH	2	AUX	623	505	SR	1	ON	ON	Y	317	ELECTRICAL	1	0	0	0	0
122	P	20	LI-RC14-4	RC PRESSURIZER CHANNEL 2	OS-001A	SH	2	AUX	623	505	SR	1	ON	ON	Y	317	ELECTRICAL	0	1	0	0	0
251	P	20	LI-RC14-4	RC PRESSURIZER CHANNEL 2	OS-001A	SH	2	AUX	623	505	SR	1	ON	ON	Y	317	ELECTRICAL	0	0	1	0	0
406	P	20	LI-RC14-4	RC PRESSURIZER CHANNEL 2	OS-001A	SH	2	AUX	623	505	SR	1	ON	ON	Y	317	ELECTRICAL	0	0	0	1	0
407	P	20	LI-SP9A1	STEAM GEN 1-2 STARTUP LEVEL INDICATOR	OS-008	SH	1	AUX	623	505	SR	1	ON	ON	Y	308	ELECTRICAL	0	0	0	1	0
408	B	20	LI-SP9B1	STEAM GEN 1 STARTUP LEVEL INDICATOR	OS-008	SH	1	AUX	623	505	SR	1	ON	ON	Y	309	ELECTRICAL	0	0	0	1	0
409	P	20	LIC 6451	STEAM GEN 1/2 SU LEVEL	OS-017A	SH	1	AUX	623	505	SR	1	ON	ON	Y	308	ELECTRICAL	0	0	0	1	0
410	B	20	LIC 6452	STEAM GEN 1/2 SU LEVEL	OS-017A	SH	1	AUX	623	505	SR	1	ON	ON	Y	309	ELECTRICAL	0	0	0	1	0
50	C	20	LR-MU16	MUT LVL RECORDER	OS-002	SH	3	AUX	623	505	SR	1,7	ON	ON	Y	314	ELECTRICAL	1	0	0	0	0
173	P	20	LR-MU16	MUT LVL RECORDER	OS-002	SH	3	AUX	623	505	SR	1,7	ON	ON	Y	314	ELECTRICAL	0	1	0	0	0
857	P	18	LSH 1122	EDG DAY TANK 1-1 LVL SWITCH HI	OS-041C			AUX	595	320A	SR	1			Y	152	ELECTRICAL	0	0	0	0	1
858	B	18	LSH 1128	EDG DAY TANK 1-1 LVL SWITCH HI	OS-041C			AUX	595	321A	SR	1			Y	151	ELECTRICAL	0	0	0	0	1
859	P	18	LSL 1122	EDG DAY TANK 1-2 LVL SWITCH LO	OS-041C			AUX	595	320A	SR	1			Y	152	ELECTRICAL	0	0	0	0	1
860	B	18	LSL 1128	EDG DAY TANK 1-1 LVL SWITCH LO	OS-041C			AUX	595	321A	SR	1			Y	151	ELECTRICAL	0	0	0	0	1
861	B	18	LT-1402	CC SRG TNK 1-1 SIDE 1 LV TRANS	OS-021	SH	3	AUX	623	501	SR		ON	ON	Y	315	ELECTRICAL	0	0	0	0	1
862	P	18	LT-1403	CC SRG TNK 1-1 SIDE 2 LV TRANS	OS-021	SH	3	AUX	623	501	SR		ON	ON	Y	315	ELECTRICAL	0	0	0	0	1
863	B	18	LT-2787	EDG DAY TANK 1-1 LVL TRANSMITT	OS-041C			AUX	585	318	SR		ON	ON	Y	316	ELECTRICAL	0	0	0	0	1
864	P	18	LT-2788	EDG DAY TANK 1-2 LVL TRANSMITT	OS-041C			AUX	585	319	SR		ON	ON	Y	316	ELECTRICAL	0	0	0	0	1
51	C	18	LT-MU16-1	MUT LVL TRANSMITTER	OS-002	SH	3	AUX	565	AB3	SR		ON	ON	Y	314	ELECTRICAL	1	0	0	0	0
172	P	18	LT-MU16-1	MUT LVL TRANSMITTER	OS-002	SH	3	AUX	565	AB3	SR		ON	ON	Y	314	ELECTRICAL	0	1	0	0	0
110	B	18	LT-MU16-2	MUT LVL TRANSMITTER	OS-002	SH	3	AUX	565	AB3	SR		ON	ON	Y	314	ELECTRICAL	1	0	0	0	0
174	B	18	LT-MU16-2	MUT LVL TRANSMITTER	OS-002	SH	3	AUX	565	AB3	SR		ON	ON	Y	314	ELECTRICAL	0	1	0	0	0
52	P	18	LT-RC14-1	RC PRESSURIZER CH 2 LEVEL TRANSMITTER	OS-001A	SH	2	CTM	585	317	SR		ON	ON	Y	317	ELECTRICAL	1	0	0	0	0
123	P	18	LT-RC14-1	RC PRESSURIZER CH 2 LEVEL TRANSMITTER	OS-001A	SH	2	CTM	585	317	SR		ON	ON	Y	317	ELECTRICAL	0	1	0	0	0
252	P	18	LT-RC14-1	RC PRESSURIZER CH 2 LEVEL TRANSMITTER	OS-001A	SH	2	CTM	585	317	SR		ON	ON	Y	317	ELECTRICAL	0	0	1	0	0
411	P	18	LT-RC14-1	RC PRESSURIZER CH 2 LEVEL TRANSMITTER	OS-001A	SH	2	CTM	585	317	SR		ON	ON	Y	317	ELECTRICAL	0	0	0	1	0
53	B	18	LT-RC14-3	RC PRESSURIZER CH 1 LEVEL TRANSMITTER	OS-001A	SH	2	CTM	585	317	SR		ON	ON	Y	317	ELECTRICAL	1	0	0	0	0
124	B	18	LT-RC14-3	RC PRESSURIZER CH 1 LEVEL TRANSMITTER	OS-001A	SH	2	CTM	585	317	SR		ON	ON	Y	317	ELECTRICAL	0	1	0	0	0
253	B	18	LT-RC14-3	RC PRESSURIZER CH 1 LEVEL TRANSMITTER	OS-001A	SH	2	CTM	585	317	SR		ON	ON	Y	317	ELECTRICAL	0	0	1	0	0
412	B	18	LT-RC14-3	RC PRESSURIZER CH 1 LEVEL TRANSMITTER	OS-001A	SH	2	CTM	585	317	SR		ON	ON	Y	317	ELECTRICAL	0	0	0	1	0
413	P	18	LT-SP9A3	STEAM GEN 1-2 STARTUP LEVEL TRANSMIT 3	OS-008	SH	1	CTM	565	286	SR	89	ON	ON	Y	308	ELECTRICAL	0	0	0	1	0

Relay Review Safe Shutdown Equipment List (SSEL)

Line No.	Equip Train	Equipment Class	Equipment ID Number	System/Equipment Description	Drawing Number	Room Bldg			Eval Elev No.	Normal Cat.	Desired Note	Pwr State	Form Reqd	Support Number	System	G.4					
																RC	IC	PC	DH	SU	
414	B	18	LT-SP9B3	STEAM GEN 1 STARTUP LEVEL TRANSMITTER	OS-008	SH 1	CTM	565	285	SR	90	ON	ON	Y	309	ELECTRICAL	0	0	0	1	0
415	P	7	MS-100	MAIN STEAM LINE 2 ISO VALVE	OS-008	SH 1	AUX	643	602	SR		OPN	CLS	Y	303	ELECTRICAL	0	0	0	1	0
416	P	7	MS-100-1	MAIN STEAM LINE 2 MSIV BYPASS VALVE	OS-008	SH 1	AUX	643	602	R		CLS	CLS	N	232		0	0	0	1	0
417	B	7	MS-101	MS LINE 1 ISO VALVE	OS-008	SH 1	AUX	643	601	SR		OPN	CLS	Y	303	ELECTRICAL	0	0	0	1	0
418	B	7	MS-101-1	MS LINE 1 MSIV BYPASS VALVE	OS-008	SH 1	AUX	643	601	R		CLS	CLS	N	233		0	0	0	1	0
419	B	8B	MS-106	MS LINE 1 TO AFP TURB 1-1 ISO VALVE	OS-017B	SH 1	AUX	623	500	SR		CLS	OPN	Y	250	ELECTRICAL	0	0	0	1	0
1087	P	BA	MS-106A	MS LINE 2 TO AFP TURB 1-1 ISO VALVE	OS-017B	SH 1	AUX	623	501	R		OPN	OPN	N	358		0	0	0	1	0
420	P	8A	MS-107	MS LN 2 TO AFP TURB 1-2 MTR CTRL ISO VLV	OS-017B	SH 1	AUX	623	501	SR		CLS	OPN	Y	153	ELECTRICAL	0	0	0	1	0
1088	B	8A	MS-107A	MS LINE 1 TO AFP TURB 1-2 ISO VALVE	OS-017B	SH 1	AUX	623	500	R		OPN	OPN	N	359		0	0	0	1	0
421	P	7	MS-375	MAIN STEAM LINE 2 WARMUP DRAIN VALVE	OS-008	SH 1	AUX	643	602	R		CLS	CLS	N	224		0	0	0	1	0
422	B	7	MS-396	MS LINE 1 WARMUP DRAIN VALVE	OS-008	SH 1	AUX	643	601	R		CLS	CLS	N	234		0	0	0	1	0
423	C	7	MS-5889A	AFP TURB 1-1 STEAM ADMISSION VALVE	OS-017B	SH 1	AUX	565	237	SR		CLS	OPN	Y	225	ELECTRICAL	0	0	0	1	0
424	C	7	MS-5889B	AFP TURB 1-2 STEAM ADMISSION VALVE	OS-017B	SH 1	AUX	565	238	SR		CLS	OPN	Y	226	ELECTRICAL	0	0	0	1	0
425	P	8A	MS-603	SG 1-2 DRAIN LINE ISO VALVE	OS-008	SH 3	AUX	565	236	R		CLS	CLS	N	235		0	0	0	1	0
426	B	8A	MS-611	SG 1-1 DRAIN LINE ISO VALVE	OS-008	SH 3	AUX	565	236	R		CLS	CLS	N	236		0	0	0	1	0
54	C	8A	MU-11	MX BED1 OUT TO ION BED LN VLV	OS-002	SH 1	AUX	565	211	R		MUT	MUT	N	237		1	0	0	0	0
55	C	8A	MU-12A	MU FILTER 1 INLET ISO VALVE	OS-002	SH 1	AUX	565	211	R		OPN	OPN	N	238		1	0	0	0	0
56	C	8A	MU-12B	MIXED BED 1-2 INLET ISO VALVE	OS-002	SH 1	AUX	565	211	R		CLS	CLS	N	239		1	0	0	0	0
215	C	7	MU-19	RCP SEAL INJ FLOW CTRL VLV	OS-002	SH 3	AUX	585	303	SR	10	THR	OPN	N	319		0	1	0	0	0
125	P	8A	MU-1A	RC LETDOWN COOLER 1-1 INLET ISO VALVE	OS-002	SH 1	CTM	565	215	SR		OPN	CLS	Y	155	ELECTRICAL	0	1	0	0	0
126	P	8A	MU-1B	RC LETDOWN COOLER 1-2 INLET ISO VALVE	OS-002	SH 1	CTM	565	215	SR		OPN	CLS	Y	156	ELECTRICAL	0	1	0	0	0
59	C	7	MU-23	BA PMP PNEUMATIC DISCH CTRL VLV	OS-046		AUX	565	240	SR		CLS	OPN	Y	318	ELECTRICAL	1	0	0	0	0
127	C	8A	MU-28	RC LETDOWN ISO VALVE	OS-002	SH 1	CTM	565	216	SR		OPN	CLS	Y	98	ELECTRICAL	0	1	0	0	0
60	P	7	MU-32	MU FLOW CTRL VALVE	OS-002	SH 3	AUX	565	225	SR		THR	OPN	Y	319	ELECTRICAL	1	0	0	0	0
213	P	7	MU-32	MU FLOW CTRL VALVE	OS-002	SH 3	AUX	565	225	SR		THR	OPN	Y	319	ELECTRICAL	0	1	0	0	0
128	C	7	MU-38	RCP SEAL RETURN ISO VALVE	OS-002	SH 2	AUX	565	208	SR	51	OPN	OPN	Y	231	ELECTRICAL/M	0	1	0	0	0
															ANUAL						
65	C	8A	MU-3971	MU PUMP2 SUCTION 3 WAY MOV	OS-002	SH 3	AUX	565	225	SR	9	OPN	OPN	Y	164	ELECTRICAL	1	0	0	0	0
177	C	8A	MU-3971	MU PUMP2 SUCTION 3 WAY MOV	OS-002	SH 3	AUX	565	225	SR	9	OPN	OPN	Y	164	ELECTRICAL	0	1	0	0	0
66	C	8A	MU-40	BATCH FEED LINE STOP ISO VLV	OS-002	SH 1	AUX	565	211	SR		CLS	OP/CL	Y	80	ELECTRICAL	1	0	0	0	0
129	C	8A	MU-59A	RCP SEAL RETURN 2-1	OS-002	SH 2	CTM	565	214	R		OPN	OPN	N	240		0	1	0	0	0
130	C	8A	MU-59B	RCP SEAL RETURN 2-2	OS-002	SH 2	CTM	565	214	R		OPN	OPN	N	241		0	1	0	0	0
131	C	8A	MU-59C	RCP SEAL RETURN 1-1	OS-002	SH 2	CTM	565	214	R		OPN	OPN	N	242		0	1	0	0	0
132	C	8A	MU-59D	RCP SEAL RETURN 1-2	OS-002	SH 2	CTM	565	214	R		OPN	OPN	N	243		0	1	0	0	0
68	C	8A	MU-6405	RC MU PMP1-1 3-WAY SUCTION VALVE	OS-002	SH 3	AUX	565	225	SR	9	OPN	OPN	Y	85	ELECTRICAL	1	0	0	0	0
178	C	8A	MU-6405	RC MU PMP1-1 3-WAY SUCTION VALVE	OS-002	SH 3	AUX	565	225	SR	9	OPN	OPN	Y	85	ELECTRICAL	0	1	0	0	0
69	C	8B	MU-6406	MAKE-UP 2 RECIRC	OS-002	SH 3	AUX	565	225	R		OPN	OPN	N	244		1	0	0	0	0
200	C	8B	MU-6406	MAKE-UP 2 RECIRC	OS-002	SH 3	AUX	565	225	R		OPN	OPN	N	244		0	1	0	0	0
70	C	8B	MU-6407	MAKE-UP 1 RECIRC	OS-002	SH 3	AUX	565	225	R		OPN	OPN	N	245		1	0	0	0	0
201	C	8B	MU-6407	MAKE-UP 1 RECIRC	OS-002	SH 3	AUX	565	225	R		OPN	OPN	N	245		0	1	0	0	0
71	C	8A	MU-6408	NORM MU TO SL INJ LN...ISO VLV	OS-002	SH 3	AUX	565	225	R		OPN	OPN	N	246		1	0	0	0	0
202	C	8A	MU-6408	NORM MU TO SL INJ LN...ISO VLV	OS-002	SH 3	AUX	565	225	R		OPN	OPN	N	246		0	1	0	0	0
72	C	8A	MU-6409	MAKE-UP 1 DISCH XCONN	OS-002	SH 3	AUX	565	225	R		OPN	OPN	N	247		1	0	0	0	0
203	C	8A	MU-6409	MAKE-UP 1 DISCH XCONN	OS-002	SH 3	AUX	565	225	R		OPN	OPN	N	247		0	1	0	0	0
73	C	8A	MU-6419	NORMAL MU TO RCS LOOP-1 ISOVLV	OS-002	SH 3	AUX	565	208	SR		CLS	OPN	Y	150	ELECTRICAL	1	0	0	0	0
204	C	8A	MU-6419	NORMAL MU TO RCS LOOP-1 ISOVLV	OS-002	SH 3	AUX	565	208	SR		CLS	OP/CL	Y	150	ELECTRICAL	0	1	0	0	0
74	C	8A	MU-6420	BYPASS VLV IN MU32 MINIFLOW LN	OS-002	SH 3	AUX	565	225	R		CLS	CLS	N	248		1	0	0	0	0
212	C	8A	MU-6420	BYPASS VLV IN MU32 MINIFLOW LN	OS-002	SH 3	AUX	565	225	R		CLS	CLS	N	248		0	1	0	0	0
75	B	8A	MU-6421	MU TG RCS TRAIN2 ISO VALVE	OS-002	SH 3	AUX	565	208	SR		CLS	OPN	Y	111	ELECTRICAL	1	0	0	0	0

Relay Review Safe Shutdown Equipment List (SSEL)

Line No.	Equip Train	Class	Equipment ID Number	System/Equipment Description	Drawing Number	Room Eval			Normal State	Desired State	Pwr Reqd	Form Number	Support System	G.4								
						Bldg	Elev	No.	Cat.	Note	State			RC	IC	PC	DH	SU				
207	B	8A	MU-6421	MU TO RCS TRAIN2 ISO VALVE	OS-002	SH	3	AUX	565	208	SR	CLS	OPN	Y	111	ELECTRICAL	0	1	0	0	0	
76	P	8A	MU-6422	NORM MU TO RCP SEALS ISO VLV	OS-002	SH	3	AUX	565	236	R	OPN	OPN	N	249		1	0	0	0	0	
214	P	8A	MU-6422	NORM MU TO RCP SEALS ISO VLV	OS-002	SH	3	AUX	565	236	SR	12	OPN	THR	Y	249	ELECTRICAL	0	1	0	0	0
168	C	7	MU-66A	RCP1-2-1 SEAL INJ FLOW ISO VLV	OS-002	SH	2	AUX	565	208	SR	51	OPN	OPN	Y	227	ELECTRICAL/M	0	1	0	0	0
169	C	7	MU-66B	P1-2-2 SEAL INJ FLOW CNTRL VLV	OS-002	SH	2	AUX	565	208	SR	51	OPN	OPN	Y	228	ELECTRICAL/M	0	1	0	0	0
170	C	7	MU-66C	RCP1-1-1 SEAL INJ FLOW ISO VLV	OS-002	SH	2	AUX	565	208	SR	51	OPN	OPN	Y	229	ELECTRICAL/M	0	1	0	0	0
171	C	7	MU-66D	RCP1-1-2 SEAL INJ FLOW ISO VLV	OS-002	SH	2	AUX	565	208	SR	51	OPN	OPN	Y	230	ELECTRICAL/M	0	1	0	0	0
1091	B	0	NI-5874A	NEUTRON FLUX IND CH 1 (SOURCE RANGE)	OS-001A	AUX	623	505	SR	ON	ON	Y	320	ELECTRICAL	1	0	0	0	0			
1092	P	0	NI-5875A	NEUTRON FLUX IND CH 2 (SOURCE RANGE)	OS-001A	AUX	623	505	SR	ON	ON	Y	320	ELECTRICAL	1	0	0	0	0			
1109	B	20	NP-1473	EDG 1-1 OIL PUMP CONT BOX CH A		AUX	585	318	SR	ON	ON	Y	144	ELECTRICAL	0	0	0	0	1			
1110	P	20	NP-1474	EDG 1-2 OIL PUMP CONT BOX CH B		AUX	585	319	SR	ON	ON	Y	145	ELECTRICAL	0	0	0	0	1			
884	B	20	NV-5305A	L.V.S.G. RM DAMP CTRL STATION	OS-035	AUX	603	429	SR	AUT	AUT	Y	140	ELECTRICAL	0	0	0	0	1			
885	B	20	NV-5305B	L.V.S.G. RM DAMP CTRL STATION	OS-035	AUX	603	429	SR	AUT	AUT	Y	141	ELECTRICAL	0	0	0	0	1			
886	P	20	NV-5314A	L.V.S.G. RM 428 VENT	OS-035	AUX	603	428	SR	AUT	AUT	Y	157	ELECTRICAL	0	0	0	0	1			
887	B	20	NV-55970	BATT RM 429B DISCH DMPR LOC SW	OS-035	AUX	603	429	SR	AUT	AUT	Y	112	ELECTRICAL	0	0	0	0	1			
888	P	20	NV-55980	BATT RM 428A DISCH DMPR LOC SW	OS-035	AUX	603	428	SR	AUT	AUT	Y	113	ELECTRICAL	0	0	0	0	1			
1089	B	0	NY-5874B	NEUTRON FLUX MONITORING AMPLIGIER CH1		AUX	603	402	SR	ON	ON	Y	320	ELECTRICAL	1	0	0	0	0			
1090	B	0	NY-5874C	NEUTRON FLUX SIGNAL PROCESSOR CH 1		AUX	603	402	SR	ON	ON	Y	320	ELECTRICAL	1	0	0	0	0			
1093	P	0	NY-5875B	NEUTRON FLUX SIGNAL AMPLIFIER		AUX	603	427	SR	ON	ON	Y	320	ELECTRICAL	1	0	0	0	0			
1094	P	0	NY-5875C	NEUTRON FLUX SIGNAL PROCESSOR CH 2		AUX	603	427	SR	ON	ON	Y	320	ELECTRICAL	1	0	0	0	0			
889	B	6	P195-1	EDG FUEL OIL TRANSFER PUMP 1-1	OS-041C	YRD	585	N/A	SR	O/O	O/O	Y	151	ELECTRICAL	0	0	0	0	1			
890	P	6	P195-2	EDG FUEL OIL TRANSFER PUMP 1-2	OS-041C	YRD	585	N/A	SR	O/O	O/O	Y	152	ELECTRICAL	0	0	0	0	1			
891	B	6	P3-1	SERVICE WATER PUMP 1-1	OS-020	SH	1	ITK	576	052	SR	ON	ON	Y	287	ELECTRICAL	0	0	0	0	1	
892	P	6	P3-2	SERVICE WATER PUMP 1-2	OS-020	SH	1	ITK	576	052	SR	ON	ON	Y	295	ELECTRICAL	0	0	0	0	1	
81	C	5	P37-1	MAKEUP PUMP 1-1	OS-002	SH	3	AUX	565	225	SR	8	OFF	ON	Y	106	ELECTRICAL	1	0	0	0	0
176	C	5	P37-1	MAKEUP PUMP 1-1	OS-002	SH	3	AUX	565	225	SR	8	OFF	ON	Y	106	ELECTRICAL	0	1	0	0	0
82	C	5	P37-2	MAKEUP PUMP 1-2	OS-002	SH	3	AUX	565	225	SR	8	ON	ON	Y	110	ELECTRICAL	1	0	0	0	0
183	C	5	P37-2	MAKEUP PUMP 1-2	OS-002	SH	3	AUX	565	225	SR	8	ON	ON	Y	110	ELECTRICAL	0	1	0	0	0
83	C	5	P38-1	BORIC ACID PUMP 1-1	OS-046	AUX	565	240	SR	OFF	ON	Y	101	ELECTRICAL	1	0	0	0	0			
84	C	5	P38-2	BORIC ACID PUMP 1-2	OS-046	AUX	565	240	SR	OFF	ON	Y	102	ELECTRICAL	1	0	0	0	0			
85	C	5	P42-1	DECAY HEAT PUMP 1-1	OS-004	SH	1	AUX	545	105	SR	15	OFF	OFF	N	288		1	0	0	0	0
143	C	5	P42-1	DECAY HEAT PUMP 1-1	OS-004	SH	1	AUX	545	105	SR	15	OFF	OFF	N	288		0	1	0	0	0
429	B	5	P42-1	DECAY HEAT PUMP 1-1	OS-004	SH	1	AUX	545	105	SR	79	OFF	ON	Y	288	ELECTRICAL	0	0	0	1	0
86	C	5	P42-2	DECAY HEAT PUMP 1-2	OS-004	SH	1	AUX	545	115	SR	15	OFF	OFF	N	296		1	0	0	0	0
144	C	5	P42-2	DECAY HEAT PUMP 1-2	OS-004	SH	1	AUX	545	115	SR	15	OFF	OFF	N	296		0	1	0	0	0
430	P	5	P42-2	DECAY HEAT PUMP 1-2	OS-004	SH	1	AUX	545	115	SR	79	OFF	ON	Y	296	ELECTRICAL	0	0	0	1	0
893	B	5	P43-1	COMP COOLING PUMP 1-1	OS-021	SH	1	AUX	585	328	SR	ON	ON	Y	289	ELECTRICAL	0	0	0	0	1	
894	P	5	P43-2	COMPONENT COOLING PUMP 1-2	OS-021	SH	1	AUX	585	328	SR	OFF	ON	Y	298	ELECTRICAL	0	0	0	0	1	
87	C	5	P56-1	CONTAINMENT SPRAY PUMP 1-1	OS-005	AUX	545	105	SR	17	OFF	OFF	N	274		1	0	0	0	0		
145	C	5	P56-1	CONTAINMENT SPRAY PUMP 1-1	OS-005	AUX	545	105	SR	17	OFF	OFF	N	274		0	1	0	0	0		
88	C	5	P56-2	CONTAINMENT SPRAY PUMP 1-2	OS-005	AUX	545	115	SR	17	OFF	OFF	N	275		1	0	0	0	0		
146	C	5	P56-2	CONTAINMENT SPRAY PUMP 1-2	OS-005	AUX	545	115	SR	17	OFF	OFF	N	275		0	1	0	0	0		
90	C	5	P58-1	HI PRESSURE INJECTION PUMP 1-1	OS-003	AUX	545	105	SR	13	OFF	OFF	N	290		1	0	0	0	0		
91	C	5	P58-2	HI PRESSURE INJECTION PUMP 1-2	OS-003	AUX	545	115	SR	13	OFF	OFF	N	297		1	0	0	0	0		
1127	B	20	PC-5898	CREVS STBY COND 1 DAMPER CONTROL (06714)	OS-032B	AUX	643	603	SR	CLS	OPN	Y	90	ELECTRICAL	0	0	0	0	1			

Relay Review Safe Shutdown Equipment List (SSEL)

Line No.	Equip Equipment			Drawing Number	Room Eval			Normal Desired Pwr			Form Reqd	Support Number	G.4					
	Train Class	ID Number	System/Equipment Description		Bldg	Elev	No.	Cat.	Note	State			RC	IC	PC	DH	SU	
1128	P	20	PC-5899 CREVS STBY COND 2 DAMPER CONTROL (C6715)	OS-032B	AUX	643	603	SR		CLS	OPN	Y	91	ELECTRICAL	0	0	0	1
896	B	18	PDIS 1379A SW STRNR 1-1 PRESS DIFF IND SW	OS-020 SH 1	ITK	576	052	SR	1	ON	ON	Y	134	ELECTRICAL	0	0	0	1
897	P	18	PDIS 1380A SW STRNR 1-2 PRESS DIFF IND SW	OS-020 SH 1	ITK	576	052	SR	1	ON	ON	Y	135	ELECTRICAL	0	0	0	1
1033	B	18	PDSH 3981 DGT JKT CC OUT ISO VLV PDSH	OS-021 SH 1	AUX	585	318	SR	32	ON	ON	Y	177	ELECTRICAL	0	0	0	1
1034	P	18	PDSH 3982 DG2 JKT CC OUT ISO VLV PDSH	OS-021 SH 1	AUX	585	319	SR	32	ON	ON	Y	178	ELECTRICAL	0	0	0	1
254	B	20	PI-2000 CTMT SFAS CH 1 PRESSURE INDICATOR	OS-03ZF	AUX	623	505	SR	1	ON	ON	Y	300	ELECTRICAL	0	0	1	0
255	P	20	PI-2001 CTMT SFAS CH 2 PRESSURE INDICATOR	OS-033F	AUX	623	505	SR	1	ON	ON	Y	300	ELECTRICAL	0	0	1	0
92	B	20	PI-MU52A BA PMP 1-1 DISCH PRESS INDIC	OS-046	AUX	565	241	SR	1	ON	ON	Y	301	ELECTRICAL	1	0	0	0
93	P	20	PI-MU52B BA PMP 1-2 DISCH PRESS INDIC	OS-046	AUX	565	241	SR	1	ON	ON	Y	301	ELECTRICAL	1	0	0	0
256	P	20	PI-RC2A4 RC LOOP 2 HLG WR SFAS CH 2	OS-001A SH 1	AUX	623	505	SR	1	ON	ON	Y	300	ELECTRICAL	0	0	1	0
431	P	20	PI-RC2A4 RC LOOP 2 HLG WR SFAS CH 2	OS-001A SH 1	AUX	623	505	SR	1	ON	ON	Y	300	ELECTRICAL	0	0	0	1
257	B	20	PI-RC2B4 RC LOOP 1 HLG WR SFAS CH 1	OS-001A SH 1	AUX	623	505	SR	1	ON	ON	Y	300	ELECTRICAL	0	0	1	0
432	B	20	PI-RC2B4 RC LOOP 1 HLG WR SFAS CH 1	OS-001A SH 1	AUX	623	505	SR	1	ON	ON	Y	300	ELECTRICAL	0	0	0	1
433	P	20	PI-SP12A STEAM GEN 2 DISCHARGE PRESSURE INDICATOR	OS-008 SH 1	AUX	623	505	SR	1	ON	ON	Y	302	ELECTRICAL	0	0	0	1
434	B	20	PI-SP12B STEAM GEN 1 DISCH PRESSURE INDICATOR	OS-008 SH 1	AUX	623	505	SR	1	ON	ON	Y	302	ELECTRICAL	0	0	0	1
1131	B	18	PS 28020 CREVS COND 1 MTR UNLOADER PRESS SWITCH	OS-032B	AUX	543	603	SR		ON	ON	Y	74	ELECTRICAL	0	0	0	1
1132	B	18	PS 28021 CREVS COND 1 MTR UNLOADER PRESS SWITCH	OS-032B	AUX	643	603	SR		ON	ON	Y	74	ELECTRICAL	0	0	0	1
1133	P	18	PS 28022 CREVS COND 2 MTR UNLOADER PRESS SWITCH	OS-032B	AUX	643	603	SR		ON	ON	Y	75	ELECTRICAL	0	0	0	1
1134	P	18	PS 28023 CREVS COND 2 MTR UNLOADER PRESS SWITCH	OS-032B	AUX	643	603	SR		ON	ON	Y	75	ELECTRICAL	0	0	0	1
1129	B	18	PS 5900 CREVS CH 1 SWITCHOVER PRESSURE	OS-032B	AUX	638	603	SR		ON	ON	Y	90	ELECTRICAL	0	0	0	1
1130	P	18	PS 5901 CREVS CH 2 SWITCHOVER PRESSURE	OS-032B	AUX	638	603	SR		ON	ON	Y	91	ELECTRICAL	0	0	0	1
1135	B	18	PSH 5898 CREVS STBY COND 1 FAN START	OS-032B	AUX	643	603	SR		ON	ON	Y	90	ELECTRICAL	0	0	0	1
1136	P	18	PSH 5899 CREVS STBY COND 2 FAN START	OS-032B	AUX	643	603	SR		ON	ON	Y	91	ELECTRICAL	0	0	0	1
263	B	20	PSH 7528A RC LOOP 1 HOT LEG SFAS CH 1	OS-001A SH 1	AUX	623	502	SR	1	ON	ON	Y	311	ELECTRICAL	0	0	1	0
264	P	20	PSH 7531A RC LOOP 2 HOT LEG SFAS CHANNEL 4	OS-001A SH 1	AUX	623	502	SR	1	ON	ON	Y	311	ELECTRICAL	0	0	1	0
265	P	18	PSH RC2B4 RC HOT LEG PRESSURE SWITCH	OS-001A SH 1	CTM	603	410A	SR	1	ON	ON	Y	99	ELECTRICAL	0	0	1	0
1137	P	18	PSHL 28018 CREVS UNIT 2 HIGH/LOW PRESS SWITCH	OS-032B	AUX	643	603	SR		ON	ON	Y	75	ELECTRICAL	0	0	0	1
1138	B	18	PSHL 28019 CREVS UNIT 1 HIGH/LOW PRESS SWITCH	OS-032B	AUX	643	603	SR		ON	ON	Y	74	ELECTRICAL	0	0	0	1
435	B	18	PSL 106A PRESS SWITCH LO FR AFP TURB 1-1 STM INLET	OS-017B SH 1	AUX	565	237	SR	1	ON	ON	Y	250	ELECTRICAL	0	0	0	1
436	B	18	PSL 106B PRESS SWITCH LOW AT AFP TURB 1-1 SUCTION	OS-017B SH 1	AUX	565	237	SR	1	ON	ON	Y	250	ELECTRICAL	0	0	0	1
437	B	18	PSL 106C PRESS SWITCH LOW FOR AFP TURB 1-1 INLET	OS-017B SH 1	AUX	565	237	SR	1	ON	ON	Y	250	ELECTRICAL	0	0	0	1
438	B	18	PSL 106D PRESS SWITCH LOW FOR AFP TURB 1-1 INLET	OS-017B SH 1	AUX	565	237	SR	1	ON	ON	Y	250	ELECTRICAL	0	0	0	1
439	P	18	PSL 107A AFP TURB 1-2 INLET PRESS SWITCH LOW	OS-017B SH 1	AUX	565	238	SR	1	ON	ON	Y	153	ELECTRICAL	0	0	0	1
440	P	18	PSL 107B AFP TURB 1-2 INLET PRESS SWITCH LOW	OS-017B SH 1	AUX	565	238	SR	1	ON	ON	Y	153	ELECTRICAL	0	0	0	1
441	P	18	PSL 107C AFP TURB 1-2 INLET PRESS SWITCH LOW	OS-017B SH 1	AUX	565	238	SR	1	ON	ON	Y	153	ELECTRICAL	0	0	0	1
442	P	18	PSL 107D AFP TURB 1-2 INLET PRESS SWITCH LOW	OS-017B SH 1	AUX	565	238	SR	1	ON	ON	Y	153	ELECTRICAL	0	0	0	1
898	P	18	PSL 1377A SW PMP 1-2 DCHG SRC TAP PRESS SWITCH LOW	OS-020 SH 1	ITK	576	052	SR	101	ON	ON	Y	160	ELECTRICAL	0	0	0	1
1141	P	18	PSL 28016 CREVS UNIT 2 LOW OIL PRESS PROT SWITCH	OS-032B	AUX	643	603	SR		ON	ON	Y	75	ELECTRICAL	0	0	0	1
1142	B	18	PSL 28017 CREVS UNIT 1 LOW OIL PRESS PROT SWITCH	OS-032B	AUX	643	603	SR		ON	ON	Y	74	ELECTRICAL	0	0	0	1
899	B	18	PSL 3783 EDG STRNG AIR RCVR 1-1-1 TO..	OS-041B	AUX	585	318	SR	1	ON	ON	Y	186	ELECTRICAL	0	0	0	1
900	B	18	PSL 3784 EDG STRNG AIR RCVR 1-1-2 TO..	OS-041B	AUX	585	318	SR	1	ON	ON	Y	187	ELECTRICAL	0	0	0	1
901	P	18	PSL 3785 EDG STRNG AIR RCVR 1-2-1 TO..	OS-041B	AUX	585	319	SR	1	ON	ON	Y	188	ELECTRICAL	0	0	0	1
902	P	18	PSL 3786 EDG STRNG AIR RCVR 1-2-2 TO..	OS-041B	AUX	585	319	SR	1	ON	ON	Y	189	ELECTRICAL	0	0	0	1
443	B	18	PSL 4930A AFP 1-1 SUCTION AFTER STRNR PRESS SWT LO	OS-017A SH 1	AUX	565	237	SR	1	ON	ON	Y	250	ELECTRICAL	0	0	0	1
444	B	35	PSL 4930B AFP 1-1 SUCTION AFTER STRNR PRESS SWT LO	OS-017A SH 1	AUX	565	237	SR	1	ON	ON	Y	358	ELECTRICAL	0	0	0	1
445	P	18	PSL 4931A AFP 1-2 SUCTION AFTER STRNR PRESS SWT LO	OS-017A SH 1	AUX	565	238	SR	1	ON	ON	Y	153	ELECTRICAL	0	0	0	1
446	P	18	PSL 4931B AFP 1-2 SUCTION AFTER STRNR PRESS SWT LO	OS-017A SH 1	AUX	565	238	SR	1	ON	ON	Y	359	ELECTRICAL	0	0	0	1
1139	B	18	PSL 5898 CREVS STANDBY COND 1 FAN STOP	OS-032B	AUX	643	603	SR		ON	ON	Y	90	ELECTRICAL	0	0	0	1
1140	P	18	PSL 5899 CREVS STANDBY COND 2 FAN STOP	OS-032B	AUX	643	603	SR		ON	ON	Y	91	ELECTRICAL	0	0	0	1

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Line No.	Equip Equipment			Drawing Number	Room Eval			Normal Desired Pwr		Form Read Number	Support System	G.4					
	Train	Class	ID Number		Bldg	Elev	No.	Cat.	Note	State	State	RC	IC	PC	DH	SU	
164	P	18	PSLL MU66A PS FOR MU66A	OS-002	SH	2	AUX	565	208	SR	1	ON	ON	Y	227	ELECTRICAL	0 1 0 0 0
165	P	18	PSLL MU66B PS FOR MU66B	OS-002	SH	2	AUX	565	208	SR	1	ON	ON	Y	228	ELECTRICAL	0 1 0 0 0
166	P	18	PSLL MU66C PS FOR MU66C	OS-002	SH	2	AUX	565	208	SR	1	ON	ON	Y	229	ELECTRICAL	0 1 0 0 0
167	P	18	PSLL MU66D PS FOR MU66D	OS-002	SH	2	AUX	565	208	SR	1	ON	ON	Y	230	ELECTRICAL	0 1 0 0 0
266	B	18	PT-2000 CTMT PRESSURE SFAS CH1 PRESSURE TRANSMIT	OS-033F	AUX	603	400	SR		ON	ON	ON	Y	300	ELECTRICAL	0 0 1 0 0	
267	P	18	PT-2001 CTMT PRESSURE SFAS CH2 PRESSURE TRANSMIT	OS-033F	AUX	623	501	SR		ON	ON	ON	Y	300	ELECTRICAL	0 0 1 0 0	
302	C	18	PT-2002 CTMT PRESSURE SFAS CH3 PRESSURE TRANS	OS-033F	AUX	623	500	SR	62	ON	ON	Y	311	ELECTRICAL	0 0 1 0 0		
303	C	18	PT-2003 CTMT PRESSURE SFAS CH4 PRESSURE TRANS	OS-033F	AUX	603	421	SR	62	ON	ON	Y	311	ELECTRICAL	0 0 1 0 0		
1143	B	18	PT-5898 CREVS CH 1 REFRIG HEAD PRESS	OS-032B	AUX	638	603	SR		ON	ON	Y	90	ELECTRICAL	0 0 0 0 1		
1144	P	18	PT-5899 CREVS CH 2 REFRIG HEAD PRESS	OS-032B	AUX	638	603	SR		ON	ON	Y	91	ELECTRICAL	0 0 0 0 1		
268	P	18	PT-RC2A4 RCP LOOP 2 HLG WR PRESS TRANS SFAS CH 2	OS-001A	SH	1	CTM	603	482	SR		ON	ON	Y	305	ELECTRICAL	0 0 1 0 0
447	P	18	PT-RC2A4 RCP LOOP 2 HLG WR PRESS TRANS SFAS CH 2	OS-001A	SH	1	CTM	603	482	SR		ON	ON	Y	300	ELECTRICAL	0 0 0 1 0
269	B	18	PT-RC2B4 RCP LOOP 1 HLG WR PRESS TRANS SFAS CH 1	OS-001A	SH	1	CTM	603	483	SR		ON	ON	Y	305	ELECTRICAL	0 0 1 0 0
448	B	18	PT-RC2B4 RCP LOOP 1 HLG WR PRESS TRANS SFAS CH 1	OS-001A	SH	1	CTM	603	483	SR		ON	ON	Y	300	ELECTRICAL	0 0 0 1 0
449	P	18	PT-SP12A2 STEAM GEN 1-2 OUTLT STEAM PRESS TRANSMIT	OS-008	SH	1	CTM	585	384	SR		ON	ON	Y	302	ELECTRICAL	0 0 0 1 0
450	B	18	PT-SP12B1 STEAM GEN 1-1 OUTLT STEAM PRESS TRANSMIT	OS-008	SH	1	CTM	585	317	SR		ON	ON	Y	302	ELECTRICAL	0 0 0 1 0
451	P	7	PY-100A MSIV--PNEUMATIC RELAY	OS-008	SH	1	AUX	643	602	SR		CLS	OPN	Y	303	ELECTRICAL	0 0 0 1 0
452	P	7	PY-100B MSIV-- PNEUMATIC RELAY	OS-008	SH	1	AUX	643	602	SR		CLS	OPN	Y	303	ELECTRICAL	0 0 0 1 0
453	P	7	PY-100G MSIV--PNEUMATIC RELAY	OS-008	SH	1	AUX	643	602	SR		CLS	OPN	Y	303	ELECTRICAL	0 0 0 1 0
454	P	7	PY-100H MSIV--PNEUMATIC RELAY	OS-008	SH	1	AUX	643	602	SR		CLS	OPN	Y	303	ELECTRICAL	0 0 0 1 0
455	P	7	PY-100J MSIV--PNEUMATIC RELAY	OS-008	SH	1	AUX	643	602	SR		CLS	OPN	Y	303	ELECTRICAL	0 0 0 1 0
456	B	7	PY-101A MSIV--PNEUMATIC RELAY	OS-008	SH	1	AUX	643	601	SR		CLS	OPN	Y	303	ELECTRICAL	0 0 0 1 0
457	B	7	PY-101B MSIV--PNEUMATIC RELAYS	OS-008	SH	1	AUX	643	601	SR		CLS	OPN	Y	303	ELECTRICAL	0 0 0 1 0
458	B	7	PY-101G MSIV--PNEUMATIC RELAY	OS-008	SH	1	AUX	643	601	SR		CLS	OPN	Y	303	ELECTRICAL	0 0 0 1 0
459	B	7	PY-101H MSIV--PNEUMATIC RELAY	OS-008	SH	1	AUX	643	601	SR		CLS	OPN	Y	303	ELECTRICAL	0 0 0 1 0
460	B	7	PY-101J MSIV-- PNEUMATIC RELAY	OS-008	SH	1	AUX	643	601	SR		CLS	OPN	Y	303	ELECTRICAL	0 0 0 1 0
270	B	8A	RC-11 PRZR PWR RELIEF ISO VALVE BE1602 E16B	OS-001A	SH	2	CTM	623	580	R		OPN	OPN	N	252		0 0 1 0 0
273	P	8A	RC-200 PRESS VENT LINE STOP VALVE	OS-001A	SH	2	CTM	585	385	SR		CLS	OP/CL	Y	163	ELECTRICAL	0 0 1 0 0
135	C	8A	RC-239A PRESS VAPOR PHASE SAMPLE ISO VALVE	OS-001A	SH	2	CTM	585	385	R		CLS	CLS	N	154		0 1 0 0 0
275	P	8A	RC-239A PRESS VAPOR PHASE SAMPLE ISO VALVE	OS-001A	SH	2	CTM	585	385	SR		CLS	OP/CL	Y	154	ELECTRICAL	0 0 1 0 0
136	C	8A	RC-239B PRESSURIZER LIQUID PHASE SAMPLE VALVE	OS-001A	SH	2	CTM	585	385	R		CLS	CLS	N	253		0 1 0 0 0
276	P	8A	RC-239B PRESSURIZER LIQUID PHASE SAMPLE VALVE	OS-001A	SH	2	CTM	585	385	R		CLS	CLS	N	253		0 0 1 0 0
277	P	8A	RC-240A PRESSURIZER SAMPLE LINE ISO VALVE	OS-001A	SH	2	CTM	585	385	R		CLS	CLS	N	254		0 0 1 0 0
137	C	0	RC-2A PRZR PWR RELIEF VALVE (SOL PILOT OP)	OS-001A	SH	2	CTM	623	580	R		CLS	CLS	N	255		0 1 0 0 0
278	B	0	RC-2A PRZR PWR RELIEF VALVE (SOL PILOT OP)	OS-001A	SH	2	CTM	623	580	SR		CLS	OP/CL	Y	255	ELECTRICAL	0 0 1 0 0
138	C	8B	RC-4608A LOOP 1 HI POINT VENT VALVE	OS-001A	SH	1	CTM	565	216	R		CLS	CLS	N	256		0 1 0 0 0
139	C	8B	RC-4610A RC LOOP 2 HI POINT VENT VALVE	OS-001A	SH	1	CTM	565	216	R		CLS	CLS	N	257		0 1 0 0 0
140	C	8B	RC-4632 RC LOOP 2 COLD LEG SAMPLE VALVE	OS-001A	SH	1	CTM	585	315	R		CLS	CLS	N	258		0 1 0 0 0
279	P	8B	RC-4632 RC LOOP 2 COLD LEG SAMPLE VALV.	OS-001A	SH	1	CTM	585	315	R		CLS	CLS	N	258		0 0 1 0 0
903	B	10	S33-1 CREVS WATER COOLED COND 1	OS-020	SH	1	AUX	638	603	SR	34	ON	ON	N	74		0 0 0 0 1
1038	B	10	S33-1 CREVS WATER COOLED COND 1	OS-032B	AUX	638	603	SR	34	ON	ON	N	74		0 0 0 0 1		
904	P	10	S33-2 CREVS WATER COOLED COND 2	OS-020	SH	1	AUX	638	603	SR	34	ON	ON	N	75		0 0 0 0 1
1039	P	10	S33-2 CREVS WATER COOLED COND 2	OS-032B	AUX	638	603	SR	34	ON	ON	N	75		0 0 0 0 1		
905	B	10	S61-1 CREVS AIR COOLED CONDENSER 1	OS-032B	AUX	660	N/A	SR	34	OFF	O/O	Y	92	ELECTRICAL	0 0 0 0 1		
906	P	10	S61-2 CREVS AIR COOLED CONDENSER 2	OS-032B	AUX	660	N/A	SR	34	OFF	O/O	Y	93	ELECTRICAL	0 0 0 0 1		
483	P	7	SS-598 STEAM GEN 1-2 SAMPLE LINE CTMT ISO VALVE	OS-051	SH	2	AUX	585	314	SR		OPN	CLS	Y	272	ELECTRICAL	0 0 0 1 0
484	B	7	SS-607 STEAM GEN 1-1 SAMPLE LINE CTMT ISO VALVE	OS-051	SH	2	AUX	585	314	SR		OPN	CLS	Y	273	ELECTRICAL	0 0 0 1 0
500	P	8B	SV-100A MS LINE 2 ISO VALVE	OS-008	SH	1	AUX	643	602	SR		ON	OFF	Y	303	ELECTRICAL	0 0 0 1 0
501	P	8B	SV-100B MS LINE 2 ISO VALVE	OS-008	SH	1	AUX	643	602	SR		ON	OFF	Y	303	ELECTRICAL	0 0 0 1 0

Relay Review Safe Shutdown Equipment List (SSEL)

Line No.	Equip Train	Equipment Class	Equipment ID Number	System	Equipment Description	Drawing Number	Room Eval		Normal Desired		Pwr Reqd	Form Number	Support System	G.4								
							Bldg	Elev	No.	Cat.	Note	State	State	RC	IC	PC	DH	SU				
502	P	BB	SV-100F	MS LINE 2	ISO VALVE	OS-008	SH 1	AUX	643	602	SR	ON	OFF	Y	303	ELECTRICAL	0	0	0	1	0	
503	B	BB	SV-101A	MS LINE 1	ISO VALVE SOL VALVE	OS-008	SH 1	AUX	643	601	SR	ON	OFF	Y	303	ELECTRICAL	0	0	0	1	0	
504	B	BB	SV-101B	MS LINE 1	ISO VALVE SOL VALVE	OS-008	SH 1	AUX	643	601	SR	ON	OFF	Y	303	ELECTRICAL	0	0	0	1	0	
505	B	BB	SV-101F	MS LINE 1	ISO VALVE SOL VALVE	OS-008	SH 1	AUX	643	601	SR	ON	OFF	Y	303	ELECTRICAL	0	0	0	1	0	
1023	B	BB	SV-1356A	CAC 1-1 SW	OUTLET ISO VALVE	OS-020	SH 1	AUX	585	314	SR	65	ON	OFF	Y	265	ELECTRICAL	0	0	0	0	1
1024	B	BB	SV-1356B	CAC 1-1 SW	OUTLET ISO VALVE	OS-020	SH 1	AUX	585	314	SR	65	ON	OFF	Y	265	ELECTRICAL	0	0	0	0	1
1025	P	BB	SV-1357A	CAC 2 SW	OUTLET ISO SOLENOID VALVE	OS-020	SH 1	AUX	585	314	SR	65	ON	OFF	Y	266	ELECTRICAL	0	0	0	0	1
1026	P	BB	SV-1357B	CAC 2 SW	OUTLET ISO VALVE	OS-020	SH 1	AUX	585	314	SR	65	ON	OFF	Y	266	ELECTRICAL	0	0	0	0	1
907	B	BB	SV-1424	SOL VLV FR CC HX	1 SW OUT ISO VLV	OS-020	SH 1	AUX	585	328	SR	30	ON	OFF	Y	268	ELECTRICAL	0	0	0	0	1
908	P	BB	SV-1434	SOL VLV FR CC HX	2 SW OUT ISO VLV	OS-020	SH 1	AUX	585	328	SR	30	ON	OFF	Y	269	ELECTRICAL	0	0	0	0	1
1035	B	BB	SV-1467	SOL VLV FOR HV	1467	OS-021	SH 1	AUX	545	113	SR	33	ON	O/O	Y	175	ELECTRICAL	0	0	0	0	1
909	P	BB	SV-1469	SOL VALVE FOR HV	1469	OS-021	SH 1	AUX	545	113	SR	33	ON	O/O	Y	176	ELECTRICAL	0	0	0	0	1
1036	B	BB	SV-1471	SOL VLV FOR HV	1471	OS-021	SH 1	AUX	585	318	SR	33	ON	O/O	Y	177	ELECTRICAL	0	0	0	0	1
1037	P	BB	SV-1474	SOL VLV FOR HV	1474	OS-021	SH 1	AUX	585	319	SR	33	ON	O/O	Y	178	ELECTRICAL	0	0	0	0	1
910	B	BB	SV-5301	AUX BLDG CTRM DMPR AIR	SOL VLV	OS-032A		AUX	638	603	SR	ON	OFF	Y	270	ELECTRICAL	0	0	0	0	1	
911	B	BB	SV-5301A	CTRM COMP CONF RM&COMP..	SOLV LV	OS-032A		AUX	638	603	SR	ON	OFF	Y	270	ELECTRICAL	0	0	0	0	1	
912	P	BB	SV-5311	CTRM ISO DAMPERS	SOL VALVE	OS-032A		AUX	638	603	SR	ON	OFF	Y	271	ELECTRICAL	0	0	0	0	1	
913	P	BB	SV-5311A	AUX BLDG CTRM DMPR AIR	SOL VLV	OS-032A		AUX	638	603	SR	ON	OFF	Y	271	ELECTRICAL	0	0	0	0	1	
506	B	BB	SV-5889A	APP TURB 1-1 STM ADM	BLD OFF SOL VALVE	OS-017B	SH 1	AUX	565	237	SR	ON	OFF	Y	225	ELECTRICAL	0	0	0	1	0	
507	P	BB	SV-5889B	APP TURB 1-2 STM ADM	BLD OFF SOL VALVE	OS-017B	SH 1	AUX	565	238	SR	ON	OFF	Y	226	ELECTRICAL	0	0	0	1	0	
508	P	BB	SV-598	SOLENOID VALVE FOR VALVE	SS598	OS-051	SH 2	AUX	585	314	SR	ON	OFF	Y	272	ELECTRICAL	0	0	0	1	0	
509	B	BB	SV-607	STEAM GEN 1-1 SAMPLE LINE	CTMT ISO VALVE	OS-051	SH 2	AUX	585	314	SR	ON	OFF	Y	273	ELECTRICAL	0	0	0	1	0	
546	P	BB	SV-ICS11A2	SV FOR ICS-11A		OS-008	SH 1	AUX	643	602	SR	ON	OFF	Y	202	ELECTRICAL	0	0	0	1	0	
547	B	BB	SV-ICS11B2	SV FOR ICS-11B		OS-008	SH 1	AUX	643	601	SR	ON	OFF	Y	203	ELECTRICAL	0	0	0	1	0	
150	P	BB	SV-MU38	SOL VLV FOR MU-38		OS-002	SH 2	AUX	565	208	SR	ON	ON	Y	231	ELECTRICAL	0	1	0	0	0	
152	P	BB	SV-MU66A	SOL VLV FOR MU-66A		OS-002	SH 2	AUX	565	208	SR	ON	ON	Y	227	ELECTRICAL	0	1	0	0	0	
153	P	BB	SV-MU66B	SOL VLV FOR MU-66B		OS-002	SH 2	AUX	565	208	SR	ON	ON	Y	228	ELECTRICAL	0	1	0	0	0	
154	P	BB	SV-MU66C	SOL VLV FOR MU-66C		OS-002	SH 2	AUX	565	208	SR	ON	ON	Y	229	ELECTRICAL	0	1	0	0	0	
155	P	BB	SV-MU66D	SOL VLV FOR MU-66D		OS-002	SH 2	AUX	565	208	SR	ON	ON	Y	230	ELECTRICAL	0	1	0	0	0	
917	B	7	SW-1356	CAC 1-1 OUTLET TEMP	CTRL VALVE	OS-020	SH 1	AUX	585	314	R	THR	OPN	Y	265	ELECTRICAL	0	0	0	0	1	
918	P	7	SW-1357	CAC 1-2 OUTLET TEMP	CTRL VALVE	OS-020	SH 1	AUX	585	314	R	THR	OPN	Y	266	ELECTRICAL	0	0	0	0	1	
919	B	8A	SW-1366	CAC 1-1 INLET ISO	VALVE	OS-020	SH 1	AUX	585	314	R	OPN	OPN	N	86		0	0	0	0	1	
920	P	8A	SW-1367	CAC 1-2 INLET ISO	VALVE	OS-020	SH 1	AUX	585	314	R	OPN	OPN	N	87		0	0	0	0	1	
921	C	8A	SW-1379	SW STRNR 1-1 DRAIN	VALVE	OS-020	SH 1	ITK	576	052	SR	OP/CL	OP/CL	Y	136	ELECTRICAL	0	0	0	0	1	
922	C	8A	SW-1380	SW STRNR 1-2 DRAIN	VALVE	OS-020	SH 1	ITK	576	052	SR	OP/CL	OP/CL	Y	137	ELECTRICAL	0	0	0	0	1	
510	B	8A	SW-1382	SW SUPPLY TO APP 1-1	ISO VALVE	OS-017A	SH 1	AUX	565	237	SR	CLS	OPN	Y	120	ELECTRICAL	0	0	0	1	0	
923	B	8A	SW-1382	SW SUPPLY TO APP 1-1	ISO VALVE	OS-017A	SH 1	AUX	565	237	R	CLS	CLS	N	120		0	0	0	0	1	
511	P	8A	SW-1383	SW SUPPLY TO APP 1-2	ISO VALVE	OS-017A	SH 1	AUX	565	236	SR	CLS	OPN	Y	121	ELECTRICAL	0	0	0	1	0	
924	P	8A	SW-1383	SW SUPPLY TO APP 1-2	ISO VALVE	OS-017A	SH 1	AUX	565	236	R	CLS	CLS	N	121		0	0	0	0	1	
925	P	8A	SW-1395	TPCW HTXCHANG INLT HDR	ISO VLV	OS-020	SH 1	ITK	566	053	SR	OPN	CLS	Y	160	ELECTRICAL	0	0	0	0	1	
926	B	8A	SW-1399	SW LOOP 1 TO TPCW	HX	OS-020	SH 1	ITK	585	053	R	CLS	CLS	N	267		0	0	0	0	1	
927	B	7	SW-1424	CCW HT XCHANG 1-1 OUT	CTRL VLV	OS-020	SH 1	AUX	585	328	SR	30	MOD	OPN	Y	268	ELECTRICAL	0	0	0	0	1
928	P	7	SW-1434	CCW HT XCHANG1-2 OLT	LT CTRL VLV	OS-020	SH 1	AUX	585	328	SR	30	CLS	OPN	Y	269	ELECTRICAL	0	0	0	0	1
929	B	8A	SW-2927	CTRM EMERG COND	1-1 OUTLET TV	OS-020	SH 1	AUX	638	603	SR	CLS	OPN	Y	128	ELECTRICAL	0	0	0	0	1	
930	P	8A	SW-2928	CTRM EMERG COND	1-2 OUTLET TV	OS-020	SH 1	AUX	638	603	SR	CLS	OPN	Y	129	ELECTRICAL	0	0	0	0	1	
931	C	8A	SW-2929	SW DISCH TO IN	STRUCTURE VALVE	OS-020	SH 1	ITK	566	053	SR	25	OP/CL	CLS	Y	138	ELECTRICAL/M	0	0	0	0	1
															ANUAL							
932	C	8A	SW-2930	SW DISCH TO IN	FOREBAY VALVE	OS-020	SH 1	ITK	566	053	SR	26	OP/CL	OPN	Y	161	ELECTRICAL/M	0	0	0	0	1
															ANUAL							

Relay Review Safe Shutdown Equipment List (SSEL)

Line No.	Equip Train	Equipment Class	Equipment ID Number	System/Equipment Description	Drawing Number	Room			Normal Cat.	Desired Note	Pwr State	Form Reqd	G.4 Number	Support System	RC IC PC DH SU					
						Bldg	Elev	No.							Eval	State	State	Form		
933	C	BA	SW-2931	SW DISCH TO COOLING TWR MU VLV	OS-020 SH 1	ITK	566	053	SR	25	OP/CL	CLS	Y	139	ELECTRICAL/M	0	0	0	0	1
934	C	BA	SW-2932	SW DISCH TO COLLECT BASIN VLV	OS-020 SH 1	ITK	566	053	SR	26	OP/CL	CLS	Y	162	ELECTRICAL/M	0	0	0	0	1
935	C	7	SW-2944	STRNR BLWDN - COLLEC BASIN VLV	OS-020 SH 1	ITK	585	052	R		CLS	CLS	N	260	ANUAL	0	0	0	0	1
936	C	7	SW-2945	STRNR BLWDN - INTAKE..4BAY VLV	OS-020 SH 1	ITK	585	052	R		OPN	OPN	N	261	ANUAL	0	0	0	0	1
941	B	8A	SW-5067	H2 DILU SYS BLWR1-1 MOV IN VLV	OS-020 SH 1	AUX	585	314	R		CLS	CLS	N	262		0	0	0	0	1
942	P	8A	SW-5068	H2 DILU BLWR1-2 MO INLT GA VLV	OS-020 SH 1	AUX	565	208	R		CLS	CLS	N	263		0	0	0	0	1
959	B	18	TC-5329	EDG RM 1 TEMP CONTROLLER	OS-035	AUX	585	318	SR	1	ON	ON	Y	212	ELECTRICAL	0	0	0	0	1
960	P	18	TC-5336	EDG RM2 TEMP CTRL LOC IN C3616	OS-035	AUX	585	319	SR	1	ON	ON	Y	215	ELECTRICAL	0	0	0	0	1
284	P	20	TDI-4950	RCS MARGIN TO SAT INDICATOR (TSAT)	OS-001A SH 1	AUX	623	505	SR	1	ON	ON	Y	305	ELECTRICAL	0	0	1	0	0
285	B	20	TDI-4951	RCS MARGIN TO SAT INDICATOR (TSAT)	OS-001A SH 1	AUX	623	505	SR	1	ON	ON	Y	305	ELECTRICAL	0	0	1	0	0
512	P	20	TDI-4950	RCS MARGIN TO SAT INDICATOR (TSAT)	OS-001A SH 1	AUX	623	505	SR	1	ON	ON	Y	305	ELECTRICAL	0	0	0	1	0
513	B	20	TDI-4951	RCS MARGIN TO SAT INDICATOR (TSAT)	OS-001A SH 1	AUX	623	505	SR	1	ON	ON	Y	305	ELECTRICAL	0	0	0	1	0
286	B	19	TE-1356	CTMT COOLER FAN 1 SUCTION TEMP ELEMENT	OS-033A	CTM	585	317	SR		ON	ON	Y	304	ELECTRICAL	0	0	1	0	0
287	P	19	TE-1357	CTMT COOLER FAN 2 SUCTION TEMP ELEMENT	OS-033A	CTM	585	317	SR		ON	ON	Y	304	ELECTRICAL	0	0	1	0	0
961	B	19	TE-5329	EDG RM 318 TEMP ELEMENT	OS-035	AUX	585	318	SR		ON	ON	Y	212	ELECTRICAL	0	0	0	0	1
962	P	19	TE-5336	EDG RM 2 TEMP ELEMENT	OS-035	AUX	585	319	SR		ON	ON	Y	215	ELECTRICAL	0	0	0	0	1
963	B	19	TE-5443	CC PMP 1 RM TEMP ELEMENT	OS-036 SH 1	AUX	585	328	SR		ON	ON	Y	219	ELECTRICAL	0	0	0	0	1
964	P	19	TE-5444	CC PMP 1 RM TEMP ELEMENT	OS-036 SH 1	AUX	585	328	SR		ON	ON	Y	220	ELECTRICAL	0	0	0	0	1
514	P	0	TE-IM07E	INCORE OUTLET E7 TEMP ELEMENT	OS-001A SH 1	CTM	578	315	SR		ON	ON	Y	305	ELECTRICAL	0	0	0	1	0
515	B	0	TE-IM07M	INCORE OUTLET M7 TEMP ELEMENT	OS-001A SH 1	CTM	578	315	SR		ON	ON	Y	305	ELECTRICAL	0	0	0	1	0
288	P	19	TE-RC3A6	RC LOOP 2 HLG WR TEMP ELEMENT	OS-001A SH 1	CTM	630	218	SR		ON	ON	Y	305	ELECTRICAL	0	0	1	0	0
516	P	19	TE-RC3A6	RC LOOP 2 HLG WR TEMP ELEMENT	OS-001A SH 1	CTM	630	218	SR		ON	ON	Y	305	ELECTRICAL	0	0	0	1	0
289	B	19	TE-RC3B5	RC LOOP 1 HLG WR TEMP ELEMENT	OS-001A SH 1	CTM	565	216	SR		ON	ON	Y	305	ELECTRICAL	0	0	1	0	0
517	B	19	TE-RC3B5	RC LOOP 1 HLG WR TEMP ELEMENT	OS-001A SH 1	CTM	565	216	SR		ON	ON	Y	305	ELECTRICAL	0	0	0	1	0
99	P	19	TE-RC4A2	RCP 2-1 DISCH CLG WR TEMP ELEMENT	OS-001A SH 1	CTM	565	218	SR		ON	ON	Y	307	ELECTRICAL	1	0	0	0	0
290	P	19	TE-RC4A2	RCP 2-1 DISCH CLG WR TEMP ELEMENT	OS-001A SH 1	CTM	565	218	SR		ON	ON	Y	307	ELECTRICAL	0	0	1	0	0
518	P	19	TE-RC4A2	RCP 2-1 DISCH CLG WR TEMP ELEMENT	OS-001A SH 1	CTM	565	218	SR		ON	ON	Y	307	ELECTRICAL	0	0	0	1	0
100	B	19	TE-RC4B2	RCP 1-1 DISCH CLG WR TEMP ELEMENT	OS-001A SH 1	CTM	565	216	SR		ON	ON	Y	307	ELECTRICAL	1	0	0	0	0
291	B	19	TE-RC4B2	RCP 1-1 DISCH CLG WR TEMP ELEMENT	OS-001A SH 1	CTM	565	216	SR		ON	ON	Y	307	ELECTRICAL	0	0	1	0	0
519	B	19	TE-RC4B2	RCP 1-1 DISCH CLG WR TEMP ELEMENT	OS-001A SH 1	CTM	565	216	SR		ON	ON	Y	307	ELECTRICAL	0	0	0	1	0
520	B	19	TE-SP11A1	STEAM GEN 1-2 SHELL TEMP ELEMENT 1	OS-008 SH 1	CTM	565	218	SR		ON	ON	Y	306	ELECTRICAL	0	0	0	1	0
521	B	19	TE-SP11A2	STEAM GEN 1-2 SHELL TEMP ELEMENT 2	OS-008 SH 1	CTM	585	218	SR		ON	ON	Y	306	ELECTRICAL	0	0	0	1	0
522	B	19	TE-SP11A3	STEAM GEN 1-2 SHELL TEMP ELEMENT 3	OS-008 SH 1	CTM	585	218	SR		ON	ON	Y	306	ELECTRICAL	0	0	0	1	0
523	B	19	TE-SP11A4	STEAM GEN 1-2 SHELL TEMP ELEMENT 4	OS-008 SH 1	CTM	603	218	SR		ON	ON	Y	306	ELECTRICAL	0	0	0	1	0
524	B	19	TE-SP11A5	STEAM GEN 1-2 SHELL TEMP ELEMENT 5	OS-008 SH 1	CTM	603	218	SR		ON	ON	Y	306	ELECTRICAL	0	0	0	1	0
525	P	19	TE-SP11B1	STEAM GEN 1-1 SHELL TEMP ELEMENT 1	OS-008 SH 1	CTM	565	216	SR		ON	ON	Y	306	ELECTRICAL	0	0	0	1	0
526	P	19	TE-SP11B2	STEAM GEN 1-1 SHELL TEMP ELEMENT 2	OS-008 SH 1	CTM	565	216	SR		ON	ON	Y	306	ELECTRICAL	0	0	0	1	0
527	P	19	TE-SP11B3	STEAM GEN 1-1 SHELL TEMP ELEMENT 3	OS-008 SH 1	CTM	565	216	SR		ON	ON	Y	306	ELECTRICAL	0	0	0	1	0
528	P	19	TE-SP11B4	STEAM GEN 1-1 SHELL TEMP ELEMENT 4	OS-008 SH 1	CTM	565	216	SR		ON	ON	Y	306	ELECTRICAL	0	0	0	1	0
529	P	19	TE-SP11B5	STEAM GEN 1-1 SHELL TEMP ELEMENT 5	OS-008 SH 1	CTM	565	216	SR		ON	ON	Y	306	ELECTRICAL	0	0	0	1	0
292	B	20	TI-1356	CTMT COOLER FAN 1 SUCTION TEMP INDICATOR	OS-033A	AUX	623	505	SR	1	ON	ON	Y	304	ELECTRICAL	0	0	1	0	0
293	P	20	TI-1357	CTMT COOLER FAN 2 SUCTION TEMP INDICATOR	OS-033A	AUX	623	505	SR	1	ON	ON	Y	304	ELECTRICAL	0	0	1	0	0
530	B	20	TI-4627	INCORE TEMP INDICATOR	OS-001A SH 1	AUX	623	505	SR	1	ON	ON	Y	305	ELECTRICAL	0	0	0	1	0
531	P	20	TI-4628	INCORE TEMPERATURE INDICATOR	OS-001A SH 1	AUX	623	505	SR	1	ON	ON	Y	305	ELECTRICAL	0	0	0	1	0
1154	P	0	TI-5503	PORTABLE RC TEMPERATURE INDICATOR		AUX	585	304	SR		OFF	ON	Y	321	ELECTRICAL	1	0	1	1	0
1155	B	0	TI-5504	PORTABLE RC TEMPERATURE INDICATOR		AUX	585	304	SR		OFF	ON	Y	321	ELECTRICAL	1	0	1	1	0
965	B	18	TIC 5443	CC PMP 1 RM TEMP INDEX CONTROL	OS-036 SH 1	AUX	585	328	SR	1	AUT	AUT	Y	219	ELECTRICAL	0	0	0	0	1

Relay Review Safe Shutdown Equipment List (SSEL)

Line No.	Equip Train Class	Equipment ID Number	System/Equipment Description	Drawing Number	Room Eval			Normal Desired		Pwr Reqd	Form Number	Support System	G.4									
					Bldg	Elev	No.	Cat.	Note				RC	IC	PC	DH	SU					
966	P	18	TIC 5444	CC PMP 2 RM TEMP INDEX CONTROL	OS-036	SH 1	AUX	585	328	SR	1	AUT	AUT	Y	220	ELECTRICAL	0	0	0	0	1	
967	B	18	TS-4688	TEMP SWT FR XHAUST FAN C99-1&2	OS-0388	ITK	576	052	SR	1				Y	114	ELECTRICAL	0	0	0	0	1	
968	P	18	TS-4689	TEMP SWT FR XHAUST FAN C99-3&4	OS-0388	ITK	576	052	SR	1				Y	115	ELECTRICAL	0	0	0	0	1	
532	B	18	TS-5135	TEMP SWITCH FOR AFP ROOM VENT FAN 1-1	OS-036	SH 1	AUX	565	237	SR	1	ON	ON	Y	122	ELECTRICAL	0	0	0	1	0	
533	P	18	TS-5136	AFP ROOM VENT FAN 2 TEMPERATURE SWITCH	OS-036	SH 1	AUX	565	238	SR	1	ON	ON	Y	123	ELECTRICAL	0	0	0	1	0	
969	B	18	TS-5261	CTRM EMERG VENT FAN 1 TEMP SWT	OS-0328	AUX	638	603	SR	1				Y	74	ELECTRICAL	0	0	0	0	1	
970	P	18	TS-5262	CTRM EMERG VENT FAN 2 TEMP SWT	OS-0328	AUX	638	603	SR	1				Y	75	ELECTRICAL	0	0	0	0	1	
971	P	18	TS-5315	TEMP SWT FR L.V.S.G.RM 428 VNT	OS-035	AUX	603	428	SR	1				Y	117	ELECTRICAL	0	0	0	0	1	
972	B	18	TS-5318	L.V.S.G. RM DAMP TEMP SWITCH	OS-035	AUX	603	429	SR	1				Y	116	ELECTRICAL	0	0	0	0	1	
973	B	18	TS-5443	CC PMP RM VNT FN 1 TEMP SWITCH	OS-036	SH 1	AUX	585	328	SR	1				Y	96	ELECTRICAL	0	0	0	0	1
974	P	18	TS-5444	CC PMP VNT FN RM 2 TEMP SWITCH	OS-036	SH 1	AUX	585	328	SR	1				Y	97	ELECTRICAL	0	0	0	0	1
1040	B	18	TS-5597	TEMP SW FR BATT RM A THERMO	OS-035	AUX	603	429	SR	1				Y	112	ELECTRICAL	0	0	0	0	1	
975	P	18	TS-5598	TEMP SW FR BATT RM B THERMO	OS-035	AUX	603	428	SR	1				Y	113	ELECTRICAL	0	0	0	0	1	
976	P	18	TSH 1435	CC HX 2 CCW OUT TEMP SWTCH HI	OS-021	SH 1	AUX	585	328	SR	1				Y	298	ELECTRICAL	0	0	0	0	1
977	B	18	TSH 1483	CC HX CCW OUT TEMP SWTCH HIGH	OS-021	SH 1	AUX	585	328	SR	1				Y	289	ELECTRICAL	0	0	0	0	1
1078	B	18	TSH 5421	ECCS RM CLR FAN 1-5 TEMP SW	OS-034	SH 2	AUX	545	105	SR	1	ON	ON	Y	147	ELECTRICAL	0	0	0	1	0	
1079	B	18	TSH 5422	ECCS RM CLR FAN 1-4 TEMP SW	OS-034	SH 2	AUX	545	105	SR	1	ON	ON	Y	146	ELECTRICAL	0	0	0	1	0	
1077	P	18	TSH 5424	ECCS RM CLR FAN 1-2 TEMP SW	OS-034	SH 2	AUX	545	115	SR	1	ON	ON	Y	149	ELECTRICAL	0	0	0	1	0	
1076	P	18	TSH 5425	ECCS RM CLR FAN 1-1 TEMP SW	OS-034	SH 2	AUX	545	115	SR	1	ON	ON	Y	148	ELECTRICAL	0	0	0	1	0	
1083	B	18	TSL 5421	ECCS RM CLR FAN 1-5 TEMP SW	OS-034	SH 2	AUX	545	105	SR	1	ON	ON	Y	147	ELECTRICAL	0	0	0	1	0	
1082	B	18	TSL 5422	ECCS RM CLR FAN 1-4 TEMP SW	OS-034	SH 2	AUX	545	105	SR	1	ON	ON	Y	146	ELECTRICAL	0	0	0	1	0	
1081	P	18	TSL 5424	ECCS RM CLR FAN 1-2 TEMP SW	OS-034	SH 2	AUX	545	115	SR	1	ON	ON	Y	149	ELECTRICAL	0	0	0	1	0	
1080	P	18	TSL 5425	ECCS RM CLR FAN 1-1 TEMP SW	OS-034	SH 2	AUX	545	115	SR	1	ON	ON	Y	148	ELECTRICAL	0	0	0	1	0	
294	B	18	TT-1356	CTMT COOLER FAN 1 SUCTION TEMP TRANSMIT	OS-033A	AUX	585	303	SR		ON	ON	Y	304	ELECTRICAL	0	0	1	0	0		
295	P	18	TT-1357	CTMT COOLER FAN 2 SUCTION TEMP TRANSMIT	OS-033A	AUX	585	314	SR		ON	ON	Y	304	ELECTRICAL	0	0	1	0	0		
978	B	18	TT-5329	EDG RM 1 TEMP TRANSMITTER	OS-035	AUX	585	318	SR		ON	ON	Y	212	ELECTRICAL	0	0	0	0	1		
979	P	18	TT-5336	EMG RM 2 TEMP TRANSMITTER	OS-035	AUX	585	319	SR		ON	ON	Y	215	ELECTRICAL	0	0	0	0	1		
980	B	18	TT-5443	CC PMP 1 RM TEMP TRANSMITTER	OS-036	SH 1	AUX	585	328	SR		ON	ON	Y	219	ELECTRICAL	0	0	0	0	1	
981	P	18	TT-5444	CC PMP 2 RM TEMP TRANSMITTER	OS-036	SH 1	AUX	585	328	SR		ON	ON	Y	220	ELECTRICAL	0	0	0	0	1	
534	P	18	TT-IM07E	INCORE OUTLET E7 TEMP TRANSMIT	OS-001A	SH 1	AUX	623	502	SR		ON	ON	Y	305	ELECTRICAL	0	0	0	1	0	
535	B	18	TT-IM07M	INCORE OUTLET M7 TEMP TRANSMIT	OS-001A	SH 1	AUX	623	502	SR		ON	ON	Y	305	ELECTRICAL	0	0	0	1	0	
296	P	18	TT-RC3A6	RC TEMP HLG WR CH 2 TSAT TEMP	OS-001A	SH 1	AUX	623	502	SR		ON	ON	Y	305	ELECTRICAL	0	0	1	0	0	
536	P	18	TT-RC3A6	RC TEMP HLG WR CH 2 TSAT TEMP	OS-001A	S' 1	AUX	623	502	SR		ON	ON	Y	305	ELECTRICAL	0	0	0	1	0	
297	B	18	TT-RC3B5	RC TEMP HLG WR CH 1 TSAT TEMP TRANS	OS-001A	SH 1	AUX	623	502	SR		ON	ON	Y	305	ELECTRICAL	0	0	1	0	0	
537	B	18	TT-RC3B5	RC TEMP HLG WR CH 1 TSAT TEMP TRANS	OS-001A	SH 1	AUX	623	502	SR		ON	ON	Y	305	ELECTRICAL	0	0	0	1	0	
1145	B	20	Y-104	CREVS DISC SWITCH FOR C6708 & C6714	AUX	603	429	SR		CLS	CLS	N	50			0	0	0	0	1		
1111	B	20	Y-105	EDG 1-1 DISCONNECT SWITCH FOR C3615	AUX	603	429	SR		CLS	CLS	N	50			0	0	0	0	1		
1146	P	20	Y-204	CREVS DISC SWITCH FOR C6709 & C6715	AUX	603	428	SR		CLS	CLS	N	50			0	0	0	0	1		
1113	P	20	Y-205	EDG 1-2 DISCONNECT SWITCH FOR C3616	AUX	603	428	SR		CLS	CLS	N	50			0	0	0	0	1		
1112	B	20	Y-305	EDG 1-1 DISCONNECT SWITCH FOR C3615	AUX	603	429A	SR		CLS	CLS	N	50			0	0	0	0	1		
1114	P	20	Y-405	EDG 1-2 DISCONNECT SWITCH FOR C3616	AUX	603	428	SR		CLS	CLS	N	50			0	0	0	0	1		
982	C	14	Y1	ESSEN INSTR DIST PNL "Y1"	OS-060	SH 2	AUX	603	429	SR	41	ON	ON	Y	50	ELECTRICAL	0	0	0	0	1	
983	C	2	Y101	XFER SWITCH FOR INV YV1 &....	OS-060	SH 2	AUX	603	429	SR		CLS	CLS	N	50			0	0	0	0	1
984	C	2	Y101A	XFER SWITCH FOR Y1A	OS-060	SH 2	AUX	603	429	SR		CLS	CLS	N	51			0	0	0	0	1
985	C	14	Y1A	120VAC ESSEN INST DIST PANEL	OS-060	SH 2	AUX	603	429	SR	41	ON	ON	Y	51	ELECTRICAL	0	0	0	0	1	
986	C	14	Y2	ESSEN INSTR DIST PNL "Y2" 120V	OS-060	SH 2	AUX	603	428	SR	42	ON	ON	Y	50	ELECTRICAL	0	0	0	0	1	
987	C	2	Y201	XFER SWT FOR YV2 ABD YBR BUS	OS-060	SH 2	AUX	603	428	SR		CLS	CLS	N	50			0	0	0	0	1
988	C	2	Y201A	XFER SWT FOR INV YV2 AND YBR	OS-060	SH 2	AUX	603	428	SR		CLS	CLS	N	51			0	0	0	0	1
989	C	14	Y2A	120VAC ESSEN INST DIST PANEL	OS-060	SH 2	AUX	603	428	SR	42	ON	ON	Y	51	ELECTRICAL	0	0	0	0	1	

Relay Review Safe Shutdown Equipment List (SSEL)

Line No.	Equip Equipment			Drawing Number	Room Eval			Normal State	Desired State	Pwr Reqd	Form Number	Support System	G.4								
	Train	Class	ID Number		Bldg	Elev	No.	Cat.	Note	State			RC	IC	PC	DH	SU				
990	C	14	Y3	ESSEN INSTR DIST PNL "Y3" 120V	OS-060	SH 2	AUX	603	429A	SR	41	ON	ON	Y	50	ELECTRICAL	0	0	0	0	1
991	C	2	Y301	XFER SWITCH FOR Y3	OS-060	SH 2	AUX	603	429A	SR		CLS	CLS	N	50		0	0	0	0	1
992	C	14	Y4	ESSEN INSTR DIST PNL "Y4" 120V	OS-060	SH 2	AUX	603	428	SR	42	ON	ON	Y	50	ELECTRICAL	0	0	0	0	1
993	C	2	Y401	XFER SWT FR DIST PNL Y4 FRM...	OS-060	SH 2	AUX	603	428	SR		CLS	CLS	N	50		0	0	0	0	1
994	B	14	YAU	UPS INSTR DIST PNL "YAU"	OS-060	SH 1	AUX	603	429	SR		ON	ON	Y	77	ELECTRICAL	0	0	0	0	1
995	B	2	YAU 01	MAIN DISC SWITCH	OS-060	SH 1	AUX	603	429	SR		CLS	CLS	N	77		0	0	0	0	1
996	P	14	YBU	UPS INSTR DIST PNL 120V ac	OS-060	SH 1	AUX	603	428	SR		ON	ON	Y	77	ELECTRICAL	0	0	0	0	1
997	P	2	YBU 01	MAIN DISC SWITCH	OS-060	SH 1	AUX	603	428	SR		CLS	CLS	N	77		0	0	0	0	1
998	B	2	YE-101	BRKR, LVSG RM VNT FN1-1 DAMPER	OS-035		AUX	585	318	SR		CLS	CLS	N	212		0	0	0	0	1
999	B	2	YE-102	BRKR, EDG RM 1 SPLY FAN RECIRC	OS-035		AUX	585	318	SR		CLS	CLS	N	213		0	0	0	0	1
1000	B	2	YE-103	BRKR, EDG RM 1 SPLY FAN OUTLT	OS-035		AUX	585	318	SR		CLS	CLS	N	214		0	0	0	0	1
1001	B	2	YE-104	BRKR, L.V.S.G. RM VENT FAN 1-1	OS-035		AUX	585	318	SR		CLS	CLS	N	215		0	0	0	0	1
1002	B	2	YE-208	BREAKER FOR TRANS 240-120 AC..	OS-059	SH 1	AUX	585	304	SR		CLS	CLS	N	216		0	0	0	0	1
1003	B	2	YE-209	BRKR, CCP RM VNT FN 1 RM BYPSS	OS-036	SH 1	AUX	585	304	SR		CLS	CLS	N	218		0	0	0	0	1
1004	B	2	YE-210	BRKR, CC PMP RM VNT FN 1 RM IN	OS-036	SH 1	AUX	585	304	SR		CLS	CLS	N	219		0	0	0	0	1
1005	B	2	YE-212	BRKR, CC PMP RM O.A. LOUVER 1	OS-036	SH 1	AUX	585	304	SR		CLS	CLS	N	222		0	0	0	0	1
880	B	1	YE1	480/120 VAC MCC/TRANSFORMER	OS-059	SH 1	AUX	585	318	SR		ON	ON	Y	12	ELECTRICAL	0	0	0	0	1
1050	B	4	YE1	480/120 VAC MCC/TRANSFORMER	OS-059	SH 1	AUX	585	318	SR		ON	ON	Y	71	ELECTRICAL	0	0	0	0	1
881	B	1	YE2	240 VAC MCC/TRANSFORMER	OS-059	SH 1	AUX	585	304	SR		ON	ON	Y	2	ELECTRICAL	0	0	0	0	1
1006	B	4	YE2A	480-240V TRANSFORMER	OS-059	SH 1	AUX	603	405	SR		ON	ON	Y	71	ELECTRICAL	0	0	0	0	1
1051	B	4	YE2B	240-120V TRANSFORMER	OS-059	SH 1	AUX	585	304	SR		ON	ON	Y	70	ELECTRICAL	0	0	0	0	1
1007	P	2	YF-101	BRKR, EMDG RM 2 SPLY FAN INLT	OS-035		AUX	585	319	SR		CLS	CLS	N	215		0	0	0	0	1
1008	P	2	YF-102	BRKR, EDG RM 2 SPLY FAN RECIRC	OS-035		AUX	585	319	SR		CLS	CLS	N	216		0	0	0	0	1
1009	P	2	YF-103	BKR, EDG RM 2 SPLY FAN OUTLT	OS-035		AUX	585	319	SR		CLS	CLS	N	217		0	0	0	0	1
1010	P	2	YF-104	BRKR, L.V.S.G. RM OUTLT DAMPER	OS-035		AUX	585	319	SR		CLS	CLS	N	211		0	0	0	0	1
1011	P	2	YF-208	BREAKER FOR 2 KVA TRANSFORMER	OS-059	SH 1	AUX	603	427	SR		CLS	CLS	N	70		0	0	0	0	1
1012	P	2	YF-209	BRKR, CC PMP RM VENT FAN2 BYPS	OS-036	SH 1	AUX	603	427	SR		CLS	CLS	N	220		0	0	0	0	1
1013	P	2	YF-210	BRKR, CC PMP RM VENT FAN 2..IN	OS-036	SH 1	AUX	603	427	SR		CLS	CLS	N	221		0	0	0	0	1
1014	P	2	YF-212	BRKR, CC PMP RM O.A. LOUVER 1	OS-036	SH 1	AUX	603	427	SR		CLS	CLS	N	223		0	0	0	0	1
882	P	1	YF1	480-120V MCC/TRANSFORMER	OS-059	SH 1	AUX	585	319	SR		ON	ON	Y	25	ELECTRICAL	0	0	0	0	1
1015	P	4	YF1	480-120V MCC/TRANSFORMER	OS-059	SH 1	AUX	585	319	SR		ON	ON	Y	71	ELECTRICAL	0	0	0	0	1
883	P	1	YF2	240 VAC MCC/TRANSFORMER	OS-059	SH 1	AUX	603	427	SR		ON	ON	Y	18	ELECTRICAL	0	0	0	0	1
1016	P	4	YF2A	480-240V TRANSFORMER	OS-059	SH 1	AUX	603	427	SR		ON	ON	Y	71	ELECTRICAL	0	0	0	0	1
1052	P	4	YF2B	240-120V TRANSFORMER	OS-059	SH 1	AUX	603	427	SR		ON	ON	Y	70	ELECTRICAL	0	0	0	0	1
847	C	16	YV1	125VDC/120VAC INVERTER CH 1	OS-060	SH 2	AUX	603	429	SR		ON	ON	Y	357	ELECTRICAL	0	0	0	0	1
848	C	16	YV2	125VDC/120VAC INVERTER CH 2	OS-060	SH 2	AUX	603	428	SR		ON	ON	Y	58	ELECTRICAL	0	0	0	0	1
849	C	16	YV3	125VDC 120VAC INVERTER CH 3	OS-060	SH 2	AUX	603	429A	SR		ON	ON	Y	58	ELECTRICAL	0	0	0	0	1
850	C	16	YV4	125VDC/120VAC INVERTER CH 4	OS-060	SH 2	AUX	603	428	SR		ON	ON	Y	357	ELECTRICAL	0	0	0	0	1
1017	B	16	YVA	UPS "YVA" INVERTER	OS-060	SH 1	AUX	603	429	SR		ON	ON	Y	76	ELECTRICAL	0	0	0	0	1
1018	P	16	YVB	UPS "YVB" INVERTER	OS-060	SH 1	AUX	603	428	SR		ON	ON	Y	76	ELECTRICAL	0	0	0	0	1
538	P	18	ZC-6451	AFP 1-2 DISCH CTRL VLV POSITION CTRLR	OS-017A	SH 1	AUX	565	238	SR		ON	ON	Y	308	ELECTRICAL	0	0	0	1	0
539	B	18	ZC-6452	AFP 1-1 DISCH CTRL VLV POS CONTROLER	OS-017A	SH 1	AUX	565	237	SR		OP/CL	ON	Y	309	ELECTRICAL	0	0	0	1	0

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 5 and 8 are used to summarize the relay review and provide a traceable record of this review.

5.2 G.4 FORMS

G.4 forms identify equipment as listed on the relay review SSEL. Each G.4 form consists of 5 columns. The five columns contain the following data:

Column 1, "Subsystem/Component"; lists the equipment requiring a relay review. When several pieces of equipment can be grouped together (i.e. a pump, breaker and handswitch), these are listed on one G.4.

Column 2, "Ref. Dwg(s)"; lists the drawings used to identify contacts and evaluate if these contacts are chatter acceptable.

Column 3, "Contact/Contact Group"; records the contact name as given on the drawing.

Column 4, "Relay Type and Location"; provides contact's manufacturer and model and location in the plant.

Column 5, "SAT"; records the result of the contact evaluation.

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Equipment ID Number	System/Equipment Description	G4 Form Number
BE-1120	FEEDER BREAKER FOR MCC E11B	1
E11B	480V ESSENTIAL MCC	1
BE-1180	BREAKER FOR XYE2 FDR TO MCCYE2	2
YE2	240 VAC MCC/TRANSFORMER	2
BE-1166	BRKR FOR FEED TO MCC E11B	3
E11B	480V ESSENTIAL MCC	3
BE-1150	FEEDER BREAKER TO MCC E11E	4
E11E	480V ESSENTIAL MCC	4
BE-1196	BREAKER FR FEEDER FRM MCC E11A	5
E11D	480V ESSENTIAL MCC	5
BE-1151	BREAKER FOR FEED FROM MCC E11C	6
E11E	480V ESSENTIAL MCC	6
BE-1202	FEEDER BREAKER TO MCC E12C	7
E12C	480V ESSENTIAL MCC	7
BE-1234	FEEDER BREAKER FOR MCC E12E	8
E12E	480V ESSENTIAL MCC	8
BE-1235	BREAKER FOR BATT CHARGER DBC1N	9
BE-1233	BREAKER FOR BATT CHARGER DBC1P	10
E12F	480V ESSENTIAL MCC	11
BE-1273	FEEDER BREAKER FOR MCC E12F	11
BE-1259	BRKR, FDR TO 120VAC MCC YE1	12
YE1	480/120 VAC MCC/TRANSFORMER	12
BE-1284	BREAKER FR FEEDER FRM MCC E12A	13
E12C	480V ESSENTIAL MCC	13
BE-1291	BREAKER FOR FEEDER TO MCC E12A	14
E12E	480V ESSENTIAL MCC	14
BE-1297	FEEDER BREAKER TO MCC E12F	15
E12F	480V ESSENTIAL MCC	15
F11E	480V ESSENTIAL MCC	16
BF-1189	BRKR FOR FEEDER TO MCC F11E	16
BF-1146	BREAKER FOR FEEDER TO MCC F11D	17
F11D	480V ESSENTIAL MCC	17
YF2	240 VAC MCC/TRANSFORMER	18
BF-1101	BRKR FOR FEEDER TO MCC YF2	18
BF-1137	BREAKER FOR FEEDER TO MCC F11B	19
F11B	480V ESSENTIAL MCC	19
BF-1162	BREAKER FOR FEEDER FRM MCCF11A	20
F11B	480V ESSENTIAL MCC	20
BF-1175	BREAKER FR FEEDER FRM MCC F11A	21
F11D	480V ESSENTIAL MCC	21
BF-1191	FEEDER BRKR FOR MCC F11E	22
F11E	480V ESSENTIAL MCC	22
BF-1209	BREAKER FOR BATT CHRGER DBC2P	23
BF-1212	BREAKER FOR BATT CHARGER DBC2N	24
BF-1270	BREAKER FOR FEEDER TO MCC YF1	25
YF1	480-120V MCC/TRANSFORMER	25
BF-1284	BREAKER FR FEEDER FRM MCC F12A	26
F12C	480V ESSENTIAL MCC	26
BF-1278	BREAKER FR FEEDER TO MCC F12D	27

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Equipment ID Number	System/Equipment Description	G4 Form Number
F12D	480V ESSENTIAL MCC	27
D104	BREAKER FOR STATION BATT 1P	28
DC MCC-1	DC BUS TRAIN 1	28
D103	BREAKER FOR + SUPPLY FRM DBC1P	29
D101	BRKR FOR +125VDC DIST PNL D1P	30
D102	BRKR FOR +125VDC DIST PNL D2P	31
D111	BRKR FR EMERG LIGHT XFER SWT 1	32
D112	BRKR FR EMERG LIGHT XFER SWT 3	33
D116	BREAKER FOR INVERTER YVA	34
D131	BREAKER FOR STATION BATT 1N	35
D132	BRKR FOR -125VDC DIST PNL	36
D133	BRKR FOR -125VDC DIST PNL D2N	37
D145	BRKR FOR D1NA	38
D1NA	ESSENTIAL -125VDC DIST PNL CH1	38
DC MCC-2	DC BUS TRAIN 2	39
D204	BRKR FOR INCOM PW FRM BATT 2P	39
D203	BREAKER FOR + SUPPLY FRM DBC2P	40
D201	BRKR FOR +125VDC DISTR PNL D1P	41
D202	BRKR FR +125VDC DIST PNL D2P	42
D134	BRKR FOR - SUPPLY FROM DBC1N	43
D212	BRKR FR EMERG LIGHT XFER SWT 4	44
D216	BREAKER FOR INVERTER YVB	45
D232	BRKR FR -125V DC DIST PNL D1N	46
D233	BRKR FR -125V DC DIST PNL D2N	47
D234	BRKR FOR - SUPPLY FRM DBC2N	48
D231	BREAKER FOR BATT STATION 2N	49
Y1	ESSEN INSTR DIST PNL "Y1"	50
Y101	XFER SWITCH FOR INV YV1 &....	50
Y2	ESSEN INSTR DIST PNL "Y2" 120V	50
Y201	XFER SWT FOR YV2 ABD YBR BUS	50
Y3	ESSEN INSTR DIST PNL "Y3" 120V	50
Y301	XFER SWITCH FOR Y3	50
Y4	ESSEN INSTR DIST PNL "Y4" 120V	50
Y401	XFER SWT FR DIST PNL Y4 FRM...	50
Y-105	EDG 1-1 DISCONNECT SWITCH FOR C3615	50
Y-305	EDG 1-1 DISCONNECT SWITCH FOR C3615	50
Y-205	EDG 1-2 DISCONNECT SWITCH FOR C3616	50
Y-405	EDG 1-2 DISCONNECT SWITCH FOR C3616	50
Y-104	CREVS DISC SWITCH FOR C6708 & C6714	50
Y-204	CREVS DISC SWITCH FOR C6709 & C6715	50
Y101A	XFER SWITCH FOR Y1A	51
Y1A	120VAC ESSEN INST DIST PANEL	51
Y201A	XFER SWT FOR INV YV2 AND YBR	51
Y2A	120VAC ESSEN INST DIST PANEL	51
EI-4553	BUS Y1A VOLTMETER	52
EI-4554	BUS Y2A VOLTMETER	52
EI-6273	BUS 1P-BUS INCOMING VOLTMETER	52
EI-6274	BUS 2P-BUS 2N VOLTMETER	52
EI-6276	BUS D2P VOLTMETER	52

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Equipment ID Number	System/Equipment Description	G4 Form Number
EI-6277	BUS Y1 VOLTMETER	52
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Section 6

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Appendix A
FLOOR SPECTRA

Auxiliary Building Area 6

SQUG Effective Grade: 573'

Peak Ground Response Spectra @ 5% Damping: .39g

I. Conservative Horizontal Floor Response Spectra @ 5% Damping (SSE) (Design Basis)

Elevation	Peak			ZPA		
	<u>N-S</u>	<u>E-W</u>	<u>Vert</u>	<u>N-S</u>	<u>E-W</u>	<u>Vert</u>
585	2.427g	2.745g	1.786g	.397g	.463g	.345g
603	3.100g	3.243g	1.913g	.516g	.545g	.366g
623	3.812g	4.044g	2.040g	.687g	.709g	.386g
643	4.432g	4.6g	2.105g	.835g	.822g	.397g

II. A-46 Realistic, Median-Centered Floor Response Spectra (Scaled from the IPREEE Spectra)

Elevation	3% Damping			5% Damping			ZPA		
	Peak			Peak			<u>N-S</u>	<u>E-W</u>	<u>Vert</u>
	<u>N-S</u>	<u>E-W</u>	<u>Vert</u>	<u>N-S</u>	<u>E-W</u>	<u>Vert</u>	<u>N-S</u>	<u>E-W</u>	<u>Vert</u>
585	.766g	.8043g	.4345g	.567g	.6038g	.3173g	.242g	.242g	.157g
603	1.536g	1.205g	.4423g	1.041g*	.9131g*	.3296g	.310g	.263g	.224g
623	2.724g	2.553g	.5877g	1.795g	1.812g	.4460g	.399g	.354g	.324g
643	3.556g	3.484g	.6573g	2.359g	2.479g	.4963g	.488g	.486g	.371g

Note: Reference EQE Calculation 50101-C-023 and 50101-C-034

* Due to frequency shifting, spectra are not enveloped by the 1.5 X Bounding Spectra

Auxiliary Building Area 7

SQUG Effective Grade: 562'

Peak Ground Response Spectra @ 5% Damping: .39g

I. Conservative Horizontal Floor Response Spectra @ 5% Damping (SSE) (Design Basis)

<u>Elevation</u>	Peak			ZPA		
	<u>N-S</u>	<u>E-W</u>	<u>Vert</u>	<u>N-S</u>	<u>E-W</u>	<u>Vert</u>
565	.774g	.642g	.376g	.230g	.174g	.100g
585	1.267g	1.020g	.436g	.317g	.242g	.119g
603	2.113g	1.781g	.564g	.423g	.292g	.150g
612	2.514g	2.136g	.651g	.469g	.313g	.167g
623	3.094g		.794g	.528g	.373g	.183g
643	4.023g	3.611g	.985g	.727g	.531g	.214g
660	4.452g	4.116g	1.028g	.817g	.635g	.222g

II. A-46 Realistic, Median Centered Floor Response Spectra (Scaled from the IPEEE Spectra)

<u>Elevation</u>	3% Damping			5% Damping			ZPA		
	<u>Peak</u>	<u>N-S</u>	<u>E-W</u>	<u>Peak</u>	<u>N-S</u>	<u>E-W</u>	<u>Vert</u>	<u>N-S</u>	<u>E-W</u>	Vert
565	.8489g	.7291g	.4252g	.6075g	.5469g	.3284g	.209g	.224g	.151g
585	1.278g	.9925g*	.5001g	.9159g	.743g	.3835g	.223g	.256g	.162g
603	1.916g	1.391g	.6842g	1.374g	1.046g	.5257g	.255g	.329g	.181g
612	2.157g	1.572g	.7465g	1.545g	1.229g	.5752g	.276g	.350g	.187g
623	2.619g	1.947g	.9005g	1.878g	1.506g	.6924g	.312g	.384g	.215g
643	3.468g	2.596g	1.145g	2.456g	1.930g	.8754g	.389g	.408g	.254g
660	3.811g	2.984g	1.184g	2.697g	2.210g	.9061g	.431g	.451g	.263g

Auxiliary Building Area 7 (continued)

III. Conservative Design Basis Floor Response Spectra (RG 1.60)

Elevation	3% Damping			5% Damping			ZPA			
	<u>Peak</u>	<u>N-S</u>	<u>E-W</u>	<u>Vert</u>	<u>Peak</u>	<u>N-S</u>	<u>E-W</u>	<u>Vert</u>	<u>N-S</u>	<u>E-W</u>
565	.7626g	.7825g	.6866g	.5869g	.5863g	.4857g	.189g	.190g	.181g	
585	1.100g*	1.089g*	.7004g	.8487g	.7932g	.4931g	.220g	.245g	.193g	
603	1.690g	1.739g	.7404g	1.289g	1.240g	.5735g	.284g	.286g	.208g	
612	1.917g	2.063g	.7809g	1.460g	1.486g	.6085g	.302g	.296g	.217g	
623	2.366g	2.580g	.9395g	1.801g	1.863g	.7235g	.340g	.371g	.257g	
643	3.146g	3.372g	1.226g	2.380g	2.470g	.9317g	.410g	.464g	.327g	
660	3.484g	3.846g	1.268g	2.611g	2.833g	.9671g	.445g	.517g	.348g	

Note: Reference EQE Calculation 50101-C-024, 50101-C-034, and 50101-C-036

* Due to frequency shifting, spectras are not enveloped by the 1.5 X Bounding Spectra

Auxiliary Building Area 8

SQUG Effective Grade: 567'

Peak Ground Response Spectra @ 5% Damping: .39g

I. Conservative Horizontal Floor Response Spectra @ 5% Damping (SSE)

<u>Elevation</u>	<u>Peak</u>			<u>ZPA</u>		
	<u>N-S</u>	<u>E-W</u>	<u>Vert</u>	<u>N-S</u>	<u>E-W</u>	<u>Vert</u>
564	.636g	.560g	.366g	.168g	.150g	.100g
584	1.037g	.849g	.369g	.241g	.201g	.110g
602.5	1.756g	1.467g	.378g	.315g	.284g	.121g
623	3.191g	2.390g	.393g	.428g	.423g	.140g
642.25	4.554g	3.158g	.424g	.636g	.539g	.155g
653.25	5.129g	3.452g	.451g	.729g	.583g	.160g
659.25	5.433g	3.575g	.460g	.780g	.602g	.162g

II. A-46 Realistic, Median-Centered Floor Response Spectra (Scaled from the IPEE Spectra)

<u>Elevation</u>	<u>3% Damping</u>			<u>5% Damping</u>			<u>ZPA</u>		
	<u>Peak</u>	<u>N-S</u>	<u>E-W</u>	<u>Peak</u>	<u>N-S</u>	<u>E-W</u>	<u>Vert</u>	<u>N-S</u>	<u>E-W</u>
564	.6254g	.6088g	.4173g	.4556g	.4556g	.4547g	.3047g	.198g	.198g
584	.9235g	.7381g	.4225g	.6702g	.5693g	.3075g	.254g	.208g	.148g
602.5	1.248g	1.064g*	.4285g	.9263g	.7841g	.3130g	.318g	.221g	.182g
623	1.922g	1.563g	.5679g	1.427g	1.119g*	.4276g	.337g	.272g	.238g
642.25	2.559g	1.973g	.6846g	1.880g	1.399g	.5113g	.373g	.319g	.284g
653.25	2.841g	2.175g	.7346g	2.071g	1.552g	.5476g	.420g	.341g	.310g
659.25	3.004g	2.331g	.7792g	2.184g	1.666g	.5801g	.448g	.356g	.336g

* Due to frequency shifting, spectra are not enveloped by the 1.5 X Bounding Spectra

Auxiliary Building Area 8 (continued)

III. Conservative Design Basis Floor Response Spectra (RG 1.60)

Elevation	3% Damping			5% Damping			ZPA			
	<u>Peak</u>	<u>N-S</u>	<u>E-W</u>	<u>Vert</u>	<u>Peak</u>	<u>N-S</u>	<u>E-W</u>	<u>Vert</u>	<u>N-S</u>	<u>E-W</u>
564	.6731g	.6493g	.6661g	.4963g	.5016g	.4765g	.177g	.163g	.164g	
584	.8333g	.7932g	.6716g	.6298g	.5782g	.4798g	.230g	.191g	.183g	
602.5	1.222g	1.130g*	.6778g	.8398g	.8061g*	.4841g	.269g	.223g	.240g	
623	2.006g	1.600g	.6875g	1.409g	1.165g*	.5099g	.314g	.270g	.391g	
642.25	2.751g	1.986g	.8462g	1.983g	1.477g	.6183g	.415g	.313g	.505g	
653.25	3.087g	2.172g	.9189g	2.226g	1.633g	.6649g	.456g	.350g	.565g	
659.25	3.287g	2.312g	.9903g	2.373g	1.755g	.7152g	.483g	.376g	.632g	

Note: Reference EQE Calculation 50101-C-025, 50101-C-034, and 50101-C-037

* Due to frequency shifting, spectra are not enveloped by the 1.5 X Bounding Spectra

Containment Internal Structure

SQUG Effective Grade: 565'

Peak Ground Response Spectra @ 5% Damping: .39g

I. Conservative Horizontal Floor Response Spectra @ 5% Damping (SSE)

<u>Elevation</u>	<u>Peak</u>			<u>ZPA</u>		
	<u>N-S</u>	<u>E-W</u>	<u>Vert</u>	<u>N-S</u>	<u>E-W</u>	<u>Vert</u>
570.75	.552g	.602g	.366g	.148g	.154g	.100g
574.0	.563g	.644g	.366g	.150g	.162g	.100g
578.0	.577g	.676g	.367g	.152g	.167g	.100g
585.0	.691g	.807g	.367g	.184g	.187g	.104g
595.0	1.021g	1.074g	.369g	.249g	.237g	.110g
603.0	1.374g	1.284g	.372g	.304g	.273g	.114g
606.0	1.524g	1.392g	.373g	.227g	.226g	.100g
617.75	2.128g	1.840g	.378g	.290g	.301g	.112g
624.5	2.479g	2.108g	.381g	.331g	.352g	.123g
629.5	2.732g	2.326g	.383g	.362g	.393g	.131g
641.25	3.252g	2.825g	.385g	.433g	.480g	.147g
653.0	3.698g	3.247g	.386g	.504g	.570g	.163g

Containment Internal Structure (continued)

II. A-46 Realistic, Median-Centered Floor Response Spectra (Scaled from the IPEEE Spectra)

	3% Damping			5% Damping			ZPA		
Elevation	<u>Peak</u> <u>N-S</u>	<u>E-W</u>	<u>Vert</u>	<u>Peak</u> <u>N-S</u>	<u>E-W</u>	<u>Vert</u>	<u>N-S</u>	<u>E-W</u>	<u>Vert</u>
570.75	.622g	.6075g	.4168g	.4539g	.4533g	.3044g	.211g	.195g	.159g
574	.6256g	.6097g	.4188g	.4556g	.4533g	.3048g	.216g	.197g	.170g
578	.6281g	.6118g	.4215g	.4568g	.4570g	.3054g	.219g	.199g	.181g
585	.6498g	.6582g	.4240g	.4886g	.5063g	.3062g	.235g	.205g	.200g
595	.7402g	.8657g	.4266g	.5677g	.6105g	.3090g	.261g	.214g	.236g
603	.8357g	1.082g*	.4347g	.6309g	.7291g	.3164g	.280g	.222g	.263g
606	.8956g*	1.180g*	.4375g	.6724g	.7967g	.3183g	.287g	.226g	.275g
617.75	1.194g*	1.588g	.4418g	.9068g*	.1080g*	.3203g	.306g	.246g	.319g
624.50	1.393g	1.871g	.4519g	1.047g*	1.280g	.3282g	.313g	.273g	.338g
629.50	1.544g	2.100g	.4606g	1.156g*	1.441g	.3366g	.320g	.295g	.347g
641.25	1.855g	2.501g	.4570g	1.379g	1.719g	.3314g	.331g	.333g	.372g
653.00	2.145g	2.943g	.4661g	1.594g	2.016g	.3406g	.360g	.375g	.375g

Note: Reference EQE Calculation 50101-C-026 and 50101-C-034

* Due to frequency shifting, these spectra are not enveloped by the 1.5 X Bounding Spectra

Intake Structure

SQUG Effective Grade: 569'

Peak Ground Response Spectra @ 5% Damping: .39g

I. Conservative Horizontal Floor Response Spectra @ 5% Damping (SSE)

<u>Elevation</u>	<u>Peak</u>			<u>ZPA</u>		
	<u>N-S</u>	<u>E-W</u>	<u>Vert</u>	<u>N-S</u>	<u>E-W</u>	<u>Vert</u>
561	1.436g	.583g	.364g	.279g	.205g	.100g
576	1.940g	.998g	.368g	.372g	.280g	.105g
585	2.185g	1.202g	.370g	.417g	.315g	.108g
591	2.300g	1.377g	.371g	.441g	.346g	.109g

II. A-46 Realistic, Median-Centered Floor Response Spectra (Scaled from the IPEEE Spectra)

<u>Elevation</u>	3% Damping			5% Damping			<u>ZPA</u>		
	<u>Peak</u>	<u>N-S</u>	<u>E-W</u>	<u>Peak</u>	<u>N-S</u>	<u>E-W</u>	<u>Vert</u>	<u>N-S</u>	<u>E-W</u>	Vert
561	.6626g*	.6650g*	.4252g	.5078g	.4876g	.3088g	.2788g	.2651g	.1744g
576	.9159g*	1.098g*	.4288g	.6734g*	.7911g*	.3132g	.3380g	.309g	.1800g
585	1.095g*	1.328g	.4275g	.7953g*	.9556g*	.3110g	.464g	.333g	.1892g
591	1.491g	1.547g	.4323g	1.042g*	1.098g*	.3194g	.413g	.371g	.1954g

Note: Reference EQE Calculation 50101-C-027 and 50101-C-034

* Due to frequency shifting, these spectra are not enveloped by the 1.5 X Bounding Spectra

Appendix B
ESSENTIAL RELAY LIST

SQUG ESSENTIAL RELAY LIST

<u>Safe Shutdown Equip.</u>	<u>G.4 Form#</u>	<u>Relay Name From Dwg.</u>	<u>Manufacturer/ Type</u>	<u>Screening Method</u>	<u>Contact's Location</u>	<u>Area/Room/ Elevation</u>
YV2	58	K1	POTTER&BRUMFIELD/ CLS 38 60010	CR	YV2	6/428/603
YV3	58	K1	POTTER&BRUMFIELD/ CLS 38 60010	CR	YV3	6/428/603
K3-1, D1P20, HIS520A, HISICS38B	72	CCW/AUX CW/AUX Y/LOWER X/RAISE ICS38X1 ICS38X2	DEUTSCH/4AP DEUTSCH/4AP AGASTAT/GPDN AGASTAT/GPDN AGASTAT/GPDB AGASTAT/GPDB	LVL 2 LVL 2 LVL 2 LVL 2 LVL 2 LVL 2	CDE12A-1 CDE12A-1 JT2703 JT2703 JT2703 JT2703	6/429/603 6/429/603 7/237/565 7/237/565 7/237/565 7/237/565
K3-2, D2P20, HIS521A, HISICS38A	73	X/RAISE Y/LOWER CW/AUX CCW/AUX ICS38X1 ICS38X2	AGASTAT/GPDN AGASTAT/GPDN DEUTSCH/4AP DEUTSCH/4AP AGASTAT/EGPB AGASTAT/EGPB	LVL 2 LVL 2 LVL 2 LVL 2 LVL 2 LVL 2	JT2704 JT2704 CDF12A-1 CDF12A-1 JT2704 JT2704	7/238/565 7/238/565 6/428/603 6/428/603 7/238/565 7/238/565
YVA	76	K5	POTTER&BRUMFIELD/ CLS 38 60010	CR	YVA	6/429/603
YVB	76	K5	POTTER&BRUMFIELD/ CLS 38 60010	CR	YVB	6/428/603

Key for Manufacturer/Type code:

Code 1, Westinghouse L-56 auxiliary switch for starter.
 Code 2, Westinghouse Series A200 size 1 or 2 FVR starter.
 Code W, Westinghouse.

<u>Safe Shutdown Equip.</u>	<u>G.4 Form#</u>	<u>Relay Name From Dwg.</u>	<u>Manufacturer/ Type</u>	<u>Screening Method</u>	<u>Contact's Location</u>	<u>Area/Room/ Elevation</u>
DH1B, BE1106, HISDH1B HISDH1B-2	78	42/O&C	2	GERS-MCC	E11A	8/209/565
DH1A, BF1136, HISDH1A HISDH1A-2	79	42/O&C	2	GERS-MCC	F11C	7/236/565
MU40, BE1109, HISMU40	80	42/O&C, 42aab	2,1	GERS-MCC	E11A	8/209/565
DH2733, BE1121, HIS2733	81	42/O&C, 42aab	2,1	GERS-MCC	E11A	8/209/565
DH2734, BF1134, HIS2734	82	42/O&C, 42aab	2,1	GERS-MCC	F11C	7/236/565
DH1517, BE1126, HIS1517	83	42/O&C, 42b	2,1	GERS-MCC	E11D	7/227/565
DH1518, BF1129, HIS1518	84	42/O&C, 42b	2,1	GERS-MCC	F11C	7/236/565
MU-6405, BE1127, HIS6405	85	42/O&C, 42aab	2,1	GERS-MCC	E11D	7/227/565
SW1366, HIS1366	86	42/O&C, 42aab	2,1	GERS-MCC	E11C	8/304/585
SW1367, HIS1367	87	42/O&C, 42aab	2,1	GERS-MCC	F12A	6/428/603
HV5261, BE1144, HIS5261A	88	42/O&C, 42aab	2,1	GERS-MCC	E11C	8/304/585
HV5262, BF1186, HIS5262A	89	42/O&C, 42aab	2,1	GERS-MCC	F11B	8/405/603
MU2B, BE1172, HISMU2B	98	42/O&C, 42aab	2,1	GERS-MCC	E11B	8/304/585
DH12, BE1183, HISDH12 HISDH12A, PSHRC2B4	99	42/O&C, 42aab	2,1	GERS-MCC	E11B	8/304/585
DH-11, BF1130, HISDH11 HISDH11A	100	42/O&C, 42aab	2,1	GERS-MCC	F11A	7/427/603
BF1167, HISMU24B1	107	RX-11-2 & RX-2 42Ka & 42kb 42, 42aab	AGASTAT/GP W/AR440A with latch 3,1	LVL 2 GERS-MCC GERS-MCC	RC2826 F11C F11C	8/209/565 7/236/565 7/236/565

<u>Safe Shutdown Equip.</u>	<u>G.4 Form#</u>	<u>Relay Name From Dwg.</u>	<u>Manufacturer/ Type</u>	<u>Screening Method</u>	<u>Contact's Location</u>	<u>Area/Room/ Elevation</u>
D217, HISMU24B2	108	PS RX-11-1 & RX-2 42Ka A 42, 42a&b	ALLEN-BRADLEY 836-C62A AGASTAT/GP W/AR440A with latch W/AQZ contactor W/MEE & L-46	LVL 2 LVL 2 GERS-MCC GERS-MCC GERS-MCC	PS2MU105A RC2826 F11C DCMCC2 DCMCC1	7/225/565 8/209/565 7/236/565 6/428/603 6/428/603
BF1168, HISMU24B3	109	TDR TDR2 RX-1 PS PS1 42Ka 42Ka, 42Xb 42, 42a&b	AGASTAT/E7022AF AGASTAT/E7012AC AGASTAT/GP UNITED ELECT. J6-148 UNITED ELECT. J6-148 W/BFD22S W/AR440A with latch 3,1	LVL 2 LVL 2 LVL 2 LVL 2&4 LVL 2&4 GERS-MCC GERS-MCC GERS-MCC	RC2826 RC2826 RC2826 PSMU102A PSMU102A1 DCMCC2 F11C F11C	8/209/565 8/209/565 8/209/565 7/225/565 7/225/565 6/428/603 7/236/565 7/236/565
P37-2, AD105, HISMU24B	110	RXMU 94-1/DI CLX/DI 50GS 50/51's PS	AGASTAT/7012 G.E./HFA51A42H AGASTAT/E7022PA W/ITH W/COM-5 AB/836-C62A	LVL 2 LVL 2 LVL 2 CR DI BUS LVL 2	RC2826 D1 BUS D1 BUS D1 BUS D1 BUS PS3MU105A	8/209/565 6/323/585 6/323/585 6/323/585 6/323/585 7/225/565
MU6421, BE1194, HIS6421	111	42/O&C, 42a&b	2,1	GERS-MCC	E11D	7/227/565
SW1382, BE1218 HIS1382, HIS1382B	120	PSL4928Y PSL4928X PSL4928A PSL4928B SSX-1 42/O&C, 42a&b	AGASTAT/E7024AC AGASTAT/E7014AC SOR/12V2-E4-M2- C1ALLTTX3 SOR/12V7-E4-N4- B1ATTLLX3 DEUTSCH/4AP43AF 2,1	LVL 2 LVL 2 LVL 2 LVL 2 LVL 2 LVL 2 GERS-MCC	CDE11D CDE11D PSL4928A PSL4928B CDE12A-1 E12A	7/227/565 7/227/565 7/237/565 7/237/565 6/429/603 6/429/603
SW1383, BF1177 HIS1383, HIS1383B	121	SSX-1 PSL4929Y PSL4929X PSL4929A & PSL4929B 42/O&C, 42a&b	DEUTSCH/4AP43AF AGASTAT/E7024AC AGASTAT/E7014AC SOR/12V2-E4-M2- C1ALLTTX3 2,1	LVL 2 LVL 2 LVL 2 LVL 2 LVL 2 GERS-MCC	CDF11C CDF12A-2 CDF12A-2 PSL4929A & PSL4929B F11C	7/236/565 6/428/603 6/428/603 7/238/565 7/238/565 6/428/603

<u>Safe Shutdown Equip.</u>	<u>G-4 Form#</u>	<u>Relay Name From Dwg.</u>	<u>Manufacturer/ Type</u>	<u>Screening Method</u>	<u>Contact's Location</u>	<u>Area/Room/ Elevation</u>
BE1223, BE12 HISRC2-A, HISRC2-7	124	27	DEUTSCH/4AX1603	LVL 2	RC4604	6/429/603
BF1217, BF12 HISRC2-B, HISRC2-8	125	27	DEUTSCH/4AP1603	LVL 2	RC4605	6/428/603
CC-5095, BE1226, HIS5095	126	LLSL/X2 2/X2 FISA FISB 42/O&C, 42a&b	DEUTSCH/4AX1603 AGASTAT/7012PDL ITT BARTON/289A ITT BARTON/289A 2,1	LVL 2 LVL 2 LVL 2 LVL 2 GERS-MCC	RC3704 RC3607 FIS1432C FIS1427C E12A	7/314/585 6/325/585 7/328/585 7/328/585 6/429/603
CC-5096, BF1106, HIS5096	127	LSLL/X2 2/X2 FISA FISB 42/O&C, 42a&b	DEUTSCH/4AX1603 AGASTAT/7012PDL ITT BARTON/289A ITT BARTON/289A 2,1	LVL 2 LVL 2 LVL 2 LVL 2 GERS-MCC	RC3705 RC3608 FIS1422D FIS1427D F11A	7/314/585 6/323/585 7/328/585 7/328/585 6/428/603
SW2927, BE1232, HIS2927	128	42/O&C, 42b&a	2,1	GERS-MCC	E12A	6/429/603
SW2928, BF1132, HIS2928	129	42/O&C, 42a&b	2,1	GERS-MCC	F11A	6/429/603
SW-1379, BE1275	136	42Xb 42/O&C, 42a&b	W/AR440A with latch 2,1	GERS-MCC GERS-MCC	E12C E12C	I/51/576 I/51/576

<u>Safe Shutdown Equip.</u>	G.4 <u>Form#</u>	<u>Relay Name</u> <u>From Dwg.</u>	<u>Manufacturer/</u> <u>Type</u>	<u>Screening</u> <u>Method</u>	<u>Contact's</u> <u>Location</u>	<u>Area/Room/</u> <u>Elevation</u>
SW-1380, BF1275	137	42Xb 42/O&C, 42aab	W/AR440A 2,1	GERS-MCC GERS-MCC	F12C F12C	I/52/576 I/52/576
SW-2929, BE1281, HIS2929	138	2X 42/O&C, 42aab	AGASTAT/7012AD 2,1	LVL 2 GERS-MCC	CDE12C E12C	I/51/576 I/51/576
SW2931, BE1282, HIS2931	139	42/O&C, 42aab	2,1	GERS-MCC	E12C	I/51/576
HV5305A, BE1240, NV5305A	140	42/O&C, 42aab	2,1	GERS-MCC	E12A	6/429/603
HV5305B, BE1241, NV5305B	141	42/O&C, 42aab	2,1	GERS-MCC	E12A	6/429/603
MU6419, BE1295, HIS6419	150	42/O&C	2	GERS-MCC	E12E	8/100/545
MS-107, BF1124, HIS107A PSL107A, B, C, D, PSL4931A	153	PSL4931X R1, R2, R3, R4 K1,K2,,K3,K61, K62,K63,K105,K106 PSL107A PSL107B PSL107C PSL107D 42/O&C, 42aab	AGASTAT/E7014AD DEUTSCH/4AX1603 STRUETHERS DUNN/ 219KDX162 SOR/6TA-B4-NXC1A-JJTTX8 SAME AS PSL107A SAME AS PSL107A SAME AS PSL107A 2,1	LVL 2 LVL 2 LVL 2 LVL 2&4 LVL 2&4 LVL 2&4 LVL 2&4 GERS-MCC	CDF11D CDF11A-2 CS792 PSL107A PSL107B PSL107C PSL107D F11A	7/227/565 7/427/603 7/502/623 7/238/565 7/238/565 7/238/565 7/238/565 7/427/603
RC239A, BF1126, HIS239A	154	42/O&C, 42a	2,1	GERS-MCC	F11A	7/427/603
MU-1A, BF1237, HISMU1A	155	2/TDC 42/O&C, 42aab PSHX PSH	AGASTAT/7012 2,1 DEUTSCH/4AX1603 SOR/6V2-E5-M2CTTX4	LVL 2 GERS-MCC LVL 2 LVL 2	RC4605 F12A RC4605 PSH3711	6/428/603 6/428/603 6/428/603 9/215/565
MU-1B, BF1238, HISMU1B	156	2/TDC 42/O&C, 42aab PSHX PSH	AGASTAT/7012 2,1 DEUTSCH/4AX1603 SOR/6V2-E5-M2CTTX4	LVL 2 GERS-MCC LVL 2 LVL 2	RC4605 F12A RC4605 PSH3712	6/428/603 6/428/603 6/428/603 9/215/565
HV5314A, BF1239, NV5314A	157	42/O&C	2	GERS-MCC	F12A	6/428/603

<u>Safe Shutdown Equip.</u>	G-4 <u>Form#</u>	<u>Relay Name</u> <u>From Dwg.</u>	<u>Manufacturer/</u> <u>Type</u>	<u>Screening</u> <u>Method</u>	<u>Contact's</u> <u>Location</u>	<u>Area/Room/</u> <u>Elevation</u>
SW1395, BF1277, HIS1395 PSL1377A	160	PSL 42/O&C, 42a&b	SOR/6V7-E3-N4-F1ATPLL 2,1	LVL 2 GERS-MCC	PSL1377A F12C	I/52/585 I/52/576
SW2930, BF1281, HIS2930	161	PSHX/2930 42/O&C, 42a&b	DEUTSCH/4AX1603 2,1	LVL 2 GERS-MCC	RC3014 F12C	I/52/576 I/52/576
SW2932, BF1282, HIS2932	162	42/O&C, 42a&b	2,1	GERS-MCC	F12C	I/52/576
RC200, BF1285, HIS200A	163	42/O&C, 42a&b	2,1	GERS-MCC	F12A	6/428/603
MU3971, BF1617, HIS3971	164	42/O&C, 42a&b	2,1	GERS-MCC	F16A	6/428/603
C1-1, BE1401, HIS5031	167	KA, KB 42a&b/LX 42a&b/HX 42X/L 42X/H 42X/H1	DEUTSCH/4CP36AF W/AR660A with latch W/AR660A W/GCL530 W/GCA530 W/A200M47	LVL 4 GERS-MCC GERS-MCC GERS-MCC GERS-MCC GERS-MCC	C5762D,C5763D E14 E14 E14 E14 E14	7/502/623 6/429/603 6/429/603 6/429/603 6/429/603 6/429/603
C1-2, BF1401, HIS5032	168	KA, KB 42a&b/LX 42a&b/HX 42X/H1 42X/H, 42X/L	DEUTSCH/4CP36AF W/AR660A with latch W/AR660A W/A200M47 W/GCA530	LVL 4 GERS-MCC GERS-MCC GERS-MCC GERS-MCC	C5755D,C5756C F14 F14 F14 F14	7/502/623 6/428/603 6/428/603 6/428/603 6/428/603
AF3869	169	K11,K12,K13,K71, K72,K73,K50,K105 42/O&C, 42a&b	STRUTHERS DUNN/ 219XDX162 2,1	LVL 2 GERS-MCC	C5762A E11E	7/502/623 8/402/603
AF3870	170	K6,K7,K8,K66,K67, K68,K45,K105 42a&b 42X/O&C, 42/O&C	STRUTHERS DUNN/ 219XDX162 W/L-56 W/A201K3CS	LVL 2 GERS-MCC GERS-MCC	C5762A D1PA D1PA	7/502/623 6/429/603 6/429/603
AF3871	171	K11,K12,K13,K71, K72,K73,K50,K110 42/O&C, 42a&b	STRUTHERS DUNN/ 219XDX162 2,1	LVL 2 GERS-MCC	C5792 F12A	7/502/623 6/428/603

<u>Safe Shutdown Equip.</u>	<u>G.4 Form#</u>	<u>Relay Name From Dwg.</u>	<u>Manufacturer/ Type</u>	<u>Screening Method</u>	<u>Contact's Location</u>	<u>Area/Room/ Elevation</u>
AF3672	172	K6, K7, K8, K66, K67, K68, K45, K105 42/O&C, 42a&b	STRUTHERS DUNN/ 219XDK162 2,1	LVL 2 GERS-MCC	C5792 F12B	7/502/623 6/319/585
AF599	173	42/O&C, 42a&b	2,1	GERS-MCC	F11A	7/427/603
AF603	174	42/O&C, 42a&b	2,1	GERS-MCC	E11E	8/402/603
CC1467, HIS1467, SV1467	175	KA, KB	DEUTSCH/4CP36AF	LVL 4	C5762C, C5763D	7/502/623
CC1469, HIS1469, SV1469	176	KA, KB	DEUTSCH/4CP36AF	LVL 4	C5755C, C5756D	7/502/623
CC1471, SV1471, HIS1471 PDSH3981	177	4/CW SS1X1	GE/HFA51A42H SQ.D/KPD13	LVL 2 SSRAP	C3615 C3621	6/318/585 6/318/585
CC1474, SV1474, HIS1474 PDSH3982	178	4/CW SS1X1	GE/HFA51A42H SQ.D/KPD13	LVL 2 SSRAP	C3616 C3622	6/319/585 6/319/585
CV2000B	179	42/O&C, 42a&b	2,1	GERS-MCC	F11A	7/427/603
CV2001B	180	42/O&C, 42a&b	2,1	GERS-MCC	E11A	8/209/565
CV2002B	181	42/O&C, 42a&b	2,1	GERS-MCC	F11A	7/427/603
CV2003B	182	42/O&C, 42a&b	2,1	GERS-MCC	E11A	8/209/565

<u>Safe Shutdown Equip.</u>	<u>G.4 Form#</u>	<u>Relay Name From Dwg.</u>	<u>Manufacturer/ Type</u>	<u>Screening Method</u>	<u>Contact's Location</u>	<u>Area/Room Elevation</u>
DH2736	194	42/O&C, 42a&b	2,1	GERS-MCC	F11A	8/402/603
DH63	195	42/O&C, 42a&b	2,1	GERS-MCC	F11E	8/101/545
DH64	196	42/O&C, 42a&b	2,1	GERS-MCC	E11E	8/402/603
DH7A	197	42/O&C, 42a&b	2,1	GERS-MCC	F11B	8/405/603
DH7B	198	42/O&C, 42a&b	2,1	GERS-MCC	E11A	8/209/565
DH830	199	42/O&C, 42a&b	2,1	GERS-MCC	F11D	7/227/565
DH831	200	42/O&C, 42a&b	2,1	GERS-MCC	E11D	7/227/565
DW2643	201	4	DEUTSCH/4AP42AF	LVL 2	RC3715	7/313/585
ICS11A, SVICS11A2, HISICS11A	202	K31,K32,K33,K34 K60,K91,K92,K93,K120	STRUTHERS DUNN/ 219KDX162	LVL 2	C5792	7/502/623
ICS11B, SVICS11B2 HISICS11B	203	K31,K32,K33,K34 K60,K91,K92,K93,K120	STRUTHERS DUNN/ 219KDX162	LVL 2	C5762A	7/502/623
HP2A	204	KA,KB 42/O&C, 42a&b TD	DEUTSCH/4CP36AF 2,1 AGASTAT/E7024AC	LVL 4 GERS-MCC GERS-MCC	C5755D,C5756C F11C F11C	7/502/623 7/236/565 7/236/565
HP2B	205	KA,KB 42/O&C, 42a&b TD	DEUTSCH/4CP36AF 2,1 AGASTAT/7024AC	LVL 4 GERS-MCC GERS-MCC	C5755D,C5756C F11C F11C	7/502/623 7/236/565 7/236/565
HP2C	206	KA,KB 42/O&C, 42a&b TD	DEUTSCH/4CP36AF 2,1 AGASTAT/7024AC	LVL 4 GERS-MCC GERS-MCC	C5762D,C5763C E11A E11A	7/502/623 8/209/565 8/209/565
HP2D	207	KA,KB 42/O&C, 42a&b TD	DEUTSCH/4CP36AF 2,1 AGASTAT/7024AC	LVL 4 GERS-MCC GERS-MCC	C5762D,C5763C E11A E11A	7/502/623 8/209/565 8/209/565

<u>Safe Shutdown Equip.</u>	<u>G.4 Form#</u>	<u>Relay Name From Dwy.</u>	<u>Manufact.: / Type</u>	<u>Screening Method</u>	<u>Contact's Location</u>	<u>Area/Room/ Elevation</u>
HIS6403	208	K29,K30,K44,K45, K50,K53,K54,K55, K60,K85,K90,K104, K105,K110,K113, K114,K115,K120 K35/TDPU,K95/TDPU	STRUTHERS-DUNN/ 219XDK162 AGASTAT/7012NC	LVL 2	C5762A	7/502/623
HIS6404	209	K29,K30,K44,K45, K50,K53,K54,K55, K60,K85,K90,K104, K105,K110,K113, K114,K115,K120 K35/TDPU,K95/TDPU	STRUTHERS-DUNN/ 219XDK162 AGASTAT/7012NC	LVL 2	C5762A	7/502/623
HV5329A, YE101, TC5329 TE5329, TT5329	212	42a	1	GERS-MCC	YE1	6/318/585
HV5329B, YE102	213	42a	1	GERS-MCC	YE1	6/318/585
HV5329C, YE103	214	42a	1	GERS-MCC	YE1	6/318/585
HV5336A, YF101, TC5336 TT5336, TE5336	215	42a	1	GERS-MCC	YF1	6/319/585
HV5336B, YF102	216	42a	1	GERS-MCC	YF1	6/319/585
HV5336C, YF103	217	42a	1	GERS-MCC	YF1	6/319/585
MS375	224	K26,K55,K86,K115	STRUTHERS DUNN/ 219XDK162	LVL 2	C5792	7/502/623
MS5889A, SV5889A, HIS5889A	225	K21,K50,K81,K110	STRUTHERS DUNN/ 219XDK162	LVL 2	C5762A	7/502/623

<u>Safe Shutdown Equip.</u>	<u>G.4 Form#</u>	<u>Relay Name From Dwg.</u>	<u>Manufacturer/ Type</u>	<u>Screening Method</u>	<u>Contact's Location</u>	<u>Area/Room/ Elevation</u>
MS5889B, SV5889B, HIS5889B	226	K21,K50,K81,K110	STRUTHERS DUNN/ 219XDK162	LVL 2	C5792	7/502/623
MU66A, SVMU66A, HISMU66A PSLLMU66A	227	KA, KB PSLL	DEUTSCH/4CP36AF SOR/6V2-T5-TTX5	LVL 4 LVL 2	C5755C,C5756D PSLLMU66A	7/502/523 8/208/565
MU66B, SVMU66B, HISMU66B, PSLMU66B	228	KA, KB PSLL	DEUTSCH/4CP36AF ASCO/SAILAR/TG10A42R	LVL 4 LVL 2,4	C5762D,C5763C PSLMU66B	7/502/623 8/208/565
MU66C, SVMU66C, HISMU66C PSLLMU66C	229	KA, KB PSLL	DEUTSCH/4CP36AF SOR/6V2-T5-TTX5	LVL 4 LVL 2	C5762D,C5763D PSLLMU66C	7/502/623 8/208/565
MU66D, SVMU66D, HISMU66D PSLLMU66D	230	KA, KB PSLL	DEUTSCH/4CP36AF SOR/6V2-T5-TTX5	LVL 4 LVL 2	C5755D,C5756C PSLLMU66D	7/502/623 8/208/565
MS1001	232	K24,K25,K55, K84,K115	STRUTHERS DUNN/ 219XDK162	LVL 2	C5792	7/502/623
MS1011	233	K24,K25,K55, K84,K115	STRUTHERS DUNN/ 219XDK162	LVL 2	C5762A	7/502/623
MS394	234	K26,K55,K86,K115	STRUTHERS DUNN 219XDK162	LVL 2	C5762A	7/502/623
MS603	235	42/O&C, 42a	2,1	GERS-MCC	E11A	7/427/603
MS611	236	42/O&C, 42a	2,1	GERS-MCC	E12E	8/101/545
MU11	237	42/O&C, 42a	2,1	GERS-MCC	E12B	6/318/585
MU12A	238	42/O&C, 42a&b	2,1	GERS-MCC	E11A	8/209/565
MU12B	239	42/O&C, 42a&b	2,1	GERS-MCC	F11D	7/227/565

<u>Safe Shutdown Equip.</u>	<u>G.4 Form#</u>	<u>Relay Name From Dwg.</u>	<u>Manufacturer/ Type</u>	<u>Screening Method</u>	<u>Contact's Location</u>	<u>Area/Room/ Elevation</u>
MU59A	240	KA, KB 42/O&C, 42a&b	DEUTSCH/4CP36AF 2,1	LVL 4 GERS-MCC	C5762C,C5763D E11B	7/502/623 8/304/585
MU59B	241	KA, KB 42/O&C, 42a&b	DEUTSCH/4CP36AF 2,1	LVL 4 GERS-MCC	C5762C,C5763D E11B	7/502/623 8/304/585
MU59C	242	KA, KB 42/O&C, 42a&b	DEUTSCH/4CP36AF 2,1	LVL 4 GERS-MCC	C5762C,C5763D E11B	7/502/623 8/304/585
MU59D	243	KA, KB 42/O&C, 42a&b	DEUTSCH/4CP36AF 2,1	LVL 4 GERS-MCC	C5762C,C5763D E11B	7/502/623 8/304/585
MU6406	244	4	AGASTAT/E GP	LVL 2	RC4606	6/428/603
MU6407	245	4	AGASTAT/E GP	LVL 2	RC4801	8/402/603
MU6408	246	42/O&C, 42a&b	2,1	GERS-MCC	F12A	6/428/603
MU6409	247	42/O&C, 42a&b	2,1	GERS-MCC	E11D	7/227/565
MU6420	248	42/O&C, 42a&b	2,1	GERS-MCC	F16A	6/428/603
MU6422	249	42/O&C, 42a&b	2,1	GERS-MCC	F11A	7/427/603
MS106, D135, DINA, HIS106A, PSL4930A PSL106A,B,C&D	250	K1-3,K61-3,K45,K105 PSL4930X1 R1,R2,R3&R4 PSL106A,B,C&D 42a&b 42X/O&C, 42/O&C	STRUTHERS DUNN 219XDK162 AGASTAT/E7014PD DEUTSCH/4AP43AX SOR/6TA-B4-NXCIA-JJTTX8 W/L-56 W/A201K3CS	LVL 2 LVL 2 LVL 2 LVL 2&4 GERS-MCC GERS-MCC	C5762A RC3701 CDE11C PSL106A,B,C&D DINA DINA	7/504/623 7/314/585 8/304/585 7/237/565 6/429/603 6/429/603

<u>Safe Shutdown Equip.</u>	<u>G.4 Form#</u>	<u>Relay Name From Dwg.</u>	<u>Manufacturer/ Type</u>	<u>Screening Method</u>	<u>Contact's Location</u>	<u>Area/Room Elevation</u>
RC-2	251	42/O&C	2	GERS-MCC	F12B	6/319/585
RC11	252	42/O&C, 42a&b	2,1	GERS-MCC	E16B	8/402/603
RC239B	253	42/O&C, 42a&b	2,1	GERS-MCC	F11A	7/427/603
RC240A	254	42/O&C, 42a&b	2,1	GERS-MCC	E11B	8/304/585
RC-2A, HISBC2-6,	255	4 PSH/RC2-5	AGASTAT/EGP PB/B40-E044-2	LVL 2 CR	RC4606 C5759D	6/428/603 7/502/623
RC-4632	258	4	AGASTAT/EGP	LVL 2	RC4607	7/427/603
SW-2944	260	4	DEUTSCH/4AP	LVL 2	RC3004	I/52/585
SW-2945	261	4	DEUTSCH/4AP	LVL 2	RC3004	I/52/585
SW5067	262	42/O&C, 42a&b	2,1	GERS-MCC	E11D	7/227/565
SW5068	263	42/O&C, 42a&b	2,1	GERS-MCC	F11D	7/227/565
SW-1356, SV1356A, SV1356B, HIS1356	265	4A and 4B 42XA/R 42XB/LX1	DEUTSCH/4AP43AX W/L-56 W/AR660A	LVL 2 GERS-MCC GERS-MCC	RC3701 E14 E14	7/314/585 6/429/603 6/429/603

<u>Safe Shutdown Equip.</u>	<u>G.4 Form#</u>	<u>Relay Name From Dwg.</u>	<u>Manufacturer/ Type</u>	<u>Screening Method</u>	<u>Contact's Location</u>	<u>Area/Room/ Elevation</u>
SW-1357, SV1357A, SV1357B, HIS1357	266	4A and 4B 42XA/H 42XB/LX1	DEUTSCH/4AP43AX W/L-56 W/AR650A	LVL 2 GERS-MCC GERS-MCC	RC3702 F14 F14	7/314/585 6/428/603 6/428/603
SW1399, HIS1399	267	42/OEC, 42atb	2,1	GERS-MCC	E1IC	8/304/585
SV598, HIS598	272	KA,KB	DEUTSCH/4CP36AF	LVL 4	C5755C,C5756D	7/502/623
SV607, HIS607,	273	KA,KB	DEUTSCH/4CP36AF	LVL 4	C5762C,C5763D	7/502/623
P56-1	274	KA,KB 52X 52Y	DEUTSCH/4CP36AF G.Z./116B719793 G.E./295B444P3	LVL 4 SWGR GERS ¹ SWGR GERS ¹	C5762C,C5763D E1 E1	7/502/623 6/429/603 6/429/603
P56-2	275	KA,KB 52X 52Y	DEUTSCH/4CP36AF G.E./116B7197P3 G.E./295B444P3	LVL 4 SWGR GERS ¹ SWGR GERS ¹	C5755C,C5756D F1 F1	7/502/623 6/428/603 6/428/603
AC101	283	27X-6/C1 27a-1/C1 27X-1/C1 27Y-1/C1 86-1/C1 51-1X/C1 51-2 51-4 51-3 51-5 51-1 51GS-2 51GS-1 51GS-3	AGASTAT/7012PB AGASTAT/E7014PB AGASTAT/E7014PA G.E./HFA51A42H G.E./HFA53K91F G.E./HFA53K91F W/CO-2 W/CO-2 W/CO-5 W/CO-5 W/CO-9 ABB/CO-11 ABB/CO-11 ABB/CO-11	LVL 1 LVL 1 LVL 1 LVL 2 CR CR CR CR CR CR CR LVL 4 LVL 4 LVL 4	C1 BUS C1 BUS	6/325/585 6/325/585 6/325/585 6/325/585 6/325/585 6/325/585 6/325/585 6/325/585 6/325/585 6/325/585 6/325/585 6/325/585 6/325/585

¹ Screening on hold until completion of modification to secure breaker hoist hook. Hoist hook is an outlier in the "Seismic Evaluation".

<u>Safe Shutdown Equip.</u>	<u>G.4 Form#</u>	<u>Relay Name From Dwg.</u>	<u>Manufacturer/ Type</u>	<u>Screening Method</u>	<u>Contact's Location</u>	<u>Area/Room/ Elevation</u>
AC101	283	51V-2's	W/COV-9	SWGR GERS	C1 BUS	6/325/585
		51X/AC110	G.E./HGA17C61	LVL 2	C1 BUS	6/325/585
		27-1/C1	G.E./NGV13B52A	LVL 1	C1 BUS	6/325/585
		27-2/C1	"	"	C1 BUS	6/325/585
		27-3/C1	"	"	C1 BUS	6/325/585
		27-4/C1	"	"	C1 BUS	6/325/585
		Y	W/BFD22S	SWGR GERS	C1 BUS	6/325/585
		87/DG	G.E./CFD	CR	C3615	6/318/585
		86-2/DG1	G.E./HFA53K91H	CR	C3615	6/318/585
		86-1/DG1	G.E./HFA53K91H	CR	C3615	6/318/585
		97/C1	AGASTAT/7012PC	LVL 2	C3615	6/318/585
		86Y/DG1	G.E./HFA51A42H	LVL 2	C3615	6/318/585
		27Y-4/C1	G.E./HFA51A42H	LVL 2	C3615	6/318/585
		27Z-1/C1	G.E./HFA51A42H	LVL 2	C3615	6/318/585
		27Z-2/C1	G.E./HFA51A42H	LVL 2	C3615	6/318/585
		27Z-3/C1	G.E./HRA51A42H	LVL 2	C3615	6/318/585
		CR3-X	AB/700-BR4	CR	C3617	6/318/585
		FSS-X	AB/200-G11081	CR	C3617	6/318/585
		V/F	ASCO/207810	CR	C3617	6/318/585
		ISR	SQ.D/KPD13	LVL 4	C3621A	6/318/585
		ISRX	SQ.D/KPD13	LVL 4	C3621A	6/318/585
		R3X3	SQ.D/KPD13	LVL 4	C3621A	6/318/585
		KA, KB	DEUTSCH/4CP36AF	LVL 4	C5763D,C5762D	7/502/623
		SS2X	SQ.D/KPD13	SSRAP	C3621	6/318/585
		R3	SQ.D/KPD13	SSRAP	C3621	6/318/585
		SDRX	SQ.D/KPD13	SSRAP	C3621	6/318/585
		SDRX1	SQ.D/KPD13	SSRAP	C3621	6/318/585
		SDR	SQ.D/KPD13	SSRAP	C3621	6/318/585
		OTR	SQ.D/KPD13	SSRAP	C3621	6/318/585
		CPR	SQ.D/KPD13	SSRAP	C3621	6/318/585
		R3X	SQ.D/KPD13	SSRAP	C3621	6/318/585
		R2	SQ.D/KPD13	SSRAP	C3621	6/318/585
		R7	SQ.D/KPD13	SSRAP	C3621	6/318/585
		SS2	SQ.D/KPD13	SSRAP	C3621	6/318/585
		SS4	SQ.D/KPD13	SSRAP	C3621	6/318/585
		TDD5X	SQ.D/KPD13	SSRAP	C3621	6/318/585
		TD1	AGASTAT/E7012PC	SSRAP	C3621	6/318/585
		TD5	AGASTAT/E7012PE	SSRAP	C3621	6/318/585

<u>Safe Shutdown Equip.</u>	<u>G.4 Form#</u>	<u>Relay Name From Dwg.</u>	<u>Manufacturer/ Type</u>	<u>Screening Method</u>	<u>Contact's Location</u>	<u>Area/Room/ Elevation</u>
AC101	283	TD8 SS4A SS2A OTS,CPS,LOPS, HJWTS	AGASTAT/7012PC SYN.START/E55B-4AT SYN.START/E55B-4AT ENGINE MTD. SWITCHES ENGINE MTD. SWITCH	SSRAP SSRAP SSRAP SSRAP SSRAP	C3621 C3621 C3621 K5-1 K5-1	6/318/585 6/318/585 6/318/585 6/318/585 6/318/585
ABDC1	284	95/AACC2 62/TDO 52X/ABDC1 27Y-1/C1 27X-4 & 27X-5/C1 Y 62/TDO	G.E./HFA53K91F G.E./HGA17C52 G.E./HGA17C52 G.E./HFA51A42H W/MG-6 W/BFD22S G.E./HGA17C52	CR LVL 2 CR LVL 2 LVL 1 SWGR GERS CR	C1 BUS C1 BUS C1 BUS C1 BUS C1 BUS C1 BUS C2 BUS	6/325/585 6/325/585 6/325/585 6/325/585 6/325/585 6/325/585 6/325/585
AC110	285	52X/AC110 27X-4/C1 27X-5/C1 27A-1/C1 27A-2/C1 27A-3/C1 27A-4/C1 27Y-1/C1	G.E./HGA17C52 W/MG-6 W/MG-6 ITE IMPERIAL/ITE-27D " " " G.E./HFA51A42H	CR LVL 1 LVL 1 LVL 1 " " " LVL 2	C1 BUS C1 BUS C1 BUS C1 BUS C1 BUS C1 BUS C1 BUS C1 BUS	6/325/585 6/325/585 6/325/585 6/325/585 6/325/585 6/325/585 6/325/585 6/325/585
AC110E11	286	94-1/C1 50/51 50GS	G.E./HFA51A42H W/CO-11 W/ITH	LVL 2 SWGR GERS CR	C1 BUS C1 BUS C1 BUS	6/325/585 6/325/585 6/325/585
P3-1, AC107, HIS1370	287	2 27Y-3/C1 94-1/C1 2X Y 50/51 50GS SAX/13 KO4 KA, KB	AGASTAT/7012PE G.E./HFA51A42H G.E./HFA51A42H G.E./HFA51A42H W/BFD22S W/COM-5 W/ITH G.E./HGA51A42H DEUTSCH/4CP36AF DEUTSCH/4CP36AF	LVL 1 LVL 2 LVL 2 LVL 2 SWGR GERS SWGR GERS CR LVL 2 LVL 4 LVL 4	C1 BUS C1 BUS C1 BUS C1 BUS C1 BUS C1 BUS C1 BUS C3615 C5762C,C5763D C5762C,C5763D	6/325/585 6/325/585 6/325/585 6/325/585 6/325/585 6/325/585 6/325/585 6/318/585 7/502/623 7/502/623

<u>Safe Shutdown Equip.</u>	<u>G.4 Form#</u>	<u>Relay Name From Dwg.</u>	<u>Manufacturer/ Type</u>	<u>Screening Method</u>	<u>Contact's Location</u>	<u>Area/Room/ Elevation</u>
AACD1	292	27A-1/D1 27A-2/D1 27A-3/D1 27A-4/D1 Y 62/TDO	GOULD/ITE-27D " ITE IMPERIAL/ITE-27D GBB/ITE-27D W/BFD22S G.E./HGA17C52	LVL 1 " LVL 1 LVL 1 SWGR GERS CR	D1 BUS D1 BUS D1 BUS D1 BUS D1 BUS D2 BUS	6/323/585 6/323/585 6/323/585 6/323/585 6/323/585 6/323/585
AD110	293	52X/TDC 27X-4/D1 27X-5/D1 27I-1/D1 27A-1 & 27A-2/D1 27A-3/D1 27A-4/D1	G.E./HGA17C52 W/MG-6 W/MG-6 G.E./HFA51A42H GOULD/ITE27D IMPERIAL/ITE27D GOULD BB/ITE27D	CR LVL 1 LVL 1 LVL 2 LVL 1 LVL 1 LVL 1	D1 BUS D1 BUS D1 BUS D1 BUS D1 BUS D1 BUS D1 BUS	6/323/585 6/323/585 6/323/585 6/323/585 6/323/585 6/323/585 6/323/585
AD1DF12	294	94-1/D1 50/51's 50GS	G.E./HFA51A42H W/CO-11 W/ITH	LVL 2 SWGR GERS CR	D1 BUS D1 BUS D1 BUS	6/323/585 6/323/585 6/323/585
AD107, HIS1317, P3-2	295	2X 2 SAX/24 KO4 KA, KB 94-1/D1 27Y-3/D1 50GS 50/51's Y	G.E./HFA51A42H AGASTAT/7012PE G.E./HFA51A42H DEUTSCH/4CP36AF DEUTSCH/4CP36AF G.E./HFA51A42H G.E./HFA51A42H W/ITH W/COM-5 W/BFD22S	LVL 2 LVL 1 LVL 2 LVL 4 LVL 4 LVL 2 LVL 2 CR SWGR GERS SWGR GERS	D1 BUS D1 BUS C3616 C5756C,C5756D C5756C,C5756D D1 BUS D1 BUS D1 BUS D1 BUS D1 BUS	6/323/585 6/323/585 6/318/585 7/502/623 7/502/623 6/323/585 6/323/585 6/323/585 6/323/585 6/323/585
P42-2, AD112, HISDH6A	296	1Y/D1 KA, KB	AGASTAT/E7022PA DEUTSCH/4CP36AF	LVL 2 LVL 4	D1 BUS C5756C,C5756D	6/323/585 7/502/623
P58-2, AD111	297	KA, KB	DEUTSCH/4CP36AF	LVL 4	C5756C,C5756D	7/502/623

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K5-1, C3621, C3621A	351	SS1A	SYNC.START/ESSB-4AT	SSRAP	C3621	6/318/585
		SS2A	SYNC.START/ESSB-4AT	SSRAP	C3621	6/318/585
		SS3A	SYNC.START/ESSB-4AT	SSRAP	C3621	6/318/585
		SS4A	SYNC.START/ESSB-4AR	SSRAP	C3621	6/318/585
		PS-7	BARK./E1H-M90-V	SSRAP	K5-1	6/318/585
		PS-8	BARK./E1H-M90-V	SSRAP	K5-1	6/318/585
		PS-36	BARK./E1H-M90-V	SSRAP	K5-1	6/318/585
C3617	352	R3X1	SQ.D/KPD13	CR	C3617	6/318/585
		R3X2	SQ.D/KPD13	CR	C3617	6/318/585
		FSS	AB/702DCBOVG931	LVL 2	C3617	6/318/585
		BUR-1,BUR-2	DELTRO/105T1465	CR	C3617	6/318/585
		FFC	AB/702DCBOVG931	LVL 2	C3617	6/318/585
		SS1X	SQ.D/KPD13	SSRAP	C3621	6/318/585
		R3X	SQ.D/KPD13	SSRAP	C3621	6/318/585
		SS3	SQ.D/KPD13	SSRAP	C3621	6/318/585
		SS3A	SYNC.START/ESSB-4AT	SSRAP	C3621	6/318/585
K5-2, C3622, C3622A	353	R7X	SQ.D/KPD13	LVL 4	C3622A	6/319/585
		TD4	AGASTAT/7012PH	LVL 4	C3622A	6/319/585
		AV1A	SQ.D/KPD13	SSRAP	C3622	6/319/585
		AV2A	SQ.D/KPD13	SSRAP	C3622	6/319/585
		FFP1	SQ.D/KPD13	SSRAP	C3622	6/319/585
		RAM	SQ.D/KPD13	SSRAP	C3622	6/319/585
		RS	SQ.D/KPD13	SSRAP	C3622	6/319/585
		R1	SQ.D/KPD13	SSRAP	C3622	6/319/585
		R1X	SQ.D/KPD13	SSRAP	C3622	6/319/585
		R1X1	SQ.D/KPD13	SSRAP	C3622	6/319/585
		R7X1	SQ.D/KPD13	SSRAP	C3622	6/319/585
		SDRX1	SQ.D/KPD13	SSRAP	C3622	6/319/585
		SS1	SQ.D/KPD13	SSRAP	C3622	6/319/585
		SS1X	SQ.D/KPD13	SSRAP	C3622	6/319/585
		SS2	SQ.D/KPD13	SSRAP	C3622	6/319/585
		SS3	SQ.D/KPD13	SSRAP	C3622	6/319/585

<u>Safe Shutdown Equip.</u>	<u>G.4 Form#</u>	<u>Relay Name From Dwg.</u>	<u>Manufacturer/ Type</u>	<u>Screening Method</u>	<u>Contact's Location</u>	<u>Area/Room/ Elevation</u>
K5-2, C3622, C3622A	353	TD5	AGASTAT/7012PE	SSRAP	C3622	6/319/585
		TD3	AGASTAT/7032PB	SSRAP	C3622	6/319/585
		SS1A	SYNC.START/ESSB-4AT	SSRAP	C3622	6/319/585
		SS2A	SYNC.START/ESSB-4AT	SSRAP	C3622	6/319/585
		SS3A	SYNC.START/ESSB-4AT	SSRAP	C3622	6/319/585
		SS4A	SYNC.START/ESSB-4AT	SSRAP	C3622	6/319/585
		PS-7	BARK./E1H-M90-V	SSRAP	K5-2	6/319/585
		PS-8	BARK./E1H-M90	SSRAP	K5-2	6/319/585
		PS-36	BARK./E1H-M90	SSRAP	K5-2	6/319/585
C3618	354	R3X1	SQ. D/KPD13	CR	C3618	6/319/585
		R3X2	SQ. D/KPD13	CR	C3618	6/319/585
		FSS	AB/702DCB0VG931	LVL 2	C3618	6/319/585
		BUR-1, BUR-2	DELTRO/105T1465	CR	C3618	6/319/585
		FFC	AB/702DCB0VG931	LVL 2	C3618	6/319/585
		SS1X	SQ.D/KPD13	SSRAP	C3622	6/319/585
		R3X	SQ.D/KPD13	SSRAP	C3622	6/319/585
		SS3	SQ.D/KPD13	SSRAP	C3622	6/319/585
		SS3A	SYNC.START/ESSB-4AT	SSRAP	C3622	6/319/585
YV1, YV4	357	K1, K2, RL1, RL2	P&B/KHU17A11-120	LVL 4	YV1, YV4	6/429/603
		K2, K3, K4, K5, K6				
		K20, K25	AGASTAT/SSC1-2-AD-A	LVL 4	YV1, YV4	6/429/603
		K21, K22, K23, K24	P&B/KHU17D11-110	LVL 4	YV1, YV4	6/429/603
		RL1	GUARDIAN/1335-2C-12D	LVL 4	YV1, YV4	6/429/603
		RL1	OMRON/MY4-UA-DC24	LVL 4	YV1, YV4	6/429/603
		RL1	GUARDIAN/13302C-120	LVL 4	YV1, YV4	6/429/603
		RL2	OMRON/H3Y4DC12	LVL 4	YV1, YV4	6/429/603
		RL3	GUARDIAN/1335-2C-120	LVL 4	YV1, YV4	6/429/603

<u>Safe Shutdown Equip.</u>	<u>G.4 Form#</u>	<u>Relay Name From Dwg.</u>	<u>Manufacturer/ Type</u>	<u>Screening Method</u>	<u>Contact's Location</u>	<u>Area/Room/ Elevation</u>
MS106A, PSL/49308	358	R2, R4	DEUTSCH/4AP1603	LVL 2	CDE11C	8/304/585
		PSL/4930X2 K16-18, K76-78	AGASTAT/E7014AD STRUTHERS DUNN 219KDX162	LVL 2	CDE11C	8/304/585
MS107A, PSL/4931B	359	42a/C	W/L-56	GERS-MCC	E12B	6/318/585
		42/C, 42/O	2	GERS-MCC	E12B	6/318/585
		R2, R4 PSL4931X2 K16-18, K76-78	DEUTSCH/4AX1603 AGASTAT/E7014AD STRUTHERS DUNN 219KDX162	LVL 2	CDF11A-2	7/427/603
			W/L-56	GERS-MCC	F11B	8/405/603
		42A/C 42/O, 42/C	2	GERS-MCC	F11B	8/405/603

Appendix C
RELAYS SCREENED USING SWITCHGEAR GERS

<u>Relay Name</u>	<u>Manufacturer/Type</u>	<u>Switchgear and Unit</u>	<u>G.4 Form #</u>
50/51 Ph. A and C	Westinghouse/COM-5, Style 289B355A23	D1 Bus, Unit 5	110
52X ¹	General Electric/ Cat. # 116B719793	E1 Bus, Unit 11	274
52Y ¹	General Electric/ Cat. # 295B44493	E1 Bus, Unit 11	274
52X ¹	General Electric/ Cat. # 116B719793	F1 Bus, Unit 11	275
52Y ¹	General Electric/ Cat. # 295B44493	F1 Bus, Unit 11	275
51V-2 Ph. A, B and C	Westinghouse/COV-9 Style 1876245	C1 Bus, Unit 1	283
Y	Westinghouse/BFD22S	C1 Bus, Unit 1	283
Y	Westinghouse/BFD22S	C1 Bus, Unit 2	284
50/51 Ph. A, B and C	Westinghouse/CO-11 Style 1875303A	C1 Bus, Unit 4	286
Y	Westinghouse/BFD22S	C1 Bus, Unit 7	287
50/51 Ph. A and C	Westinghouse/COM-5, Style 289B355A23	C1 Bus, Unit 7	287
50/51 Ph. A and C	Westinghouse/COM-5, Style 289B355A23	C1 Bus, Unit 13	289
51V-2 Ph. A, B and C	Westinghouse/COV-9 Style 1876245	D1 Bus, Unit 1	291
Y	Westinghouse/BFD22S	D1 Bus, Unit 1	291
Y	Westinghouse/BFD22S	D1 Bus, Unit 2	292
50/51 Ph. A, B and C	Westinghouse/CO-11 Style 1875303A	D1 Bus, Unit 4	294

Appendix C
RELAYS SCREENED USING SWITCHGEAR GERS

<u>Relay Name</u>	<u>Manufacturer/Type</u>	<u>Switchgear and Unit</u>	<u>G.4 Form #</u>
50/51 Ph. A and C	Westinghouse/COM-5, Style 289B355A23	D1 Bus, Unit 7	295
Y	Westinghouse/BFD22S	D1 Bus, Unit 7	295
Y	Westinghouse/BFD22S	D1 Bus, Unit 13	298

- 1 Screening these relays with Switchgear GERS (GERS-LVS-MVS.9) is on hold until a modification to secure the breaker hoist hook is complete. This modification is being tracked by the Seismic Evaluation Report.

Appendix D
ESSENTIAL RELAY CABINETS

<u>Relay Cabinets</u>	<u>Disconnect Switch Cabinets</u>	<u>Motor Control Centers</u>	<u>Control Room Cabinets</u>
RC2826	CDE11C	E11A F11A	C5755C
RC3004	CDE11D	E11B F11B	C5755D
RC3014	CDE12A-1	E11C F11C	C5756C
RC3607	CDE12C	E11D F11D	C5756D
RC3608	CDF11A-2	E11E F11E	C5759D
RC3715	CDF11C	E12A F12A	C5761A
RC3701	CDF11D	E12B F12B	C5762A
RC3702	CDF12A-1	E12C F12C	C5762C
RC3704	CDF12A-2	E12E	C5762D
RC3705		E14 F14	C5763C
RC4604		E16B F16A	C5763D
RC4605		YE1 YF1	C5792
RC4606		D1PA DCMCC2	C5792A
RC4607		D1NA	
RC4801			

<u>Emergency Diesel Generator Cabinets</u>		<u>Inverters</u>	<u>Junction Boxes</u>	<u>Switchgear</u>
C3615	C3616	YV1	JT2703	E1
C3617	C3618	YV2	JT2704	F1
C3621	C3622	YV3		C1
C3621A	C3622A	YV4 YVA YVB		D1 C2 D2

Appendix E
RESUMES OF LEAD RELAY REVIEWERS

RELAY EVALUATOR RESUME

Department: Plant Engineering
Section: Design Engineering Electrical and Control
Name: Craig W. Bladow
Title: Lead Relay Reviewer-Instrumentation and Control
QUALIFICATIONS: Registered Professional Engineer - Ohio (Electrical)

EDUCATION
AND TRAINING: UNIVERSITY OF MISSOURI - ROLLA
Bachelor of Science in Electrical Engineering
Degree Awarded: 1984 Summa Cum Laude
Honors Scholar in Electrical Engineering

UNIVERSITY OF TOLEDO
Master's of Science in Electrical Engineering
90 % Complete
Emphasis on Digital Controls and Computer Architecture.

UNITED STATES NAVY SCHOOLS AND COURSES
Naval Nuclear Power School (First in Class)
Naval Nuclear Power Prototype - Ballston Spa, N.Y.
TRIDENT Engineering Administration
Operational Water Chemistry and Radiological Controls

PROFESSIONAL
HIGHLIGHTS: TOLEDO EDISON * DAVIS-BESSE NUCLEAR POWER STATION

<u>SENIOR ENGINEER - NUCLEAR</u>	1994
ENGINEER - NUCLEAR	1990
ASSOCIATE ENGINEER - NUCLEAR	1989

DESIGN ENGINEERING - ELECTRICAL CONTROLS

UNITED STATES NAVY 1983 - 1989

Lieutenant

USS HENRY M. JACKSON SSBN-730 (1986 - 1989)
Electrical Division Officer * Communications Officer
Engineering Officer of the Watch
Engineering Duty Officer * Officer of the Deck

RELATED
ASSIGNMENTS: McDONNELL DOUGLAS 1984
Saint Louis, Missouri
Engineering Intern



Certificate of Achievement

This is to certify that

Craig W. Bladon

has completed the
SQUAD Relay Evaluation Training Course
held November 17-19, 1992

Jess Betlack

Jess O. Betlack, MPR Associates

RELAY EVALUATOR RESUME

Department: Plant Engineering
Section: Design Engineering Electrical and Control
Name: William J. Kreinbihl
Title: Lead Relay Reviewer--Electrical

EDUCATION:

Bachelor of Science Electrical Engineering (BSEE), University of Toledo, 1985.

PROFESSIONAL HISTORY:

Nine years electrical design experience in operating nuclear power plant.

Davis-Besse Nuclear Power Station, Engineer, 1992 - present
Davis-Besse Nuclear Power Station, Associate Engineer, 1989 - 1992
Davis-Besse Nuclear Power Station, Assistant Engineer, 1986 - 1989

PROFESSIONAL EXPERIENCE:

Lead and support engineer for numerous major and minor plant modifications.

Analysis of electric circuits for Appendix R Compliance.

Prepare and check electrical specifications and calculations.

Environmentally Qualified cable splices and terminations.

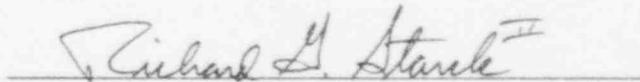
Analysis of circuit/equipment malfunctions.

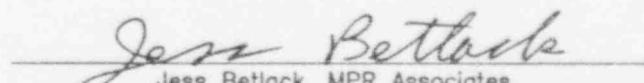


Equipment Selection and
Relay Evaluation Training Course

This is to Certify

that William Kreinbihl has Attended
the SQUG Equipment Selection and Relay Evaluation
Training Course, held on September 25-27, 1990. This includes
Attendance in the Equipment Selection and Relay Workshop(s).
Equipment Selection and/or Relay


Richard G. Starck, II, MPR Associates
Equipment Selection Instructor


Jess Betlack, MPR Associates
Relay Instructor

Relay Evaluation Report

Section 5.2 G-4 Forms

Binder 1

Docket Number 50-346

License Number NPF-3

Serial Number 2316

6.4 #1

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System 480 VAC ELECTRICALPage 1 OF 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BE1120, MCC E11B	E-220A SHTS 4, 25 E-8-73	NONE	NONE	NA

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. Koenig, Date 1-21-93
 Reviewed by _____ / Date _____

6.4 #2

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System 240 VAC ELECTRICALPage 1 OF 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
RE1180, MCC YER	E-221A SHTS 3+H E-8-73	NONE	NONE	NA

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Hall, Date 1-21-93
 Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

6.4 #3

System 480 VAC ELECTRICAL

Page 10F1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BE1164, MCC E11B	E-221A SHTS 3+11	NONE	NONE	NA
	E-8-67			

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- - No entry necessary.

Prepared by W. K. Schell, Date 1-21-93
Reviewed by _____ / Date

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

6.4 #4

System 480 VAC ELECTRICAL

Page 10F1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
---------------------	------------	-----------------------	-------------------------	------

RE1150, MCC E11E	E-222A SHT. 3 + 24 E-8-73	NONE	NONE	NA
------------------	-------------------------------------	------	------	----

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by W.H. Smith Date 1-21-93
Reviewed by _____ / Date

6.4 #5

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System 480 VAC ELECTRICAL

Page 1 OF 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BE1196, MCC EIID	E-223A SHT 3, 7 E-8-72	NONE	NONE	NA

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by W. K. Schell, Date 1-22-93
Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT ~~RAVIS-BESSE~~ UNIT 1

6.4 #6

System 480 VAC ELECTRICAL

Page 1 OF 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BE1151, EIIC	E-798A SHT. 3, 6	NONE	NONE	NA

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by Walter Sif Date 1-22-93
Reviewed by _____ / Date _____

6.4 #7

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System 480 VAC ELECTRICAL

Page 1 OF 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BE1202 , E12C	E-224A SHT. 3, 6	NONE	NONE	NA
	E-8-73			

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by W.H. Loh Date 1-22-93
Reviewed by _____ / Date _____

6.4 #8

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System 480 VAC ELECTRICAL

Page 1 OF 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
E12E , BE1234	E-224A SHT. 3, 35	NONE	NONE	NA

E-8-73

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by D. Knobell Date 1-22-93
Reviewed by _____ / Date _____

6.4 #9

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System 125/250 VDC ELECTRICAL

Page 1 of 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BE1235 (480V BKR FOR BATT. CHARGER DB2IN)	E-224A SHT. 4, 28 E-8-73	NONE	NONE	NA

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
 - NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
 - GERS - Seismically adequate based on GERS ____; include GERS number.
 - NA - Component not affected by relays.
 - CR - Corrective action required.
 - DA - Operator action.
 - No entry necessary.
- Prepared by W. Ken Sill Date 1-22-93
 Reviewed by _____ / Date _____

6.4 # 10

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT LEWIS-BESSE UNIT 1

System 125/250 VDC ELECTRICALPage 1 OF 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BE1233 (480V BREAKER AR) (DBCIP)	E-224A SHT. 3, 23 E-8-73	NONE	NONE	NA

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____ ; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

ed by W. K. Schill Date 1-22-93
 ed by _____ / Date

6.4 # 11

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System 480 VAC ELECTRICAL

Page 1 OF 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BE1273, E12F	E-225A SHT 3, 20	NONE	NONE	NA
	E-8-73			

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- - No entry necessary.

Prepared by Walter L. Schaefer Date 1-22-93
Reviewed by _____ / Date _____

6.4 #12

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System 120/240 VAC ELECTRICAL

Page 1 OF 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BEI259, YE1	E-225A SHT. 3, 17	NONE	NONE	NA

E-8-73

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Lef Date 1-22-93
Reviewed by _____ / Date _____

6.4

#13

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System 480 VAC ELECTRICALPage 1 OF 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BE1284, E12C	E-226A SHT. 3, 11	NONE	NONE	NA
	E-B-47			

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by Wren, J.A. Date 1-22-93
 Reviewed by _____ / Date _____

6.4 #14

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System 480 VAC ELECTRICALPage 1 OF 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BE1291, MCC E12E	E-282A SHT. 3,7 E-8-67	NONE	NONE	NA

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Lill Date 1-22-93
 Reviewed by _____ / Date

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System 480 VAC ELECTRICALPage 10F1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BE1297, MCC E12F	E-855A SHT. 3, 4 and E-8-72	NONE	NONE	NA

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Loh Date 1-22-93
 Reviewed by _____ / Date _____

6.4 #16

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System 480 VAC ELECTRICALPage 1 OF 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BF1189, MCC FILE	E-250A SHT 3, 44	NONE	NONE	NA
	E-8-73			

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. Krenz Date 1-22-93
 Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT Lewis-Besse. Unit 1

6.4 #17

System 480 VAC ELECTRICAL

Page 1 OF 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BF1146, MCC F11D	E-250A SHT. 4, 30	NONE	NONE	NA
	E-8-73			

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
DA - Operator action.
- No entry necessary.

Prepared by W. K. Smith Date 1-22-93
Reviewed by _____ / Date _____

6.4 #18

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT LAVIS-BESSE UNIT 1

System 120/240 VAC ELECTRICALPage 1 OF 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BF1101, MCC YFR	E-250A SHT 4, 29 E-8-73	NONE	NONE	NA

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. Thiel Date 1-22-93
 Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
FORM G-4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

G-4 #19

System 480 VAC ELECTRICAL

Page 1 OF 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BF1137, MCC FIIB	E-250A SHT. 4, 26	NONE	NONE	NA

E-8-73

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by W. French Date 1-22-93
Reviewed by _____ / Date _____

6.4 #20

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System 480 VAC ELECTRICAL

Page 1 OF 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BF1162, MCC FIIB	E-251A SHT. 3, 4	NONE	NONE	NA
	E-8-72			

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by W. H. Smith Date 1-22-91
Reviewed by _____ / Date _____

6.4 #21

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System 480 VAC ELECTRICALPage 1 OF 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BF1175, MCC F11D	E-253A SHT 3, 8	NONE	NONE	NA
	E-8-72			

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Hanrahan, Date 1-22-93
 Reviewed by _____ / Date _____

6.4 #22

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System 180 VAC ELECTRICAL

Page 1 OF 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BF1191, MCC F11E	E-283A SHT. 3, 7	NONE	NONE	NA
	E-8-67			

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by Wm. L. B. Date 1-22-93
Reviewed by _____ / Date _____

6.4 #23

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT Lewis-Besse Unit 1

System 125/250 VDC ELECTRICALPage 10F1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BF1209 <i>(BAR FOR DBC2P)</i>	E-254A SHT. 3, 12	NONE	NONE	NA
		E-8-73		

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Gold Date 1-22-93
 Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT LEWIS-BESE UNIT 1

System 125/250 VDC ELECTRICAL

Page 1 OF 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BF1212 <i>(BKR FOR DBC2N)</i>	E-254A 8HT 3, 15 E-8-73	NONE	NONE	NA

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by Wm. Smith Date 1-22-93
 Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

6.4 #25

System 120/240 VAC ELECTRICAL

Page 1 OF 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BF1270, MCC YFI	E-255A SHT. 3, 16	NONE	NONE	NA
	E-8-73			

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Smith Date 1-22-93
Reviewed by _____ / Date _____

6.4 #26

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System 480 VAC ELECTRICAL

Page 1 OF 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BF12.84, MCC F12C	E-256A SHT. 3, 9	NONE	NONE	NA
	E-8-67			

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.
- Prepared by W. K. Smith Date 1-22-93
Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT LAVIS-BESSE UNIT 1

6.4 #27

System 480 VAC ELECTRICAL

Page 1 OF 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BF1278, MCC FIRD	E-256A SHT. 3, 12	NONE	NONE	NA
	E-8-71			

- Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS ____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by W. K. Smith Date 1-22-93
Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT ZEUS-BIESE UNIT 1

6.4 #28

System 250/125 VDC ELECTRICAL

Page 1 OF 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
D104, DC MCC1	E-8-95	MAIN & AUX	(W) 1600A	NV
NOTE: D104 AND D131 (SEE 6.4 # 35) SUPPLY DCMCC1	E-280A CHT. 3, 6	SW CONTACTS	SW & FU	
	E-6 SHT 3		DCMCC1	

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Schaffner Date 1-22-93
 Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT ZAPPA-BESE UNIT 1

6.4 #29

System 250/125 VDC ELECTRICAL

Page 1 OF 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
D103	E-280A SHT. 3, 7	MAIN AND AUX. SW CONTACTS	(W) 800A 3WE FUSE	NV
	E-8-96		DC MCC1	
	E-6 SHT 3			

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by W. K. Smith Date 1-22-93
Reviewed by _____ / Date _____

1

IMAGE EVALUATION TEST TARGET (MT-3)



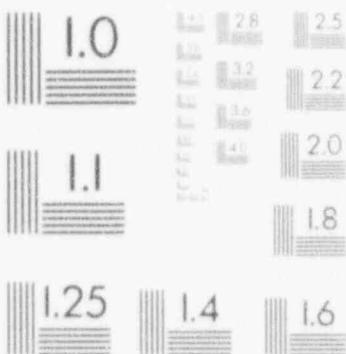
150mm

6"

PHOTOGRAPHIC SCIENCES CORPORATION
770 BASKET ROAD
P.O. BOX 338
WEBSTER, NEW YORK 14580
(716) 265-1600

1

IMAGE EVALUATION TEST TARGET (MT-3)



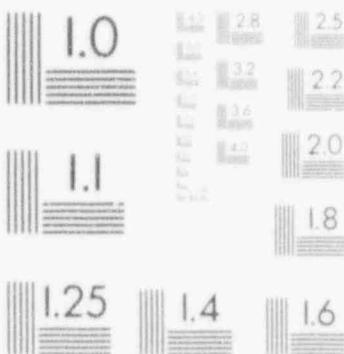
150mm

6"

PHOTOGRAPHIC SCIENCES CORPORATION
770 BASKET ROAD
P.O. BOX 338
WEBSTER, NEW YORK 14580
(716) 265-1600

1

IMAGE EVALUATION TEST TARGET (MT-3)



150mm

9"

PHOTOGRAPHIC SCIENCES CORPORATION
770 BASKET ROAD
P.O. BOX 338
WEBSTER, NEW YORK 14580
(716) 265-1600

6.4 #30

**A-66 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1**

System 125/250 VOL ELECTRICAL

Page 1 of 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
D101,	E-280A SHT. 3, 10	MAIN AND AUX CONTACTS	(W) 400A SW & FUSE	NV
	E-8-96			
	E-6 SHT3		DC MCC!	
	E-38B SH1 (72A/D101)			

- Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- | | |
|------|---|
| CA | - Chatter acceptable. |
| NV | - Not vulnerable (mechanically-actuated contacts and solid state relays). |
| GERS | - Seismically adequate based on GERS ____; include GERS number. |
| NA | - Component not affected by relays. |
| CR | - Corrective action required. |
| OA | - Operator action. |
| | - No entry necessary. |

Prepared by W. Kuehne Date 1-22-93
Reviewed by _____ / Date _____

6.4 #31

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT ZAVIS-BESE UNIT 1

System 250/125 V DC ELECTRICAL

Page 1 OF 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
D102	E-280A SHT. 3, 11	MAIN AND AUX. CONTACTS	(W) 400 A SW & FUSE	NV
	E-8-96		DCMCC1	
	E-6 SHT 3			
	E-38B SHT 3 (72a /D102)			

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- | | |
|------|---|
| CA | - Chatter acceptable. |
| NV | - Not vulnerable (mechanically-actuated contacts and solid state relays). |
| GERS | - Seismically adequate based on GERS ____; include GERS number. |
| NA | - Component not affected by relays. |
| CR | - Corrective action required. |
| OA | - Operator action. |
| - | - No entry necessary. |

Prepared by W. Ken Shiff Date 1-22-93
Reviewed by _____ / Date _____

A-86 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

6.4 #32

System STATION LIGHTING

Page 1 OF 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
D111	E-280A SHT. 4, 12	MAIN & AUX. CONTACTS	(W) 100A SW & FUSE	NV
	E-8-96			DC MCC1
	E-6 SHT. S			

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by W. Keen biff Date 1-22-93
Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT 2A'S-RESE UNIT 1

6.4 #33

System STATION LIGHTING

Page 1 OF 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
D112	E-RBOA SHT. 4, 13	MAIN AND AUX. CONTACTS	(W) 100A SW ₂ FUSE	NV
	E-8-96		DEMCC1	
	E-6 SHT. 3			

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Bell Date 1-22-93
Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.6 - RELAY TABULATION
 PLANT 2A/1S-BESE UNIT 1

6.6 #34

System 120/240 VAC ELECTRICAL.

Page 1 OF 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT [*]
D116	E-280A SHT. 4, 14	MAIN AND AUX CONTACTS	(W) 400A SW AND FUSE	NV
	E-8-96			
	E-6 SHT.3		DEMCC/	
	E-38B SHT.2 (72a) (D116)			

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by JK Date 1-23-93
 Reviewed by _____ / Date _____

A-8E RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT 2015-PIESF UNIT 1

6.4 #35

System 12.5/250 VDC ELECTRICAL

Page 1 OF 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
D131	E-8-95	MAIN AND AUX. SW. CONTACTS	(W) 1A00A SW 1A00 FUSE	NV
	E-280A SHT. 5, 25		DEMCC1	
	E-6 SHT. 3			

- * Identify reason for Contact/Contact Group Being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NY - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Loh / Date 1-22-93
Reviewed by _____ / Date _____

A-4E RELAY SCREENING AND EVALUATION
FORM E-4 - RELAY TABULATION
PLANT 2A/US-PISSF UNIT 1

E-4 #36

System 125/250 VDC ELECTRICAL

Page 1 OF 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
D132,	E280A SHT 4, 20	MAIN AND AUX CONTACTS	(W) 400A SW & FUSE DEMCC1	1/V
	E-8-96			
	E-38 SHT. 1	(72a/D132)		
	E-6 SHT 3			

* Identify reason for Contact/Contact Group Being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- PV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- RL - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. Koenig / Date 1-22-93
Reviewed by _____ / Date _____

A-RE RELAY SCREENING AND EVALUATION
FORM 6.8 - RELAY TABULATION
PLANT DAVIS-BECE UNIT 1

6.8 #37

System 125/250 VAC ELECTRICAL

Page 1 OF 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
D133,	E-280A SHT. 4, 22	MAIN AND AUX. CONTACTS	(W) 400A SW & FUSE	NV
	E-8-96			DCMCC1
	E-6 SHT 3			
	E-38B SHT.4	(72a/D113)		

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NY - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- DA - Operator action.
- No entry necessary.

Prepared by W. Krenz Date 1-22-93
Reviewed by _____ Date _____

6.4 #38

A-40 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT ZEIS-RIESSE UNIT 1

System 125/250 VDC ELECTRICALPage 1 OF 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
D145, MCC DIN A	E-280A SHT. 4, 32	MAIN CONTACTS	(W) 200A SW & FUSE	NV
NOTE, D145 IS THE FEEDER FOR DIN A.	E-6 SHT 3		DEMCC1	

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Schaff Date 1-22-93
Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS - BESSIE

G.4 #39

System 125/250 VDC ELECTRICAL

Page 1 OF 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
D204, DEMCC2	E-281A SHT. 3,4	MAIN AND AUX. CONTACTS	(W) 1600A SW & FUSE	NV
	E-8-95			DEMCC2

NOTE: D204 AND E-6-SHT 4

D231 (SEE G.4 #

49) SUPPLY

C MCC2

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS ____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by W. K. Loh, Date 1-25-93
Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS - BESSIE

G.4 #40

System 125/250 VDC ELECTRICAL

Page 1 OF 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
D203	E-281A SHT 3, 7	MAIN AND ALTR. CONTACTS	(W) 800A SW & FUSE	NV
	E-8-94		DCMCCR	
	E-6 SHT. 4			

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by Walter Bell Date 1-25-93
Reviewed by _____ / Date _____

G.4 #41

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS - BESSIE

System 125/250 VDC ELECTRICAL

Page 1 OF 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
D201	E281A SHT 3, 10	MAIN AND AUX CONTACTS	(D) 400A SW & FUSE	NV
	E-8-96			DEMCC 2
	E-6 SHT.4			
	E38B SHT 1	(72 ^a /D201)		

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- - No entry necessary.

Prepared by W. Ken Lill Date 1-25-93
Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS - BESSIE

G.4 #42

System 125/250 VDC ELECTRICAL

Page 1 OF 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
D202	E-81A SHT. 3, 11	MAIN AND AUX CONTACTS	(W) 400A SH & FUSE	NV
	E-8-46			DEMCC 2
	E-6 ENT 4			
	E-38B SHT. 3	(72a/D202)		

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by W. K. Lusk Date 1-25-93
Reviewed by _____ / Date _____

A-4E RELAY SCREENING AND EVALUATION
FORM E-4 - RELAY TABULATION
PLANT 2A15-R15SF UNIT 1

6.4 #43

System 125/250 VDC ELECTRICAL

Page 1 OF 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
D134	E280A SHT. 5,24	MAIN AND AUX. CONTACTS	(W) 800A SW FUSE DEMCC 1	NV
	E-8-96			
	E-6 SHT 3			

- * Identify reason for Contact/Contact Group Being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NY - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Smith Date 1-22-93
Reviewed by _____ / Date _____

G.4 #44

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE

System STATION LIGHTING

Page 1 of 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
D212	E-281A SHT. 3, 13	MAIN AND AUX. CONTACTS	(B)100A SW & FUSE	NV
	E-8-96		DCMCC2	
	E-6 SHT. 4			

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by M. K. Smith Date 1-25-93
Reviewed by _____ / Date _____

G.4 #45

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS - BESSE

System 120/240 VAC ELECTRICAL

Page 10F1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
D216	E-281A SHT. 3, 14	MAIN AND AUX. CONTACTS	(W) 400A SW & FUSE	NV
	E-8-96			DCMCCR
	E-6 SHT4			
	E-38B SHT4 .	(72A/D216)		

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by W. K. Gold Date 1-25-94
Reviewed by _____ / Date _____

G.4 #46

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS - BESSIE

System 125/250 VDC ELECTRICAL

Page 10F/1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
D232	E-281A SHT. 4, 20 E-8-96 E-6 SHT. 4 E-38B SHT. 2 (72a/D232)	MAIN AND AUX. CONTACTS	(W) 400A SW FUSE DCMCC 2	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by W. K. Smith Date 1-25-93
Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS - BESS

G.4 #47

System 125/250 VDC ELECTRICAL

Page 1 of 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
D233	E-281A SHT. 4,22	MAIN AND AUX CONTACTS	(W) 400A SW & FUSE DC MCC 2	NV
	E-8-96			
	E-6 SHT. 4			
	E-38B SHT. 3	(72a/D233)		

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by W.H. Smith Date 1-25-93
Reviewed by _____ / Date _____

G.4 #48

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE

System 125/250 VDC ELECTRICAL

Page 1 OF 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
D234	E-281A SHT. 5, 24	MAIN AND AUX. CONTACTS	(W) 800A SW & FUSE	NV
	E-8-96		DCMCE2	
	E-6 SHT. 4			

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by John Smith Date 1-25-93
Reviewed by _____ / Date _____

G.4 #49

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS - BESSE

System 125/250 VDC ELECTRICAL

Page 1 OF 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
D231	E-281A SHT 5, 25	MAIN AND AUX CONTACTS	(W) 1600A SW, FUSE	NV
	E-8-95		DEMCC 2	
	E-6 SHT 4			

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS ____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by W.K. Gandy Date 1-25-93
Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS - BESSIE UNIT 1

G.4 # 57

System 125/250 VDC ELECTRICAL

Page 1 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
---------------------	------------	-----------------------	-------------------------	------

DBC1N, DBC1P,
 DBC2N, DBC2P
 (BATT. CHARGERS)

E-20-30	34	PATHER E, BRUMFIELD # PR5AY IN BATT. CHARGERS MAIN CKT.	CA - ENTERING CURRENT LIMIT DURING STRONG SHAKING ACCEPTABLE IF REQUIRED, BATT WILL HANDLE SYST. VOLTAGE
E-20-84 &			
VMAN E-20-89			

E-20-30	54/1	CRAMER 24 HR. TIMER. PN Q71-2-24HR IN CHARGERS MAIN CKT.	NV
---------	------	--	----

E-20-30	54/2	"	CA - A CHANGE BETWEEN FLOAT & EQUALIZE IS ACCEPTABLE DURING STRONG SHAKING
---------	------	---	--

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS ____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by D. Kennedy Date 1-27-93
 Reviewed by _____ / Date _____

G.4 #57

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System 125/250 V.D.C. ELECTRICALPage 2 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
E-20-30	47/2	SIEMENS PN V23134- DO403-W075 IN CHARGERS' MAIN CKT	CA-SAME AS 54/2	
E-20-30	FLT/EQU ②0	CUTLER- HAMMER #8373K7 IN CHARGERS' MAIN CKT.	NV	
E-20-30	47/1, 45/3	SIEMENS PN V23134-	CA1	
E-542 SHT 1A	45/1, 45/2	DO403-W075		
E-542 SHT 2A	4Y1, 41/2	IN CHARGERS. MAIN CKT		
E-388 SHTS, 6, 7, 8	41/3			
E-20-30	40/1 44/1	HOAGLAND # P115X120	CA1	

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS ____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by W. K. Smith Date 1-27-93
 Reviewed by _____ / Date _____

G.4 #57

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS - BESSIE

System 125/250 V.D.C. ELECTRICAL

Page 3 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
	E-20-30	39/1, 43/1	POWERTRONIC EQUIP. LIMITED)	CA1
	E-20-52		# 1-0087	

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Gold, Date 1-27-93
Reviewed by _____ / Date

A-4E RELAY SCREENING AND EVALUATION
FORM E-4 - RELAY TABULATION
PLANT DAVIS-BECE UNIT 3

E-4 #50

System 120 VAC ELECTRICAL

Page 1 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
Y1 (DISTRIBUTION PANEL) INCLUDES SEL COMPONENTS Y104 + Y105.	E-20-70	CBY103 THRU- CBY122 WITH AUX. SWITCH	NON-AUTO CIRCUIT BKR. IN Y1	NV
Y101	E-20-70	SY101	MANUAL TRANSFER SW IN Y1	NV
Y2 (DISTRIBUTION PANEL) INCLUDES SEL COMPONENTS Y204 + Y205	E-20-70	CBY203 THRU- CBY122 WITH AUX. SWITCH	NON-AUTO CKT. BERS IN Y2	NV
Y201	E-20-70	SY202	MANUAL TRANSFER SW IN Y2	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- EA - Chatter acceptable.
- AV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Loh Date 1-25-93
Reviewed by _____ / Date _____

A-60 RELAY SCREENING AND EVALUATION
FORM 6.6 - RELAY TABULATION
PLANT 2AUS-PISSF UNIT 1

6.6 #50

System 120 VAC ELECTRICAL

Page 2 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
Y3 (DISTRIBUTION PANEL) INCLUDES SSEL COMPONENT Y-305.	E-20-70	CB Y303 THRU CBY322 WITH AUX. SWITCH	NON-AUTO CKT. BKRS, IN Y3	NV
Y301	E-20-70	SY301	MANUAL TRANS. SW IN Y3	NV
Y4 (DISTRIBUTION PANEL) INCLUDES SSEL COMPONENT Y405.	E-20-70	CBY403 THRU CBY422 WITH AUX. SWITCH	NON-AUTO CKT. BKRS IN Y4	NV
Y401	E-20-70	SY401	MANUAL TRANS. SW IN Y4	NV

- * Identify reason for Contact/Contact Group Being satisfactory or unsatisfactory

- EA - Chatter acceptable.
- AV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NE - Component not affected by relays.
- CR - Corrective action required.
- DA - Operator action.
- No entry necessary.

Prepared by W.L. Smith Date 1-25-93
Reviewed by _____ / Date _____

A-4E RELAY SCREENING AND EVALUATION
 FORM E-4 - RELAY TABULATION
 PLANT LOUIS-REEF UNIT 3

E-4 #51

System 120 VAC ELECTRICAL

Page 1 OF 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT ^o
Y1A (DISTRIBUTION PANEL)	12501 E-20Q-2, -4, -5	Y103A THRU Y122A	(W)EB2100N BKRS WITH IAIB AUX. SWITCH IN Y1A.	NV
Y101A	"	AA (Y101A)	AMERICAN SOLENOID CO. MANUAL TRANSFER SW.	NV
Y2A (DISTRIBUTION PANEL)	"	Y203A THRU Y222A	(W)EB2100N BKRS WITH IAIB AUX. SWITCH IN Y2A	NV
Y201A	"	AA (Y201A)	AMERICAN SOLENOID CO. MANUAL TRANSFER SW.	NV

- Identify reason for Contact/Contact Group Being satisfactory or unsatisfactory

- EA - Chatter acceptable.
- AV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Satisfactorily adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Schaff Date 1-25-93
 Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS - BESSIE

System 125/250 VDC ELECTRICALPage 1 OF 1

Subsystem/Component <u>(SEE NOTE 1)</u>	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
EI6273	E-6 SHT. 3	NONE - FOR ALL COMPONENTS	NONE - FOR ALL COMPONENTS	NA
EI6274	E-6 SHT 4			
EI 4553	E- 7			
EI 4554	E-388 SHT 5			
EI 6271				
EI 6272				
EI6275	IIIG283			
EI6276	IIIG284			
EI6277	IIIG285			
EI6278	IIIG286			
EI6281	IIIG289			
EI6282	IIIG290			
EI6297	IIIG291			
EI6298	IIIG292			

NOTE 1: EI = VOLTMETER

II = AMMETER

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS ____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by John L. Smith Date 1-25-93
 Reviewed by _____ / Date _____

G.4 #53

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS - BESSIE UNIT I

System 125/250 VOC ELECTRICALPage 1 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
DIN (D.C. DISTRIBUTION PANEL)	E-20-28 E-20-29 E-542 SHT. 1A	K1	POWERTRONIC EQUIPMENT LIMITED # I-0087 10 DIN	CA 1
		K3	FOTHER & BRUMFIELD # PR110Y IN DIN	CA 1
DINO1 & DINO2	E-20-28 E-20-29 E-388 SHTS. 142	CBDINO1 CBDINO2 MAIN & AUX CONTACTS (72a/DINO1 OR DINO2)	(W) NON AUTO 400A CKT BKRS. # LAB 2400N IN DIN	NV
DINO3	E-20-28 E-20-29 E-388 SHTR	CBDINO3 72a/DINO3	(W) NON AUTO CKT. BKR WITH AUX. CONTACT. # KA2225N IN DIN.	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by John Smith Date 1-26-93
 Reviewed by _____ / Date _____

C.A # 53

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System 125/250 VDC ELECTRICALPage 2 OF

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
DIN04	7749-E-20-28-6	CBDIN04	(W) NON-AUTO CKT. BKR WITH AUX CONTACT. # KA2225N	NV
DIN05 THRU DIN24 (WHICH INCLUDES SEL COMPONENT DIN09),	"	CBDIN05 THRU CBDIN24	(W) NON-AUTO CKT. BKR WITH AUX CONTACT. # EBZ100N	NV
	7749-E-20-28	K2	AMPERITE MODEL # i15C5 TIME DELAY RELAY IN DIN	CAI - SUPPLIES K3 COIL

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Siff Date 10-19-94
 Reviewed by _____ / Date _____

6.4 #54

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT 2045-TRICEP UNIT 3

System 125/250 V.D.C ELECTRICAL

Page 1 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT
D2P (DISTRIBUTION PANEL)	E-20-28 E-20-29 E-542 SHT. 2A	K1	POWERTRONIC EQUIP. LIMITED #1-0087 IN D2P	CA1
	"	K2	AMPERITE # 115C5 IN D2P	CA1
	"	K3	POTTER & BRUMFIELD # PR110Y IN D2P	CA1
D2P01 & D2P02	E-20-28 E-20-29 E-388 SHT3	CBD2P01 & CBD2P02 MAIN & AUX CONTACTS (72a/D2P01 or D2P02)	(W) NON-AUTO 400A CKT. BKR # LAB 2400N IN D2P	NV

- Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared By W. K. Loh, Date 1-26-93
Reviewed By _____ / Date _____

G.4 #54

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS - BESSIE

System 125/250 VDC ELECTRICALPage 2 of 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
D2P03	E-20-28 E-20-29 E-38B3HT.	CBD2P03, MAIN AND AUX CONTACT 72a/02P03 3	(W) NOR-AUTO CCT BKR WITH AUX. CONTACT # KA2225N IN D2P	NV
D2P04	E-20-28	CBD2P04	(W) NOR-AUTO CCT BKR WITH AUX CONTACT # KA2225N IN D2P	NV
D2P05 THRU D2P24 (WHICH INCLUDES SSEL COMPONENT D2P09)	E-20-28	CBD2P05 THRU CBD2P24	(W) NOR-AUT CCT BKR WITH AUX CONTACT # EB2100N IN D2P	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Smith Date 1-26-93
 Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS - BESSIE UNIT 1

G.4 #55

System 125/250 VAC ELECTRICAL

Page 1 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
DIP (DISTRIBUTION PANEL)	E-854Q-74 E-542 SHT. 1 VMAN; E-854Q-117	X700 (UNDER VOLTAGE RELAY BOARD)	R11 - OMRON #MY4-UA-DC24 IN DIP	CA1
DIP01 AND DIP02	" E-38B SHT 1	CBDIPO1 CBDIPO2 AND AUX. CONTACTS 72a/DIP01, 72a/DIP02	G.E. NON-AUTO CKT. BKR WITH AUX CONTACTS #TJJ426Y400 IN DIP	NV
DIP03	E-854Q-74 VMAN E-854Q-117 E-38B SHT. 1	CBDIPO3 AND AUX CONTACTS 72a/DIP03	G.E. NON-AUTO CKT. BKR WITH AUX CONTACTS #TFK226Y225 IN DIP	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS ____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by W.K. Loh Date 1-26-93
 Reviewed by _____ / Date _____

c. #55

A-46 RELAY SCREENING AND EVALUATION
FORM E.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System 125/260 KOC ELECTRICAL

Page 1 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
DIP04	E-854Q- 74	CBO1P04	G.E. NON AUTO CKT BKR WITH AUX CONTACTS #TFKK226Y225 IN DIP	NV
DIP05 THRU DIP24 (WHICH INCLUDES SSEL COMPONENT DIP09)	"	CBO1P05 THRU CBO1P24	GE NON AUTO. CKT BKR # TED124Y100-50C IN DIP	NA

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.L. Body Date 10-20-94
Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS - BESS

G.4 #56

System 125/250 VDC ELECTRICAL

Page 1 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
D2N (DISTRIBUTION PANEL)	E-854Q-71 E-542 SHT. 2 VMAN; E 854Q-117	X'100 (UNDER VOLTAGE RELAY BOARD)	RL1- OMRON #MYH-1A-DC24 IN D2N	CA1
DRNO1 + DRNO2	" E-38B SHTS. 344	CBD2N01 CBD2N02 AND AUX. CONTACTS 7Ra/D2N01, 7Ra/D2N02	G.E. 400A NON-AUTO CKT. BKR WITH AUX CONTACTS #TJ1426Y400 IN D2N	NV
DRNO3	E-854Q-117 E-38B SHT3	CBD2N03 AND AUX CONTACT 7Ra/D2N03	G.E. 225A NON-AUTO CKT. BKR. WITH AUX. CONTACTS IN D2N.	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Schill Date 1-26-93
 Reviewed by _____ / Date _____

6.4 # 56

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System 825/8250 KOC ELECT

Page 2 of 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
D2N04	E-854Q-71	CB02N04	G.E. NON AUTO CKT BKR (SAME AS CB02N03)	NV
D2N05 THRU D2N24, (WHICH INCLUDES ALL COMPONENT D2N09).	"	CB02N05 THRU CB02N24	G.E. NON AUTO CKT. BKR 100 A. # TEO124Y100-50C	NA

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Schipper Date 10-21-94
 Reviewed by _____ / Date _____

G.4 #58

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS - BESSIE UNIT 1

System 120 VAC ELECTRICAL

Page 1 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
YV2, YV3 (CYBEREX INVERTERS)	E-20-18	K1	POWER & BRAUNFIELD #CSL-38-60010 IN INVERTER	CR- vulnerable bug replaced
	E-20-18	S101, CHARGE SWITCH	MANUALLY OPERATED SWITCH ON INVERTER ESCO # 101602A-2	NV
	E-20-20	K101	SIGMA DPDT RELAY # 42806-1000S-SIL IN INVERTER	CA1 (SYNC WITH YAR (YBR))

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. L. R. Date 1-27-93
Reviewed by _____ / Date _____

A-45 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

G.4 #58

System 120 VAC ELECTRICAL

Page 2 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
YV2, YV3 (CYBEX EX INVERTERS)	E-20-20-3	K6	SCHRACK DPDT # RM201-610 IN INVERTER	CA1
	E-20-20-3	K7	(SEE K6)	CA8
	E-20-53	3261	Toggle SWITCH	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Loh Date 1-27-98
Reviewed by _____ / Date _____

BKR IS CLOSED AND REQUIRED
TO REMAIN CLOSED

6.4 #59

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System 480 VAC ELECTRICAL

Page 1 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BCEII, USS EI	E-37B SHT. SHT 142	27 /EI	G.E TYPE IAV54Z IN EI. A=6 EL=603	CA1
LOCATION 11	E-37B SHT	DS 3	GE TYPE SB-9 IN BCEII *	NV
*A=6 RM=429 EL=603	"	CS (HIS 6244)	GE TYPE SB-10 IN C5715 ***	NV
**A=6 RM=325 EL=585	"	'CLOSE'	PUSH BUTTON ON BKR.	NV
***A = 7 RM = 505 EL = 623	"	52a and A 52b A	AUX. SWITCH FOR (W) BREAKER IN ACICEII **	NV

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Smith Date 2-9-93
Reviewed by _____ / Date _____

G.4 #59

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS - BESSIE UNIT 1

System 480 VAC ELECTRICALPage 2 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BCEII, USS E1 BKR TYPE AK-505	E-37B SHT. 3	52hb/B1, 52b/ 52a/B1, 52ha/B1	AUX. SW CONTROLLED BY BREAKER BCEII *	NV
	E-37B SHT. 3	52hb/B2, 52b/ 52a/B2, 52ha/B2	AUX. SW CONTACTS CONTROLLED BY G.E. BKR BCEI2 *	NV

NOTE THE "AUXILIARY CONTACTS" SHOWN ON E37B
 SHT. 3 DO NOT CONTROL BKR AND THEREFORE ARE
 NOT EVALUATED ON THIS G.4.

52X
 E30B SHT. 16
 VMAN E-7-142-1

GE #
 192A9770P2
 IN BCEII *

CA-BKR IS
 ALREADY CLOSED;
 THEREFORE, CHATTER
 IN CLOSE CKT. IS
 ACCEPTABLE.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Smith Date 2-9-93
 Reviewed by _____ / Date _____

G.4 # 59

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS - BESSIE UNIT 1

System 480 VAC ELECTRICALPage 3 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BCEII, USSEI	E30B SHT. 16 YMAN E-7-142-1	52W	GE # 192A9771P2 IN BCEII *	CA - BKR IS CLOSED, THERE- FORE CHATTER IN CLOSE CKT ACCEPTABLE
		52CC	GE # CR9500B202H3A IN BCEII *	CA - SEE 52W
	E-30B SHT. 16 YMAN E-7-142-1	52Z + 52Y	MECHANICALLY OPERATED SWITCHES IN BCEII *	NV
	E-30B SHT 16 YMAN E-7-142-1	52 (10 TC CKT)	AUX. SWITCH CONTACT IN BCEII *	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Schell Date 2-9-93
 Reviewed by _____ / Date _____

G.4 # 59

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS - BESSE UNIT 1

System 480 VAC ELECTRICALPage 4 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BCEII, USS E1	VMAA1 E-7-142-1 (Pg 119)	POWER SENSOR TRIP FOR AK-3A-50S G.E BKR	SOLID STATE COMPONENTS INCLUDED WITH BKR.	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. H. Schubert Date 2-10-93
 Reviewed by _____ / Date _____

THIS BKR. IS CLOSED AND IS
REQUIRED TO REMAIN CLOSED

AK3A505

6.6 #60

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System 480 VAC ELECTRICAL

Page 10F4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BDF12, HSS F1	E-378 SHT. 3	DS	GE TYPE SB-9 IN BDF12 *	NV
<u>LOCATION</u>	E-378 SHT. 3	CS (HIS6254)	GE TYPE SB-10 IN C5715 **	NV
$HA = 6$ $H = 428$ $EL = 603$	E-378 SHT.	"CLOSE" 3	PUSHBUTTON ON BKR. BDF12 *	NV
* $A = 7$ $RM = 505$ $EL = 623$	E-378 SHT 3	52a/A AND 52b/A	AUX. SWITCH FOR <u>W</u> BKR IN ACID/FIR ***	NV
*** $A = 6$ $RM = 323$ $EL = 585$				

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Bell, Date 2-10-93
Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS - BESSIE UNIT 1

G.4 #60

System 480 VAC ELECTRICAL

Page 2 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BDF12, USS F1	E-37B SHT 3	52hb/B1, 52b/B1, 52a/B1, 52ha/B1	AUX SW. CONTROLLED BY BKR, BDF12 *	NV

E-37B SHT 3	52hb/ B2, 52b/ B2, 52ha/ B2, 52a/ B2,	AUX SW. CONTROLLED BY BKR BDF11 *	NV
-------------	--	--	----

NOTE THE "AUXILIARY CONTACTS" SHOWN ON E-37B SHT-3
 DO NOT CONTROL BDF12 AND THEREFORE ARE NOT
 EVALUATED ON THIS 6.4.

E-30B SHT. 16 VMAN E-7-142-1	52X	G.E. # 192A9770P2 IN BDF12 *
---------------------------------	-----	------------------------------------

CA - BKR IS ALREADY
 CLOSED; THEREFORE,
 CHATTER IN CLOSING
 CKT IS ACCEPTABLE.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- DA - Operator action.
- No entry necessary.

Prepared by D. K. Schill, Date 2-10-93
 Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS - BESSE UNIT 1

G.4

System 480 VAC ELECTRICAL

Page 3 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BDF12, USS F1	E-30B SHT16 VMAN E-7-142-1	52W	G.E # 192A9771P2 IN BDF12 *	CA-SEE 52X
"		52CC	G.E. # CR9500B202H3A IN BDF12 *	CA-SEE 52X
"		52Z AND 52Y	MECHANICALLY OPERATED SWITCHES IN BDF12 *	N.V
"		52 (IN TC CIRCUIT)	AUX. SWITCH CONTACTS IN BDF12 *	N.V

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Loh Date 2-10-93
 Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS - BESSIE

G.4 #60

System 180 VAC ELECTRICAL

Page 4 of 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BDF12, LSS FI	VMAN E-7-142-1 Pg 119	POWER SENSOR TRIP FOR GE, AK-3A-50S BKR,	SOLID STATE COMMENTS INCLUDED WITH BKR	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- - No entry necessary.

Prepared by John Smith Date 2-10-93
Reviewed by _____ / Date _____

THIS BKR. IS CLOSED +
REQUIRED TO REMAIN CLOSED

AK3A25

AUTO TRIP FUNCTIONS LT O.C + GRD

6.4 # 61

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System 480 VAC ELECTRICAL

Page 1 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BE106, MCC E12A	E-37B SHT 4	"DS"	GE CTRL. SWITCH SB-9 AT UNIT SUB E1 *	NV
	E-37B SHT. 4	"CLOSE"	PUSHBUTTON ON BKR. BE106 *	NV
<u>LOCATION</u>				
X H = 6 RM = 429 EL = 403		52b/1/BA, 52c/1/BA, 52ha/1/BA,	AUX. SWITCH CONTACTS IN BE106 *	NV
	E-37B SHT. 4	51/1/BA	OVER CURRENT RELAY CONTACT WHICH IS NOT USED	CA

NOTE: THE "AUXILIARY CONTACTS" SHOWN ON E-37B SHT 4 DO NOT CONTROL THIS
BKR. AND THEREFORE ARE NOT EVALUATED ON THIS 6.4

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. Haribolli Date 2-11-93
Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS - BESSE UNIT 1

G.4 #61

System 480 VAC ELECTRICAL

Page 2 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BE106, MCC EIRA	E-30B SHT 16 E-7-51	bb AND aa	CUT-OFF SWITCH IN BE106 *	NV
VMAN	E-7-142			
"	52X	G.E # 116B7197P3 IN BE106 *	CA - BK2 IS CLOSED; THEREFORE CHATTER IN CLOSE CKT. IS ACCEPTABLE	
"	52Y	G.E # 295B444P3 IN BE106 *	CA - SEE 52X	
VMAN E-7-142	SOLID STATE TRIP DEVICE FOR G.E AM3A25 BK2.	SOLID STATE COMPONENTS IN BE106 *	NV	

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Hill Date 2-11-93
 Reviewed by _____ / Date _____

THIS BKR IS CLOSED
AND IS REQUIRED TO
REMAIN CLOSED

AK3425

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

6.4 #62

System 480VAC ELECTRICAL

Page 1 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BE107, MCC E1IA	E-37B SHT. 4	"DS"	G.E 581 SWITCH IN HSS EI *	NV
	E-37B SHT. 4	"CLOSE"	PUSHBUTTON ON BKR BE107 *	NV
	E-37B SHT. 4	526 BA, 52ay BA,	AUX. SWITCHES IN BE107 *	NV
		52ay BA		
	E-37B SHT. 4	51 BA	OVERCURRENT RELAY CONTACT IN BE107 WHICH IS NOT USED	CA

LOCATION
Area = 4
RM = 429
EL = 603

NOTE: THE "AUXILIARY CONTACTS" SHOWN ON
E-37B SHT DO NOT CONTROL THIS BKR
AND THEREFORE ARE NOT EVALUATED ON THIS 6.4

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by W. Biddle Date 2-12-93
Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS - BESSIE UNIT 1

G.4 #62

System 480 VAC ELECTRICAL

Page 2 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BE107, MCC E11A	E-308 SHT 16 VMAN E-7-142-1 E-7-51	22 AND 66	CUT-OFF SWITCH IN BE107 *	NV
"		52X	G.E. # 11687197P3 IN BE107 *	CA - BKR IS CLOSED; THEREFORE CHATTER IN CLOSE CKT IS ACCEPTABLE.
"		52Y	G.E. # 295B444P3 IN BE107 *	CA - SEE 52X
VMAN E-7-142-1	.SOLID STATE TRIP DEVICE FOR G.E. AK3A25 BKR.	SOLID STATE COMPONENTS IN BE107 *	NV	

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Bell Date 2-12-93
 Reviewed by _____ / Date

AK3A25

6.4 #63

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System 480 VAC ELECTRICALPage 1 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BEL10, MCC E14	E-37B SHT 5 E-4 SHT1	50GS	GROUND SENSOR RELAY, RELAY SHORTED OUT AND NOT USED IN BEL10 *	CA
	E-37B SHT 5	51/B	G.E. TYPE IAC, RELAY CONTACT NOT USED, IN BEL10 *	CA
<u>LOCATION</u>				
AREA = 6				
Rm = 424	E-37B SHT,	DS	G.E. TYPE	NV
EL = 603	5		SBI CTRL. SWITCH IN E1 *	
	E-37B SHT.	"CLOSE"	PUSHBUTTON IN BEL10 *	NV
	5			

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Smith Date 2-12-93
 Reviewed by _____ / Date _____

THIS BKR IS CLOSED AND
IS REQUIRED TO REMAIN
CLOSED

6.4 #63

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS - BESSIE

System 180 VAC ELECTRICAL

Page 2 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BE110, MCC E14	E-370 SHT5	52b/ B, 52a/ B, 52hay/ B	AUX. SWRCH ON BKR. BE110 *	NV
E-303 SHT 16 E- 7-51 VMAN: E-7-142-1		52X	G.E. # 11687197P3 IN BE110 *	CA - BKR IS CLOSED; THEREFORE CHATTER IN CLOSE CKT IS ACCEPTABLE
11		52Y	G.E. # 295B444P3 IN BE110 *	CA - SEE 62X

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Gold Date 2-12-93
Reviewed by _____ / Date

G.4 #63

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS - BESSE UNIT I

System 480 VAC ELECTRICAL

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Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BE110 MCC E14	VMAN. E-7-142-1	SOLID STATE TRIP DEVICE FOR G.E AK3A25 BKR.	SOLID STATE COMPONENTS IN BE110 *	NV
	E-30B SHT 14 & VMAN E-7-142-1	BB, A2	MECHANICALLY OPERATED SWITCH IN BE110.	NV
	E-37B SHT 5	52LS	CELL SWITCH MECHANICALLY OPERATED IN BE110	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS ____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by W.K. Goff Date 2-12-93
Reviewed by _____ / Date _____

THIS BKR IS CLOSED AND
IS REQUIRED TO REMAIN
CLOSED.

AK3A25

6.6 #65

A-46 RELAY SCREENING AND EVALUATION
FORM 6.6 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System 480 VAC ELECTRICAL

Page 10F2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BF110, MCCF14	E-37B SHT. 5 E-4-SHT 2	5BGS	GROUND SEISDR RELAY CONTACTS WHICH ARE NOT USED - RELAY SHORTED OUT	CA
	E-37B SHT. 5	5 1/2	G.E. TYPE IAC OVERCURRENT (CONTACTS NOT USED) IN FL *	CA
<u>LOCATIONS</u>				
REA = 6 RM = 408 EL = 603	E-37B SHT. 5	"DS"	GE, TYPE SB1 CTRL SWITCH ON FL *	NV
	E-37B SHT. 5	"CLOSE"	DUSHBUTTON ON BF110 *	NV

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by W.H. Smith Date 2-12-93
Reviewed by _____ / Date _____

G.4 #65

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS - BESSIE UNIT 1

System 480 VAC ELECTRICALPage 2 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BF110, MCC FIT	E-37B SHT. 5	52A/ B, 52a/ B, 52b/ B	AUX. SWITCHES ON BF110 *	NV

NOTE: THE AUXILIARY CONTACTS SHOWN ON E-37B SHT. 5 DO NOT CONTROL THIS BKR AND THEREFORE ARE NOT EVALUATED IN THIS G.4.

E-30B SHT. 16	52X	G.E. # 116B7197P3 IN BF110 *	CA - BKR CLOSED; THEREFORE, CHATTER IN CLOSE CKT ACCEPT- ABLE.
E-7-51 VMAN: E-7-142-1	52Y	G.E. # 295B444P3 IN BF110 *	CA - SEE 52X
"	aa AND bb	CUT-OFF SW. CONTACTS IN BF110 *	NV
VMAN E-7-142-1	SOLID STATE TRIP DEVICE FOR AK3A25	SOLID STATE COMPONENTS IN BF110 *	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS ____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by W.H. Lish Date 2-12-93
 Reviewed by _____ / Date _____

BKR. CLOSED AND
REQUIRED TO REMAIN
CLOSED

AK3A25

6.4 #67

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System 480 VAC ELECTRICAL

Page 1 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BF114, MCC F12A	E-37B SHT.4	5/BA	OVERCURRENT RELAY CONTACT NOT USED IN F1 *	CA
	E-37B SHT.4	"DS"	G.E. TYPE SBI CTRL. SWITCH AT F1 *	NV
<u>LOCATION</u>	E-37B SHT.4	"CLOSE"	PUSHBUTTON ON BF114 *	NV
AREA = 4 RM = 428 SL = 603	E-37B SHT.4	52b/52a/ 52ba/ 52ba/ /BA	Aux. CONTACTS IN BF114 *	NV
	E-30B SHT 16 E-7-51 VMAN: E-7-142-1	aa AND bb	CUT-OFF SWITCH IN BF114 *	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS ____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by W.H. Smith Date 2-12-93
Reviewed by _____ / Date _____

G.4 #67

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System 480VAC ELECTRICAL

Page 2 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BF114, MCC F14	E-30B SHT 16 E-7-51	52X	G.E. # 116B7197P3 IN BF114 *	CA - BKR CLOSED; THEREFORE CHATTER IN CLOSE CKT ACCEPTABLE.
VMAN:	E-7-142-1	52Y	G.E. # 295B444P3 IN BF114 *	CA - SEE 52X
VMAN:	E-7-142-1	SOLID STATE TRIP DEVICE FOR GE AK3A25 BKR.	SOLID STATE COMPONENTS IN BF114 *	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Kehl Date 2-12-93
Reviewed by _____ / Date

BKR IS CLOSED & REQUIRED
TO REMAIN CLOSED AK3A25

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

G.4 #68

System 480 VAC ELECTRICAL

Page 1 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
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BF115, MCCF11A	E-37B SHT 4	51/BA	OVERCURRENT CONTACT NOT USED IN FI*	CA
----------------	-------------	-------	-------------------------------------	----

	E-37B SHT 4	"DS"	G.E. TYPE SB1 CTRL. SWITCH IN FI	NV
--	-------------	------	----------------------------------	----

	E-37B SHT 4	"CLOSE"	PUSHBUTTON ON BF115 *	NV
--	-------------	---------	-----------------------	----

LOCATIONS

* A=4
RM=428
FL=403

E-37B SHT 4	520/520/ BA, BA, 520/ BA,	AUX. SWITCH CONTACTS ON BF115 *	NV
-------------	------------------------------------	------------------------------------	----

E-30B SHT 16 E-7-51 VMAN: E-7-142	52X	G.E. # 11687197P3 IN BF115 *	CA - BKR CLOSED; THEREFORE CHATTER IN CLOSE Ckt ACCEPTABLE.
--	-----	------------------------------------	--

E-30B SHT 16	52a + 52b (IN $\frac{52}{TC}$ CKT)	AUX. CONTACTS ON BKR. BF115	NV
--------------	---------------------------------------	--------------------------------	----

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- | | |
|------|---|
| CA | - Chatter acceptable. |
| NV | - Not vulnerable (mechanically-actuated contacts and solid state relays). |
| GERS | - Seismically adequate based on GERS ____; include GERS number. |
| NA | - Component not affected by relays. |
| CR | - Corrective action required. |
| OA | - Operator action. |
| | - No entry necessary. |

Prepared by John Libe Date 2-12-93
Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS - BESSE UNIT 1

6.4 #68

System 480 VAC ELECTRICAL

Page 2 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BF115, ACC F1A	E-30-B SHT. 16 E-7-51	52Y	G.E. # 295B444P3 IN FI *	CA - SEE 52X
VMAN:	E-7-142-1			
		cc AND bb	CUT-OFF SWITCH (CONTACTS ON F1 *)	NV
VMAN: E-7-142-1		SOLID STATE TRIP DEVICE FOR G.E. AK3A 25 BKR	SOLID STATE COMPONENTS IN BF115 *	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. Gold, Date 2-12-93
 Reviewed by _____ / Date _____

BKR. IS CLOSED AND IS REQUIRED
TO REMAIN CLOSED.

6.4 #69

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS BESSE UNIT 1

System 480 VAC ELECTRICAL

Page 1 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
---------------------	------------	-----------------------	-------------------------	------

BF118, MCC FIGA	E-37B SHT 4	51/ BA	OVERCURRENT CONTACT NOT BEING USED IN F1 *	CA
<u>LOCATION</u>	E-37B SHT 4	"DS"	G.E. TYPE SB1 CTRL. SWITCH ON F1 *	NV
* A=6 PM=428 EL=603	E-37B SHT 4	"CLOSE"	PUSHBUTTON ON BF118 *	NV
	E-37B SHT 4	52a/ BA, 52b/ BA	Aux. Contacts ON BF118 *	NV
		52ha/ BA		
	E-30B SAT.16 E-7-51 VMAN E-7-142-1	52x	G.E. # 11687197P3 IN BF118 *	CA - BKR IS CLOSED; THEREFORE CHATTER IN CLOSE CLT IS ACCEPTABLE.

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Lish Date 2-12-93
Reviewed by _____ / Date _____

G.4 #69

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS - BESSIE UNIT 1

System 480 VAC ELECTRICAL

Page 2 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BF118, MCC F16A	E-308 SHT 16 E-7-51 VMAN: E-7-142-1	52Y	G.E. # 2958444P3 IN F1*	CA-SEE 52X
"	aa And bb		CUT-OFF SWITCH CONTACTS ON F1*	NV
VMAN: E-7-142-1	SOLID STATE TRIP DEVICE		SOLID STATE COMPONENTS IN BF118 *	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by J. K. Reid Date 2-12-93
 Reviewed by _____ / Date _____

G.4 #70

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS - BESSE

System 120VAC ELECTRICALPage 1 OF 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
(X) YE2B	E-8-119	<u>NONE</u>	<u>NONE</u>	NA
(X) YF2B	E-249A SHT.3			
YE208	E-284A SHT.3			
YF208				

(X) - TRANSFORMER

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Smith Date 2-12-93
 Reviewed by _____ / Date _____

G.4 #71

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS - BESS

System 120 VAC ELECTRICALPage 10F1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
YE1 (XYE1)	E-248A SHT 3,4	NONE	NONE	NA
YFI (XYFI)	E-277A SHT 3,4	NONE	NONE	NA
YE2A (XYE2A)	E-245Q-4	NONE	NONE	NA
YF2A (XYF2A)				

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Smith Date 2-12-73
 Reviewed by _____ / Date _____

LOCATIONS

* AREA = 6
 RM = 429
 EL = 603

** AREA = 7
 RM = 237
 EL = 565

6.4 #72

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System Auxiliary Feedwater

Page 1 OF 10

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
D1P20	E-845Q-74 (SEE G.4 # 55)	CBD1P20	G.E. 100A NON-AUTO CKT. BKR #TED124Y100-SUC IN PANEL D1P	NV
HIS520A	E-45B SHTS. 11A AND 11B	HIS/A	G.E. TYPE SBM CTRL SWITCH IN C5706	NV
HIS1CS38B	E-45B SHTS. 11A AND 11B	HIS/C	G.E TYPE SBM CTRL. SWITCH IN C3630	NV
K3-1	E-45B SHTS 11A, 11C	SSX1	DEUTSCH (COUCH) TYPE HAP IN CDE12A-1	CA - WE WOULD NOT ATTEMPT A SPEED ADJ. DURING S.S.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by T. K. Smith Date 8/28/95
 Reviewed by _____ / Date

6.4 #72

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System AUXILIARY FEED WATERPage 2 OF 10

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
K3-1	E-45B SHTS. 11A, 11B	SSX2	DEUTSCH (COUCH) TYPE AAP IN CDE12A-1 *	CA - WE WOULD NOT ATTEMPT A SPEED ADJ DURING S.S.
	E-45B SHTS. 11A, 11B	<u>CCW</u> <u>AUX</u>	"	LEVEL 2 USING RELAY SPECIFIC TEST DATA (SEE PG 5 OF THIS G.4)
	E-45B SHTS. 11A, 11B	<u>CW</u> <u>AUX</u>	"	"
	E-45B SHT. 11A, 11B AND M-36AQ-19	ZS1CS38Q (HIGH SP. STOP SWITCH) AND ZS1CS38R (LOW SPEED STOP SWITCH)	MICRO SWITCH TYPE 11SM3-T ON K3-1 TYPE PGG WOODWARD GOVERNOR	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by J. K. Smith Date 2/23/95
 Reviewed by _____ / Date _____

G.4 #72

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System AUXILIARY FEEDWATERPage 3 OF 10

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
K3-1	E-45B SHT. IIA, IIB; E-554B SHT. 29	Y LOWER, RAISE	AGASTAT TYPE GPON IN JT2703 **	GERS-PLY- ARS. 4 (SEE Pg. 6)
	E-45B SHT. IIA, IIB; E-554B SHT 29	<u>IC538X1</u> , <u>IC538X2</u>	AGASTAT TYPE EGPB IN JT2703 **	GERS-PLY-ARS.4 (SEE Pg. 6)
	E-45B SHT IIB	ZS-ICS38N ZS-ICS38N	MICRO SWITCH TYPE LSP1A ON TURBINE INLET CTRL ULV	NV
	E-45B SHT. IIC	HS-ICS38A ("SS" ON Dwg)	G.F. TYPE SBM CTRL SWITCH ON C3630	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Lee Date 5/15/95
 Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System AUXILIARY FEEDWATER

Page 4 OF 10

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
K3-1	E-45B SHT.19	ZS-ICS38C	NATIONAL ACME TYPE DIR00G POSITION SW ON TRIP & THROTTLE VLV	NV
			MICRO SWITCH TYPE LSP1A POSITION SW ON GOV. CTRL VLV.	NV
		ZS5889A (V5889A)	NAMCO TYPE EA-180 ON K3-1 STEAM INLET VLV.	NV
	E-45B SHT.19	ZS1CS38C ZSX	DEUTCH TYPE AAP IN RC3715	CA1

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by D.K. Kelly Date 2/28/95
 Reviewed by _____ / Date _____

C.E #72

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System Auxiliary Feedwater

Page 5 OF 10

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
---------------------	------------	-----------------------	-------------------------	------

LEVEL 2 SCREENING FOR CDE12A-1

1. Natural frequency of CDE12A-1 is greater than or equal to 8Hz.
2. CDE12A-1 has been given an amplification factor (AF) of 3.
3. CDE12A-1 is located in plant area 6, elevation 603', which is less than about 40 feet above effective grade (Area 6 effective grade = 573')
4. For this area and elevation Peak GRS = .39g and Ground ZPA = .15g
5. Seismic capacity for Deutsch 4AP43AF = 6.7g peak and 5g at the ZPA (ref. NED 95-10022, "Seismic Evaluation of Deutsch Relays" and "Justification for Covering Older Deutsch Relays with the 1990 Farwell & Hendricks Report", copies attached).

thus;

$$ERS = \text{Peak GRS} \times 1.5 \times 1.5 \times AF$$

$$ERS = 2.63$$

and

$$ZPA = \text{Ground ZPA} \times 1.5 \times 1.5 \times AF$$

$$ZPA = 1.01$$

therefore, seismic capacity exceeds seismic demand.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____ ; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by J.W. Gaskill Date 4-24-95
Reviewed by _____ / Date _____

SCE
Review

J.W.Gaskill 8/18/85

C-6 #72

A-46 RELAY SCREENING AND EVALUATION
FORM C-6 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System AUXILIARY FEEDWATER

Page 6 OF 10

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
---------------------	------------	-----------------------	-------------------------	------

LEVEL 2 SCREENING FOR JT2703 AND JT2704

These terminal boxes are located in Plant Area 7 on elevation 565'. Both have natural frequencies less than 8Hz and amplification factors (AF) = 3. This area and elevation has a Peak conservative design basis floor response spectra (FRS) = .5869g and a ZPA conservative design basis FRS = .190g. Seismic demand (SD) is calculated as; SD = FRS * AF.

Peak seismic demand:

$$\begin{aligned} SD &= .5869g * 3 \\ SD &= 1.8g \end{aligned}$$

ZPA seismic demand:

$$\begin{aligned} SD &= .190g * 3 \\ SD &= .57g \end{aligned}$$

Relay Capacity:

RELAY	PEAK	ZPA	REFERENCE
Agastat EGP/GP	3.3g	1.32g	GERS-RLY-ARS.4

therefore, seismic capacity exceeds seismic demand.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by W.H. Hark Date 5/4/95
Reviewed by _____ / Date _____

SCE
~~REVIEW~~
Review

: J.W.G. Hark 5/18/95

G.4 # 72

pg 7 of 10

JUSTIFICATION
FOR
COVERING OLDER DEUTSCH RELAYS
WITH THE 1990
FARWELL & HENDRICKS REPORT

The Farwell & Hendricks report which is referenced in NED 95-10022 qualified both DC and AC Deutsch Series 4A rotary relays. Using code numbers printed on the qualified relays' case, it was determined that the DC relays were manufactured in 1987 and the AC relays were manufactured in 1990. To extend the Farwell & Hendricks seismic testing to relays manufactured prior to 1987, Deutsch Relays Inc. was contacted to learn about any changes made in these relays between the years 1974 and 1987. This contact is documented by Toledo Edison letter NED 95-30004, dated 1-23-94, and Deutsch's response, dated 2-2-95 (copies of both letters are attached).

The response from Deutsch Relays Inc., indicates there were no changes in the Series 4A rotary relays during the time period in question. In fact, changes in the relay housing material and in the hermetic sealing process, which occurred in 1994, would not change the g level where contact chatter is exhibited. Therefore, the results of the Farwell & Hendricks report referenced in NED 95-10022 will be used as the seismic capacity for all model 4AP43AF and model 4AX1603 Deutsch relays.

G.4 # 72

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System Aux Feedwater

Page 8 OF 10

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

INTENTIONALLY BLANK

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS ____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by _____ / Date

Reviewed by _____ / Date

G.4 # 12

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System AUX. FEEDWATER

Page 9 OF 10

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
---------------------	------------	-----------------------	-------------------------	------

Intentionally Blank

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS ____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by _____ / Date
Reviewed by _____ / Date



A Centeneor Energy Company

EDISON PLAZA
300 MADISON AVENUE
TOLEDO, OHIO 43652-0001

January 23, 1995

NED 95-30004

Deutsch Relays Incorporated
65 Daly Road
East Northport, New York 11731

Attention: Mr. Mike Moutuz, QA Manager

Subject: Deutsch Series 4A Rotary Relays

Dear Mr. Moutuz:

Davis-Besse Nuclear Power Station uses the Deutsch Series 4A rotary relay for a variety of control applications. In 1990, we contracted the services of Farwell & Hendricks, Inc. to perform environmental qualification testing on these relays (model numbers 4AP43AF and 4AX1603). This testing included Seismic Qualification per IEEE 344-1975.

We would like to apply the results of this Seismic Qualification to relays which were purchased and installed prior to the Farwell and Hendricks testing. Based on codes stamped to the sides of the tested relays (code numbers 8704 and 9025), we believe they were manufactured in 1987 or 1990. Extending the results of the Farwell and Hendricks to earlier vintage relays requires a comparison between the tested and the earlier vintage relays. To assist in making this comparison, we would like to know of any changes in the manufacturing process of these relays between the dates of 1974 and 1987 which may affect seismic characteristics and seismic performance.

This letter is a follow-up to the telephone conversation between yourself and Mr. William Kreinbihl on January 18, 1995. Questions concerning this request may be directed to William Kreinbihl at (419) 321-8246.

Sincerely,

A handwritten signature in cursive ink, appearing to read "J.H. Lash".
J. H. Lash
Manager - Design Engineering

WJK/lmk

LOCATIONS

* AREA 6
 RM 428
 EL 603

** AREA = 7
 RM = 238
 EL = 565

6.4 #73

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System AUXILIARY FEEDWATERPage 1 OF 6

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
D2P2O	E-20-28 E-20-29 (SEE G.4 #54)	CBD2P2O	(W) TYPE EB2100N NON-AUTO CKT. BKR IN D2P	NV
HIS521A	E-45B SHT. 1A	HIS/A	G.E. TYPE SBM CTRL, SWITCH ON C5709	NV
HIS1CS38A	E-45B SHT. 1A	HIS/C	G.E. TYPE SBM CTRL SWITCH ON C3630	NV
K3-2	E-45B SHT. 1A, 1B	SSX2	DEUTSCH (COUCH) TYPE 4AP IN CDF12A-1	CA - Will Will NOT ATTEMPT * SPEED ADJ. DURING S.S.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Sali Date 2/23/95
 Reviewed by _____ / Date

6.4 #73

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System AUXILIARY FEED WATER

Page 2 OF 6

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
K3-2 (CONT)	E-45B SHT 11A	SSK1	DEUTSCH (COUCH) TYPE HAP IN CDF12A-1 *	CA - WILL NOT ATTEMPT SPEED ADJUSTMENT DURING SS.
	E-45B SHT 11A AND 11B	Y/LOWER AND X/RAISE	AGASTAT TYPE GPDN IN JT2704 **	GERS-RLY - ARS. 4 (SEE Pg 6)
	E-45B SHT 11A AND 11B	CCW/AUX AND CW/AUX	DEUTSCH (COUCH) TYPE HAP IN CDF12A-1 *	LEVEL 2 - USING RELAY SPECIFIC TEST DATA (SEE Pg 5 OF THIS 6.4)
	E-45B SHT 11A, 11B	<u>I</u> C538X1 & <u>I</u> C538X2	AGASTAT TYPE EGPB IN JT2704 **	GERS-RLY - ARS. 4 (SEE Pg 6)

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by D.K. Leif Date 5/4/95
Reviewed by _____ / Date

6.4 # 73

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System AUXILIARY FEEDWATERPage 3 of 6

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
K3-2 (cont.)	E-45B SHT. 11A, 11B M-36AG-19	ZS-1CS38S (HIGH SPEED STOP SWITCH) ZS-1CS38T (LOW SPEED STOP SWITCH)	MICRO-SWITCH TYPE 11SM3-T ON K3-2 TYPE PGG WOODWARD GOVERNOR	NV
	E-45B SHT. 11B	ZS-1CS38P & ZS-1CS38N	MICRO SWITCH TYPE LSP1A ON TURBINE INLET CTRL ULV	NV
	E-45B SHT. 11C	HS1CS38A (LABLED SS ON DWG)	G.E. TYPE SBM CTRL. SWITCH ON C3630	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Smith Date 2/23/95
 Reviewed by _____ / Date _____

6.4 # 73

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System AUXILIARY FEEDWATERPage 4 OF 6

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
---------------------	------------	-----------------------	-------------------------	------

K3-2 (cont.)	E-45B SHT. 19	ZS-1CS38D	NATIONAL ACME TYPE DI200G POSITION SW. ON THROTTLE AND TRIP VLV	NV
--------------	---------------	-----------	---	----

E-45B SHT. 19	ZS-1CS38J	MICRO SWITCH TYPE LSP1A POSITION SW. ON GOV. CTRL. VLV.	NV
---------------	-----------	--	----

E-45B SHT. 19	ZS5889B (V5889B)	NAACO TYPE EA-180 ON K3-2 STEAM INLET VLV.	NV
---------------	---------------------	---	----

E-45B SHT. 19	<u>1CS38D</u> <u>ZSX</u>	DEUTSCH TYPE 4AP IN RC3716	CA1
---------------	-----------------------------	----------------------------------	-----

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. H. Schell Date 2/23/95
 Reviewed by _____ / Date _____

C.E #73

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System Auxiliary Feedwater

Page 5 of 6

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
---------------------	------------	-----------------------	-------------------------	------

LEVEL 2 SCREENING FOR CDF12A-1

1. Natural frequency of CDF12A-1 is greater than or equal to 8Hz.
2. CDF12A-1 has been given an amplification factor (AF) of 3.
3. CDF12A-1 is located in plant area ~~74~~ elevation 603', which is less than about 40 feet above effective grade (Area ~~74~~ effective grade = 562') ~~573'~~ *OK*
4. For this area and elevation Peak GRS = .39g and Ground ZPA = .15g
5. Seismic capacity for Deutsch 4AP43AF = 6.7g peak and 5g at the ZPA (ref. NED 95-10022, "Seismic Evaluation of Deutsch Relays" and "Justification for Covering Older Deutsch Relays with the 1990 Farwell & Hendricks Report", copies attached). SEE 6.1 # 72.

thus;

$$\begin{aligned} \text{ERS} &= \text{Peak GRS} \times 1.5 \times 1.5 \times \text{AF} \\ \text{ERS} &= 2.63 \end{aligned}$$

and

$$\begin{aligned} \text{ZPA} &= \text{Ground ZPA} \times 1.5 \times 1.5 \times \text{AF} \\ \text{ZPA} &= 1.01 \end{aligned}$$

therefore, seismic capacity exceeds seismic demand.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- | | |
|------|---|
| CA | - Chatter acceptable. |
| NV | - Not vulnerable (mechanically-actuated contacts and solid state relays). |
| GERS | - Seismically adequate based on GERS ____; include GERS number. |
| NA | - Component not affected by relays. |
| CR | - Corrective action required. |
| OA | - Operator action. |
| | - No entry necessary. |

Prepared by W.H. Ladd Date 4-24-95
Reviewed by _____ / Date _____

SCE Review: J.W.G. Hark 8/19/95

c.e #73

A-46 RELAY SCREENING AND EVALUATION
FORM E.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System AUXILIARY FEEDWATER

Page 6 OF 6

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
---------------------	------------	-----------------------	-------------------------	------

LEVEL 2 SCREENING FOR JT2703 AND JT2704

These terminal boxes are located in Plant Area 7 on elevation 565'. Both have natural frequencies less than 8Hz and amplification factors (AF) = 3. This area and elevation has a Peak conservative design basis floor response spectra (FRS) = .5869g and a ZPA conservative design basis FRS = .190g. Seismic demand (SD) is calculated as; SD = FRS * AF.

Peak seismic demand:

$$SD = .5869g * 3$$

$$SD = 1.8g$$

ZPA seismic demand:

$$SD = .190g * 3$$

$$SD = .57g$$

Relay Capacity:

RELAY	PEAK	ZPA	REFERENCE
Agastat EGP/GP	3.3g	1.32g	GERS-RLY-ARS.4

therefore, seismic capacity exceeds seismic demand.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by W.H. Hoad Date 5/4/95
Reviewed by _____ / Date _____

SCE
~~REVIEW~~ Review :

Jon G. Hoad 2/19/83

NOTE: CREVS IS NOT FUNCTIONING
DURING EVENT. OPERATORS
PLACE INTO SERVICE DURING
PERFORMANCE OF EMERGENCY
PROCEDURE DB-OP-2000.

LOCATIONS
* AREA = 7
RM = 603
EL = 638

** AREA = 6
RM = 429
EL = 403

THIS IS A MANUAL
EMG LOAD.

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

6.4 #74

System CTRL. RM. EMER. VENTILATION
(CREVS)

Page 1 OF 3

Relay
Type and
Location

SAT*

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
RE1216, S33-1, TS5261 INCLUDES S3311	M-410-281	SS-1	(W) SELECTOR SWITCH # OT151C IN C6704 *	NV

NOTE: S3311 REFERS TO
COMPRESSOR, MS 3311
REFERS TO COMPRESSOR
MOTOR.

"
IM
(INCLUDES MAIN
CONTACTS)

(W) SIZE 1
SERIES A/200
STARTER IN
C6704 *

CA - SYSTEM
MANUALLY STARTED.
EARLY START IS
ACCEPTABLE

THIS G.4 ALSO INCLUDES
SOME COMPONENTS:
PS28020, PS28021,
PSHL28019, PSL28017

" TS5261
BARKSDALE #
T2H-M150S-25A
FROM 603 WALL
MOUNTED
EL 638

CA - SEE IM

" 42A
(W) TYPE L-56
ELECTRICAL
INTERLOCK IN
MCC E124 **
(SEE G.4 # 94)

CA - SEE IM

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by JK Date 12-13-94
Reviewed by _____ / Date _____

6.4 #74

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System CTRL. RM. EMER. VENTILATIONPage 2 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BEI216, S33-1 AND S3311	M-410-281	PS-1 (PS28020)	PENN ENGINEERING 2342-278AP20 IN C6706 *	CA- UNLOADER VALVE WILL RETURN TO DESIRED STATE AFTER STRONG SHAKING
"	"	PS-2 (PS28021)	SAME AS ABOVE	SEE PS-1
"	"	ICR	(W) TYPE BF CTRL, RELAY IN C6706 *	CA- EARLY START OF CREWS ACCEPTABLE
"	"	PS-4 (PSHL28019)	PENN ENGINEERING PIOMA-18 DUAL IN C6706 *	CA- EARLY START OF COMPRESSOR ACCEPTABLE

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W K 6/28 Date 12-13-94
 Reviewed by _____ / Date _____

6.4 #74

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System CTRL. RM. EMER. VENTILATIONPage 3 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BE1612, S33-1 AND S3311	M-H10-281	PS-3 (PSL28017)	PENN ENGINEERING P45NCA-79 IN C6706 *	CA- CHATTER BLOCKS STARTER, TAKES AT LEAST 45 SECONDS FOR H TO LOCK OPEN SC CONTACT
"		IM (OL)	(W) OVERLOAD RELAY CONTACT IN C6706 *	CA1
"		ZCR	(W) TYPE AR440A CTRL. RELAY IN C6706 *	CA1
"		IM (AUX)	(W) L-54 ELECTRICAL INTERLOCK IN C6706 *	CA - EARLY COMPRESSOR START IS ACCEPTABLE

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. [Signature] Date 12-13-94
 Reviewed by _____ / Date _____

NOTE: THE CREVS DOES NOT
FUNCTION DURING EVENT.
OPERATORS PLACE INTO SERVICE
DURING PERFORMANCE OF
DODP-2000. THIS IS A
MANUAL EDS LOAD

LOCATIONS

* AREA = 7	** AREN = 7
RM = 603	RM = 427
EL = 603	EL = 603

6.4 #75

A-46 RELAY SCREENING AND EVALUATION FORM G.4 - RELAY TABULATION PLANT DAVIS-BESSE UNIT 1

System CTRL. RM. EMER. VENTILATION
(CREVS)

Page 1 OF 3

Relay
Type and
Location

SAT*

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BF1131, S33-2 INCLUDES S3321, TS5262 NOTE: S3311 REFERS TO COMPRESSOR MS3311 REFERS TO COMPRESSOR MOTOR. ALSO EVALUATED ARE SEL COMPONENTS: PS28022, PS28023, PSL28018, PSL28016	M-410-281 "	SS-1 IM (INCLUDES MAIN CONTACTS)	(W) SELECTOR SWITCH # OT151C IN C6707 *	NV CA-SYSTEM IS MANUALLY STARTED. EARLY START IS ACCEPTABLE
"	TS5262	BARKSDALE T2H-.150S-25A ROOM 603 WALL MOUNTED *	CA - SEE IM	
"	42A	L-56 ELECTRICAL INTERLOCK IN MCC F1A	CA - SEE IM	

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- DA - Operator action.
- No entry necessary.

Prepared by W.K. Smith Date 12-13-94
Reviewed by _____ / Date _____

6.4 #115

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System CTRL. RM. EMER. VENTILATION

Page 2 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BA131, S33-2 (S3321)	M-410-281	PS-1 (PS28022)	PENN ENGINEERING 2342-270A P20 IN C6707*	CA- UNLOADER VALVES WILL RETURN TO DESIRED STATE AFTER STRONG SHAKING
"		PS-2 (PS28023)	SAME AS ABOVE	→ SAME AS PS-1
"		ICR	(W) TYPE BF CTRL. RELAY IN C6707*	CA- EARLY START OF CREWS ACCEPTABLE
"		IM (AUX)	(W) L-56 ELECTRICAL INTERLOCK IN C6707*	CA- EARLY COMPRESSOR START ACCEPTABLE
"		PS-4 (PSHL28018)	PENN ENGINEERING PTOMA-18 DUAL IN C6707 *	CA- SAME AS IM (AUX)

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Smith Date 12-13-94
Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

6.4 #75,

System CTRL. RM. EMER. VENTILATION

Page 3 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BF1B1, S33-2 (S3321)	M-410-281	PS-3 (PSL28016)	PENN ENGINEERING P45NCA-79 IN C6707 *	CH-CHATTER BLOCKS STARTER, THICKS AT LEAST 45 SECONDS FOR "H" TO LOCK OPEN SC CONTACT
"		IM (OL)	(W) OVERLOAD RELAY CONTACT C6707 *	CA1
"	2CR		(W) TYPE AR440A CTRL. RELAY IN C6707 *	CA1

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- DA - Operator action.
- No entry necessary.

Prepared by O.H. Loh Date 12-13-94
 Reviewed by _____ / Date _____

LOCATIONYVA: AREA = 6
RM = 428
EL = 603YVB: AREA = 6
RM = 429
EL = 603

6.4 #76

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System 120 VAC ELECTRICALPage 1 OF 6

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
INVERTERS YVA & YVB	E-20-34	K5 (CONTACTS 3 & 2)	POTTER & BRUMFIELD TYPE: CSL38-60010 IN YVA AND YVB	CR - REPLACE OR REMOVE
	E-20-34	S101	ESCO DPDT 20A SWITCH #101602A-7 ON YVA & YVB	NV
	E-20-34 E-20-35 E-542 SHT 142 E-20-39	K1 (CONTACTS 7 & 1)	RELAY TO MONITOR INVERTER FAN OPERATION	CA1

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Lusk Date 2-23-95
 Reviewed by _____ / Date _____

6.4 #76

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System 120 VAC ELECTRICAL

Page 2 OF 6

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
YVA & YVB	E-20-35 E-38B SHTS 6+8	K2 (CONTACTS ON POLES 3,4,5 & 6)	SCH PPACK DPDT #RM201-610 IN YVA & YVB	CA1
	E-20-35	K101 (CONTACTS 3&1)	SIGMA DPDT #42R06- 1000S-SIL IN YVA & YVB	CA1
	E-20-35, E-20-34	K101 (CONTACTS 5&8)	SIGMA DPDT #42R06- 1050S-SIL IN YVA & YVB	CA1 (NEON LAMP ON INVERTER)

-
- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Scott Date 2/23/95
 Reviewed by _____ / Date _____

6.4 #76

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System 120 VAC ELECTRICALPage 30F6

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
YVA & YVB	E-20-39	S102 & S103	ROTRON TYPE 2A AIR FLOW SWITCH IN YVA, YVB	CA1 (NEON LAMP + K1 RELAY COIL)

NOTE RELAY R3 CONTACTS ARE NOT USED
 THEREFORE THIS RELAY IS NOT EVALUATED
 IN THIS 6.4

E-20-40 +	RESET SWITCH (S152)	ARROW HART DPDT PUSH BUTTON #83094-CB IN YVA & YVB	NV
--------------	---------------------------	---	----

-
- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; includ: GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by EJK Date 2/23/95
 Reviewed by _____ / Date _____

G.4 #76

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System 120 VAC ELECTRICALPage 406

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
YVA & YVB	E-20-40	K151 (TEST SWITCH)	JBT SPDT SWITCH IN YVA + YVB	NV
	E-20-42			
	E-20-40	K151 contacts (5+8, 6+8)	SIGMA #42R06 - 1000S-3IL	CAI
"		K151 contacts (4+1)	"	CA - CONTACTS NOT USED
"		K151 contacts (3+1)	"	CA - CONTACTS ENERGIZE "K4" COIL SEE NEXT SHEET

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Lipp Date 4/23/95
Reviewed by _____ / Date _____

6.4 # 76

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System 120VAC ELECTRICALPage 5 OF 6

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
YVA, YVB	E-20-40 E-3BB SHT. 8	K4, CONTACTS 467, 649	SCHRACK DPDT #RM 201- 610 IN YVA & YVB	CA1
	E-20-40	K152 CONTACTS 124	SIGMA #42R06-1000S- SIL IN YVA & YVB	CA1
		K152 CONTACTS 123	"	CA (CONTACTS NOT USED)

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by D. K. L. S. Date 2/23/95
 Reviewed by _____ / Date

6.4 #76

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System 120 VAC ELECTRICAL

Page 6 OF 6

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
YVA & YVB	E-20-40	MANUAL BYPASS SWITCH (CONTACTS B1, B2, B3, B4, B5, B6)	AMSDL CYB5244	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Smith Date 2/23/95
Reviewed by _____ / Date _____

G.4 # 77

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS - BESSIE

System 120 VAC ELECTRICAL

Page 1 OF 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
YALL	E-24-7,	NONE - 120VAC	NONE	
YBUL	E-24-8,	DISTRIBUTION		NA
INCLUDING YALLO1 + YBUL01 +	UMAN E-24-9	PANEL CONSISTING OF MAIN SWITCH AND FUSIBLE SWITCHES		

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by W.K. Smith Date 4-2-93
Reviewed by _____ / Date _____

Relay Evaluation Report

Section 5.2 G-4 Forms

Binder 2

Docket Number 50-346

License Number NPF-3

Serial Number 2316

VALVE POSITION CHANGED
BY HANDSWITCH

6.4 #78

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System DECAY HEAT REMOVAL

Page 1 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
DH-1B, BE1106	E-52B SHT. 60A	ALL "DS" CONTACTS	G.E. TYPE SB 1	NV
HISDH1B, HISDH1B-2	8B		CTRL. SWITCH LOCATED IN CDE11A	
NOTE: DH-1B REFERS TO THE VALVE, MVDHO1B (ON DWG E-52B SHT. 60B) PREFERS TO VALVE OPERATOR	E-52B SHT. 60A & 60B	ALL "ISO" CONTACTS (HISDH1B-2)	CUTLER-HAMMER TYPE E-30 MAIN- TAINED CONTACT PUSHBUTTON ON C5716	NV
"		TWO "OL" CONTACTS	(W) OVERLOAD CONTACTS IN BE1106	CA8 (CONTACTS NOT CONNECTED TO CKT CONTROLLING COILS).
"	33/ ³³ / ₁₀₀ , 33/ ³³ / ₁₀₀ 33bn%	LIMIT TORQUE LIMIT SWITCH CONTACTS IN MVOHO1B		NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- DA - Operator action.
- No entry necessary.

Prepared by W.H. Lill, Date 4-5-93
Reviewed by _____ / Date _____

6.4 #78

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System DECAY HEAT REMOVAL

Page 2 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
DH-1B, BE110G, HISDH1B HISDH1B-2	E-5RB SHT. 60A + 60B	33/TC, 1B (33/ 10)	LIMIT TORQUE TORQUE RESP. LIMIT SWITCHES IN NVDH1B	NV
"	STOP	REES PB # 04161-001-002 IN NVDH01B		NV
"	OPEN, CLOSE	REES PB # 03845-000 IN NVDH01B		NV
"	CS OPEN, CS CLOSE (HISDH1B)	CUTLER-HAMMER MOMENTARY PB TYPE E30 ON C5716		NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Laff Date 4-5-93
 Reviewed by _____ / Date _____

BE1106 → MCC E11A
 A=8
 RM=209
 EL=565

6.4 #78

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System DECAY HEAT REMOVAL

Page 3 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
DH-1B, BE1106, HISDH1B, HISOH1B-2	E52B SHTS. 60B	VRX (CONTACTS 1+5)	DEUTSCH TYPE 4AP IN CDE11B-2	CA1

E-52B
SHTS 60A+
60B $\frac{42a}{C}$ $\frac{42b}{C}$,
 $\frac{42b}{O}$

(W) L-56
ELECTRICAL
INTERLOCK
FOR (W) A/200
SERIES STARTER
IN BE1106 *

CA4 (I.E OPEN)
CLOSE, CS/OPEN?
CS/CLOSE)

" $\frac{42}{O}$, $\frac{42}{C}$

(W) A/200 SERIES
SIZE 2 MOTOR
STARTER IN
BE1106

GERS - MCC .9
(AREA 8)
SEE Pg 4

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Gifford Date 12/4/94
 Reviewed by _____ / Date _____

G-4 # 78

A-46 RELAY SCREENING AND EVALUATION
FORM G-4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System: DECAY HEAT REMOVAL

Page 4 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

GERS-MCC.9 (AREA 8)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 8; 603', 585', 565' and 545'.

The effective grade for Area 8 is 567'.

Since $603' - 567' = 36'$, the ground spectra multiplied by (1.5×1.5) may be used to evaluate contactors/starters in Area 8 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} \leq 1.5g$ and bA_{33Hz} is $\leq 1.0g$, then contactors/starters in Area 8 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by W. K. Sial, Date 12/6/94
Reviewed by _____ / Date _____

VALVE POSITION CHANGED
BY HANDSWITCH

6.4 #79

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System DECAY HEAT REMOVAL

Page 1 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
DH-1A, BF1136 HIS DHIA HIS DHIA-2	E-52B SHT. 60A & 60B	ALL "DS" CONTACTS	G.E TYPE SB-1 CTRL SWITCH IN) CDFIIC	NV
NOTE: DH-1A REFERS TO VALVE, MVDHOIA ON E52B SHT. 60B REFERS TO VALVE OPERATOR.	"	ALL "ISO" CONTACTS (HISDHIA2	CUTLER- HAMMER TYPE E-30 MAINTAINED CONTACT RB ON CS'116	NV
"	"	TWO "OL" CONTACTS	OVERLOAD RELAY CONTACTS	CA8 (CONTACTS NOT CONNECTED TO Ckt CONTROLLING COILS)
"	33/ 76%, 33/ 70%, 33/ 70%	33/ 76%, 33/ 70%	LIMIT TORQUE LIMIT SWITCH CONTACTS IN MVDHOIA	NV

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Bily, Date 4-6-93
Reviewed by _____ / Date _____

6.4 #79

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System DECAY HEAT REMOVALPage 2 of 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
DH-1A, BF1136, HISDHIA, HISDHIA-2	E-52B SHIS 60A & 60B	33 $\frac{1}{2}$ TC, 18 (33 $\frac{1}{2}$ TO)	LIMIT TORQUE, TORQUE RESPONSIVE LIMIT SWITCHES IN NVDHO1A	NV
"	STOP	PEES P.B. #04161-001-002 IN NVDHO1A		NV
"	OPEN, CLOSE	PEES P.B. #03845-000 IN NVDHO1A		NV
"	OPEN, CLOSE	CUTTER-HAMMER MOMENTARY P.B., TYPE E30 ON C5716		NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by J.K. Hill Date 4-6-93
 Reviewed by _____ / Date _____

BF1136 = MCC F11C
 A=7
 RM=236
 EL=565

6.4 #79

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System DECAY HEAT REMOVAL

Page 3 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
DH-1A, BF1136 HISDHIA, HISDHIA-R	E-52B SHTS 60A & 60B	VRX (CONTACTS 1+5)	DEUTSCH TYPE HAP IN CDFIIC	CA1
"	42% C, 42% C, 42% O	(W) L-56 ELECTRICAL INTERLOCK FOR (W) A/200 SERIES STARTER IN BF1136 *	CA4 (i.e. OPEN, CLOSE, CS/OPEN, CS/CLOSE)	
"	42% O, 42% C	(W) A/200 SERIES SIZE 1 MOTOR STARTER IN BF1136 *	GERS - MCC.9 (AREA 7) SEE Pg 4	

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. 6-4 Date 12/6/94
 Reviewed by _____ Date _____

C-4 #79

A-46 RELAY SCREENING AND EVALUATION
FORM G-4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System DECAY HEAT REMOVAL

Page 4 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

GERS-MCC.9 (AREA 7)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 7: 603', and 565'.

The effective grade for Area 7 is 562'.

Since $603' - 562' = 41'$, the ground spectra multiplied by (1.5x1.5) may be used to evaluate contactors/starters in Area 7 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} \leq 1.5g$ and bA_{33Hz} is $\leq 1.0g$, then contactors/starters in Area 7 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by W. K. Sibley, Date 12/6/94
Reviewed by _____ / Date _____

THIS VALVE IS NOT REQUIRED TO OPEN
DURING STRONG SHAKING

6.4 #80

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATION

Page 1 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MU-40, BE1109 HISMU40	E-4913 SHT34	"OL"	(W) TYPE A 3 POLE OVERLOAD RELAY IN BE1109	CA - THIS VALVE DOES NOT CHANGE STATE DURING STRONG SHAKING
NOTE: MU-40 IS VALVE MVMU400 LISTED ON E-498 SHT34 IS VALVE OPERATOR.		33/100, 33/100, 33/100, 33/100, 33/100%, 33/100%	LIMIT TORQUE LIMIT SWITCHES IN MVMU400	NV
		33/100, 33/100	LIMIT TORQUE TORQUE RESPONSIVE LIMIT SWITCHES IN MVMU400	NV
		L/D STOP	REES: P.B. WITH LOCKOUT CAT. #64062-032 IN MVMU400	NV

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. bch, Date 12/4/94
Reviewed by _____, Date _____

6.4 #80

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAKE UP AND PURIFICATION

Page 2 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MU-40, BE1107, HSMU40	E-49B SHT. 36	OPEN (TEST) & CLOSE (TEST)	PEES P.B CAT. # 03845-000 IN NVMU400	NV
"		33/100 (in) <u>MA</u>)	LIMIT TORQUE LIMIT SWITCH IN MVMU110	NV ①
"	RX-6		DEUTSCH TYPE 4AP IN RC2825	CA4- (i.e CS OPEN, 42a)

" CS CS
OPEN, CLOSE NV

CUTLER-HAMMER
MOMENTARY CONTACT
P.B. TYPE E30

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.L. Bobb Date 12/6/94
Reviewed by _____ / Date _____

① STATUS OF THIS CONTACT DURING STRONG
SHAKING IS NOT IMPORTANT BECAUSE
A CLOSE SIGNAL WOULD BE G-4
BLOCKED BY CS 42a
OPEN & 0

BE1109 \Rightarrow MCC E11A
 A=8
 RM=209
 EL=565

6.4 #80

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System MAKE UP AND PURIFICATION

Page 3 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MU-40 BE1109 HISMU40	E-49B SHT 36	$\frac{42}{C}$, $\frac{42}{O}$, $\frac{42}{C}$, $\frac{42}{O}$	(W) L-56 ELECTRICAL INTERLOCK FOR (W) A/200 SERIES STARTER IN BE1109	GERS-MCC.9 (AREA 8) SEE PG 4
		$\frac{42}{O}$, $\frac{42}{C}$	(W) SIZE 1 A/200 SERIES REVERSING STARTER IN BE1109	GERS-MCC.9 (AREA 8) SEE PG 4

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Smith Date 12/6/94
 Reviewed by _____ / Date _____

6.4 # 80

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System: MAKEUP AND PURIFICATION

Page 4 of 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

GERS-MCC.9 (AREA 8)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 8; 603', 585', 565' and 545'.

The effective grade for Area 8 is 567'.

Since $603' - 567' = 36'$, the ground spectra multiplied by (1.5×1.5) may be used to evaluate contactors/starters in Area 8 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} \leq 1.5g$ and $bA_{33Hz} \leq 1.0g$, then contactors/starters in Area 8 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by W. Kuehne Date 12/6/94
Reviewed by _____ / Date _____

OPEN
STAY ~~CLOSED~~ DURING
PERIOD OF STRONG
SHAKING

6.4 #81

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT BONIS-BESSE UNIT 1

System DECAY HEAT REMOVAL

Page 1 OF 5

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
DH-2733, BE1121 HIS 2733	E-52B 34 TS 23A, 23B	"DS" ALL	G.E. TYPE SB9 CTRL. SWITCH IN CDE11A	NV
NOTE: DH 2733 IS THE VALVE, MV27330 IS THE VALVE OPERATOR.		"OPEN", "CLOSE"	REES SPRING RETURNED TO NORMAL #03845-000 IN NV27330	NV
		"STOP"	REES P.B #01461-202 IN NV27330	NV
		33% _{AC} , 33% _{DC} , 33% _{BN} %	LIMIT TORQUE LIMIT SWITCHES IN MV27330 AND MV15170	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- DA - Operator action.
- No entry necessary.

Prepared by W.K. Lipp Date 9-22-94
Reviewed by _____ / Date _____

E.4 #81

A-46 RELAY SCREENING AND EVALUATION
FORM E.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System DECAY HEAT REMOVALPage 2 OF 5

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
DH 2733, BE1121, HIS 2733	E-52B SHTS 23A4 23B	33% _{tc} , 33/ _{tc}	LIMIT TORQUE TORQUE SW IN MV27330	NV
		CS OPEN, CS/ CLOSE (HIS 2733)	CUTLER HAMMER TYPE E-30 MOMENTARY CONTACT PB IN C54117	NV
		OL	(W) OVERLOAD RELAY CONTACTS IN MCC EI1A	CA (CONTACTS ARE NOT CONNECTED TO CONTACTORS)
		OPEN CKT:		
		KA, KB	DEUTSCH TYPE 4CP 24VDC RELAY IN C5762C & C5763D	CA4 (ie 33% _{bo})
		BA, GB	AROMAT # STLEL20C24V IN C5762C & C5763D	CA4 (ie 33% _{bo})

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Lutz Date 9-22-94
Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System DECAY HEAT REMOVALPage 3 OF 5

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
DH-2733, BE1121, HIS2733	E-52B SHTS 23A, 23B	42a 0 42b C	(W) TYPE L-56 ELECTRICAL INTERLOCK FOR A/200 SERIES STARTER IN MCC E11A.	CA4 (VALVE OPEN)
		CLOSE CKT. : KA + KB	DEUTSCH TYPE 4CP 24VDC RELAY IL C5762C & C5763D	CA4 (i.e CLOSE, CS CLOSE)
		BA + BB	AROMAT P.N. STEEL2DC24V IN C5762C & C5763D	CA4 - SAME AS BA + BB

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Willy Date 9-22-94
 Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System DECAY HEAT REMOVAL

Page 4 OF 5

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
DH-2733, BE1121, HIS 2733	E-52B-SHTS 23A, 23B	42%, 42/C (MAIN CONTACTS)	(W) SIZE 1 A/200 SERIES REVERSING STARTER IN MCC E11A.	GERS-MCC.9 (AREA B) SEE PG 5
		CLOSE CKT: . . . 42%, 42b/10	(W) TYPE L-56 ELECTRICAL INTERLOCKS FOR A/200 SERIES STARTER IN MCC E11A	GERS-MCC.9 (AREA B) SEE PG 5

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- DA - Operator action.
- No entry necessary.

Prepared by JK Date 9-22-94
 Reviewed by _____ / Date

C.4 # 81

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System DECAY HEAT REMOVAL

Page 5 OF 5

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

GERS-MCC.9 (AREA 8)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 8; 603', 585', 565' and 545'.

The effective grade for Area 8 is 567'.

Since $603' - 567' = 36'$, the ground spectra multiplied by (1.5×1.5) may be used to evaluate contactors/starters in Area 8 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} \leq 1.5g$ and $bA_{33Hz} \leq 1.0g$, then contactors/starters in Area 8 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by W. K. Hall Date 9-22-94
Reviewed by _____ / Date _____

STAY OPEN
DURING Period
of Strong Shaking

6.4 #82

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System DECAY HEAT REMOVAL

Page 1 OF 5

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
DH-2734, BF1134 HIS 2734	E-52B SHT, 23A, 23B	"DS" (ALL)	GE, TYPE SB-9 CTRL SW. IN CDFIIC	NV
Note: DH2734 refers to the valve, MV27340 refers to valve operator		"OPEN" "CLOSE"	REES SPRING RETURN TO NORMAL # 03845-000 IN NV27340	NV
		"STOP"	REES P.B #01461-202 IN NV27340	NV
		33/ao, 33/b0, 33/bn%, 33/ac	LIMIT/SQUE LIMIT SWITCHES IN MV27340 & MV15180	NV

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by W.K. Gandy Date 9-22-94
Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System DECAY HEAT REMOVAL

Page 20F.5

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
DH-2734, BFII34 HIS 2734	E-52B SHTS. 23A + 23B	33/ to, 33/ tc	LIMIT TORQUE TORQUE SWITCHES IN MV27340	NV
		CS OPEN, CS CLOSE (HIS 2734)	CUTLER-HAMMER TYPE E-30 MOMENTARY CONTACT IN C57117	NV
<u>#LOCATION OF FIIC</u>				
A = 7 R = 236 EL = 565		OL	(<input checked="" type="circle"/> OVERLOAD RELAY CONTACTS IN MCC FIIC* (CONTACTS ARE NOT CONNECTED TO CONTACTORS))	CA
		OPEN Ckt: KA, KB	DEUTSCH TYPE 4CP 24VDC RELAY IN C5755C + C5756D	CA4 (ie 33/60)
		BA, BB	AROMAT # STIEL2DC24V IN C5755C + C5756D	II

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Bell, Date 8-22-84
 Reviewed by _____ / Date _____

#82
6.4

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System DECAY HEAT REMOVAL

Page 3 OF 5

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
DH2734, BF1134 HIS2734	E-52B SHTS. 23A, 23B	42a/b, 42b (REL) CKT)	L-56 ELECTRICAL INTERLOCK FOR A/200 SERIES STARTER IN MCC F1C	CA4 (i.e. 33%bo)

CLOSE CKT:

KA & KB	DEUTSCH TYPE 4CP 24VDC RELAY IN C5755C + C5756D	CA4 (i.e. 42a CLOSE + as CLOSE)
BA & BB	AROMAT P.N. ST1EL2DC24V IN C5755C + C5756D	"

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K.601P Date 9-22-94
 Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

6.4

#82

System DECAY HEAT REMOVAL

Page 4 OF 5

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
DH2734, BF1134 HIS 2734	E-52B-SHTS, 23A, 23B	CLOSE CKT: 42%/ 42%	(W) TYPE L-54 ELECTRICAL INTERLOCK FOR A/200 SERIES STARTER IN MCC FIC	GERS-MCC-9 (AREA 7) SEE Pg 5
"		42%, 42%/ C	(W) SERIES A 200 STARTER IN MCC FIC.	GERS-MCC-9 (AREA 7) SEE Pg 5

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary

Prepared by W.R. Smith Date 9-22-94
 Reviewed by _____ / Date _____

c.e #82

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System DECAY HEAT REMOVAL

Page 5 OF 5

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

GERS-MCC.9 (AREA 7)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 7; 603', and 565'.

The effective grade for Area 7 is 562'.

Since $603' - 562' = 41'$, the ground spectra multiplied by (1.5×1.5) may be used to evaluate contactors/starters in Area 7 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} < 1.5g$ and $bA_{33Hz} < 1.0g$, then contactors/starters in Area 7 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by W. K. Schaff Date 9-22-94
Reviewed by _____ / Date _____

This valve to remain closed
during strong shaking

#83

6.4

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT ~~DOUGLAS~~-BESSE UNIT 1

System DECAY HEAT REMOVAL

Page 1 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
DH-1517, BE1126 HIS 1517	E-5213 SHT. R.R.	"DS" (ALL)	G.E. TYPE SB-9 CTRL. SW IN CDEIID	NV
NOTE: DH-1517 REFERS TO THE VALVE, MVDH15170 REFERS TO THE VALVE OPERATOR.		$\frac{33}{100}$ ac, $\frac{33}{100}$ to $\frac{33}{100}$ bn%, $\frac{33}{100}$ an%	LIMIT TORQUE LIMIT SWS. IN MV15170 & MV27330	NV
		OL	(N) OVERLOAD RELAY IN MCC EIID	CA (CONTACT NOT CONNECTED To STARTER)
		$\frac{33}{100}$ tc, $\frac{33}{100}$ to	LIMIT TORQUE TORQUE SWITCH IN MV27330	NV

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by W.H. Gold, Date 12/5/94
Reviewed by _____ / Date _____

6.4 #83

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System DECAY HEAT REMOVAL

Page 2 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
DH1517, BE1124 HIS1517	E52B SHT. 22	STOP	REES P.B # 01461-202 IN NV15170	NV
		"OPEN" & "CLOSE"	REES ROCKER #03845-000 IN NV15170	NV
		CS/OPEN, CS/CLOSE (HIS1517)	CUTTER-HAMMER TYPE E-30 MONIMENTARY P.B. IN C5704	NV
		CLOSE CKT: 42 1/2	⑩ SIZE 1 A/200 STARTER "MAIN CONTACT" IN MCR EIID RM=287 A=7, EL=565	GERS-MCE.9 (AREA 7) SEE Pg 4

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by J Kibb Date 75/94
Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System DECAY HEAT REMOVAL

Page 3 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
DH1517 BE1126 HIS/517	E-52B SHT. 22	42b/ 0 (CLOSE CKT.)	(W) TYPE L-56 ELECTRICAL INTERLOCK IN MCC EIID SEE ABOVE	CA4-(ie 42%, 0% CLOSE) 33%)
		42b/ 0 (OPEN CKT.)	(W) SIZE 1 SERIES A/200 STARTER IN MCC EIID SEE ABOVE	GERS-MCC.9 (AREA 7) SEE Pg 4
		42%, 42/ 0 (MAIN CONTACTS)	(W) TYPE L-56 ELECTRICAL INTERLOCK IN MCC EIID RM=227, A=7 EL-565	GERS-MCC.9 (AREA 7) SEE Pg 4

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by JK Date 7/5/94
 Reviewed by _____ / Date _____

c.4 # 83

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System DECAY HEAT REMOVAL

Page 4 of 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

GERS-MCC.9 (AREA 7)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 7; 603', and 565'.

The effective grade for Area 7 is 562'.

Since $603' - 562' = 41'$, the ground spectra multiplied by (1.5×1.5) ^{must b} used to evaluate contactors/starters in Area 7 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} \leq 1.5g$ and $bA_{33Hz} \leq 1.0g$, then contactors/starters in Area 7 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by W.H. Will Date 12-5-94
Reviewed by _____ / Date _____

This valve is to remain closed during
strong shaking - open after

6.4

#84

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System DECAY HEAT REMOVAL

Page 1 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
DH-1518, BF1129 HIS 1518	E-52B SHT. 22	"DS" (ALL)	G.E. TYPE SB-9 CTRL SW IN CDFIIC	NV
NOTE: DH-1518 REFERS TO THE VALUE, MV15180 REFERS TO THE VALUE OPERATOR		33/ $\frac{1}{10}$ C, 33/ $\frac{1}{10}$ O, 33/ $\frac{1}{10}$ n%, 33/ $\frac{1}{10}$ n%	LIMIT TORQUE LIMIT SWS. IN MV15180 AND MV27340	NV
	OL	(W) OVERLOAD RELAY IN MCC F11C	CA (CONTACT NOT CONNECTED TO STARTER)	
	33/ $\frac{1}{10}$ O, 33/ $\frac{1}{10}$ C	LIMIT TORQUE TORQUE SWITCH IN MV15180	NV	

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by E.R. Gill Date 12/5/94
Reviewed by _____ / Date _____

6.4 #84

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System DECAY HEAT REMOVALPage 2 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
DH-1518, BF11R9 HIS 1518	E-52B SHT. 22	STOP	REES P.B. #01461-282 IN NV15180	NV
		"OPEN" & "CLOSE"	REES ROCKER #03845-000 IN NV15180	NV
		CLOSE, CS (HIS 1529)	CUTLER-HAMMER TYPE E-30 MOMENTARY P.B. IN CS704	NV
		CLOSE CKT: 42/C	(W) SIZE 1 A/200 SERIES STARTER MAIN CONTACT IN MCC FILE A=7, RM=236 EL=565	GERS-MCC.9 (AREA 7) SEE Pg.4

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by JK Sil Date 12/4/94
 Reviewed by _____ / Date _____

* A=7
RM=236
EL=665

6.4 #84

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System DECAY HEAT REMOVAL

Page 3 of 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
DH1518, BF1129 HIS1518	ES2B SHT 22	<u>426</u> (CLOSE <u>O</u> CKT.)	(W) TYPE L-56 ELECTRICAL INTERLOCK IN MCC F1IC (SEE ABOVE)*	DA4 (i.e $\frac{42}{C}$, CLOSE, $\frac{83}{AN\%}$)
		<u>42</u> (OPEN <u>O</u> CKT.)	(W) SIZE 1 SERIES A200 STARTER MAIN CONTACT IN MCC F1IC *	GERS-MCC.9 (AREA 7) SEE Pg 4
		$\frac{42}{C}$, $\frac{42}{C}$ (MAIN CONTACTS)	(W) SIZE 1 SERIES A200 STARTER IN MCC F1IC *	GERS-MCC.9 (AREA 7) SEE Pg 4
		<u>426</u> (OPEN <u>C</u> CKT.)	(W) TYPE L-56 ELECTRICAL INTERLOCK IN MCC F1IC *	GERS-MCC.9 (AREA 7) SEE Pg 4

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Gaskin Date 12/4/94

Reviewed by _____ / Date _____

C.4 #84

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System DECAY HEAT REMOVAL

Page 4 of 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

GERS-MCC.9 (AREA 7)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 7; 603', and 565'.

The effective grade for Area 7 is 562'.

Since $603' - 562' = 41'$, the ground spectra multiplied by (1.5×1.5) may be used to evaluate contactors/starters in Area 7 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} \leq 1.5g$ and $bA_{33Hz} \leq 1.0g$, then contactors/starters in Area 7 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Saff Date 12/4/94
Reviewed by _____ / Date _____

CHANGE FROM MUT (MAKE UP TANK)

TO BUST DURING STRONG SHAKING

ACCEPTABLE.

6.4

#85

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAKING AND PURIFICATION

Page 1 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MU-6405, BE 1127 HIS 6405	E-49B SHT, 70A, 70B	"DS" (ALL)	G.E. TYPE SB-9 CTRL SW IN CDEIID	NV
		OL	(W) OVERLOAD RELAY CONTACTS IN MCC EIID	CA (CONTACTS NOT CONNECTED TO STARTER)
		33%no, 33%an%, 33%am%, 33%an%, 33%ac, 33%ao	LIMIT TORQUE LIMIT SWITCHES IN MV64050	NV
		33%tc, 33%tc	LIMIT TORQUE TORQUE SWITCHES IN MV64050	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- DA - Operator action.
- No entry necessary.

Prepared by OK Lipp Date 10/21/94
Reviewed by _____ Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System MAKE UP AND PURIFICATION

Page 2 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MU6405, BE7127 HIS 6405	E-49B SHTS 70A & 70B	"STOP"	REES P.B. #01461-202 IN NV6405	NV
		"BWST" - "MUTK"	REES PCKER #03845-000 IN NV6405	NV
		CS / BWST CS/MUTK (HIS 6405)	CUTLER-HAMMER TYPE E30 IN C5703	NV
	27X-1		AGASTAT EGP IN RC4801	CA - ALIGNING PUMP TO BWST IS ACCEPTABLE.
	59X-1		AGASTAT EGP IN RC4801	CA4 (ie $\frac{33}{\text{an \%}}$)

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Reid Date 12/21/94
 Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System MAKE UP AND PURIFICATION

Page 3 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MU-6405, BE1127 HIS 6405	E-498 SHT 70A, 70B	<u>42a</u> <u>42b</u> <u>O</u> , <u>C</u> (BNST OPEN) (CKT.)	(N) L-54 ELECTRICAL INTERLOCK FOR A/200 SERIES STARTER IN MCC E-11D A= 7 RM= 227 EL=565	GERS-MCC.9 (AREA 7)
		<u>42a</u> <u>42b</u> <u>C</u> , <u>O</u> (BNST CLOSE) (CKT.)	SAME AS ABOVE	GERS-MCC.9 (AREA 7) SEE PG 4
		<u>42</u> <u>42</u> <u>O</u> , <u>C</u> (STARTER MAIN CONTACTS)	(N) SIZE 1 SERIES A/200 REVERSING STARTER IN MCC E-11D A=7, RM= 227 EL=565	GERS-MCC.9 (AREA 7) SEE PG 4

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Boff Date 12/21/94
 Reviewed by _____ / Date _____

C.4 #85

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATION

Page 4 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

GERS-MCC.9 (AREA 7)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 7; 603', and 565'.

The effective grade for Area 7 is 562'.

Since $603' - 562' = 41'$, the ground spectra multiplied by (1.5×1.5) may be used to evaluate contactors/starters in Area 7 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} \leq 1.5g$ and bA_{33Hz} is $< 1.0g$, then contactors/starters in Area 7 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by W.H. Smith Date 12/21/94
Reviewed by _____ / Date _____

VALVE TO REMAIN OPEN
DURING STRONG SHAKING

6.4

#86

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System SERVICE WATER

Page 1 OF 5

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
SW-1366, BE11A2 HIS1366	E-48B SHT. 12	"DS" ALL	G.E. TYPE SB-9 CTRL SW IN CDEIIC	NV
NOTE: SW-1366 REFERS TO THE VLV. MV13660 REFERS TO VALVE OPERATOR.		BL	(W) OVERLOAD RELAY CONTACTS IN MCC EIIIC	CA (CONTACTS NOT CONNECTED TO STARTER)
		$\frac{33}{50}$, $\frac{33}{bc}$, $\frac{33}{ao}$, $\frac{33}{ac}$	LIMIT TORQUE LIMIT SWITCHES IN MV13660	NV
		$\frac{33}{tc}$, $\frac{33}{to}$	LIMIT TORQUE LIMIT SWITCHES IN MV13660	NV

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by O.K. Smith Date 12/12/94
Reviewed by _____ / Date _____

6.4 #86

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System SERVICE WATERPage 2 OF 5

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
SW-1366, BE1142, HIS1366	E-48B-SHT. 12	"STOP"	REES P.B. #01461-202 IN NV1366	NV
		"OPEN", "CLOSE"	REES ROCKER #03845-000 IN NV1366	NV
		OS OPEN), OS (HIS1366)	CUTLER HAMMER MOMENTARY CONTACT P.B TYPE E-30 IN C5716	NV
		48a, 42b %, % (OPEN CKT.)	④ L-56 ELECTRICAL INTERLOCKS FOR SERIFS A/200 STARTERS IN WICC E11C	CA4 (12. <u>33</u>) <u>60</u>

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by D. K. Lipp Date 12/12/94
 Reviewed by _____ / Date _____

6.4 #86

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System SERVICE WATERPage 3 OF 5

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
SW1364, BE1142 HIS1364	E-48B SHT 12	42a LX1 (OPEN CKT)	(W) AR640A RELAY WITH LATCH IN MCC E14, A=6, RM=429, EL=603	CA 4 (i.e. 33/60)
		42xa H	(W) L-5G AUX CONTACT FOR GCA530 STARTER IN MCC E14. A=6, RM=429, EL=603	CA4 (i.e. 33/60)
		42a, 42b C, O (CLOSE CKT.)	(W) L-5G ELECTRICAL INTERLOCK FOR SERIES A/200 STARTER IN MCC E11C. A=8, RM=304 EL=585	GERS - MCC. 9 (AREA 8) SEE Pg 5

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Smith Date 12/12/94
 Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

6.4 #86

System SERVICE WATER

Page 4 of 5

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
SW-1366 BE1142 HIS1366	E-48B SHT. 12	42%, 42/C (MAIN CONTACTS)	(W) SIZE 1 SERIES A/200 REVERSING STARTER IN MCC E11C A= 8 R= 304 EL-585	GERS-MCC.9 (AREA 8) SEE PG 5

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Smith Date 12/21/94
 Reviewed by _____ / Date _____

C-4 # 86

A-46 RELAY SCREENING AND EVALUATION
FORM G-4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System: SERVICE WATER

Page 5 OF 5

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT [*]

GERS-MCC.9 (AREA 8)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 8; 603', 585', 565' and 545'.

The effective grade for Area 8 is 567'.

Since $603' - 567' = 36'$, the ground spectra multiplied by (1.5x1.5) may be used to evaluate contactors/starters in Area 8 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} \leq 1.5g$ and bA_{33Hz} is $\leq 1.0g$, then contactors/starters in Area 8 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Bell Date 12/21/94
Reviewed by _____ / Date _____

VALVE TO REMAIN OPEN

6.4 #87

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System SERVICE WATER

Page 1 OF 5

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
SW-1367, BF1223 HIS 1367	E-488 SHT. 12	"DS" (ALL)	G.E. TYPE SB-9 CTRL SWITCH IN CDFIRA-1	NV
NOTE: SW-1367 REFERS TO THE VALVE, MV13670 REFERS TO VALVE OPERATOR		"OL"	(W) OVERLOAD RELAY CONTACTS IN MCC F12A	CA (CONTACTS NOT CONNECTED TO STARTER)
		33/60, 33/6ac, 33/6c, 33/6ao	LIMIT TORQUE LIMIT SWITCHES IN MV13670	NV
		33/60, 33/6cc	LIMIT TORQUE TORQUE SWITCHES IN MV13670	NV

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by W.K. Seif Date 12/21/94
Reviewed by _____ / Date _____

6.4 #87

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System SERVICE WATER

Page 2 OF 5

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
SW-1367, BF1223 HIS1367	E-4BB SHT- 12	"STOP"	REES P.B. #01461-202 IN NV1366	NV
		"OPEN", "CLOSE"	REES POKER #03845-000 IN NV1366	NV
		<u>CS</u> OPEN, <u>CS</u> CLOSE (HIS 1367)	CUTLER HAMMER MOMENTARY CONT. P.B. TYPE E-30 IN C5716	NV
		<u>42a</u> , <u>42b</u> / <u>c</u> (OPEN CKT.)	(W) L-56 ELECTRICAL INTERLOCK FOR SERIES A/200 STARTER IN MCC FIR A	CA4 (VALVE OPEN) (i.e 33%)

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Gandy Date 12/21/94
 Reviewed by _____ / Date _____

6.4 #87

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System SERVICE WATERPage 3 OF 5

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
SWL367, BF1223 HIS1367	E-48B SHT. 12	42xa 4 (OPEN CKT.)	(W) L-56 ELECTRICAL INTERLOCK ON (W) GCA530 STARTER IN MCC F14, A=6, RM=428 EL= 603	CA4 (i.e 33%)
		42a, 42b %, % (CLOSE CKT)	(W) L-56 ELECTRICAL INTERLOCKS FOR SERIES A/200 STARTER IN MCC F12A A=6, RM=428, EL= 603	GERS-MCC.9 (AREA 6) SEE PG 5
		42a, 42b (MAIN CONTACTS)	(W) SIZE 1 SERIES A/200 STARTER IN MCC F12A	GERS-MCC.9 (AREA 6) SEE PG 5

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by D.K. Giff Date 12/21/94
Reviewed by _____ / Date _____

6.6 #87

A-46 RELAY SCREENING AND EVALUATION
FORM 6.6 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System SERVICE WATER

Page 4 of 5

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
SW1367, BF1223 HIS1367	E-48B SHT. 12	42a, LX1	(W) AR640A RELAY WITH LATCH IN MCC F14, A=6 RM=428, EL=603	CA4 (i.e 33%)

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by W.H. Smith Date 12/21/94
Reviewed by _____ / Date _____

c.e #87

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System SERVICE WATER

Page 5 OF 5

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

GERS-MCC.9 (AREA 6)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 6; 603', and 585'.

The effective grade for Area 6 is 573'.

Since $603' - 573' = 30'$, the ground spectra multiplied by (1.5×1.5) may be used to evaluate contactors/starters in Area 6 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} \leq 1.5g$ and $bA_{33Hz} \leq 1.0g$, then contactors/starters in Area 6 MCCS may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.L. Smith Date 12/31/94
Reviewed by _____ / Date _____

HV5261 IS NOT REQUIRED
TO OPEN DURING STRONG
SHAKING

6.4

#B8

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System CTRL, RM. EMERGENCY VENTILATION
(CREUS)

Page 1 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
HV-5261, BE1144 MVS5261A	E-60B SHT "DS" (ALL) 17	"OL"	G.E. TYPE SB-9 CTRL. SW. IN CDE11C	NV
		"OL"	(W) OVERLOAD RELAY CONTACTS IN MCC EHC	CA (CONTACTS NOT CONNECTED TO STARTER)
		33/33/ 60, 1ac, 33/33/ 60, 1cc	LIMIT TORQUE LIMIT SWITCH CONTACTS IN MVS5261A	NV
		33/33/ 60, 1cc	LIMIT TORQUE TORQUE SWITCH CONTACTS IN MVS5261A	NV
		"STOP"	FEES P.B. #01461-202 IN NV5261A	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by D. Knecht / Date
Reviewed by _____ / Date

MCC EIIIC \Rightarrow AREA = 8
 RM = 304
 EL = 585

6.4 #88

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System CTRL. RM. EMERGENCY VENTILATION

Page 2 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
HV-5261 BE1144 HIS 5261A	E-608 SHT. 17	"OPEN", "CLOSE"	REES ROCKER #Q3845-000	NV
		CS OPEN CS CLOSE (HIS 5261A)	CUTLER HAMMER MOMENTARY P.B. TYPE E-30 IN C5720	NV
		42a, 42c %, 0 (CLOSE CKT.)	⑩ L-54 ELECTRICAL INTERLOCKS FOR SERIES A/200 STARTER IN MCC EIIIC *	GERS - MCC .9 (AREA 8) SEE PG 4
		42a, 42b %, 0 (OPEN CKT.)	⑩ L-54 ELECT. INTERLOCKS FOR SERIES A/200 STARTER IN MCC EIIIC *	GERS - MCC .9 (AREA 8) SEE PG 4

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Smith / Date 12/6/94
 Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

6.4 #88

System CTRL Rm. EMERGENCY VENTILATION

Page 3 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
HV5261, BF11-14 HIS5261A	E-60B SHT. 17	4 $\frac{1}{2}$, 4 $\frac{1}{2}$ C (MAIN CONTACTS)	(W) SIZE 1 SERIES A/200 REVERSING STARTER IN MCC E11C *	GERS - MCC 9 (AREA E) SEE pg 4

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- - No entry necessary.

Prepared by Wheeler Date 12/6/94
 Reviewed by _____ / Date _____

G.4 #88

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE

System CREVS

Page 4 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
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GERS-MCC.9 (AREA 8)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 8; 603', 585', 565' and 545'.

The effective grade for Area 8 is 567'.

Since $603' - 567' = 36'$, the ground spectra multiplied by (1.5×1.5) may be used to evaluate contactors/starters in Area 8 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} \leq 1.5g$ and $bA_{33Hz} \leq 1.0g$, then contactors/starters in Area 8 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.Hill Date 12/6/84
Reviewed by _____ / Date _____

HV5262 IS NOT REQUIRED
TO OPEN DURING STRONG
WINDING

6.4 #89

A-86 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System CTRL. RM. EMER. VENTILATION
(CREVS)

Page 1 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
HV-5262, BF1186 HIS 5262A	E-60B SHT. 17	"DS" (ALL)	G.E. TYPE SB-9 CTRL, SW. IN CDFIIB	NV
NOTE! HV-5262 REFERS TO DAMPER, MV5262A REFERS TO DAMPER OPERATOR.		OL	(W)OVERLOAD RELAY CONTACT IN MCC FIIB	CA (CONTACT NOT CONNECTED TO MTR. STARTER)
		33/60, 33/1ac	LIMIT TORQUE LIMITSWITCH IN MV5262A	NV
		33/60, 33/1dc	LIMIT TORQUE TORQUE SW. IN MV5262A	NV
		"STOP"	REFS P.B # 01461-202 IN NV5261A	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Smith Date 12/6/94
Reviewed by _____ / Date _____

MCC F11B > A = 8
RM = 405
EL = 603

6.4 #89

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System Ctr. Rm. EMERGENCY VENTILATION

Page 2 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
HV5261, BF1144, HIS5261A	E-60B SHT. 17	"OPEN", "CLOSE" (HIS5261A)	REFS ROCKER #03845-000 CUTLER HAMMER MOMENTARY P.B. TYPE E-30 IN C5920	NV NV
		42a/ % C, 42a/ % O (CLOSE CKT.)	(W) L-56 ELECTRICAL INTERLOCKS FOR SERIES A/200 STARTER IN MCC F11B *	GERS-MCC. 9 (AREA 8) SEE pg 4
		42a/ % O, 42a/ % C (OPEN CKT.)	SAME AS ABOVE	GERS-MCC. 9 (AREA 8) SEE pg 4

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by W.K. Smith Date 12/6/94
Reviewed by _____ Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

G.4 #89

System CRL. Pm. EMERGENCY VENTILATION

Page 3 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
HV5261, BF1144 HIS5261A	E-60B SHT 17	42%, 42/c (MAIN CONTACTS)	(1) SIZE 1 SERIES A/200 STARTER IN MCC F11B*	GERS-MCC.9 (AREA 8) SEE PG 4

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Lipp Date 12/6/94
 Reviewed by _____ / Date _____

G.4 #89

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS - BESSE

System CREVS

Page 4 of 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
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GERS-MCC.9 (AREA 8)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 8; 603', 585', 565' and 545'.

The effective grade for Area 8 is 567'.

Since $603' - 567' = 36'$, the ground spectra multiplied by (1.5×1.5) may be used to evaluate contactors/starters in Area 8 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz}):

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz}):

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} \leq 1.5g$ and $bA_{33Hz} \leq 1.0g$, then contactors/starters in Area 8 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Goss Date 12/6/94
Reviewed by _____ / Date _____

NOTE: THIS EQUIPMENT IS NOT REQUIRED TO OPERATE DURING SHOCK, SHAKING. THIS SYSTEM IS MANUALLY STARTED BY OPERATORS DURING PERFORMANCE OF EMERGENCY PROCEDURE DE-OP-PROC.

6.4 #90

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System CTRL. RM. EMER. VENTILATION

Page 1 OF 6

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BE1148, HV4906, {SV4823, SV4824A SV4824.	E60B SHT. 34	426, 42a	(W) L-56 ELECTRICAL INTERLOCK IN MCC EHE	CA - NOT CONNECTED TO STARTER
NOTE - HV4906 REFERS TO THE DAMPER, MV49060 REFERS TO THE ACTUATOR	"	OL	(W) OVERLOAD RELAY CONTACT IN MCC EHE	SAME AS ABOVE
	"	SC-5A	MICRO SWITCH SELECTOR SWITCH # 910-A-E-A-01-1 IN C6708	NV
SEE Pg 4	"	ACCFR/1	CLARK TYPE PM 4-P CONVERTIBLE RELAY IN C6708	CA - OPERATION OF DAMPER ACCEPTABLE
NOTE: COMPONENTS NOT SPECIFICALLY CALLED OUT ON SSEL ARE BEING CONSIDERED AS PART OF SKID PER SSEL NOTE 34.				

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by O. K. Gandy, Date 12/15/94
Reviewed by _____ / Date _____

6.4 #90

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System CTRL. RM. EMER. VENTILATIONPage 2 OF 6

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BE1148, HV4906	E-60B SHT 34	42 (MAIN CONTACTS)	(W) SIZE 1 SERIES A/ ZOO STARTER IN MCC EEE	CA - OPERACTO OF DAMPER MTR, ACCEPTABLE
"	"	FORCE MOTOR COIL (PT5898 PC5898)*	GENERAL CTRL. TYPE AH91 MA HYDRA MOTOR ACTUATOR AT HV4906	NA
"	M-410Q- 25	SS-4A AUTO	MICRO SWITCH SELECTOR SW # 910-A-E-A-01-1 IN CG708	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W Kabel P Date 12-13-94
Reviewed by _____ / Date _____

* PT5898 - HEAD PRESSURE TRANSMITTER
FISHER-ROSEMOUNT MODEL
1153G07

G-4

PC5898 - CONTROLLER, FOXBORO
MODEL # N-2AX-A4

BOTH III C6714 A=7 DM=1A2 CI=1.4/2

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

6.4 #90

System CTRL. RM. EMER. VENTILATION

Page 3 OF 6

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BE114B, HV4904	M-410-550	JOG PB 1A (NS0611)	MICRO SW P.B TYPE PMD IN C6708	NV
"		PS6X/1 /CRX/1 /MX/1	CLARK TYPE PM 4-POLE CONVERTIBLE RELAY IN C6708	CA-ACTUATOR WILL NOT REPOSITION DAMPER UNLESS FORCE MOTOR COIL RECEIVES SIGNAL.
"		PY5898C PY5898B	FOXBORO # N-2AO-L2C-R IN C6708	SEE ABOVE
"		PS5X/1	CLARK TYPE PM 4-POLE CONVERTIBLE RELAY IN C6708	SEE ABOVE

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Lang Date 6-13-74
 Reviewed by _____ / Date _____

6.4 #90

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System CTRL. RM. EMER. VENTILATIONPage 4 OF 5

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BE1148, HV4906	M-410-550	PK5900	FOXBORO #N-2A0-L2C-R IN C6708	CA - OPERATORS WILL START SYS WHEN REQUIRED
"		SS3A, SS4A	MICRO SWITCH #910-B-F-A-53-1, #910-A-E-A-96-1 BOTH IN C6708	NV
BE1148 HV4906, SV4623A, SV4623, SV4624	"	CS-1A (RESET)	MICRO SWITCH #910AE0011 IN C6708	NV
SV4623A, SV4623, SV4624	"	HIS 4823A, HIS 4823, HIS 4824	MICRO SWITCH SELECTOR SW #910-B-D-A-93-1	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS ____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by V. K. Lef Date 12-13-95
 Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

6.4

System CTRL. RM. EMER. VENTILATION

Page 5 OF 6

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
SV4623A, SV4623, SV4624	M-410-550	P45900	FOXBORO HN-2AO-L2L-R IN C6708 4K	CA - WITH SELF RESET
		PS5X/1	CLARK TYPE PML 4-POLE CONVERTIBLE RELAY IN C6708	CA - OPERATOR ACTION TO RESET VIA CS-1A
		IMX/1 ICRX/1	CLARK TYPE PML 4-POLE CONVERTIBLE RELAY IN C6708	CA - Will self reset or be reset by resetting PS5X/1
	M-410-550 M-410-281 SEE 6.4 #74	IM	(W) L-56 ELECTRICAL INTERLOCK IN C6704	CA

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Lish Date 12/13/94
 Reviewed by _____ / Date _____

G.4 #90

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System CTRL. RM. EMER. VENTILATIONPage 6 of 6

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
PS5900	M-410Q-25	SWITCHOVER FROM WATER COOLED TO AIR COOLED SW	FOXBORO MODEL # N-2AP+ALM-AR IN C6714 A=6 RM=G23 EL=643	CA - THIS SYSTEM IS MANUALLY STARTED AFTER PERIOD OF STRONG SHAKING
PSH5898 + PSL5898	M-410Q-25	AIR COOLED CONDENSER FAN START/STOP SWITCH	FOXBORO MODEL # N-2AP+ALM-AR IN C6714. (SEE PS5900)	DB-OP-2000 CA - SEE PS5900

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Giff Date 12/13/94
 Reviewed by _____ / Date _____

NOTE: THIS SYSTEM IS MARVELLY
PLACED INTO SERVICE. IT IS
NOT REQUIRED DURING
STRONG SHAKING

6.4 #91

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System CTRL. RM. EMER. VENTILATION

Page 1 OF 6

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BF1103, HV4907	E-60B SHT. 34	42b, 42a	(W) L-56 ELECTRICAL INTERLOCK IN MCC F1A	CA - NOT COMPLETING A CIRCUIT TO STARTER.
D { SV4827, SV4828 SV4827A		OL	(W) OVERLOAD RELAY CONTACT IN MCC F1A	SAME AS ABOVE
		SS-5B	MICRO SWITCH SELECTOR SW # 910-A-E-A-01-1 IN C6709	NV
NOTE: HV4907 REFERS TO THE DAMPER, HV49070 REFERS TO THE DAMPER ACTUATOR		ACCFR/2	CLARK TYPE PM 4-POLE CONVERTIBLE RELAY IN C6709	CA - OPERATION OF DAMPER MTR. ACCEPTABLE
NOTE: Components not specifically called out on SSEL is being considered as part of skid per SSEL NOTE 34				

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Schubert Date 12-13-94
Reviewed by _____ / Date _____

A-86 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

6.4 # 91

System CTRL. RM. EMER. VENTILATION

Page 2 OF 6

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BF1103, HV4907	E-60B SHT. 34	42 (MAIN CONTACTS)	⑩ SIZE 1 NON REVERSING SERIES A/200 STARTER IN MCC F1A	CA - OPERATION OF DAMPER MOTOR ACCEPTABLE
M-4109-	11 + 26	FORCE MOTOR COIL (PT5899 PC5899)*	GENERAL CTRLS. TYPE AH91 mA HYDRA MOTOR ACTUATOR AT HV4907	NA
M-410-561	SS-4B AUTO		MICRO SWITCH SELECTOR SW # 910-A-E-A-01-1 IN C6709	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Schaefer Date 10/13/94
 Reviewed by _____ / Date _____

* PT5899 - HEAD PRESSURE TRANSMITTER
 FISHER-ROSEMOUNT MODEL
 # 1153 GD7

6-4

PC5899 - DAMPER CONTROLLER
 FOXBORO N-2AX+A4
 BOTH IN C6715 A=3 RM=623, EC=643

6.4 # 91

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System CTRL. RM. EMER. VENTILATIONPage 3 OF 6

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BF1103, HV6707	M-410-551	JOG PB 1B (NS0612)	MICROSWITCH TYPE PMP PUSHBUTTON IN C6709	NV
"	PS6X/2	CLARK TYPE PM	CA - CONTACTS DO NOT REPOSITION	
"	ICRX/2	4-POLE CONVERTIBLE	DAMPER unless	
"	IMX/2	RELAY IN C6709	FORCE MOTOR COIL RECEIVES SEAL.	
"	PY5899C	Foxboro #	SAME AS	
"	PY5899B	N-2AO-12C-R	PS6X/2	
"	PS5X/2	CLARK TYPE PML 4-POLE CONVERTIBLE RELAY IN C6709	SAME AS PS6X/2	

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS ____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by

JK 12/13/94

Reviewed by

Date

/ Date

6.4 #91

**A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1**

System CTRL. RM. EMER. VENTILATION

Page 4 OF 6

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BF1103, HV6707	M-410-551	PY5901	FOXBORO #N-240-L2C-R IN C6709	CA - OPERATORS WILL START SYSTEM WHEN REQUIRED.
"	"	SS-3B, SS-4B	MICRO SWITCH H910-13-F-A-53-1, H910-A-E-A-96-1 BOTH IN C6709	NV
BF1103, HV6707, SV27A, SV4827 SV4828	M-410-551	CS-1B (RESET)	MICRO SWITCH #910AEC011 IN C6709	NV
SV4827A, SV4827 SV4828	M-410-551	HIS4827 HIS4827A HIS4828	MICRO SWITCH SELECTOR SW 910BDA 95-1	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Schipper Date 12/13/94
Reviewed by _____ / Date _____

6.4 #91

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System CTRL. RM. EMER. VENTILATIONPage 5 OF 6

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
SV4827, SV4827A SV4828	M-410-551	PY5901	FOXBORO #N-2AO-L2C-R	CA - WILL SELF RESET
"		PS5X/2	CLARK TYPE PML 4-POLE CONVERTIBLE RELAY IN C6709	CA - OPERATOR ACTION TO RESET USING CS-1B
"		IMX/1 ICRX/1	CLARK TYPE PM 4-POLE CONVERTIBLE RELAY IN C6709	CA - WILL SELF RESET OR RESET BY RESETTING PS5X/2
M-410-551 M-410-281 SEE G.4 #75	IM	(W) L-56	ELECTRICAL INTERLOCK IN C6707	CA

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by J. K. Lang Date 12/13/94
Reviewed by _____ / Date _____

G.4 #91

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System CTRL. RM. EMER. VENTILATION

Page 6 OF 6

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
PS5901	M-410Q-26	SWITCHOVER FROM WATER COOLED TO AIR COOLED SW.	FOXBORO MODEL # N-2AP+ALM- AR 11 C64115, A-1 RM=603, EL 643	CA - THIS SYSTEM IS MANUALLY STARTED AFTER PERIOD OF STRONG SHAKING (DB-OP-2000)
PS45899/ PSL5899	M-410Q-26	AIR COOLED CONDENSER FAN START/ STOP SWITCH	(SEE PS5901)	(SEE PS5901)

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Bish Date 12/13/94
 Reviewed by _____ / Date _____

NOTE: THIS SYSTEM IS MANUALLY
PLACED INTO SERVICE. IT IS
NOT REQUIRED DURING STRONG
SHAKING

6.4 #92

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System CTRL. RM. EMER. VENTILATION

Page 1 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
---------------------	------------	-----------------------	-------------------------	------

S61-1, BE1201 E-60B SHT. 42b, 42a
37

(W) L-56

ELECTRICAL
INTERLOCK
FOR SERIES A/
200 STARTER
IN MCC E12A

CA - CONTACTS
NOT CONNECTED
TO STARTER

NOTE S61-1 REFERS TO
THE FAN; WHEREAS
NIS0611 REFERS TO
THE FAN MTR.

OR

(W) OVERLOAD
RELAY CONTACTS
IN MCC E12A

SAME AS
ABOVE

ACCFR/1

CLARK TYPE PM
4-POLE CONVERTABLE
RELAY IN C6108

CA - STARTING
DAMPER MTR
ACCEPTABLE

42

(W) SIZE 1 STARTER
MAIN CONTACTS
IN MCC E12A

CA - STARTING
DAMPER MTR
ACCEPTABLE

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Schiff Date 5-18-93
Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System CTRL RM. EMERGENCY VENTILATION

Page 2 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
S61-1, BE1201	M-410-550	PS6X/1	CLARK TYPE PM 4-POLE CONVERTABLE RELAY IN C6708	CA-SAME AS ACCFR1/1
"		PY5898 C, PY5898B	FOXBORO # N-2A0-L2C-R IN C6714	CA-SAME AS ACCFR1/1
"		SS-4A AUTO	MICRO SWITCH SELECTOR SWITCH # 910-A-E-A-96-1 IN C6708	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Schif Date 5-18-93
 Reviewed by _____ / Date _____

6.4 #92

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System CTRL. RM. EMER. VENTILATIONPage 3 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
S61-1, BE1201	M-410-550	Jog PB-1A (NS611)	MICRO SW P.B. TYPE PMP IN C6708	NA
	M-410-550	ICRX/1	CLARK TYPE PML 4-POLE CONVERTIBLE RELAY IN C6708,	CA - Will SELF RESET OR OPERATOR RESET BY RESETTING PS5X/1 VIA CS-1A
		PS5X/1	CLARK TYPE PML 4-POLE CONVERTIBLE RELAY IN C6708	CA - OPERATOR ACTION TO RESET VIA CS-1A

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- DA - Operator action.
- No entry necessary.

Prepared by D.H. Sill Date _____
 Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System CTRL. RM. EMER. VENTILATION

Page 4 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
S61-1, BE1201	M-410-550	PY5900	FOXBORO #N-RAO-L2C-R IN C6714	CA - WILL SELF RESET.
"	SS-3A		MRRO SWITCH SELECTOR SW #910-B-F-A-53-1 IN C6708	NV
"	IM		(W) L-56 ELECTRICAL INTERLOCK IN C6706	CA - FAN S61-1 RESET BY CS-1A
"	IMX/1		CLARK TYPE PM 4-POLE CONVERTIBLE RELAY IN C6708	SAME AS ABOVE

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by JK Date 5/18-93
 Reviewed by _____ / Date

NOTE: THIS SYSTEM IS MANUALLY
PLACED INTO SERVICE IF IT IS
NOT REQUIRED DURING STRONG
SHAKING.

6.4 # 93

A-RE RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT ZEUS-PISSÉ UNIT 1

System CTRL. RM. EMER. VENTILATION

Page 1 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
S61-2, BF-1229	E-608 SHT. 37	426, 42a	(W) L-56 ELECTRICAL INTERLOCK FOR SERIES A/200 STARTER IN MCC F12A	CA - CONTACTS ARE NOT CONNECTED TO STARTER
NOTE: S61-2 REFERS TO THE FAN, MS0612. REFERS TO THE FAN MOTOR.	"	OK	(W) OVERLOAD RELAY CONTACTS IN MCC F12A	SAME AS ABOVE
"	ACCFR/2		CLARK TYPE PM 4-POLE CONVERTABLE RELAY IN C6709	CA-STARTING DAMPER MTR ACCEPTABLE.
"	42		(W) SIZE 1 STARTER MAIN CONTACTS IN MCC E12A	CA - SAME AS ACCFR/2

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Smith 5-18-93
Reviewed by _____ / Date _____

6.4 #93

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System CTRL. RM. EMERGENCY VENTILATION)

Page 2 of 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
SGI-2, BF1229	M-410-551	PS6X/2	CLARK TYPE PM 4-POLE CONVERTABLE RELAY IN C6709	CA - SAME AS ACCFR/2
"	"	PY5899C, PY5899B	FOXBORO #N-2A0-LRC-R IN C6715	CA - SAME AS ACCFR/2
"	"	SS-4B AUTO	MICRO SWITCH SELECTOR SW #910-A-E-96-1 IN C6709	NV

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Leib Date 5-18-93
 Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

G.4 #93

System CTRL. RM. EMER. VENTILATION

Page 3 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
S61-2, BF1229	M-410-551	Jog PB-1B (NS0612)	MICRO SW P.B. TYPE PMP IN C6709	NV
"	ICRX/2		CLARK TYPE PML 4-POLE CONVERTIBLE RELAY IN C6709	CA - WILL SELF RESET OR RESET BY OPERATOR (CS-1B)
"	PS5X/2		CLARK TYPE PML 4-POLE CONVERTIBLE RELAY IN C6709	CA - WILL BE RESET BY PUSHING CS-1B
"	PY5901		FOXBORO # N-2AO-L2C-R IN C6715	CA - WILL SELF RESET

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by D. H. [Signature] Date 5-15-93
 Reviewed by _____ Date _____

6.4 #93

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System CTRL. RM. EMER. VENTILATIONPage 4 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
S61-2, BF122.9	M-410-551	SS-3A	MICRO SWITCH SELECTOR SW #910-B-F-A-53-1 IN C670B	NA
"	"	IM	(N) L-56 ELECTRICAL INTERLOCK IN C670B	CA- RESET BY CS-1B
"	"	IMX/2	CLARK TYPE PM 4-POLE CONVERTIBLE RELAY IN C670B	SAME AS IM

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Slegg Date 5-18-93
 Reviewed by _____ / Date _____

LOCATIONS

* AREA = 6	** AREA = 7	*** AREA = 7
RM = 429	RM = 603	RM = 505
= EL = 403	= EL = 638	= EL = 623

6.4 # 94

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System CTRL. RM. EMER. VENTILATIONPage 1 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
HIS5261 , C21-1	E1209 SHT. 1, 1A, 39	42a, 42b	(W) L-56 ELECTRICAL INTERLOCK IN MCC E124 *	CA1
NOTE C21-1 REFERS TO FAN, MCO211 REFERS TO FAN MOTOR		OR	(W) OVERLOAD RELAY CONTACTS IN MCC E124 *	CA1
		STOP, START	REES PUSHBUTTON CAT.# 20810-032 IN MCO211	NV
		CS START , CS STOP (HIS5261)	MICRO SWITCH 3 POSITION MOMENTARY CONTACTS TYPE CMC # 910 MGD 013 1U C5720	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Belf Date 12/13/94
Reviewed by _____ / Date _____

6.4 # 94

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System CTRL. RM. EMER. VENTILATIONPage 2 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
HIS5261, BE1209 C21-1	E-60-SHT. 1	42a (STARTER CRT. SEAL-IN)	(W) L-54 ELECTRICAL INTERLOCK IN MCC E12A*	CA-EARLY START OF THIS FAN IS ACCEPTABLE
		42 (STARTER MAIN CONTACTS)	(W) SIZE 1 SERIES A/200 STARTER IN MCC E12A *	SEE 42a

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by OKL / Date 12/13/94
 Reviewed by _____ / Date _____

6.4 #95

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT ~~DAVIS-BESSE~~ UNIT 1

System CTRL. RM. EMER. VENTILATIONPage 1 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
C21-2, BF1149 HIS 5262	E-60B SHT. 1	42a, 42b	(W) L-56 ELECTRICAL INTERLOCK IN MCC FTIA	CA1
		OL	(W) OVERLOAD RELAY CONTACT IN MCC FTIA	CA1
		STOP, START	REES PUSHBUTTON # 20810-032 IN NC0212	NV
CS/START, CS/STOP (HIS5262)			MERC SWITCH, 3 POSITION MOMENTARY CONTACTS, TYPE CMC IN C6920	NV
42a (STARTER CKT. SEAL-IN)			(W) L-56 ELECTRICAL INTERLOCK IN MCC FTIA	CA - EARLY START OF THIS FAN IS ACCEPTABLE

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Schaefer Date 12/13/94
Reviewed by _____ Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System CTRL. RM. EMER. VENTILATION

Page 2 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
C21-1, BF1149 HIS5262	E-60B SHT. 1	42 (STARTER MAIN CONTACTS)	(W) SIZE 1 Non Reversing STARTER	CA- SEE 42a

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Lipp Date 12/13/94
 Reviewed by _____ / Date _____

6.4 #96

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DEAVIS-BESSE UNIT 1

System ESSENTIAL HVAC
CCW PUMP RM.

Page 1 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
C75-1, BE1154 HISNC751, TS5443	E-608 SHT. 29	TSX1 (ALL)	DEUTSCH TYPE 4AP IN RL3706 AT AUXLB, 304, EL 585	CA6
		TS A, TS B (TS5443)	BARKSDALE T2H-M154S- 25A; AT AUXL 7 328, EL 585	CA6
		STOP, START	REES # 20810-032 IN AUXL7, 328, EL 585	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by O. K. Smith Date 6-1-73
Reviewed by _____ / Date

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

6.4 #96

System ESSENTIAL HVAC
CCW PUMP RM.

Page 2 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
C76-1, BE1154 HISNC751, TS5443	E-60B SHT. 29	OL	(W) OVERLOAD RELAY CONTACTS IN MCC E11C AT AUXLB, 304 EL 585	CA - NOT CONNECTED TO STARTER
"	42xa, 42xb		(W) TYPE AR440A RELAY WITH AR LATCH ATTACH. IN MCC E11C AT AUXLB, 304, EL. 585	CA 1
"	42b, 42a		(W) L-5G ELECTRICAL INTERLOCK 1) MCC E11C AT AUXLB, 304 EL. 585	CA 6

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by D.L. K. Smith Date 6-1-93
 Reviewed by _____ / Date _____

6.4 # 96

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System ESSENTIAL HVAC
CCW PUMP ROOM

Page 3 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
C75-1, BE1154, HISNC751, TS5443	E-60B SHT. 29	42 (MAIN CONTACTS)	(W) CLASS A200 STARTER IN MCC EIIC AT AXL8, 304 EL. 585	CA - WILL NOT LOCKOUT VENT FAN

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Smith Date 6-1-93
Reviewed by _____ / Date

6.4 #97

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System ESSENTIAL HVAC
CCW PMP. RM.

Page 1 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
C75-2, BF1112, HIS NC752, TS5444	E-60B SAT. 29	TSX1 (ALL)	DEUTSCH TYPE 4AP IN RC3705 AT AUXL7, 314 EL. 585	CA6
"	TS 1/A, TS 1/B (TS5444)	BARKSDALE CTLS. DIV. #72H-M154S-25A	AUXL. 7 328 EL 585	CA6

NOTE: C75-2 REFERS
TO THE FAN, MC0752
REFERS TO FAN MTR.

STOP, START REFS #
(HISNC752) 20810-032
 IN AUXL7, 328
 EL. 585

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- DA - Operator action.
- No entry necessary.

Prepared by W.H. Smith, Date 6-1-93
Reviewed by _____ / Date _____

6.4 #97

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System ESSENTIAL HVAC
CCW PUMP RM

Page 2 of 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
C75-2, BF1112, HISNC752, TS5444	E-60B SHT. 29	OL	(W) OVERLOAD RELAY CONTACTS IN MCC F1A AT AUXL7, 427 EL. 603	CA - CONTACTS NOT CONNECTED TO STARTER.
		42xa, 42xb	(W) TYPE AR440A RELAY WITH AR LATCH ATTACH. IN MCC F1A AT AUXL7, 427, EL. 603	CA1
		42b, 42a	(W) L-56 ELECTRICAL INTER-LOCK IN MCC E11C AT AUXL7, 427 EL. 603	CA6

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Smith, Date 6-1-93
 Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

ESSENTIAL HUHC
System CCW PHP. RM.

Page 3 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
C75-2, BF1112 HIS NC752, TS5444	E-60B SHT. 29	42 (MAIN CONTACTS)	(W) CLASS A200 FURN WITH MECH. LATCH IN MCC F11A AT AUXL.7 427 EL. 603	CA - WILL NOT LOCK OUT VENT FAN MTR.

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by D.K. Litt, Date 6-1-93
 Reviewed by _____ / Date _____

THIS VALVE MUST BE CAPABLE
OF CLOSING DURING PERIOD OF
STRONG SHAKING.

6.4 #98

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BEESLE UNIT 1

System MAKEUP AND PURIFICATION

Page 1 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MU-2B, BE1172 HIS MU2B	E-49B SHT. 50A & 50B	"DS" (ALL)	G.E. TYPE SB-9 CTRL SW IN COE11B-1 AT AUXLB, 304, EL. 585.	NV
NOTE: MU-2B REFERS TO THE VALVE, MVMUL02B REFERS TO VALVE OPERATOR	"	OL	(W) OVERLOAD RELAY CONTACTS IN MCC E11B AT AUXLB, 304, EL. 585.	CA - CONTACTS ARE NOT CONNECTED TO STARTER.
	11	33/60, 33/ 60%, 100% 33/60%, 33/ 100%	LIMIT TORQUE LIMIT SWITCH CONTACTS IN MVMUL02B AT CMMT9, 215, EL. 565	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS ____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by JK Date 6-2-94
Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATION

Page 2 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MU-2B, BE1172 HISMU2B	E49B SATS. 50A + 50B	33/ 1tc, 33/ 1tc	LIMIT TORQUE TORQUE SW IN MU/MUO 2B AT CMTR 9, 215, EL. 565	NV
"	"	C5/ OPEN, C5/ CLOSE (HISMU2B)	CUTLER HAMMER TYPE E30 PUSHBUTTON IN C5703 AT AUXL7, 505 EL. 623.	NV
"	"O" "N" "C"	(W) TYPE PB3	SELECTOR SW IN MCC E11B. AT AUXL8, 304, EL. 585	NV

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by OK 6-2-94
 Reviewed by _____ / Date _____ / Date _____

6.4 #98

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATIONPage 3 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MUL-2B BE1172, HIS/MU2B	E-49B SHT. 50A, 50B	42a/ %, 42b/ % (OPEN CKT.)	(W) L-54 ELECTRICAL INTERLOCK IN MCC E11B. AT AUXL8, 304, EL. 585	MCC-GERS. 9 (AREA 8)
"	"	42a/ %, 42b/ % (CLOSE CKT.)	SAME AS ABOVE	MCC-GERS. 9 (AREA 8)
"	"	42a/ %, 42b/ % (MAIN CONTACTS)	(W) CLASS A211 FVR CONTACTOR IN MCC E11B AT AUXL8, 304, EL. 585	MCC-GERS. 9 (AREA 8)

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Lutz Date 6-2-94
Reviewed by _____ / Date _____

6.4 # 98

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATIONPage 4 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MUL-2B, BE1172 HISMU2B	E49B SHT. 50A, 50B	<u>PSHX</u> <u>3759</u> , <u>3763</u>	DEUTSCH TYPE 4AP IN RC3801 AT AUXLB, 303, EL.585	CA - CHATTER WILL CAUSE VALVE TO GO TO DESIRED STATE
"	TSH (TS.H3745B)		BARKSDALE # T2H-M2505-25A AT CTMT9, 215 EL. 565	SAME AS PSHX 3759
"		PSH 3759, PSH 3763	STATIC-O-RING # 6V2-E5-MRTX4 AT CTMT9, 215, EL. 565	SAME AS PSHX 3759

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Lippert Date 6-2-94
 Reviewed by _____ / Date _____

THIS VALUE IS TO REMAIN CLOSED
DURING STRONG SHAKING.

6.4 #99

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System DECAY HEAT REMOVAL

Page 1 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
DH-12, BE1183 HISDH12, HISDH12A PSHRC 2134	E-52B SAT. 24C +240	DS (ALL)	G.E TYPE SB-9 CTRL SW. IN CDE11B-2. AT AUXLB, 304, EL 585	NV
NOTE: DH-12 REFERS TO THE VALVE, MVDH120 REFERS TO THE VALVE OPERATOR.		OL	(W) OVERLOAD RELAY CONTACTS IN MCC E11B AT AUXLB, 304, EL. 585	CA - CONTACTS NOT CONNECTED TO STARTER.

ISO
(HISDH12A)

CUTLER HAMMER
TYPE E30 PB*
IN C5704. AT
AUXL7, 505,
EL. 623

* MAINTAINED CONTACT

NV

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by W.K. Loh Date 4-22-94
Reviewed by _____ / Date _____

6.4 #99

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System DECAY HEAT REMOVALPage 2 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
DH-12, BE1183 HISDH12, HISDH12A, PSHRC2B4	E-52B SHT. 24C+ 24D	33% oo, 33% 100, 33% oo, 33% ac, 33% ac,	LIMIT TORQUE LIMIT SWITCH CONTACTS IN MVDH120. AT CTAIT9, 290, EL. 565	NV
"		33/ tc, 33/ tc	LIMIT TORQUE TORQUE SWITCHES IN MVDH120. AT CTAIT9, 290, EL. 565.	NV
"		CS OPEN, CS CLOSE (HISDH12)	CUTLER HAMMER TYPE E30 P.B. IN C5904. AT AUXLT, 505, EL. 623.	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Bush Date 4-22-94
 Reviewed by _____ / Date _____

6.4 #99

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System DECAY HEAT REMOVALPage 3 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
DH-12, BE1183, HISDH12, HISDH12A PSHRC2B4	E-52B SHT. 24C + 24D	PSH X RC2B4	DEUTSCH TYPE 4AP RELAY IN COE11B-2, AT AUXLB, 304 EL. 525.	CA4 (ie C3 OPEN) O-C-N, 42A 0
NOTE: SOURCE OF POWER FOR PSHYRC2B4 IS DISTRIBUTION PANEL Y1. SEE 6.4 # 50 FOR RELAY EVALUATION.		PSH (PSHRC2B4)	STATIC-O- RING # 9TA-84-NX-C1A-JTTX6 AT CTHIT3, 483 EL. 603.	CA - WILL NOT BLOW 3A FUSE
	E-52B SHT 24D	VRK	DEUTSCH TYPE 4AP IN COE11B-2	CA1
		150	- SEE PREVIOUS ENTRY	"
		33/ac	- SEE PREVIOUS ENTRY	"

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. / Date 4-22-94
Reviewed by _____ / Date _____

6.4 #99

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System DECAY HEAT REMOVALPage 4 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
DH-12, BE11B3, HISDH12, HISDH12A, PSHRC2BA	E-52B SHT. 24C & 24D	"OPEN" "NEUTRAL" "CLOSE"	(W) TYPE PB3 SELECTOR SW IN MCC E1B AT AUXL8, 304, EL.585	NV
"		42a, 42b/ %, 42b/ %, 42b/ %	(W) L-56 ELECTRICAL INTERLOCK IN MCC E1B AT AUXL8, 304, EL.585	GERS-MCC.9 (AREA 8)
		42%, A2/ %	(W) CLASS K211 FVR CONTACTOR IN MCC E1B AT AUXL8, 304, EL 585	GERS-MCC.9 (AREA 8)

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. 4-22-94
Reviewed by _____ / Date

MUST STAY CLOSED DURING
STRONG SHAKING

6.4 #100

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System DECAY HEAT REMOVAL

Page 1 OF 5

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
DH-II, BF1130	E-52B	"DS" (ALL)	GE TYPE SB-9 CTRL. SW IN CDFIIA-1 AT AUXL 7, 427, EL. 603	NV
HIS DHII	SHT. 24A+			
HIS DHIIA	24B			
		"OL"	(W) OVERLOAD RELAY CONTACTS IN MCC FIA AT AUXL7, 427 EL. 603	CA8
	11		LIMIT TORQUE LIMIT SW CONTACTS IN MVDH110 AT CTMT9, 290, EL. 585	NV
	33% _{ac} , 33% _{dc}			
	33% _{ac} , 33% _{dc}			
	33% _{ac} , 33% _{dc}			

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- DA - Operator action.
- No entry necessary.

Prepared by W.K. 6/14 Date 4-22-94
Reviewed by _____ / Date _____

6.4 #100

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System DECAY HEAT REMOVALPage 2 OF 5

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
DH-11, BF1130, HISDH11, HISDH11A	E52B SHT. 24A & 24B	33/ 1to, 33/ tc	LIMIT TORQUE TORQUE SW IN MVDH110 AT CTMT9 290, EL. 585	NV
"ISO" (ALL) (HISDH11A)			CUTLER-HAMMER TYPE E-30 PB (MAINT. CONT.) IN C5704 AT AUXL7, 505, EL. 623	NV
CS OPEN, CS CLOSED (HISDH11)			CUTLER-HAMMER TYPE E-30 PB IN C5704, AT AUXL7, 505, EL. 623.	NV

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. 4-22-94
 Reviewed by _____ / Date

6.6 #100

A-46 RELAY SCREENING AND EVALUATION
FORM 6.6 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System DECAY HEAT REMOVALPage 3 OF 5

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
DH-11, BF1130, HISOH11, HISOH11A	E-52B SHTS. 24A+24B	"OPEN"- "NEUTRAL"- "CLOSE"	(W) TYPE PB3 SELECTOR SW IN MCC FIIA AT AUXLT, 427, EL. 603	NV
"	42%, 42%/ 42%, 42%/ 42%, 42%/ (MIN CONTACTS)	(W) L-56 ELECTRICAL INTERLOCK IN MCC FIIA AT AUXLT, 427, EL. 603	GERS-MCC. 9 (AREA 7) SEE Pg 5	
"	42%, 42%/ (MIN CONTACTS)	(W) CLASS A211 STARTER FVR IN MCC FIIA AT AUXLT, 427. EL. 603	GERS-MCC. 9 (AREA 7) SEE Pg 5	

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. 6-1 Date 4-22-94
Reviewed by _____ / Date

6.4 #100

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System DECAY HEAT REMOVALPage 4 OF 5

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
DH-11, BF1130, HISDH11 HISDH11A	E-52B SHTS. 24A, 24B	VRX	DEUTSCH TYPE 4AP RELAY IN RC3702 AT AUKL7, 314 EL. 585	CA1
"	PSH K03			CA4① CLOSE CKT: $\frac{33}{100}$, $\frac{33}{100}$, $\frac{33}{100}\%$ OPEN CKT: $\frac{03}{100}$, $\frac{420}{100}$, OPEN NEUTRA OPEN, 0, CLOSE

① VALUE IS NOT REQUIRED TO CHANGE
STATE DURING PERIOD OF STRONG SHAKING

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. 6-14 Date 4-22-94
Reviewed by Date

6.6 #100

A-46 RELAY SCREENING AND EVALUATION
FORM 6.6 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System DECAY HEAT REMOVAL

Page 5 OF 5

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT ^a

GERS-MCC.9 (AREA 7)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 7; 603', and 565'.

The effective grade for Area 7 is 562'.

Since $603' - 562' = 41'$, the ground spectra multiplied by (1.5×1.5) may be used to evaluate contactors/starters in Area 7 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} \leq 1.5g$ and bA_{33Hz} is $< 1.0g$, then contactors/starters in Area 7 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by W.K. Bell Date 4-22-94
Reviewed by _____ / Date _____

THIS PUMP IS NOT REQUIRED
TO START DURING PERIOD OF
STRONG SHAKING

6.4 #101

A-66 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATION

Page 1 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
P38-1, BE1185, HIS MUSOA	E-54/B SHT.	"OL"	(W) OVERLOAD RELAY CONTACT IN MCC EIID AT AUXLT 7, 227, EL. 565.	CA1
NOTE: P38-1 REFERS TO THE PUMP, MP0381 REFERS TO THE PUMP MTR.		L/O STOP	REES P.B WITH LOCKOUT #04062-032 IN NP0381 AT AUXLT 240, EL. 565	NV
"		START	SAME AS ABOVE	NV
"		CS (ALL) (HIS MUSOA)	MICRO SWITCH 3 POSITION TYPE CMC IN C5702 @ AUXLT 7 505, EL. 623	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS ____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by W.K. Bell, Date 12/7/94
Reviewed by _____ / Date _____

PMP NOT REQUIRED
DURING PERIOD OF
STRONG SHAKING

6.4 #101

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATION)

Page 2 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
P38-1, BE1185, HISMU50A	E-54B SHT. 1	42a, 42b	(W) L-56 ELECTRICAL INTERLOCK IN MCC EIID AT AUXLT 227, EL. 565	CAG-CHATTER WILL NOT LOCK- OUT PMP.
		42 (MAIN CONTACTS)	(W) CLASS A200 FUNR STARTER IN MCC EIID AT AUXLT 227, EL. 565	CAG- SAME AS ABOVE
		LSLL	UNITED ELECTRIC # J302-453 ON R2702 AT TURB4 251 EL. 565	CAG - WILL NOT LOCKOUT PUMP

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by D.K. [Signature] 12/7/94
Reviewed by _____ / Date _____

THIS PUMP IS NOT REQUIRED TO
START DURING THE PERIOD OF
EARTHQUAKE SHAKING.

6.4 #102

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATION

Page 10F2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
P38-2, BF1169 HIS MUL50B	E-54R SHT.	"OK"	(W) OVERLOAD RELAY CONTACTS IN MCC FIID AT AUXL7, 227 EL. 565	CA1
NOTE: P38-2 REFERS TO THE PUMP MP0382 REFERS TO PMP. MTR.	"	L/O STOP	REES P.B WITH LOCKOUT #04062-032 IN NP0382 AT AUXL7, 240, EL. 565	NV
"	"	START	SAME AS ABOVE	NV
"	"	CS (ALL) (HISMU50B)	MICRO SWITCH 3 POSITION TYPE CMC IN C5702 AT AUXL7, 505, EL. 623	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Schaff Date 10/7/94
Reviewed by _____ / Date _____

6.4 #102

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATIONPage 2 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
P38-2, BF1169, HISMUL50B	E-54B SHT. 1	42a, 42b	(W) L-56 ELECTRICAL INTERLOCK IN MCR FIID AT AUXL7, 227, EL.565	CAB-CHATTER WILL NOT LOCK-OUT THIS PUMP
		42 (MAIN CONTACTS)	(W) CLASS A200 FVNR STARTER IN MEE FIID AT AUXL7, 227, EL. 565.	CAB-SAME AS ABOVE
LSLL		UNITED ELECTRIC # J302-453 ON R2702 AT TURBH, 251, 565		CAB-WILL NOT LOCK OUT PUMP

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Blythe Date 12/7/94
 Reviewed by _____ / Date _____

THIS PUMP IS NOT REQUIRED
TO START DURING STRONG
SHAKING.

#103
G.4

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATION

Page 1 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BE1191, HIS MUL24A1 ALSO INCLUDES MP371B (SEE SSEL NOTE 8)	E-49B SHT. 4, 24	DS (ALL)	G.E. TYPE SB-9 CTRL SW IN CDE11D AT AUXLT 7, 227, E1.565	NV
		OL	(W) OVERLOAD RELAY CONTACTS IN MCC E11D AT AUXLT 7, 227, E1.565	CA1
		START/STOP	REES CHARING RETURN TO NORMAL # 03845-000 AT AUXLT 7, 226A, E1.565	NV

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS ____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by W.H. Gold Date 6-4-93
Reviewed by _____ Date _____

6.4 #103

A-46 RELAY SCREENING AND EVALUATION
 FORM G-4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System MAKE UP AND PURIFICATIONPage 2 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BE1191, HISMU24A1	E-49B SHT 4	CSA (HISMU24A1)	MICRO SWITCH 3 POSITION TYPE CMC IN Q5704 AT AUXL7, 505 EL. 623	NV
		CSB	SAME AS ABOVE	NV
		42b, 42a	(W) L-56 ELECTRICAL INTERLOCKS IN MCC EIID AT AUXL7, 227, EI. 565	CA-CHATTER ON THESE CONTACTS WILL NOT START OR LOCK-OUT PMP
		42xa, 42xb	(W) TYPE AR440A RELAY WITH ARLIA ATTACH. IN MCC EIID, AT AUXL7, 227 EI. 565	CA - SAME AS 42b, 42a

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by OK Sip 4-18-93
 Reviewed by _____ / Date

6.4 #103

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATION

Page 3 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BE1191, HISMU24A1	E-49B SHT. 4	42 (MAIN CONTACTS) #A201KICA # A201LIA	W CLASS A200 FVN R STARTER WITH MECH. LATCH KIT IN ARC EID AT AUXL7 227 EL. 565,	CA-CHATTER ON THESE CONTACTS WILL NOT LOCK-OUT PUMP.
"	RX-11-2		AGASTAT TYPE GP RELAY IN RC2825 AT AUXLB, 209, EL. 565	CA - CHATTER ON THESE CONTACTS WILL NOT START PUMP
"	RX-2		SAME AS ABOVE	SAME AS ABOVE

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by J. Koenig, Date 9-28-94
Reviewed by _____ / Date _____

THIS PUMP IS NOT REQUIRED
TO START DURING STRONG
SHAKING

6.4 #104

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAKE UP AND PURIFICATION

Page 1 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
D117, HIS MU24A2	E-49B SHT. 24, 25	"OL"	(W) OVERLOAD RELAY CONTACTS IN DC MCC 1 AT AUXL8, 429 EI. 603'	CAI
NOTE: THIS EVALUATION ALSO COVERS MP371C WHICH IS CONSIDERED PART OF THE MUP SKID. SEE SSEL NOTE B.		CS	MICRO SWITCH 3 POSITION TYPE CMC IN C5704 AT AUXLT, 505 EI. 623'	NV
	40-STOP- START		REES P.B. WITH LOCKOUT # 04062-032, IN NP371C AT AUXLT, 226A, EI. 565	NV
RX-11-1 (NOT CONTACT TO A COIL)			AGASTHT 6P/EEP RELAY IN RC2825 AT AUXL8, 209 EI. 565	CA-CHATTER ON THESE CONTACTS WILL NOT LOCK-OUT PUMP

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
DA - Operator action.
- No entry necessary.

Prepared by D.K. beth Date 4-18-94
Reviewed by / Date

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

6.4 #104

System MAKEUP AND PURIFICATION

Page 2 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
D117, HISMU24A2	E-49B SHT 24	RX-2	SAME AS ABOVE	SAME AS RX-11-1
"	"	PS	ALLEN-BRADLEY #836-C62A AT AUX17 225 EL. 565	SAME AS RX-11-1
"	52S1a	(W) MOC (BKR SWITCH) IN AC105 AT AUXL6, 325, EL. 585	NV	
ALSO SEE Dwg E-49B SHT. 25 FOR COIL.	42XC ₂ (IN BA)	(W) TYPE AR* RELAY IN MCC EID AT AUXL7, 221, EL. 565. *AR440A WITH ARLA LATCH	CA-CHATTER WILL NOT LOCKOUT PUMP	

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS ____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by W.K. Goss Date 10-14-94
 Reviewed by _____ / Date _____

6.4 # 104

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE NUNIT 1

System MAKEUP AND PURIFICATION

Page 3 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
D117, HISMU24A2	E-49B SHT.24	42xa, 42xb (FOR RED & GRN INDICATING LAMPS)	(W) TYPE BFD 22S IN DC MCC 1 AT AUXL6, 429 EI. 603	CA1
"	"	42a, 42b	(W) L-46 ELECTRICAL INTERLOCK IN DC MCC 1 AT AUXL6, 429 EI. 603	CA-CHATTER WILL NOT LOCK-OUT POINT
"	A		(W) TYPE AQZ 2120 TIMETACTOR STYLE 1292530 (CONTACTOR) IN DC MCC 1 A=6, 429, E=603	CA-SEE ABOVE

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GER - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.L. Clark Date 4-18-94
Reviewed by _____ / Date _____

6.4 #104

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATIONPage 4 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
D117, HISMU24A2	E-49B SHT. 24	42 (MAIN CONTACT)	(W) TYPE MD 110 CONTACTOR IN DC MCC 1 A=6, RM=429 EL=603	CA - CHATTER WILL NOT LOCK-OUT PUMP.

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- - No entry necessary.

Prepared by W.K. Lipp / Date 4-18-94
 Reviewed by _____ / Date _____

NOT REQUIRED TO OPERATE
DURING STRONG SHAKING.

G.4 FF 105

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATION

Page 1 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
---------------------	------------	-----------------------	-------------------------	------

BE1192, HISMU24A3 E-49B
SHT 25

BE1192-TRIP COIL CIRCUIT E-49B SHT 25 ALL VARIOUS CA - CHATTER IN TRIP CIRCUIT IS ACCEPTABLE AS PUMP WILL REMAIN AVAILABLE WHEN REQUIRED - AFTER PERIOD OF STRONG SHAKING.

DO NOT WANT THIS }
PUMP TO START }
DURING, STRONG }
SHAKING }

BE1192-CLOSING COIL CIRCUIT " DS G.E. TYPE S89 NV
CTRL IN CODE110.
A=7, RM=227,
EL=565

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by D.K. Bell, Date 9-27-94
Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATION

Page 2 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BE1192 - CLOSE COIL CKT	E-49B SHT 25	CS START	MICRO SW TYPE CMIC ON C5704, A=7, RM=505, EL= 623	NV
"		START	RESE P6 # 03845-000 IN NP371D. A=7, RM=226A EL= 565	NV
"	TDR		AGAST SERIES E7005 IN RC2825. A=8, RM=209, EL= 565	CAL - START OF THIS PUMP DURING STRONG SHAKING IS ACCEPTABLE.

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W) K. L. Lang Date 10-14-94
 Reviewed by _____ / Date _____

c.4 # 105

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE N. T-1

System MAKEDUP & PURIFICATIONPage 3 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BEL112 - CLOSE COIL CIRCUIT	E-49B SHT 25	42a, 42b	L-56 AUX SWITCH FOR <u>(W)</u> SERIES A200 STARTER IN MCC E11D. A=7, RM=807, EL= 565	CA - CHATTER ON THESE CONTACTS WILL NOT LOCKOUT PUMP. WILL NOT START OR STOP DUE TO UPSTREAM SCREENED CONTACT
"		42Xa	<u>(W)</u> TYPE BFD22S IN DC MCC 1. H=6, RM= 429 EL= 603	CA - STOPPING THIS PUMP DURING STRONG SHAKING IS ACCEPTABLE.
"		42	<u>(W)</u> SERIES A200 STARTER IN MCC E11D. A=7, RM= 807, EL= 565 STARTER HAS LATCH # A201K1A # A201L1A	CA - WILL NOT LOCKOUT PUMP

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____ ; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- - No entry necessary.

Prepared by E.K.G. 4 Date 10-14-94
Reviewed by _____ / Date _____

G.4 #105

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAKEUP & PURIFICATION

Page 4 of 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BE1192 - INDICATION CKT	E-49B SH. 25	42Xa, 42Xb	(W) AR440A WITH ARLA LATCH IN MCC E11D	CA1

OL

(W) OVERLOAD
RELAY CONTACTS
FOR SERIES A200
STARTER IN MCC
E11D

CA1

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Griff Date 1/11/95
Reviewed by _____ / Date _____

G-4 #106

A-46 RELAY SCREENING AND EVALUATION
FORM G-4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATIONPage 1 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
P37-1, AC105 HIS MUL24A				
AC105 - TRIP CIRCUIT	E-49B SHT 1B	ALL	VARIOUS	CA - THIS BKR IS OPEN AND SHALL REMAIN OPEN DURING PERIOD OF STRONG SHAKING. THEREFORE CONTACT CHATTER IN TRIP CIRCUIT IS ACCEPTABLE.
AC105 - CLOSE CIRCUIT	E-49B SHT 1B	DS	(W) TYPE W CONTROL SWITCH ON CI BUS, UNIT 5	NV
"		52H1	(W) TOE SWITCH IN CI BUS, UNIT 5	NV

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Laff Date 9-07-94
Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System MAKEUP & PURIFICATIONPage 2 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AC105-CLOSE CKT	E-493 SHT 1B	<u>CS</u> START	6.E TYPE SB9 CTRL SW ON C1 BUS, UNIT 3	NV
		<u>OS(HIS)</u> START	6.E TYPE SBM CTRL SW ON C5704, A=7, RM=505,	NV
		CLOSE	REESE Pb CHT # 20810-032 IN NP371A, A=7, RM=226A, EL=565	NV
RX-MLL			AGASTAT SERIES 7000 IN RC2825. A=8, RM= 209, EL= 565	CA4 (i.e. <u>CS</u> START, <u>CS(HIS)</u> and CLOSE)

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Liff Date 9-27-94
 Reviewed by _____ / Date _____

G-4 # 106

A-46 RELAY SCREENING AND EVALUATION
 FORM G-4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System MAKE UP AND PURIFICATIONPage 3 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AC105 - CLOSE CKT	E-49B SHT 1B	CLOSE	SEE BELOW	
71149-E-5-45	"	Y	(W) CONTROL RELAY FOR 5KV DHP BKR IN CI BUS, UNIT 5	CA4 (i.e 52H1 AND SAME AS RH-MX)
"	b		AUXILIARY SWITCH FOR (W) 5KV DHP BKR IN CI BUS UNIT 5	NV
"	LCSW		LATCH CHECK SW FOR (W) 5KV DHP BKR IN CI BUS UNIT 5.	NV
"	LS6, LSa		MOTOR CUTOFF SWITCH FOR (W) 5KV DHP BKR IN CI BUS, UNIT 5	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. 64 Date 9-27-94
 Reviewed by _____ / Date _____

(W) TYPE BDF22S

THIS PUMP SHALL REMAIN
OPERATING DURING
STRONG SHAKING.

6.4 #107

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATION

Page 10F5

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BF1167, HIS MUR24B1	E-49B SHT. 4A.	Q	(W) OVERLOAD RELAY IN MCC F11C AT AUXL7, 236 EI. 565	CA1
NOTE: F11C INCLUDES NP372B. SEE SSFL NOTE B.		START/STOP	REES Spring RETURN TO NORMAL # 03845-000 AT AUXL7, 225A, EI. 565	NV
CSA (HISMU24B1)			MICR3 SWITCH 3 POSITION, TYPE CMC IN C5704 AT AUXL7, 505, EI. 623.	NV
CSB			SHMIE AS ABOVE	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K.61D / Date 10-14-94
Reviewed by _____ / Date _____

6.6 #107

A-66 RELAY SCREENING AND EVALUATION
FORM 6.6 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MKKEUP AND PURIFICATIONPage 2 OF 5

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BF1167, HISMU24B1	E-49B SHT. 4A	42b, 42a	(W) L-56 ELECTRICAL INTERLOCK IN MCC FIIC AT. AUX17, 236, EL. 565	GERS-MCC. 9 (AREA 7) SEE Pg 4
		42Xa, 42Xb	(W) TYPE AR440A RELAY WITH ADLA ATTACH. IN MCC FIIC AT AUX17, 236, EL. 565	GERS-MCC. 9 (ARE'1) 2 GERS- 'RLY-AII. 4 SEE Pg 4
RX-11-2		AGASTAT TYPE GP RELAY IN RC2824 AT AUXL8, 209 EL. 565		GERS-PLY-ARS.4 (SEE Pg 5)

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by OK Date 5/23/95
Reviewed by _____ / Date _____

6.4 #107

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATIONPage 3 OF 5

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BF1167, HISMUL24B1	E-49BSHT. 4A	RX-2	SAME AS ABOVE	GERS-RLY-ARS.4 (SEE PG 5)

" 42 (MAIN CONTACTS) W CLASS A200 FVNR, STARTER WITH MECH. LATCH KIT IN MCC FIIC AT AUXL. 7 236 E1. 565

A201KICA
A201LIA

SEE 6.4 #108 FOR EVALUATION OF CONTACTS WHICH CONTROL RX-2 & RX-11-2

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.L. Smith Date 5/23/95
Reviewed by _____ / Date _____

C.E. #107

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATION

Page 4 OF 5

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

GERS-MCC.9 (AREA 7)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 7; 603', and 565'.

The effective grade for Area 7 is 562'.

Since $603' - 562' = 41'$, the ground spectra multiplied by (1.5x1.5) may be used to evaluate contactors/starters in Area 7 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} \leq 1.5g$ and $bA_{33Hz} \leq 1.0g$, then contactors/starters in Area 7 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Smith Date 2/27/94
Reviewed by _____ / Date _____

6.4 # 107

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAKEUP + PURIFICATION

Page 5 OF 5

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

LEVEL 2 SCREENING FOR RC2826

1. Natural frequency of RC2826 is less than 8Hz.
2. RC2826 has been given an amplification factor (AF) of 7.
3. RC2826 is located in plant area 8, elevation 564.
4. For this area and elevation the Peak Conservative Design Basis Floor Response Spectra (FRS) = .5016g with an associated ZPA = .177g.
5. GERS LEVEL for Agastat E7012AC = 12.5g and ZPA = 5.0g (ref. GERS-RLY-PNT.7).
6. GERS LEVEL for Agastat E7022AF = 6g (all states) and ZPA = 2.4 (ref. GERS-RLY-PNT.7).
7. GERS LEVEL for non-operate Agastat EGP = 3.3g peak and 1.3g at the ZPA (ref. GERS-RLY-ARS.4).

thus Peak Seismic Demand (SD);

$$\begin{aligned} SD &= FRS * AF \\ SD &= .5016g * 7 \\ SD &= 3.5g \end{aligned}$$

and ZPA Seismic Demand (SD);

$$\begin{aligned} SD &= ZPA * AF \\ SD &= .177g * 7 \\ SD &= 1.24g \end{aligned}$$

therefore, seismic capacity exceeds seismic demand.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by W.H. Hill, Date 5-23-95
Reviewed by _____ / Date _____

SCE
~~REVIEW~~ Review:

Jov. S. Jacob 8/18/95

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT 2615-PESSE UNIT 1

6.4 #108

System MAKEUP AND PURIFICATION

Page 1 OF 7

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
D217, HIS MU24B2	E-49B SHT. 24, 25	"OL"	(W) OVERLOAD RELAY CONTACTS IN DC MCC2 AT AUXL B, 428 EI. 603	CAL
"	"	CS	MICRO SWITCH 3 POSITION, TYPE CMC IN C5704 AT AUXL 7, 505 EI. 623	NV
L/O - STOP- START			REES P.B. WITH LOCKOUT, # 04062-032 IN NP372C AT AUXL 7, 225A EI. 565	NV

- Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. de Pree Date 10/19/94
 Reviewed by _____ / Date _____

6.4 #108

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATIONPage 2 OF 7

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
D217, HISMU24BR	E-49B SHT. 24	RX-11-1	AGASTAT GP/EGP RELAY IN TR22826 AT AUXL8, 209 EI. 565	GERS-RLY- ARS.4 (SEE Pg 7)
		RX-2	SAME AS ABOVE	GERS-RLY-ARS.4 (SEE Pg 7)
		PS	ALLEN-BRADLEY #836-C62A AT AUXL7, 225 EI. 565	GERS-PS.5 (SEE PAGE 6)
	429, 426	(W) L-46 ELECT INTERLOCK IN DR MCC2 AT AUXL, 428 EI. 603		GERS-MCC.9 (AREA 4) SEE Pg 5

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

DEIC: C. W. Blakely 4/19/95 for PS

Prepared by W.R. Blakely Date 5-23-95
Reviewed by _____ / Date _____

6.4 #108

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATIONPage 3 OF 7

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
D217, HISMU24B2.	E-49B SHT. 24	52S1a	(W) "MOC" SWITCH (AUX BKR POSITION SWITCH) IN D1 UNIT 5 AT AUX/G, 323, EL 585	NV
		42xa (IN BF1167)	(W) TYPE AR440A RELAY WITH ARLA ATTACHMENT IN MCC FLIC AT AUX/7 236, EL. 565	SEE 6.4 #107 FOR EVALUATION (GERS-MCC.9 AREA 7 and GERS-RLY-AII. 4)

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Gandy Date 10-14-94
Reviewed by _____ / Date _____

6.4 #108

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATIONPage 4 OF 7

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
DR17, HISMUL24B2	E-49B SHT. 24	42X2, 42X6	(W) TYPE BFD22S IN DC MCC 2, AT A1XLG, 428, 603	CAI
		A	(W) TYPE AQZ TIMETACTOR STYLE 1292530 (CONTACT GROUP) IN DC MCC 2 A=6 RM=428, EL 603	GERS-MCC.9 (AREA 6) SEE Pg 5
		42 (MAIN CONTACTS)	(W) TYPE MMF 10-25 CONTACTOR A=6, RM = 428 EL = 603 NO DC MCC 2	GERS-MCC.9 (AREA 6) SEE Pg 5

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Gandy Date 10-14-94
Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATION

Page 5 OF 7

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

GERS-MCC.9 (AREA 6)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 6; 603', and 585'.

The effective grade for Area 6 is 573'.

Since $603' - 573' = 30'$, the ground spectra multiplied by (1.5×1.5) may be used to evaluate contactors/starters in Area 6 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} < 1.5g$ and $bA_{33Hz} < 1.0g$, then contactors/starters in Area 6 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Smith Date 10-14-94
 Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G 4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

G 4 #108

System MAKEUP & PURIFICATION

Page 6 of 7

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT
<u>GEPS-PS.5</u>				
<u>AREA = AUXL7 ELEV = 565'</u>				
EQUIPMENT	MFG.	MODEL NO.	AMP.	>8HZ Setpoint/Nom.
PS2MU105A	ALLEN-BRADLEY	836-C62A	1.0	Y 5#/12#
PS3MU105A	ALLEN-BRADLEY	836-C62A	1.0	Y 3#/12#

Nominal based on System Description SD-48 Table 2.5-1-5

The effective grade for area 7 is 562'

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

Since $565' - 562' = 3' < 40'$, the ground spectra multiplied by (1.5×1.5) may be used to evaluate these pressure switches.

Natural frequency of the mounting is > 8 Hz (Ref. NED 95-10023)

The amplification factor for the mounting is 1.0. (Ref. NED 95-10023)
 (Note that the memo discusses switches PS2MU105B and PS3MU105B - that discussion is applicable to these switches.)

GERS-PS.5 = 3.0g/1.0g (EPRI NP-5223-SL)

Demand = $.39g/.15g \times 1.5 \times 1.5 \times 1.0 = 0.88g/0.34g < 3.0g/1.0g$

Therefore these devices may be screened at level 2 as being seismically adequate using GERS-PS.5

Prepared by John Blalock Date 8/24/95

Seismic Capability Engineer Jack G. Stroh Date 8/25/95

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS _____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by

Reviewed by

NIA

/ Date

/ Date

6.4 # 108

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAKEUP & PURIFICATION

Page 7 OF 7

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

LEVEL 2 SCREENING FOR RC2826

1. Natural frequency of RC2826 is less than 8Hz.
2. RC2826 has been given an amplification factor (AF) of 7.
3. RC2826 is located in plant area 8, elevation 564.
4. For this area and elevation the Peak Conservative Design Basis Floor Response Spectra (FRS) = .5016g with an associated ZPA = .177g.
5. GERS LEVEL for Agastat E7012AC = 12.5g and ZPA = 5.0g (ref. GERS-RLY-PNT.7).
6. GERS LEVEL for Agastat E7022AF = 6g (all states) and ZPA = 2.4 (ref. GERS-RLY-PNT.7).
7. GERS LEVEL for non-operate Agastat EGP = 3.3g peak and 1.3g at the ZPA (ref. GERS-RLY-ARS.4).

thus Peak Seismic Demand (SD);

$$SD = FRS * AF$$

$$SD = .5016g * 7$$

$$SD = 3.5g$$

and ZPA Seismic Demand (SD);

$$SD = ZPA * AF$$

$$SD = .177g * 7$$

$$SD = 1.24g$$

therefore, seismic capacity exceeds seismic demand.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Smith Date 5-23-95
Reviewed by _____ / Date _____

SCE REVIEW:

John G. Hord 8/18/95

A-45 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT BUS-BESSE UNIT 1

System MAKEUP AND PURIFICATION

Page 1 OF 8

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
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BF1168, HIS MU24B3	E-49B SHT. 25	OL	(W) OVERLOAD RELAY IN MCC F11C AT AUXL7 236, EI565	CA1
--------------------	------------------	----	--	-----

NOTE: THIS EVALUATION
 ALSO COVERS MP372D
 WHICH IS CONSIDERED
 PART OF MUP SKID.
 SEE ESEL NOTE 8.

START/ STOP	REES P.B # 03845-000 IN NP372D AT AUXL7, 226A, EI. 565	NV
----------------	--	----

CS (HISMU24B3)	MICRO SWITCH TYPE CMC IN C5704 AT AUXL7, 505 EI. 623	NV
-------------------	--	----

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- DA - Operator action.
- No entry necessary.

Prepared by W.K. Garg Date 10-14-94
 Reviewed by _____ / Date _____

6.4 # 109

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATIONPage 2 OF 8

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BF1168, HISMU24B3	E-49B SHT. 25A	4/2a ("IN BA")	(W) L-56 ELCT. INTERLOCK IN MCC FAC AT AUXLT, 236 EL. 565	SCREENED IN 6.4 107 GERS-MCC.9 (AREA 7)
"		42Xa (IN "D")	(W) TYPE BFD22S IN DC MCC 2, AT AUXLB, N28, EL. 603,	GERS-MCC.9 (AREA 6) + GERS- RLY - AII.4
TDR			AGASTAT SERIES E7022AF RC2826 AT AUXLB, 209 EL. 565	GERS- RLY - PNT. 7 (SEE P 8)

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by O.K. Giff, Date 5/23/95
Reviewed by _____ / Date _____

6.4 #109

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATIONPage 3 OF 8

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BF1168, HISMU24B3	E-49B SHT. 25A	52S1a	(W) MOC SW (BKR. SW) IN D1 UNIT 5 @ AUXL 7, 323 EI. 565	NV
"	RX-1	AGASTAT TYPE 6P IN RC2826 AT AUXL8 209 EI. 565	GERS-RLY- ARS.4 (SEE Pg 8)	
"	RX-3	SAME AS ABOVE	CA - RELAY SEMS IN FOLLOWING PSIG > 12. RESETS FOLLOWING LOSS OF POWER,*	
"	TDR2	AGASTAT SERIES E701ZAC IN RC2826 AT AUXL8, 209, EI. 565	GERS-RLY- PNT.7 (SEE Pg 8)	

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

* LUBE OIL PUMP
WILL CONTINUE TO
OPERATE IF
LOW LUBE OIL
PRESSURE IS
DETECTED

Prepared by M. K. Bill Date 5-23-95
Reviewed by _____ / Date _____

6.4 #109

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATIONPage 4 OF 8

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BF1168, HISNU24B3	E-49 B SHT. 25	426, 42a	(W) L-56 ELECTRICAL INTERLOCKS IN MCC FIIC AT AUXL7, 236 EI. 565	GERS-MCC.9 (AREA 7) SEE PG 6
"	"	42Xa, 42Xb	(W) AR RELAY AR440A WITH ARLA LATCH IN MCC FIIC	GERS-MCC.9 (AREA 7) & GERS-RLY - AIL.4
"	42 (MAIN CONTACTS) A201KICA		(W) FURN CLASS A200 STARTER IN MCC FIIC AT AUX17, 236 EI. 565. LATCH A201LIA	GERS-MCC.9 (AREA 7) SEE PG 6

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. Knobell Date 10-14-94
Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT I

6.4 #109

System MAKEUP AND PURIFICATION

Page 5 OF 8

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BF1168, HISMU24B3	E49B SHT 25	PS	PRESS. SW. UNITED ELECT. # 18-148 AT AXL 7, 225 EL. 565	SAT (sec pg 7)

" PS1 SAME AS ABOVE SAT
(sec pg 7)

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by John H. Miller / Date 4/22/65
 Reviewed by John H. Miller / Date 4/22/65

C-4 #109

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATION

Page 6 OF 8

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
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GERS-MCC.9 (AREA 7)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 7; 603', and 565'.

The effective grade for Area 7 is 562'.

Since $603' - 562' = 41'$, the ground spectra multiplied by (1.5×1.5) may be used to evaluate contactors/starters in Area 7 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} < 1.5g$ and $bA_{33Hz} < 1.0g$, then contactors/starters in Area 7 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by W. K. Sill Date 10-14-94
Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAKEUP & PURIFICATION

Page 7 of 8

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT
<u>AREA = AUXL7 ELEV = 565'</u>				

EQUIPMENT	MPG	MODEL NO.	AMP.	>8HZ	Setpoint/Nom.
PSMU102A	UNITED ELECTRIC	J6-148	1.0	Y	12#/>16#
PSMU102A1	UNITED ELECTRIC	J6-148	1.0	Y	5#/>16#

Nominal Pressure based on system minimum value observed during single lube-oil pump operation (Per Plant System Engineer).

The effective grade for area 7 is 562'

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

Since 565' - 562' = 3' < 40' , the ground spectra multiplied by (1.5 X 1.5) may be used to evaluate these pressure switches.

Natural frequency of each mounting is > 8 (Ref. NED 95-10034)

The amplification factor for each mounting is 1.0. (Ref. NED 95-10034)

Device Capacity = 11.2g/ 6.25g (Ref. NED 95-10034)

Demand = .39g/.15g X 1.5 X 1.5 X 1.0 = 0.88g/0.34g < 11.2g/ 6.25g

Therefore these devices may be screened at level 2 as being seismically adequate using relay specific capacity data.

In addition, per memo NED 95-10034, these devices are qualified to current standards and also screen at level 4.

Prepared by G.W.Burke Date 7/19/95

Seismic Capability Engineer J.W.Burke Date 7-18-95

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS ____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by

Reviewed by

N/A

/ Date

/ Date

C-47 PG

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MKUP & AERIFICATION

Page 8 OF 8

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

LEVEL 2 SCREENING FOR RC2826

1. Natural frequency of RC2826 is less than 8Hz.
2. RC2826 has been given an amplification factor (AF) of 7.
3. RC2826 is located in plant area 8, elevation 564.
4. For this area and elevation the Peak Conservative Design Basis Floor Response Spectra (FRS) = .5016g with an associated ZPA = .177g.
5. GERS LEVEL for Agastat E7012AC = 12.5g and ZPA = 5.0g (ref. GERS-RLY-PNT.7).
6. GERS LEVEL for Agastat E7022AF = 6g (all states) and ZPA = 2.4 (ref. GERS-RLY-PNT.7).
7. GERS LEVEL for non-operate Agastat EGP = 3.3g peak and 1.3g at the ZPA (ref. GERS-RLY-ARS.4).

thus Peak Seismic Demand (SD);

$$\begin{aligned} SD &= FRS * AF \\ SD &= .5016g * 7 \\ SD &= 3.5g \end{aligned}$$

and ZPA Seismic Demand (SD);

$$\begin{aligned} SD &= ZPA * AF \\ SD &= .177g * 7 \\ SD &= 1.24g \end{aligned}$$

therefore, seismic capacity exceeds seismic demand.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by W. K. Hill Date 5/23/95
Reviewed by _____ / Date _____

SCE REVIEW: John B. Hock 8/18/95

D1 BUS: AREA = G
RM = 323
EL = 585

c.e # 110

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATION

Page 1 OF 9

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
P37-2, AD105, HISMUZ4B	E-49B SH1B	AD105-CLOSE CKT CONTACTS (ALL)	VARIOUS	CH - THIS BKR IS CLOSED AND SHALL REMAIN CLOSED DURING PERIOD OF STRONG SHAKING. THEREFORE CHATTER IS ACCEPTABLE FOR CLOSE CKT. CONTACTS
AD105 - TRIP CKT CONTACTS	E-49B SH1B (ALL)	DS (ALL)	(W) TYPE W CTRL SW ON D1 BUS, UNIT 5	NV
		CS(HIS) STOP	G.E. TYPE SEM CTRL SW ON C5704. A- 7, RM=505, EL=623	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by O.K. Sulli Date 10-4-94
Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

G.4 #110

System MAKEUP & SPECIFICATION

Page 2 OF 9

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AS105 - CLOSE CKT	E-49B SHT. 1B	CS STOP	GE TYPE S89 CTRL. SW ON DI BUS, UNIT 5	NV
		748	GE TYPE HGA IN DI BUS, UNIT 5	CA1 - PRO LAMP MONITORS TRIP COIL & PROTECTIVE RECALL VOLTAGE.
	33 60		LIMITORQUE LIMIT SW. IN MV3971, A=7, Rm=225, El= 565	NV
		44W	GE TYPE HGA IN DI BUS UNIT 5	CA1 - OVERLOAD INDICATION TO CONTROL RM.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by D. K. Lill, Date 10-4-94
 Reviewed by _____ / Date _____

6.4 # 110

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATIONPage 3 of 9

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AD105 - TRIP CKT	E-49B SHT 1B	PS	AVEN BRADLEY #836-C62A (PS3MUL105A) A=7 Rm=225 EL=565	GERS-PS.5 (see page 7)
"	RXMUL		AGASTAT SERIES E7012 IN RC2826 A=8 RAI= 209 EL = 565	GERS-PLY-PNT. 7 (SEE Pg 9)
"	94		AGASTAT EGP SERIES IN OR BUS, UNIT 5.	CA - CHATTER OF THESE CONTACTS WILL NOT TRIP AD105

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

DEIC! L. W. Blodoo for PS, 4/19/95

Prepared by L. K. Baileg Date 4-28-95
Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
FORM G-4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

6.5 # 110

System MAKEUP of Purification

Page 4 OF 9

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AD105 - TRIP CKT	E-49B SHT 1B	94-1 DI (N.O. CONTACT)	G.E. TYPE HF451A42H IN DI BUS UNIT 3	GER5-RLY-ARH.5 (SEE PT 8)

NOTE: TRIPPING RELAY 94-1/01 IS CONTROLLED BY
LOCKOUT RELAY 86-1/01 (SEE DWS E-346
SHT. 13). LOCK OUT RELAY 86-1/01 IS
EVACUATED IN G.H # 291

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
 NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
 GERS - Seismically adequate based on GERS ____; include GERS number.
 NA - Component not affected by relays.
 CR - Corrective action required.
 OA - Operator action.
 - No entry necessary.

Prepared by John B. S. Date 4-28-45
Reviewed by _____ Date _____

G.R #110

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAKE UP AND PURIFICATIONPage 5 OF 9

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AD105 - TRIP CKT	E-49B SHT 1B	1X D1	AGASTAT MOD, E7022PB IN D1 BUS, UNIT 12	CA - THIS BKR IS NOT TO TRIP DURING STRONG SHAKING - SEE SHT FOR CLK / D1 CHATTER OF N.C. CONTACTS ACCEPTABLE.
"		CLK D1	AGASTAT MOD # E7022PA IN D1 BUS UNIT 12	GERS-RLY-PNT. 7 (SEE PG 8)

NOTE: THE COIL OF CLK/D1 IS SUPPLIED BY ESSENTIAL
RELAYS 1Y/D1, KA, KB, BA & BB (SEE DWG E-52B SHT.
GD). THESE ESSENTIAL RELAYS ARE EVALUATED
IN G.4 # 296.

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Baillif Date 4-28-95
Reviewed by _____ / Date _____

c.4 #110

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAKEUP & PURIFICATIONPage 6 OF 9

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AD105 - TRIP CKT	E-49B SHT. 1B	50GS	(W) TYPE ITH STYLE # 1955594A IN D1 BUS, UNITS	BA- CR
"		50/51 (DA & PC)	(W) TYPE COM-5 289B355A23 IN DI BUS, UNITS	GERS-MVS/LVS.7
		TRIP		
E-5-51 + VIAHN E-5-168		a	(W) AUXILIARY SWITCH FOR 500 OHM RKE IN DI BUS, UNIT 5	NV
E-49B SHT 1B		526	SAME AS a	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.Kuehne Date 4-27-95
Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
FORM G 4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAKEUP & PURIFICATION

Page 7 of 9

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT
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GERS-PS.5
AREA = AUXL7 ELEV = 565'

<u>EQUIPMENT</u>	<u>MFG.</u>	<u>MODEL NO.</u>	<u>AMP.</u>	<u>>8HZ</u>	<u>Setpoint/Nom.</u>
PS2MU105A	ALLEN-BRADLEY	836-C62A	1.0	Y	5#/12#
PS3MU105A	ALLEN-BRADLEY	836-C62A	1.0	Y	3#/12#

Nominal based on System Description SD-48 Table 2.5-1-5

The effective grade for area 7 is 562'

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

Since 565' - 562' = 3' < 40' , the ground spectra multiplied by (1.5 X 1.5) may be used to evaluate these pressure switches.

Natural frequency of the mounting is > 8 Hz (Ref. NED 95-10023)

The amplification factor for the mounting is 1.0. (Ref. NED 95-10023)

(Note that the memo discusses switches PS2MU105B and PS3MU105B - that discussion is applicable to these switches.)

GERS-PS.5 = 3.0g/1.0g (EPRI NP-5223-SL)

Demand = .39g/.15g X 1.5 X 1.5 X 1.0 = 0.88g/0.34g < 3.0g/1.0g

Therefore these devices may be screened at level 2 as being seismically adequate using GERS-PS.5

Prepared by Gen Blk Date 8/24/95

Seismic Capability Engineer John G. Stark Date 8/25/95

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by _____	/ Date _____
Reviewed by _____	/ Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATION

Page 8 OF 9

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
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LEVEL 2 SCREENING FOR C1 AND D1 SWITCHGEAR

Level 2 screening is being applied to the following essential relay types, which are located in the Westinghouse medium voltage switchgears C1 and D1: Agastat model 7022, General Electric models HFA51A, HGA17C (see attached sheet for comparison between General Electric models HGA17A and HGA17C).

Level 2 screening requires that the seismic capacity of the relay exceed it's seismic demand. Both C1 and D1 are located in Plant Area 6, elevation 585', which is less than about 40' above effective grade (Area 6 effective grade = 573'). The median-centered floor response for Peak and ZPA for this area and elevation are .6038g and .242g respectively. Per NED 95-10027 (~~copy attached~~) an amplification factor of 5.5 has been assigned to the C1 and D1 switchgears. The natural frequency of the C1 and D1 switchgears is less than 8Hz, therefore, seismic demand (SD) is calculated: SD = medium centered floor response X safety factor X amplification factor. Peak seismic demand:

$$\begin{aligned} \text{SD} &= .6038g \times 1.5 \times 5.5 \\ \text{SD} &= 4.98g \end{aligned}$$

ZPA seismic demand:

$$\begin{aligned} \text{SD} &= .242g \times 1.5 \times 5.5 \\ \text{SD} &= 1.99g \end{aligned}$$

Relay capacities from GERS-RLY-ARH.5 and GERS-RLY-PNT.7

	HGA17A	HFA51A	7022
Peak	6	6	6
ZPA	2.4	2.4	2.4

therefore, seismic capacity exceeds seismic demand.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NY - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Sill Date 4-28-95
 Reviewed by _____ / Date _____

SCE Review: Jon G. Heek 8/18/95

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAKEUP & PURIFICATION

Page 9 OF 9

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT
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LEVEL 2 SCREENING FOR RC2826

1. Natural frequency of RC2826 is less than 8Hz.
2. RC2826 has been given an amplification factor (AF) of 7.
3. RC2826 is located in plant area 8, elevation 564.
4. For this area and elevation the Peak Conservative Design Basis Floor Response Spectra (FRS) = .5016g with an associated ZPA = .177g.
5. GERS LEVEL for Agastat E7012AC = 12.5g and ZPA = 5.0g (ref. GERS-RLY-PNT.7).
6. GERS LEVEL for Agastat E7022AF = 6g (all states) and ZPA = 2.4 (ref. GERS-RLY-PNT.7).
7. GERS LEVEL for non-operate Agastat EGP = 3.3g peak and 1.3g at the ZPA (ref. GERS-RLY-ARS.4).

thus Peak Seismic Demand (SD);

$$SD = FRS * AF$$

$$SD = .5016g * 7$$

$$SD = 3.5g$$

and ZPA Seismic Demand (SD);

$$SD = ZPA * AF$$

$$SD = .177g * 7$$

$$SD = 1.24g$$

therefore, seismic capacity exceeds seismic demand.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- 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.
- No entry necessary.

Prepared by W.K. Knobell Date 5/23/95
Reviewed by _____ / Date _____

See Review: Jon G. Hard 8/18/95

NOT OPERATED DURING PERIOD
OF STRONG SHAKING, ∴ VALUE
TO REMAIN CLOSED.

6.4 #111

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATION

Page 1 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MU-6421, BE1194 HIS 6421	E-49B SHT. 67A, 67B	DS	G.E. TYPE SB-9 DISC SWITCH ON CDE11D AT AREA = 7 RM = 227 EL = 565	NV
		33/bo, 33/bn%, 33/ao, 33/an%, 33/ac, 33/bc	LIMIT TORQUE LIMIT SW IN MV64210 AT AREA = 8 RM = 208 EL = 565	NV
		33/to, 33/tc	LIMIT TORQUE TORQUE SW IN MV64210 AT AREA = 8 RM = 208 EL = 565	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- DA - Operator action.
- No entry necessary.

Prepared by D. K. Smith Date 12/6/94
Reviewed by _____ Date _____

6.4 # 111

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATION

Page 2 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT [*]
MUL-6421, BE1194, HIS 6421	E49B SHTS. 67A, 67B	"OL"	(W) OVERLOAD RELAY CONTACTS IN MUL EIID AREA = 7 RM = 227 EL = 565	CA (CONTACTS NOT CONNECTED TO STARTER)
"STOP"			PEES PB #01461-202 IN NV64210 AREA = 8 RM = 208 EL = 565	NV
"OPEN/ CLOSE"			PEES RCKER #03845-000 IN NV64210 AREA = 8 RM = 208 EL = 565	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. biff 12/6/94
Reviewed by _____ / Date

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

G.4 # 111

System MAKEUP AND PURIFICATION

Page 3 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MU-6421, BE1194, HIS 6421	E-49B SHT. 67A, 67B	CS/CLOSE, CS/OPEN (HIS6421)	CUTLER HAMMER PB. TYPE E30B ON C5703 AREA = 7 RM. = 505 EL. = 623	NV
		42a/b, 42a/c 42b/c, 42b/o (MAIN CONTACTS)	(N) L54 AUX CONTACTS IN MCC EIID AREA = 7 RM = 227 EL = 565	GERS-MCC.9 (AREA 7) SEE Pg 4
		42/b, 42/c (MAIN CONTACTS)	(W) SIZE 1 SERIES A/200 STARTER IN MCC EIID A = 7 R = 227 EL = 565	GERS-MCC.9 (AREA 7) SEE Pg 4

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- 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.
- No entry necessary.

Prepared by W.K. Smith Date 10/6/94
 Reviewed by _____ / Date _____

C.4 #111

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAKE UP AND PURIFICATION

Page 4 of 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

GERS-MCC.9 (AREA 7)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 7; 603', and 565'.

The effective grade for Area 7 is 562'.

Since $603' - 562' = 41'$, the ground spectra multiplied by (1.5×1.5) may be used to evaluate contactors/starters in Area 7 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} \leq 1.5g$ and $bA_{33Hz} \leq 1.0g$, then contactors/starters in Area 7 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by W. K. Schaff Date 10/4/94
Reviewed by _____ / Date _____

6.4 #112

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System ESSENTIAL HVAC
BATT. AND SWGR. RMS.

Page 1 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
HV-5597 , BE120B NV-55970	E-60B SHT. 32	OPEN/AUTO P.B.	REES P.B. CAT NO. 03202-032 AREM=6 RM=429 EL=603	NV
TS5597		ZS	POSITION SW FOR ITT AMERICAN NH95A2673N7 ACTUATOR AREM=6 RM= 429 EL = 603	NV
NOTE: HV-5597 REFERS TO DAMPER, MV5597 REFERS TO ACTUATOR.				
NVX/55970		(W)SIZE 1 STARTER # A201KICA (A200 SERIES)	CA 6	
		IN MCC E12F		
		AREA = 6 RM = 318 EL - 585		

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by D.K. Saff Date 10-16-94
 Reviewed by _____ / Date _____

6.4 #112

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System ESSENTIAL HVAC
BATT. AND SWGR RMS.

Page 2 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
HV-5597, BE1208	E-60B	TS	ASCO ELEC	CAB
NV-5597, TS5597	SH. 32	(TS5597)	PROD. CO. #SC11BR/ QF11A4DR	
		42 (MAIN CONTACTS)	(W) A200 SERIES SIZE 1 STARTER IN MCC E12A AREA = 6 RM1 = 429 EL = 603	CA-CHATTER ON THIS STARTER WILL NOT LOCK OUT THIS DAMPER.
		42b, 42a (ALL)	(W) L-56 AUX CONTACTS IN MCC E12A AREA = 6 RM1 = 429 EL = 603	CAB
		OL	(W) OVERLOAD RELAY CONTACTS IN MCC E12A	CAB

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include RS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Leif Date 10-16-94
Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

6.4 #113

System ESSENTIAL HVAC
BATT. AND SWGR. RM13

Page 1 OF 2

Relay
 Type and
 Location

SAT*

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group		
HV 5598, BF1210 NV-55980 TS5598	E-60B SHT. 32	OPEN/AUTO	REES P.B. CAT. NO 03202-032 AREA 6 RM 428 EL 603	NV
NOTE: HV5598 REFERS TO DAMPER, MV5598 REVERS TO ACTUATOR	ZS		POSITION SW FOR ITT AMERICAN #NH9564673N192 AREA 6 RM 428 ELEV 603	NV

NVX
55980

(W) SIZE 1 SHUTTER
 #A201KICA
 (A200 SERIES)
 IN MEC F12A
 AREA 6
 RM 428
 ELEV 603

CA6

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- DA - Operator action.
- No entry necessary.

Prepared by W.H. Smith Date 10-18-93
 Reviewed by _____ / Date _____

6.4 #113

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System ESSENTIAL HVAC BAH
AND SWGR ROOMS

Page 2 OF 2

Relay
Type and
Location

SAT*

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
HV5598, BF1210, NV55780, TB5598	E-60B SHT. 32	TS (TS5598)	ASCO ELECT CO. MODEL SC11BR/GFI1A4DR AREA 4 RM 428 EL 603	CA4
		42 (MAIN CONTACTS)	(W) A200 SERIES SIZE 1 STARTER IN MCC F12A AREA = 4 RM = 428 EL = 603	CA - CHATTER ON THIS STARTER. WILL NOT LOCK OUT THIS DAMPER
		422/426	(W) L-56 AUX. STARTER CONTACTS IN MCC F12A AREA = 4 RM = 428 EL = 603	CA8
	OL		(W) OVERLOAD RELAY CONTACTS IN MCC F12A AREA = 4 RM = 428 EL = 603	CA8

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Baile Date 10-16-94
Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System ESSENTIAL HVAC
SW PAIP. RM.

Page 1 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
C99-1, BE1212 HS4688, TS4688	E-60B SHT 50	OK	(W) OVERLOAD RELAY CONTACTS IN MCC E12C AREA = INTAKE RM = 51 ELEV = 576	CA8
		"ON", "OFF" "AUTO" (HS4688)	MICRO SW TYPE CMC # 910BHA014 IN NC9901. AREA = INTAKE RM = 53, EL = 576	NV
	TS (TS4688)		STATIC-O-RING 201TH-BB125- JTTXG H = INTAKE RM = 53 EL = 585	CA6

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Lef Date 10-16-94
 Reviewed by _____ Date _____

6.4 #114

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System ESSENTIAL HVAC
SW PAIP. RM

Page 2 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
299-1, BE1212, HS4688, TS4688	E-60B SH. 50	42b, 42a	(W) L-54 AUX CONTACTS FOR SIZE 1 STARTER IN MCC E12C RM 51, AREA INTAKE, EL 574,	CA-WHIL NOT CAUSE FAN TO CHANGE STATE.
		42 (MAIN CONTACTS)	(W) SIZE 1 STARTER* (A200) WITH LATCH AZ101IA → MECHANISM ATTACHMENT IN MCC E12C (SEE ABOVE)	CA-CHATTER ON THIS STARTER WILL NOT LOCK- OUT THIS FAN
	E-60B SH.50	42YC	POWER & BRUMFIELD MDR LATCHING RELAY IN MCC E12C (SEE ABOVE)	CAI

* AZ10K1Z

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by L/K Date 4/18/94
Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System ESSENTIAL HVAC
SW PMP. RM.

Page 1 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
C99-3, BF1211, HS 4689, TS4689	E-60B SHT. 50, 50A	OL	(W) OVERLOAD RELAY CONTACTS IN MCC FLD. AREA INTAKE RM53 EL576	CA8
		"ON", "OFF" "AUTO" (HS4689)	MICRO SW TYPE CMC # 91084A014 IN NC9903, A=5 INTAKE, RM=53 EL= 566	NV
		TS (TS4689)	STATIC-O-RINGS # 201TA-BB125- JTTTX-6, A=5 INTAKE, RM53 EL 566	CA6

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Loyal Date 10-16-94
 Reviewed by _____ / Date _____

6.4 #115

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System ESSENTIAL HVAC
SW PMP RM

Page 2 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
C99-3, BF1211, HS4689 TS4689	E-60B SHT. 50	426, 42a	(W) L56 AUX CONTACTS FOR STARTER IN MCC F12D *	CA - THESE CONTACTS WILL NOT CAUSE FAN TO CHANGE STATE.
MCC F12D		42 (MAIN CONTACTS)	(N) SERIES A200 SIZE 1 STARTER IN MCC F12D * WITH A2011IA LATCH.	CA - CHATTER ON THIS STARTER WILL NOT LOCK-OUT THIS FAN.
ARCA = INTAKE RM = 52 EL. = 576	E60B-SHT50	42XC	POTTER & BRUMFIELD TYPE MOR LATCHING RELAY IN MCC F12D *	CA1

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. L. Siv Date 4-18-94
Reviewed by _____ / Date _____

6.4 #116

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System ESSENTIAL HVAC
BATT. AND SWGR. RMS.

Page 1 OF 2

Relay
Type and
Location

SAT*

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group		
C71-1, BE1217, HIS NC711, TS5318	E-60B SHT. 4B	OL	(W) OVERLOAD RELAY CONTACT IN MCC E12A AREA = 6 RM = 429 EL = 603	CAB
NOTE: C71-1 REFERS TO THE FAN, NC711 REFERS TO FAN1 MTR.	"	TS/A, TS/B (TS5318)	BARKSDALE CTRLS # TR4-MI553- 25A. A=6 RM= 429 EL= 603	CA6
"	STOP, START (HIS NC711)		REES P.B # 03845-000 A=6 RM= 429 EL = 603	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- DA - Operator action.
- No entry necessary.

Prepared by W.K. Guly Date 10-16-94
Reviewed by _____ / Date _____

6.4 # 116

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System ESSENTIAL HVAC
BATT. AND SWGR. RMS

Page 2 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
C7H-1, BE1217, TS5318 HIS NC 711	E60B SA4B	426, 42a	(W) 1-56 AUX CONTACTS FOR STARTER IN MCC E12A	CA - THE CONTACTS WILL NOT CAUSE FAN TO CHANGE STATE.
"	42 (MAIN Contacts)		* A=6 RM=429 EL=603	CA - CHATTER ON THIS STARTER WILL NOT LOCIL- OUT THIS FAN.
	42XA 42XB		(W) AR440A RELAY WITH ARLA LATCH IN MCC E12A *(SEE ABOVE)	CA1, 42xa contacts TO 42x1 ALSO CA SEE 643 HO+1A1.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. 603 Date 4-18-94
Reviewed by _____ / Date _____

6.4 #117

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System ESSENTIAL HVAC
BATT. AND SWGR. RMS.

Page 1 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
---------------------	------------	-----------------------	-------------------------	------

C133, BF1204, TS5315, HIS NC133	E60B SHT. 4B, 4C, 26	OL	(W) OVERLOAD RELAY CONTACTS IN MCC F12A AREA = 4 RM = 428 EL = 603	CA8
------------------------------------	-------------------------	----	---	-----

NOTE: C133 REFERS TO
 THE FAN, MC0183
 REFERS TO MTR

"	"START" "STOP" (HISNC113)	REES P.B. #03845-000 AREA = 4 RM = 428 EL = 603	NV
---	---------------------------------	---	----

"	TS/A, TS/B (TS5315)	BARKSDALE CTRCS #T2H-M1553-254 A = 6 RM = 428 EL = 602	CA4
---	---------------------------	--	-----

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by D. K. Conner Date 10-16-94
 Reviewed by _____ / Date _____

6.4 # 117

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System ESSENTIAL HVAC
BATT. AND SWGR. RMS.

Page 2 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
C113, BFM204, TS5315, HIS NC133	E60B SHT 4B	42 (MAIN CONTACTS)	(W) SERIES A200 SIZE 1 STARTER* A=6 RM=428 EL=603 (MCC F12A)	CA - CHATTER ON THIS STARTER WILL NOT LOCK OUT THIS FAN.
		42XA 42XB	(W) AR440A WITH ARUA LATCH IN MCC F12A A=6, RM=428 EL=603	CA1
		42b, 42a	(W) L-56 TUX CONTACTS FOR A200 SERIES STARTER IN MCC F12A, A=6, RM= 428, EL=603	CA - CHATTER OF THESE CONTACTS WILL NOT CAUSE FAN TO CHANGE STATE.

* STARTER = A201K1A
LATCH = A201L1A

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Schmid Date 4/18-94
Reviewed by _____ / Date _____

6.4 #118

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System ESSENTIAL HVAC
SW PMP. RM.

Page 1 OF 3

Relay
 Type and
 Location

SAT*

Subsystem/Component Ref Dwg(s) Contact/Contact Group

C99-2, BE1205 HS-4698	E-60B SHT 50A	"ON", "OFF", "AUTO" (HS4698)	MICRO SW TYPE CMC #910BHA014 IN NC9901 AREA = INTK RM = 53 EL = 566	NV
--------------------------	------------------	------------------------------------	---	----

NOTE C99-2 REFERS TO
 THE FAN, NC9902
 REFERS TO FAN
 MOTOR.

"OL"	(W) OVERLOAD RELAY IN MCC E12C AREA = INTAKE RM = 51 EL = 576	CAB
------	--	-----

42a, 42b	(W) L-54 AUX CONTACTS IN MCC E12C AREA = INTAKE RM = 51 EL = 576	CAB
----------	---	-----

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Wilh Date 4-18-94
 Reviewed by _____ / Date _____

6.4 #118

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System ESSENTIAL HVAC
SW PUMP RM

Page 2 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
C99-2, BE1205 HS 4698	E-60B SHT 50A	42 (MAIN CONTACTS) # A210K1Z # A201L1A	(N) SERIES A200 STARTER WITH LATCHING MECHANISM IN E12C AREA = INTAKE RM = 51 EL = 576	CA6
	E-60B SHT 50A FOR 92-0376-701	42XC	POTTER & BRUMFIELD TYPE MDR LATCHING RELAY IN MCC E12C (SEE ABOVE)	CA 1
	"	"	POTTER & BRUMFIELD TYPE MDR LATCHING RELAY IN MCC E12C (SEE ABOVE)	CA6 - CONTROLLED BY TEMP SWITCH TS4688 SEE 6.4 114.

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by D.K. bdp Date 4-18-94
Reviewed by _____ / Date _____

6.4 #118

A-45 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT I

System ESSENTIAL HVAC
SW PMP Rm

Page 3 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
C99-2, BE1205, HS-4698	E60B SHT 50	TS	STATIC-O-RING 201TA-2B125- JTTXG A = INTAKE, RM = 53, EL=585	CA6

THIS TEMPERATURE
SWITCH CAN CHANGE
STATE OF 42XC
CONTACTS. THIS
IS WAS ALSO EVALUATED
IN G.4 #. 114

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- - No entry necessary.

Prepared by W.K. Baile Date 10-16-94
Reviewed by _____ / Date _____

6.4 # 119

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System ESSENTIAL HVAC
SW PMP RM.

Page 1 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
C99-4, BF1234 HS 4699	E-60B SHT 50A	"ON"- "OFF"- 'AUTO" (HS 4699)	MICRO SW TYPE CMC #910BHA014 IN NC9903 A= INTAKE RM= 52 EL= 57 P	NV
NOTE C99-4 REFERS TO THE FAN, MC9904 REFERS TO THE FAN MOTOR	"	OL	① OVERLOAD RELAY IN MCC F12D A= INTAKE RM= 51 EL= 57 G	CA8
, *	42XC	POTTER & BRUMFIELD TYPE MDR LATCHING RELAY IN MCC F12D (SAME AS ABOVE)		CA1

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Smith Date 10/25/93
 Reviewed by _____ / Date _____

* ALSO SEE FPR 92-0376-701

6.4 #119

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System ESSENTIAL HVAC
SW PMP RM.

Page 2 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
C99-4, BF1234 HS 4679	E-60B SHT 50A FPR 92- 0376-701	42XC	POTTER & BRUMFIELD TYPE MOR LATCHING RELAY IN MCC F12D A = INTAKE RM = 51 EL = 576	CA/6 - COIL CONTROLLED BY TEMP. SW EVALUATED ON 6.4 115
		42a, 42b	(W) L-56 AUX SW FOR A200 STARTER IN MCC F12D (SAME AS ABOVE)	CA - CHATTER ON THESE CONTACTS WILL NOT STOP OR START FAN. WILL NOT LOCK-OUT FAU.
		42 (MAIN CONTACTS)	(W) SERIES A200 STARTER IN MCC F12D (SAME AS ABOVE)	CA - CHATTER ON THESE STARTER CONTACTS WILL NOT LOCK-OUT FAU.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS ____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by W. Ken Bif Date 4-18-94
Reviewed by _____ / Date _____

6.4 #119

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System ESSENTIAL HWC
SW AMP RM

Page 3 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
299-4, BF1234, HS4099	E-60B SH 50	TS	STATIC-O-RN4, #201TA-BB125- JTTTX-6. A= INTAKE, RM=53 EL=566.	CA6

TEMPERATURE
 SWITCH CONTACTS WHICH
 CAN CAUSE 42XC CONTACTS
 TO CHANGE STATE.
 THIS SWITCH WAS EVAL.
 IN 6.4 # 115.

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Griff Date 10-10-94
 Reviewed by _____ / Date _____

THIS VALVE MUST BE CAPABLE
OF OPENING IF REQUIRED DURING
STRONG SHAKING.

6.4 #120

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System SERVICE WATER

Page 1 OF 10

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
SW-1382, BE1218 HIS 1382, HIS 1382B	E-44B SHT 6B, 6A	DS (ALL)	G.E. SB-9 CTRL SW IN CDE12A-1	NV
"	"	OL	(W) OVERLOAD RELAY IN MCC E12A, A=6 RM = 429 EL = 603	CA8
NOTE: SW1382 refers to the VALVE, MV13820 refers TO VALVE MOTOR.	SH 18	33/33/ 60, 6C 33/33/ 60, 6C	LIMIT TORQUE LIMIT SWITCHES IN MV13820 A = 7 RM = 237 EL = 565	NV
	E-44B SHT 6A & 6B	33/33/ 60, 6C	LIMIT TORQUE TORQUE SWITCHES IN MV13820 A = 7 RM = 237 EL 565	NV

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- | | |
|------|---|
| CA | - Chatter acceptable. |
| NV | - Not vulnerable (mechanically-actuated contacts and solid state relays). |
| GERS | - Seismically adequate based on GERS ____; include GERS number. |
| NA | - Component not affected by relays. |
| CR | - Corrective action required. |
| OA | - Operator action. |
| | - No entry necessary. |

Prepared by J.L. Koenig Date 12/8/94
Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System SERVICE WATER

Page 2 OF 10

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
SW1382, BE1218 HIS1382, HIS1382B	E44B SHTS. 6A + 6B	"STOP"	REES PB #04161-001 002 IN NV1382 A = 7 RM = 237 EL = 565	NV
"	"OPEN", "CLOSE"		REES SPRING RETURN TO NORMAL # 03845.000 (SEE ABOVE)	NV
"	SSX-2		COUCH (DEUTSCH) TYPE 4AP IN CDE12A-1 A = 6, RM 429 EL = 603	CA1 AND CA4 (i.e. CS & CSA)
"	SSX-1	(SEE ABOVE)		LEVEL 2 - USING RELAY SPECIFIC TEST DATA (SEE PG) 7)

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Smith / Date 12/8/94
 Reviewed by _____ / Date _____

6.4 #120

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System SERVICE WATERPage 3 OF 10

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
SW1382, BE1218, HIS1382, HIS1382B	E-44B SHT. 6A & 6B	CS/ OPEN, CS/ CLOSE (HIS1382)	CUTLER HAMMER TYPE E30B PB, ON C5704 A=7 RM=505 EL=623	NV
		CSA/ OPEN, CSA/ CLOSE	SEE ABOVE ON C3630 A=6 RM=324 EL=585	NV
	E-44B SHT. 6B	SS/LOCAL, SS/ REMOTE (HIS1382B)	G.E. TYPE SBM SELECTOR SW ON C3630 A=6 RM=324 EL=585	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Lohia Date 12/8/94
 Reviewed by _____ / Date _____

6.4 #120

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System SERVICE WATER

Page 4 OF 10

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
SW1382, BE1218 HIS1382, HIS1382B	E-44B SHT. 6A+6B	<u>PSL4928Y</u> <u>TDDO</u>	AGASTAT MODEL NO. E7024AC IN CDEIID A = 7 RM = 227 EL = 565	GERS-RLY-PNT.7 (SEE Pg 10)
"		<u>PSL4928X</u> <u>TDPUL</u>	AGASTAT MODEL NO. E7014AC IN CDEIID A = 7 RM = 227 EL = 565	GERS-RLY-PNT.7 (SEE Pg 10)
"	<u>42a</u> <u>42b</u> <u>O</u> , <u>C</u> , <u>42a</u> <u>42b</u> <u>C</u> , <u>O</u>	<u>(W) TYPE L-56</u> AUX CONTACTS FOR A200 SERIES STARTER (W) MCC E12A, A = 6 RM = 429, EL = 603		GERS-MCC.9 (AREA 6)

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by JK b/w Date 12/8/94
Reviewed by _____ / Date _____

6.4 #120

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System SERVICE WATERPage 5 OF 10

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
SW1382, BE1218, HIS1382 HIS1382B	E-44B SHT 6A 44B	42 $\frac{1}{2}$, 42 $\frac{1}{2}$ C MAIN CONTACTS	(W) A200 REVERSING, STARTER IN MCC E12A A = 6 RM = 429 EL = 603	GERS-MCC.9 (AREA 6)
	E-60B SHT 18	PSL4928A	STATIC-O-RING MODEL # 12V2-E4-M2-CIALLTTX3 WALL MOUNTED A = 7 R = 237 EL 565	GERS-PS.5 (Page 8)
	E-60B SHT 18	PSL4928B	STATIC-O-RINGS MODEL # 12V7-E4-N4-B1A-TTLLX3 WALL MOUNTED A = 7 R = 237 EL 565	GERS-PS.5 (Page 8)

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by JK bush Date 12/8/94
Reviewed by _____ / Date _____

C.E. # 120

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System SERVICE WATER

Page 4 OF 10

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT

GERS-MCC.9 (AREA 6)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 6; 603', and 585'.

The effective grade for Area 6 is 573'.

Since $603' - 573' = 30'$, the ground spectra multiplied by (1.5×1.5) may be used to evaluate contactors/starters in Area 6 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz}):

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz}):

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} \leq 1.5g$ and $bA_{33Hz} \leq 1.0g$, then contactors/starters in Area 6 MCCs may be screened using GERS-MCC.9 per Step 1 in EPRI NP-7148-SL.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by W.H. Griff Date 12/8/84
Reviewed by _____ / Date _____

C.E. #120

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System SERVICE WATER

Page 7 OF 10

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

LEVEL 2 SCREENING FOR CDE12A-1

1. Natural frequency of CDE12A-1 is greater than or equal to 8Hz.
2. CDE12A-1 has been given an amplification factor (AF) of 3.
3. CDE12A-1 is located in plant area 6, elevation 603', which is less than about 40 feet above effective grade (Area 6 effective grade = 573')
4. For this area and elevation Peak GRS = .39g and Ground ZPA = .15g
5. Seismic capacity for Deutsch 4AP43AF = 6.7g peak and 5g at the ZPA (ref. NED 95-10022, "Seismic Evaluation of Deutsch Relays" and "Justification for Covering Older Deutsch Relays with the 1990 Farwell & Hendricks Report", copies attached). SEE G.4 # 72).

thus;

$$\begin{aligned} \text{ERS} &= \text{Peak GRS} \times 1.5 \times 1.5 \times \text{AF} \\ \text{ERS} &= 2.63 \end{aligned}$$

and

$$\begin{aligned} \text{ZPA} &= \text{Ground ZPA} \times 1.5 \times 1.5 \times \text{AF} \\ \text{ZPA} &= 1.01 \end{aligned}$$

therefore, seismic capacity exceeds seismic demand.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Shatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by D.H. Gaff Date 4/24/95
Reviewed by J.G. Hank Date 8/18/95

SCE Review

Jon G. Hank 8/18/95

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System SERVICE WATERPage 8 of 10

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT
<u>AREA = AUXL7 ELEV = 565'</u>				
EQUIPMENT	MEG.	MODEL NO.	AMP.	>8HZ Setpoint/Nom.
PSL4928A	S-O-R	12V2-E4-M2-C1A-LLTX3	1.0	Y 2#/>8#
PSL4929A	S-O-R	12V2-E4-M2-C1A-LLTX3	1.0	Y 2#/>8#
PSL4929B	S-O-R	12V2-E4-M2-C1A-LLTX3	1.0	Y 2#/>8#
PSL4928B	S-O-R	12V7-E4-N4-B1A-TTLLX3	1.0	Y 2#/>8#

Nominal Pressure based on minimum NPSH for pump of 20 ft. This equates to 8.67 PSIG.

The effective grade for area 7 is 562'

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

Since 565' - 562' = 3' < 40' , the ground spectra multiplied by (1.5 X 1.5) may be used to evaluate these pressure switches.

Natural frequency of each mounting is > 8 Hz (Ref. NED 95-10048)

The amplification factor for each mounting is 1.0. (Ref. NED 95-10048)

GERS-PS.5 = 3.0g/1.0g (EPRI NP-5223-SL) (JUSTIFICATION ATTACHED)

Demand = .39g/.15g X 1.5 X 1.5 X 1.0 = 0.88g/0.34g < 3.0g/1.0g

Therefore these devices may be screened at level 2 as being seismically adequate using GERS-PS.5

Prepared by Besler Date 7/19/95

Seismic Capability Engineer John G. Stark Date 7-19-95

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS ____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by

/ Date

Reviewed by

/ Date

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System SERVICE WATERPage 9 of 10

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT
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JUSTIFICATION TO USE GERS-PS.5 = 3.0g/1.0g (EPRI NP-5223-SL)

The GERS for Static-O-Ring Pressure switches is given for S-O-R models 4N6, 5N, 6N and 12N. Research of S-O-R catalogs back to 1975 indicate that the first number, 4,5,6 or 12 refers to the piston size. the second and third digits specify the type and size of the case. The 'N' code as used in the GERS is a general reference to S-O-R's NEMA 4 style enclosures. These enclosures are rigid boxes within which the moving components are mounted. Given that the enclosure is rigidly mounted, the exact dimension of the enclosure should not have any effect on the seismic capacity of the device.

Davis-Besse has several essential S-O-R pressure switches that these GERS may be used for with justification. They represent two piston sizes, 6 and 12. This portion of the model number exactly matches the number specified in the GERS. There are also two enclosure styles represented. These styles are known as V2 and V7. They are also NEMA 4 enclosures. The only difference between these enclosures and the 'N' enclosures is in their dimensions. The 'V' enclosures are of the same general shape but of slightly larger dimensions than the N series. These differences will not affect the seismic capacity of the instrument. Based on the above discussion regarding the similarity of these switches, GERS-PS.5 may be used for evaluating 6V and 12V series pressure switches.

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
 NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
 GERS - Seismically adequate based on GERS ____; include GERS number.
 NA - Component not affected by relays.
 CR - Corrective action required.
 OA - Operator action.
 - No entry necessary.

Prepared by *Gawlik* / Date
 Reviewed by *Gawlik* + Date 7/19/95

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System SERVICE WATER

Page 10 OF 10

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
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LEVEL 2 SCREENING FOR CDE11D

1. Natural frequency of CDE11D is greater than or equal to 8Hz.
2. CDE11D has been given an amplification factor (AF) of 3.
3. CDE11D is located in plant area 7, elevation 565', which is less than about 40 feet above effective grade (Area 7 effective grade = 562')
4. For this area and elevation Peak GRS = .39g and Ground ZPA = .15g
5. Seismic capacity for an Agastat E7014AC is 10g peak and 4g ZPA, seismic capacity for an Agastat E7024AC 4g (transition) peak and 1.6g (transition) ZPA (ref GERS-RLY-PNT.7).

thus peak seismic demand (SD);

$$\begin{aligned} SD &= \text{Peak GRS} \times 1.5 \times 1.5 \times \text{AF} \\ &= .39g \times 1.5 \times 1.5 \times 3 \end{aligned}$$

$$SD = 2.63g$$

and ZPA seismic demand (SD);

$$\begin{aligned} SD &= \text{Ground ZPA} \times 1.5 \times 1.5 \times \text{AF} \\ &= .15g \times 1.5 \times 1.5 \times 3 \end{aligned}$$

$$SD = 1.01g$$

therefore, seismic capacity exceeds seismic demand.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS ____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by W. K. Lohf Date 5/15/95
 Reviewed by _____ Date _____

SCE Review: Jay B. Smith 8/18/95

F REQUIRED THIS VALUE MUST BE
CHAPABLE OF OPENING DURING PERIOD
OF STRONG SHAKING

6.4 #121

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System SERVICE WATER

Page 1 OF 11

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
SW-1383, BF1177 HIS 1383 HIS 1383B	E-44BSHT. 6A-6B	DS	G.E SB-9 CTRL SW IN CDFIIC A = 6 RM = 236 EL = 565	NV
NOTE: SW-1383 REFERS TO THE VALUE MV1383 REFERS TO MTR.		OL	(W) OVERLOAD RELAY CONTACTS IN MCC FILE A = 4 RM = 236 EL = 565	CAB
	33/00, 33/0c, 33/00, 33/0c		LIMIT TORQUE LIMIT SWITCHES IN MV1383 A = 7 RM = 236 EL = 565	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Bell Date 12/8/94
 Reviewed by _____ / Date _____

6.4 #121

A-45 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System SERVICE WATERPage 2 OF 11

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
SW-1383, RF1177, HIS1383, HIS1383B	E44B SHT. 6A + 6B	33/ 1to, 33/ 1tc	LIMIT TORQUE TORQUE SW IN MV1383 A = 7 RM = 236 EL = 565	NV
"STOP", "OPEN", "CLOSE"			REES P.B. #04161-001- 002 IN NV1383. A = 7 RM = 236 EL = 565	NV
"			REES SPRING RETURN TO NORMAL #03845-000	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Bish Date 12/8/94
 Reviewed by _____ / Date _____

6.4 #121

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System SERVICE WATER

Page 3 OF 11

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
SW1383, BF1177 HIS1383, HIS1383B	E44RB SHTS 6A & 6B	SSX-2	COUCH (DEUTSCH) TYPE 4AP IN CDFIIC (SEE DS)	CH1 AHD CA4
		CS OPEN, CS CLOSE (HIS1383)	CUTLER HAMMER TYPE E30B P.B ON C5709 A=7 RM=505 EL=623	NV
		CSA OPEN CSA CLOSE SSX-1 (SEE SSX-2)	SAME AS ABOVE ON C3630 A=7 RM=324 EL=585	NV
				LEVEL 2 (PER SPECIFIC RELAY QUALIFICATION- SEE PG 8)

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by _____ / Date
Reviewed by _____ / Date

6.6 #121

A-66 RELAY SCREENING AND EVALUATION
FORM 6.6 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System SERVICE WATER

Page 4 OF 11

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
SW-1383, RF1177 HIS1383, HIS1383B	E-44B SHT, WB	SS/ LOCAL, SS/ REMOTE (HIS1383B)	G.E TYPE SBM SELECTOR SW ON C3630 A=6 RM=324 EL= 585	NV
" AND 6A	PSL4929Y TDDO	AGASTAT MODEL NO. E7024AC IN	GERS-Rly-PNT. 7 (SEE PG 9)	CDF12A-2 A=4 RM=428 EL= 603
" TDPIL	PSL4929X	AGASTAT MODEL NO. E7014AC IN	GERS-Rly-PNT. 7 (SEE PG. 9)	CDF12A-2 A=4 RM=429 EL= 603

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS ____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by W.H. Smith Date 5/15/95
Reviewed by _____ / Date _____

G.4 #121

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System SERVICE WATERPage 5 OF 11

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
SW-1383, BF1177	E444B SHT. 6A AND 6B	42a, 42b 1/0, 1/c, 42a, 42b 1/c, 1/c	(W) L-55 AUX CONTACTS FOR A200 SERIES STARTER IN MCC F11C A = 4 RM = 326 EL = 565	GERS-MCC-9 (AREA 6) (SEE PG 7)
"		42, 42/ 1/0, 1/c (MAIN CONTACTS)	(W) SERIES A200 REVERSING STARTER (SEE IN MCC F11C A = 4 RM = 326 EL = 565	GERS-MCC-9 (AREA 6) (SEE PG 7)

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Bish Date 12/8/94
Reviewed by _____ / Date _____

6.6 #121

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.6 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System SERVICE WATER

Page 6 or 11

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
SW-1383 BF1177 HIS1383, HIS1383B	E-44B SHT. 18	PSL4929A, PSL4929B	STATIC-O- RING Press. SW MODEL	GERS- PS. 5 (PAGE)
				12V2-E4-M2-CI ALL TX3

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by L.W.H. Date 6/14/95
 Reviewed by L.W.H. Date 6/14/95

6.4 #121

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System SERVICE WATER

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Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT [*]

GERS-MCC.9 (AREA 6)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 6; 603', and 585'.

The effective grade for Area 6 is 573'.

Since $603' - 573' = 30'$, the ground spectra multiplied by (1.5×1.5) may be used to evaluate contactors/starters in Area 6 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz}):

$$bA_{4-16Hz} = 0.39g(1.5 \times 1.5) \\ = 0.88g$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz}):

$$bA_{33Hz} = 0.15g(1.5 \times 1.5) \\ = 0.34g$$

Since $bA_{4-16Hz} \leq 1.5g$ and bA_{33Hz} is $\leq 1.0g$, then contactors/starters in Area 6 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
HV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by W.H. Bell, Date 2/28/95
Reviewed by _____ / Date _____

6.4 # 121

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System SERVICE WATER

Page 8 OF 11

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

LEVEL 2 SCREENING FOR CDF11C

1. Natural frequency of CDF11C is greater than or equal to 8Hz.
2. CDF11C has been given an amplification factor (AF) of 3.
3. CDF11C is located in plant area 7, elevation 565', which is less than about 40 feet above effective grade (Area 7 effective grade = 562')
4. For this area and elevation Peak GRS = .39g and Ground ZPA = .15g
5. Seismic capacity for Deutsch 4AP43AF = 6.7g peak and 5g at the ZPA (ref. NED 95-10022, "Seismic Evaluation of Deutsch Relays" and "Justification for Covering Older Deutsch Relays with the 1990 Farwell & Hendricks Report", ~~copies attached~~, SEE G.9 # 72),

thus peak Seismic Demand (SD);

$$\begin{aligned} SD &= \text{Peak GRS} \times 1.5 \times 1.5 \times \text{AF} \\ &= .39g \times 1.5 \times 1.5 \times 3 \end{aligned}$$

$$SD = 2.63g$$

and ZPA Seismic Demand (SD)

$$\begin{aligned} SD &= \text{Ground ZPA} \times 1.5 \times 1.5 \times \text{AF} \\ &= .15g \times 1.5 \times 1.5 \times 3 \end{aligned}$$

$$SD = 1.01g$$

therefore, seismic capacity exceeds seismic demand.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chiller acceptable.
RV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by D. K. Schaff Date 5/15/95
Reviewed by _____ / Date _____

SCE REVIEW:

Jay G. Stark 8/18/95

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS - BESSE UNIT 1

G.4 #121

System SERVICE WATER

Page 9 of 11

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

LEVEL 2 SCREENING FOR CDF12A-2

1. Natural frequency of CDF12A-2 is greater than or equal to 8Hz.
2. CDF12A-2 has been given an amplification factor (AF) of 4.5.
3. CDF12A-2 is located in plant area 6, elevation 603', which is less than about 40 feet above effective grade (Area 6 effective grade = 573')
4. For this area and elevation Peak GRS = .39g and Ground ZPA = .15g
5. Seismic capacity for an Agastat E7014AC is 10g peak and 4g ZPA, seismic capacity for an Agastat E7024AC 4g (transition) peak and 1.6g (transition) ZPA (ref. GERS-RLY-PNT.7).

thus peak seismic demand (SD);

$$\begin{aligned} SD &= \text{Peak GRS} \times 1.5 \times 1.5 \times \text{AF} \\ &= .39g \times 1.5 \times 1.5 \times 4.5 \end{aligned}$$

$$SD = 3.9g$$

and ZPA seismic demand (SD);

$$\begin{aligned} SD &= \text{Ground ZPA} \times 1.5 \times 1.5 \times \text{AF} \\ &= .15g \times 1.5 \times 1.5 \times 4.5 \end{aligned}$$

$$SD = 1.5g$$

therefore, seismic capacity exceeds seismic demand.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by D. K. Loh Date 5/15/95
Reviewed by _____ / Date _____

SCE Review: J. A. Johnson 8/18/95

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System SERVICE WATER

Page 10 of 11

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT
<u>AREA = AUXL7 ELEV = 565'</u>				
EQUIPMENT	MFG.	MODEL NO.	AMP.	>8HZ Setpoint/Nom.
PSL4928A	S-O-R	12V2-E4-M2-C1A-LLTX3	1.0	Y 2#/>8#
PSL4929A	S-O-R	12V2-E4-M2-C1A-LLTX3	1.0	Y 2#/>8#
PSL4929B	S-O-R	12V2-E4-M2-C1A-LLTX3	1.0	Y 2#/>8#
PSL4928B	S-O-R	12V7-E4-N4-B1A-TTLLX3	1.0	Y 2#/>8#

Nominal Pressure based on minimum NPSH for pump of 20 ft. This equates to 8.67 PSIG.

The effective grade for area 7 is 562'
 Peak Ground Response Spectra = 0.39g
 Ground ZPA = 0.15g

Since 565' - 562' = 3' < 40' , the ground spectra multiplied by (1.5 X 1.5) may be used to evaluate these pressure switches.

Natural frequency of each mounting is > 8 Hz (Ref. NED 95-10048)
 The amplification factor for each mounting is 1.0. (Ref. NED 95-10048)

GERS-PS.5 = 3.0g/1.0g (EPRI NP-S223-SL) (JUSTIFICATION ATTACHED)

Demand = .39g/.15g X 1.5 X 1.5 X 1.0 = 0.88g/0.34g < 3.0g/1.0g

Therefore these devices may be screened at level 2 as being seismically adequate using GERS-PS.5

Prepared by Besler Date 7/19/95

Seismic Capability Engineer Jon H. Roth Date 7-19-95

- Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
 NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
 GERS - Seismically adequate based on GERS ____; include GERS number.
 NA - Component not affected by relays.
 CR - Corrective action required.
 OA - Operator action.
 - No entry necessary.

Prepared by N/A / Date
 Reviewed by N/A / Date

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System SERVICE WATERPage 11 of 11

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT
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JUSTIFICATION TO USE GERS-PS.5 = 3.0g/1.0g (EPRI NP-5223-SL)

The GERS for Static-O-Ring Pressure switches is given for S-O-R models 4N6, 5N, 6N and 12N. Research of S-O-R catalogs back to 1975 indicate that the first number, 4,5,6 or 12 refers to the piston size. the second and third digits specify the type and size of the case. The 'N' code as used in the GERS is a general reference to S-O-R's NEMA 4 style enclosures. These enclosures are rigid boxes within which the moving components are mounted. Given that the enclosure is rigidly mounted, the exact dimension of the enclosure should not have any effect on the seismic capacity of the device.

Davis-Besse has several essential S-O-R pressure switches that these GERS may be used for with justification. They represent two piston sizes, 6 and 12. This portion of the model number exactly matches the number specified in the GERS. There are also two enclosure styles represented. These styles are known as V2 and V7. They are also NEMA 4 enclosures. The only difference between these enclosures and the 'N' enclosures is in their dimensions. The 'V' enclosures are of the same general shape but of slightly larger dimensions than the N series. These differences will not affect the seismic capacity of the instrument. Based on the above discussion regarding the similarity of these switches, GERS-PS.5 may be used for evaluating 6V and 12V series pressure switches.

- Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS ____; include GERS number.

NA - Component not affected by relays.

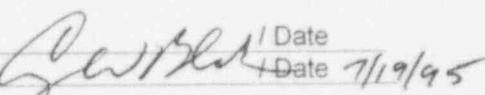
CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by

Reviewed by



6.4 #122

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System ESSENTIAL HVAC
AUX. FEEDWATER FMP. RM

Page 1 OF 2

Subsystem/Component	Ref Iwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
C73-1, HS5902, TS5135	BE1222 9	E-60K1 SHT. (HS5902)	HS MICRO SW TYPE CMC #910AEAO11 A=7, RM 237 EL= 565	NV
		TS _A , TS _B (TS5135)	BARKSDALE CTRLS # T2H- M150S, A=7 RM = 237, EL = 565 L-56	CA4

42b, 42a (W) AUX. CONTACTS
FOR A/200 STARTER
IN MCC E12A
A= RM = 429
EL = 603

CA-CHATTER
OF THESE
CONTACTS
DOES NOT
CAUSE EQUIP.
TO CHANGE
STATE.

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. Krueger Date 10-16-94

Reviewed by _____ / Date _____

6.4 #122

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System ESSENTIAL HVAC
AUX. FEEDWATER PUMP RM.

Page 2 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
C73-1, BE1222, HS5902	E-60B SHT 9	42X9, 42Xb	(W) AR440A RELAY WITH ARIA LATCH IN MCC E12A A=6, RM= 429 EL= 603	CA 1
"	42 (MAIN CONTACTS)		(N) A/200 SERIES STARTER WITH LATCH MECHANISM IN MCC E12A. A=6, RM= 429 EL= 603	CA-CHATTER ON THIS STARTER WILL NOT LOCK- OUT THIS FAN.
OL			(W) OVERLOAD RELAY CONTACTS IN MCC E12A (AS ABOVE)	CA8

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- 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.
- No entry necessary.

Prepared by W.K. Gib Date 4-18-94
 Reviewed by _____ / Date _____

E.4 # 123

A-4E RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System ESSENTIAL HVAC
AUX. FEEDWATER PMP. RM.

Page 1 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
---------------------	------------	-----------------------	-------------------------	------

C73-2 , BF1205 HS- 5903 TS5136	E608 SHT 9	HS (HS-5903)	MICRO SW TYPE CMC #910AEAO11 IN NC0731 A=7, RM 238 EL = 565	NV
--------------------------------------	------------	-----------------	--	----

B/A, TS/B (TS5136)	BARKSDALE CTRLS # T2H-M150S A=7, RM= 238 EL = 565	CA
-----------------------	---	----

426, 422	(N) L-56 ELECT. INTERLOCK IN MCC F12A A=4, RM= 428 EL = 603	CA-CHATTER OF THESE CONTACTS DOES NOT CAUSE FAN TO CHANGE STATE.
----------	---	---

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Knif Date 10-16-94
Reviewed by _____ / Date _____

6.4 #123

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System ESSENTIAL HVAC
AUX. FREEDWATER PUMP RM.

Page 2 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
C73-2, BF1205, HS5903, TS5136	E-60B SAT. 9	42 (MAIN CONTACTS)	(1) A/200 SERIES STARTER WITH LATCH MECHANISM IN MCC FIZA A=6, RM=428 EL=603	CA - CHATTER ON THIS STARTER WILL NOT LOCK- OUT THIS FAN
		42x2, 42x6	(1) AR440A RELAY WITH ARCA LATCH IN MCC FIZA (AS ABOVE)	CA1
		OL	(1) OVERLOAD RELAY CONTACTS IN MCC FIZA (AS ABOVE)	CA8

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by John Smith Date 4-18-94
Reviewed by _____ / Date _____

CYCLING OF THE PRESS HEATERS
DURING PERIOD OF STRONG SHAKING
IS ACCEPTABLE.

G.4 #124

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System REACTOR COOLANT

Page 1 OF 7

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BE1223, BE12, HISRC2-A, HISRC2-7	E-52B SHTS 43B & 43C	DS (ALL)	G.E TYPE SB-9 CTRL SW IN CDE12A-2, A=6, RM= 429, EL= 603.	NV
	E-52B SHT 43D	SS LOCAL, SS REMOTE (HISRC2-7)	G.E TYPE SBM CTRL SW ON C3430, A=6 RM=324, EL= 585	NV
	E-52B SHTS 43B & 43C	SSX-1	DEUTSCH TYPE HAX1603 IN RC4604 A=6, RM= 429 EL= 603	CA6 - NO SEAL IN OR LOCK OUT ON THIS COIL.
"		SSX-2 (SAME AS SSX-1)		CA1 & CA4
"	CS (HISRC2-A)		MICRO SW TYPE CMC # 910M6A013 IN C5705. A=7 RM=505 EL=623	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by OK Date 10/01/94
Reviewed by _____ / Date _____

6.4 #124

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System REACTOR COOLANT

Page 2 OF 7

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BE1223, BE12, HISRC2-1, HISRC2-4	E-52B SHTS 43B 43C	CSA	MICRO SW TYPE CMC # 910MGA013 ON C3630 A=6, RM=324, EL=585	NV
"	"	27	DEUTSCH TYPE 4AP IN RC4604 A=6, RM=429 EL=603	LEVEL 2 - USING RELAY SPECIFIC TEST DATA.
"	42a, 42b, 42 a	(W) L-56 ELECT. INTERLOCK IN NRC BE12A A=6, RM=429 EL=603	CA1 (42a, 42b), CA ($\frac{42}{a}$) - blocker BY 27	

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Self Date 12/01/94
Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

G.4 #124

System REACTOR COOLANT

Page 3 OF 7

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BE1223, BE12, HISRC2-7, HISRC2-A	E-52B SHT 43B+ 43C	PSHLX /ON, PSHLX /OFF, LSXI, PSH7528X	DEUTSCH TYPE 4AP IN RC4604 A=6, RM=429 EL=603	CA6
"	CR	(W) AR440A CONTROL RELAY	IN MCC E12A A=6, RM=429 EL=603	CA6
E-52B SHT. 43A	42 (MAIN CONTACTS)	(W) TYPE GCA530 SIZE 5 CONTACTOR IN MCC E12A A=6, RM=429 EL=603	CA-CHATTER WILL NOT SEAL- IN OR LOCK OUT HEATERS	

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by D.H. Schaff Date 10/21/94
 Reviewed by _____ Date _____

G.4

#124

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System REACTOR COOLANTPage 4 OF 7

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BE1223, BE12A, HISRC2-7, HISRC2-4	E-52B SHT 43A	52a	Auxiliary SWITCH FOR W LA BREAKER IN MCC E12A, A=6, RNI=429 EL=603.	NV
"	52 b, a		AUXILIARY SW FOR W HFB BKR (AS ABOVE)	NV
E-52B SHT 42E m-530-309 m-530-312 m-530-313	LS / (28-29) (LRC14)		P.B TYPE R40-E0044-2 IN 5759D, A=7 RM=502, EL=623	CA6
"	LS / (6-7) (27-1/LC14)		P.B TYPE R40-E071-1 IN 5759D (SEE ABOVE)	CA6

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by John Schaff Date 12/21/94
Reviewed by _____ / Date _____

G.4 #124

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System Reactor CoolantPage 5 OF 7

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BE1223, BE12, HISRC2-7, HISRC2-4	E-52B SHT 42E m-530-312 m-530-3	PSHL/ON, PSHL/OFF (PSHLRC2-2)	P.R. TYPE R40-E0044-2 IN CS759E A=7, RM=502 EL 623 (CTRM)	CA6
	E-52B SHT 67	33/ac CONTACT 10	LIMIT TORQUE LIMIT SW IN MVDH12 A=9, RM=290, EL = 565 (CTMT)	NV
"		33/ac	NAMCO LIMIT SW # EA740-20100 ON MVDH11. A=9, RM=290 EL=565 (CTMT)	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Smith Date 12/21/94
 Reviewed by _____ / Date _____

G.4 #124

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System REACTOR COOLANTPage 6 OF 7

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BE1223, BE12, HISRC2-7, HISRC2-A	E52B SHT 67	SEE G.4 FORMS 99 AND 100 FOR EVALUATION OF LIMIT SWITCHES* FOR MVDH12 AND MVDH11 RESPECTIVELY.		NV
		* 33/ae		
	E-52B SHT 67	RSH K03	DEUTSCH TYPE 4AP LOCATED: C5763 C A=7, RIN=502 EL=622 (CTRIN)	CA6

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by Clyde Philtz Date 1/9/95
 Reviewed by Clyde Philtz / Date _____

G.4 #124

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System Pump/Ort Coolant

Page 7 OF 7

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
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LEVEL 2 SCREENING FOR RC4604

1. Natural frequency of RC4604 is greater than or equal to 8Hz.
2. RC4604 has been given an amplification factor (AF) of 3.
3. RC4604 is located in plant area 6, elevation 603', which is less than about 40 feet above effective grade (Area 6 effective grade = 573')
4. For this area and elevation Peak GRS = .39g and Ground ZPA = .15g
5. Seismic capacity for Deutsch 4AP43AF = 6.7g peak and 5g at the ZPA (ref. NED 95-10022, "Seismic Evaluation of Deutsch Relays" and "Justification for Covering Older Deutsch Relays with the 1990 Farwell & Hendricks Report"), see G.4 # 72.

thus;

$$\begin{aligned} \text{ERS} &= \text{Peak GRS} \times 1.5 \times 1.5 \times \text{AF} \\ \text{ERS} &= 2.63 \end{aligned}$$

and

$$\begin{aligned} \text{ZPA} &= \text{Ground ZPA} \times 1.5 \times 1.5 \times \text{AF} \\ \text{ZPA} &= 1.01 \end{aligned}$$

therefore, seismic capacity exceeds seismic demand.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by JK Date 4-24-95
Reviewed by _____ / Date

SCE REVIEW: John G. Hark 3/18/95

G.4 #125

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DANIS-BESSE UNIT 1

System Reactor CoolantPage 10F/6

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BF1217, BF12, HISRC2-B, HISRC2-8	E-52B SHTS 43B 443C	DS (ALL)	G.E. TYPE SB-9 CTRL SW IN CDF12A-1 A = 6 RM = 428 EL = 603	NV
	E-52B SHT. 43D	SS LOCAL, SS REMOTE (HISRC2-8)	G.E. TYPE SBM CTRL. SW ON C3630. A=6, RM=324, EL=585	NV
	E-52B SHTS. 43B+43C	SSX-1	DEUTSCH TYPE 4AX1603 IN RC4605. A=6, RM=428 EL = 603	CA6 - NO SEAL- IN OR LOCK-OUT ON THESE CONTACT'S COIL.
"	"	SSX-2	(SAME AS SSX-1)	CA1 & CA4
"	"	CS (HISRC2-B)	MICRO SW TYPE CMC# 910MGAB15 ON C5705. A=7 RM=505, EL=623	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by Ed. K. Smith Date 12/21/94
 Reviewed by _____ Date _____

G.4 #125

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System REACTOR COOLANT

Page 2 OF 6

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BF1217, BF12, HISRC2-8, HISRC2-8	E-52B SHTS 42B #42C	CSA	MICRO SW TYPE CMC #91016A013 ON C3630, A=6 RM=324, EL=585	NV
"	27		DEUTSCH TYPE 4AP IN RC4605, A=6, RM=428, EL=603	LEVEL 2 - USING RELAY SPECIFIC TEST DATA. (SEE PG 6)
"	42a, 42b, <u>42</u> a	(W) L-56 EUECT.	INTERLOCK IN MCC F12A. A=6, RM= 428, EL=603	CA1 AND CA(for <u>42</u> WHICH IS BLOCKED BY 27)
"	RSHLX /ON, RSHLX /OFF LSX2, PSH7531X		DEUTSCH TYPE 4AP IN RC4605, A=6 RM=428, EL=603	CA6

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Hall Date 12/01/94
 Reviewed by _____ / Date _____

G.4 #125

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System REACTOR COOLANTPage 3 OF 6

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BF1217, BF12, HISRC22-B, HISRC22-B	E-52B SHTS. 43B & 43C	CR	(W) AR440A CONTROL RELAY IN MCC F12A A=6, RM=428 EL=603	CA6
E-52B SHT. 43A		42 (MINIR CONTACTS)	(W) GCA 530 SIZE 5 CONTACTOR IN MCC F12A, A=6 RM=429, EL=603	CA - CHATTER WILL NOT SEAL-IN OR LOCK-NUT THESE HEATERS
"		52Q	Aux. SW. FOR (W) LA BKR. IN MCC F12A. A=6, RM= 428, EL=603	NV
"		$\frac{52}{6}$, $\frac{52}{2}$	AUX SW. FOR (W) HFB BKR. (HS ABOVE)	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS ____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by M. K. Schaff Date 10/21/94
Reviewed by _____ / Date _____

G.4 #125

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System Reactor Control

Page 4 OF 6

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BF1217, BF12, HISRC2-B, HISRC2-8	E-52B SHT. 42J M-530-309 M-530-312 M-530-313	L8 1(28-29) P. B. TYPE (LSRC14) IN C5759D, A=7 RM=502, EL=623	R40-E0044-2	CA6
"	"	L8 1(28-29) P. B. TYPE (LSRC14) IN C5759D (SEE ABOVE)	R40-E072-1	CA6
"	PSHL/ON, PSHL/OFF (PSHLRC2-4)	P. B. TYPE R40-E0044-2 A=7, RM=502 EL=623 IN C5759D (SEE ABOVE)	IN C5759D (SEE ABOVE)	CA6
E-52B SHT. 47	33 2ac (10)	LIMIT TORQUE LIMIT SWITCH IN MVDH11. A=9, RM=290, EL=565 (CTMT)	NV	

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by D. K. Lohf Date 12/21/94
Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System REACTOR Coolant

Page 5 of 6

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BF1217, BF12, HISRC2-3, HISRC2-8	E-52B SHT 67	33/ AC	NAMCO LIMIT SW. #EA740- 20100 ON MVDH12. A=9, RM=290 EL=565 (CTMT)	NV

SEE 6.4 FORMS 99 AND
100 FOR EVALUATION OF
LIMIT SWITCHES FOR MVDH12
AND MVDH11

E-52B
SHT 67

RSH
KD3

DEUTSCH TYPE
L/A P
CK756D
A=7, Rm=502
EL=623((TRM))

CAG

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

Prepared by Lynne Ely Date 4/16/95
Reviewed by _____ / Date _____

C.C #125

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System REACTOR Coolant

Page 6 of 6

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT
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LEVEL 2 SCREENING FOR RC4605

1. Natural frequency of RC4605 is greater than or equal to 8Hz.
2. RC4605 has been given an amplification factor (AF) of 3.
3. RC4605 is located in plant area 8, elevation 603', which is less than about 40 feet above effective grade (Area 8 effective grade = 567').
4. For this area and elevation Peak GRS = .39g and Ground ZPA = .15g
5. Seismic capacity for Deutsch 4AP43AF = 6.7g peak and 5g at the ZPA (ref. NED 95-10022, "Seismic Evaluation of Deutsch Relays" and "Justification for Covering Older Deutsch Relays with the 1990 Farwell & Hendricks Report", ~~copies attached~~, SEE G.H #72)
6. Seismic capacity for Agastat 7012 = 12.5g peak and 5g at ^{the} ZPA (ref. GERS-RLY-PNT.7).

thus;

$$\begin{aligned} \text{ERS} &= \text{Peak GRS} \times 1.5 \times 1.5 \times \text{AF} \\ \text{ERS} &= 2.63 \end{aligned}$$

and

$$\begin{aligned} \text{ZPA} &= \text{Ground ZPA} \times 1.5 \times 1.5 \times \text{AF} \\ \text{ZPA} &= 1.01 \end{aligned}$$

therefore, seismic capacity exceeds seismic demand.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by J.W. Kishif Date 4-24-95
Reviewed by _____ / Date _____

SCE Review: Jon G. Hough 8/19/85

VALVE MUST BE
CAPABLE OF OPENING
OR CLOSING DURING
ONE SHAKING

6.4 #126

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System COMPONENT COOLING WATER

Page 1 OF 10

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
CC-5095, BE1226 HIS 5095	E-503 SHT. 13B +13A	DS	G.E. TYPE S8-9 CTRL. SW IN CDE12A-1, A=6 RM=429, EL=603	NV
"	"	OL	(N) OVERLOAD RELAY CONTACTS IN MCC E12A A=6, RM=429 EL=603.	CAB
"	"	33/ $\frac{1}{2}$ 0, 33/ $\frac{1}{2}$ n%, 33/ $\frac{1}{2}$ 0, 33/ $\frac{1}{2}$ n%, 33/ $\frac{1}{2}$ c	LIMIT TORQUE LIMIT SWITCHES IN MV5095. A = 7 RM = 328 EL = 585	NV
"	"	33/ $\frac{1}{2}$ 0, 33/ $\frac{1}{2}$ c	LIMIT TORQUE TORQUE SWITCHES IN MV5095 A = 7 RM = 328 EL = 603	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GEKS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Schaff Date 12/21/94
Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System COMPONENT COOLING WATER

Page 2 OF 10

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
CC-5095, BE1226, HIS 5095	E-50B SHT. 13A + 13B	1SLL X2	DEUTSCH TYPE HAX IN RC3704. A=7, RM=314, EL= 585	LEVEL 2 USING RELAY SPECIFIC TEST DATA (SEE Pg 7 THIS G.4)
" ALSO SEE E-50B SH. 28		2 X2	AGASTAT MOD. # 7012POL IN RC3607, A=6 RM= 325, EL= 585	GERS-RLY-PNT.7 (SEE Pg 8 THIS G.4)
"	CS (HIS 5095)		CUTLER-HAMMER TYPE E30 PB ON C5720. A=7 RM= 502, EL= 623	NV
"	52526		① MOC SWITCH IN CI UNIT 13. A=6 RM= 325, EL= 585	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by J. K. Buhl Date 2/14/95
 Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System COMPONENT COOLING WATERPage 3 OF 10

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
CC-5095, BE1226, HIS 5095	E50B SHT.13A +13B	52S16	(W) NOC SW IN C1 UNIT B, A= 6 RM=325, EL= 585	NV
"	"	STOP	REES PB CAT # # 01461-202 IN NV5095 A=7, RM=328 EL= 585	NV
"	"	OPEN, CLOSE	REES LEVER OPERATOR CAT # 03845-000 IN NV5095. A=7, RM= 328, EL= 585	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Reid Date 12/21/94
 Reviewed by / Date

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System COMPONENT COOLING WATERPage 4 OF 10

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
215095, BE1226, HIS5095	E-50B SHT. 13A+13B	42a 42a 42b 0, C, 0 , 42b C	(W) L-56 ELECTRICAL INTERLOCK/IN MCC F12A, H= 6, RM=429, EL=603	GERS-MCC.9 (AREA 6) (SEE PG 9)
"		42 42 0, C (MAIN CONTACTS)	(W) FVR STARTER IN MCC EMA (SEE ABOVE)	GERS-MCC.9 (AREA 6) SEE PG 9
E-50B SHT. 25	LSLL (LSLL3757B & LSLL3757C)	LSLL	MAGNETROL INTER- NATIONAL, INC. MODEL # BS751- QMP-X-SIMD4DC A=7 RM=501 EL=603	CA - VALVE Allowed to change state During SSE (Per Operations Rep). Will return to desired position within 30 seconds of event termination

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS ____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by C.W.P. Date 4/18/75 (LSLL)
 Reviewed by _____ / Date

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

G.4 # 126

System COMPONENT COOLING WATER

Page 5 OF 10

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
CC5095, BE1226, HIS5095	E-50B SHT. 2B	FISA + FISB	ITT BARTON INSTRUMENTS MOD 289A. A = 7 RM = 328 EL = 585	GERS-P.S.5 (SEE PAGE 10 OF THIS G.4 FORM) NOTE: CONTACT SUBSEQUENTLY EVALUATED as CA - see LSLL pg. 4
"	52H1	(W) TOC SW	IN CI UNIT 13. A = 6 RM = 325 EL = 585	NV
E-854Q-74 (SEE G.4 # 55)	CBD1P21 (PWR SOURCE FISA + FISB)	G.E NON-AUTO CKT. BREAKER #TED124Y100-50C	NA	

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS ____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by L. J. Wilby DEIC Date 4/17/95 (FISA +
Reviewed by _____ / Date _____ FISB)

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

G.4 #126

System COMPONENT COOLING WATER

Page 6 OF 10

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
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SEE G.4 # 50 FOR LSLL POWER SOURCE
EVALUATION (Y1).

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by John L. Smith Date 2/14/95
Reviewed by _____ / Date _____

c.e#126

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System Component Casting Water

Page 7 OF 10

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

LEVEL 2 SCREENING FOR RC3704

1. Natural frequency of RC3704 is greater than or equal to 8Hz.
2. RC3704 has been given an amplification factor (AF) of 3.
3. RC3704 is located in plant area 7, elevation 585', which is less than about 40 feet above effective grade (Area 7 effective grade = 562)
4. For this area and elevation Peak GRS = .39g and Ground ZPA = .15g
5. Seismic capacity for Deutsch 4AX1603 = 6.7g peak and 5g at the ZPA (ref. NED 95-10022, "Seismic Evaluation of Deutsch Relays" and "Justification for Covering Older Deutsch Relays with the 1990 Farwell & Hendricks Report", ~~copies attached~~) SEE G.4 # 72

thus;

$$\begin{aligned} ERS &= \text{Peak GRS} \times 1.5 \times 1.5 \times \text{AF} \\ ERS &= 2.63 \end{aligned}$$

and

$$\begin{aligned} ZPA &= \text{Ground ZPA} \times 1.5 \times 1.5 \times \text{AF} \\ ZPA &= 1.01 \end{aligned}$$

therefore, seismic capacity exceeds seismic demand.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Libe Date 2/14/95
Reviewed by _____ Date _____

see Review Jewell Hark 2/18/95

C-4 # 126

A-46 RELAY SCREENING AND EVALUATION
FORM C-4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System COMPONENT COOLING WATER

Page 8 OF 10

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

LEVEL 2 SCREENING FOR RC3607
AGASTAT MODEL 7012PDL
(time delay contacts only)

1. Natural frequency of RC3607 is greater than or equal to 8Hz.
2. RC3607 has been given an amplification factor (AF) of 3.
3. RC3607 is located in plant area 6, elevation 585', which is less than about 40 feet above effective grade (Area 6 effective grade = 573)
4. For this area and elevation Peak GRS = .39g and Ground ZPA = .15g
5. GERS LEVEL for Agastat 7012PDL (time delay contacts only) = 12.5g and ZPA = 5.0g (ref. GERS-RLY-PNT.7).

thus;

$$\begin{aligned} \text{ERS} &= \text{Peak GRS} \times 1.5 \times 1.5 \times \text{AF} \\ \text{ERS} &= 2.63 \end{aligned}$$

and

$$\begin{aligned} \text{ZPA} &= \text{Ground ZPA} \times 1.5 \times 1.5 \times \text{AF} \\ \text{ZPA} &= 1.01 \end{aligned}$$

therefore, seismic capacity exceeds seismic demand.

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by LH / Date 2/14/94
Reviewed by _____ / Date _____

SCE Review: JW / Date 8/18/85

C-4 #126

A-46 RELAY SCREENING AND EVALUATION
FORM G-4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System COMPONENT COOLING WATER

Page 9 OF 10

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

GERS-MCC.9 (AREA 6)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 6; 603', and 585'.

The effective grade for Area 6 is 573'.

Since $603' - 573' = 30'$, the ground spectra multiplied by (1.5×1.5) may be used to evaluate contactors/starters in Area 6 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} \leq 1.5g$ and bA_{33Hz} is $< 1.0g$, then contactors/starters in Area 6 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by Walter Gifford Date 2/28/95
Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

G.4 #126

System COMPONENT COOLING WATER

Page 10 of 10

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT
<u>GERS-PS.5</u>				
<u>AREA = AUXL7 ELEV = 565'</u>				
EQUIPMENT	MFG.	MODEL NO.	AMP.	>8HZ Setpoint/Nom.
FIS1432C	BARTON	289A	1.0	Y 1000GPM/6300GPM
FIS1427C	BARTON	289A	1.0	Y 1000GPM/6300GPM
FIS1422D	BARTON	289A	1.0	Y 1000GPM/6300GPM
FIS1427D	BARTON	289A	1.0	Y 1000GPM/6300GPM

Nominal flow based on actual plant data.

The effective grade for area 7 is 562'

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

Since 585' - 562' = 23' < 40' , the ground spectra multiplied by (1.5 X 1.5) may be used to evaluate these pressure switches.

Natural frequency of the mounting is > 8 Hz (Ref. NED 95-10023)

The amplification factor for the mounting is 1.0. (Ref. NED 95-10023)

GERS-PS.5 = 3.0g/1.0g (EPRI NP-5223-SL)

Demand = .39g/.15g X 1.5 X 1.5 X 1.0 = 0.88g/0.34g < 3.0g/1.0g

Therefore these devices may be screened at level 2 as being seismically adequate using GERS-PS.5

Prepared by Gerber Date 7/19/95

Seismic Capability Engineer John B. Hark Date 7-19-95

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS ____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required

OA - Operator action.

- No entry necessary.

Prepared by

/ Date

Reviewed by

N/A

/ Date

THIS VALVE REQUIRE THE
CAPABILITY OF OPERATING
DURING STRONG SHAKING.

6.4 #127

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System COMPONENT COOLING WATER

age 1 OF 9

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
CC-5096, BF1106 HIS 5096	E-50B SHT. 13A & 13B	DS	G.E. TYPE SB-9 CTRL. SW IN CDFIIA-2. A=6 RM= 427 EL= 603	NV
"	"	OL	(1) OVERLOAD RELAY CONTACTS IN MCC FIIA. A=6, RM= 427 EL= 603	CAB
"	33% _{b0} , 33% _{bN} % 33% _{a0} , 33% _{aN} % 33% _{c0}		LIMIT TORQUE LIMIT SWITCHES IN MV5096. A=7, RM= 328, EL= 585	NV
"	33% _{b0} , 33% _{bC}		LIMIT TORQUE TORQUE SWITCHES IN MV5096 (SEE ABOVE)	NV

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS ____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by W.H. Lipp Date 12/22/94
Reviewed by _____ / Date _____

G.4 #127

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System COMPONENT COOLING WATERPage 2 OF 9

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
CC-5096, BF1106, HIS5096	E50B SHTS 13A + 13B	LSLL X2	DEUTSCH TYPE 4AX IN RC3705, A=7 RM=314, EL= 585	LEVEL 2 USING RELAY SPECIFIC TEST DATA (SEE Pg 6 OF THIS G.4)
"	"	2 X2	AGASTAT 110D. 7012PDL IN RC3608, A=6 RM=323, EL= 585.	GERS-RLY-PNT.7 (SEE Pg 7 OF THIS G.4)
"	CS (HIS5096)		CUTLER-HAMMER TYPE E30 PB ON C5720, A=7, RM=505, EL = 623	NV
	52S26		④ MOC SWITCH IN D1 UNIT 13, A=6, RM=323 EL= 585	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS ____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by Walter Gossel Date 2/14/95
 Reviewed by _____ / Date _____

G.4 #127

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System COMPONENT COOLING WATERPage 3 OF 9

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
CC5096, BF1106, HIS5096	E-508 SHT. 13A & 13B	52S16	(W) moc SW IN D1 UNIT 8, A=6, RM=323, EL=585	NV
"	STOP	REES PB. CAT. #01461-202 IN NV5096 A=6, RM=323, EL=585		NV
"	OPEN CLOSE	REES LEVER OPERATOR CAT # 03845-000 IN NV5096 (SEE ABOVE)		NV
"	42a O, C, 42b O, 426 C	(W) L-56 ELECT. INTERLOCK IN MCC F1A. A=6 RM=427, EL=603	GERS-MCC. 9 (AREA 6) (SEE pg 8)	

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by L.H. K. Bird Date 12/22/94
 Reviewed by / Date

6.4 #127

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System COMPONENT COOLING WATERPage 4 OF 9

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
CC 5096, BF1106, HIS 6096	E-50B SHTS 13A & 13B	42 ①, C (MAIN CONTACTS)	(W) FVR STARTER IN MCC F11A (SEE ABOVE)	GERS-MCC.9 (AREA 6) (SEE PG. 8)
E-50B SHT. 25	LSLL (LSLL3758B & LSLL3758C)	MAGNETROL INTERNATIONAL, INC. MOD. # BS751-QAIP-X-SIMD4DC. A=7, RM=501, EL=623	CA - see explanation G.4 #126 for LSLL	
E-50B SHT 28	FISA & FISB	FIS1422D & FIS1427D ITT BARTON INSTRUMENTS MOD. # 289A. A=7, RM=328 EL=585	GERS-PS.5 (SEE PG. 9 THIS G.4 FORM) NOTE: SUBSEQUENTLY EVALUATED AS CA (SEE LSLL ABOVE)	

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by J. L. Ha Date 4/15/95
Reviewed by / Date

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System COMPONENT COOLING WATER

Page 5 OF 9

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
CC-5096, BF1106, HIS5096	E-50B SHT. 28	52H1	(W) TAC SW IN D1 UNIT 13, A=6, RM=323, EL=585	NV
	E-20-28 (SEE G.4 # 54)	CBD2P21 (PWR SOURCE FOR FISA + FISB)	(W) EB2100N NON AUTO CIRCUIT BKR IN D2P A=6, RM 428, EL = 1603.	NV

SEE G.4 # 50 FOR LSLL PWR SOURCE EVALUATION (Y2).

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by John Smith Date 12/22/94
 Reviewed by Date

c.e #127

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System Component Cooling Water

Page 6 of 9

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

LEVEL 2 SCREENING FOR RC3705

1. Natural frequency of RC3705 is greater than or equal to 8Hz.
2. RC3705 has been given an amplification factor (AF) of 3.
3. RC3705 is located in plant area 7, elevation 585', which is less than about 40 feet above effective grade (Area 7 effective grade = 562)
4. For this area and elevation Peak GRS = .39g and Ground ZPA = .15g
5. Seismic capacity for Deutsch 4AX1603 = 6.7g peak and 5g at the ZPA (ref. NED 95-10022, "Seismic Evaluation of Deutsch Relays" and "Justification for Covering Older Deutsch Relays with the 1990 Farwell & Hendricks Report", copies attached). SEE G.4 # 72).

thus;

$$ERS = \text{Peak GRS} \times 1.5 \times 1.5 \times AF$$

$$ERS = 2.63$$

and

$$ZPA = \text{Ground ZPA} \times 1.5 \times 1.5 \times AF$$

$$ZPA = 1.01$$

therefore, seismic capacity exceeds seismic demand.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by W.H. Litch Date 4-24-95
Reviewed by _____ / Date _____

SCE Review: Jan/G.Hard 8/18/95

C.E. #127

A-46 RELAY SCREENING AND EVALUATION
FORM C.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System COMPONENT Cooling Water

Page 7 OF 9

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

LEVEL 2 SCREENING FOR RC3608
AGASTAT MODEL 7012PDL
(time delay contacts only)

1. Natural frequency of RC3608 is greater than or equal to 8Hz.
2. RC3608 has been given an amplification factor (AF) of 3.
3. RC3608 is located in plant area 6, elevation 585', which is less than about 40 feet above effective grade (Area 6 effective grade = 573)
4. For this area and elevation Peak GRS = .39g and Ground ZPA = .15g
5. GERS LEVEL for Agastat 7012PDL (time delay contacts only) = 12.5g and ZPA = 5.0g (ref. GERS-RLY-PNT.7).

thus;

$$\begin{aligned} \text{ERS} &= \text{Peak GRS} \times 1.5 \times 1.5 \times \text{AF} \\ \text{ERS} &= 2.63 \end{aligned}$$

and

$$\begin{aligned} \text{ZPA} &= \text{Ground ZPA} \times 1.5 \times 1.5 \times \text{AF} \\ \text{ZPA} &= 1.01 \end{aligned}$$

therefore, seismic capacity exceeds seismic demand.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by W. K. Bush Date 2/14/95
Reviewed by _____ / Date _____

SCE REVIEW: J.W.G-Hall 8/18/95

6.4 #127

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System ENVIRONMENT COOLING WATER

Page 8 OF 9

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

GERS-MCC.9 (AREA 6)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 6; 603', and 585'.

The effective grade for Area 6 is 573'.

Since $603' - 573' = 30'$, the ground spectra multiplied by (1.5×1.5) may be used to evaluate contactors/starters in Area 6 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} \leq 1.5g$ and $bA_{33Hz} \leq 1.0g$, then contactors/starters in Area 6 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Siff Date 2/28/95
Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System COMPONENT COOLING WATER

Page 9 of 9

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT
<u>GERS-PS.5</u>				
		<u>AREA = AUXL7 ELEV = 565'</u>		
EQUIPMENT	MFG.	MODEL NO.	AMP.	>8HZ Setpoint/Nom.
FIS1432C	BARTON	289A	1.0	Y 1000GPM/6300GPM
FIS1427C	BARTON	289A	1.0	Y 1000GPM/6300GPM
FIS1422D	BARTON	289A	1.0	Y 1000GPM/6300GPM
FIS1427D	BARTON	289A	1.0	Y 1000GPM/6300GPM

Nominal flow based on actual plant data.

The effective grade for area 7 is 562'

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

Since 585' - 562' = 23' < 40' , the ground spectra multiplied by (1.5 X 1.5) may be used to evaluate these pressure switches.

Natural frequency of the mounting is > 8 Hz (Ref. NED 95-10023)

The amplification factor for the mounting is 1.0. (Ref. NED 95-10023)

GERS-PS.5 = 3.0g/1.0g (EPRI NP-6223-SL)

Demand = .39g/.15g X 1.5 X 1.5 X 1.0 = 0.88g/0.34g < 3.0g/1.0g

Therefore these devices may be screened at level 2 as being seismically adequate using GERS-PS.5

Prepared by Gerold Date 7/19/95

Seismic Capability Engineer John H. Hark Date 7-19-95

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- | | | | | |
|------|---|-------------|------------|--------|
| CA | - Chatter acceptable. | Prepared by | <u>N/A</u> | / Date |
| NV | - Not vulnerable (mechanically-actuated contacts and solid state relays). | Reviewed by | <u>N/A</u> | / Date |
| GERS | - Seismically adequate based on GERS _____; include GERS number. | | | |
| NA | - Component not affected by relays. | | | |
| CR | - Corrective action required. | | | |
| OA | - Operator action. | | | |
| - | - No entry necessary. | | | |

IS NOT REQUIRED TO CHANGE
DURING STRONG-SHAKING

NOTE AN OPENING AND
SUBSEQUENT RECLOSES
IS ACCEPTABLE FOR THIS

6.4 #128

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT NAVIS-BESSE UNIT 1

System SERVICE WATER

Page 1 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
SW-2927, BE1232 HIS 2927	E-48B SHT. 27	DS	GE, TYPE 38-9 CTRL. SW IN CDE12A-1, A=6, RM=429, EL=603	NV
	"	OL	(W) OVERLOAD RELAY IN MCC E12A, A=6, RM=429, EL=603	CAB
NOTE SW-2927 REFERS TO THE VALVE MV2927D REFERS TO VALVE OPERATOR.	"	33/100, 33/100%, 33/100, 33/100%	LIMIT TORQUE LIMIT SWITCH IN MV2927, A=7, RM=603, EL=638	NV
	"	33/100, 33/100%	LIMIT TORQUE TORQUE SWITCH IN MV2927 (SEE ABOVE)	NV
	"	STOP	REES PB. CAT # 01461-202 IN NV2927, A=7 RM=603, EL=638	NV

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
 NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
 GERS - Seismically adequate based on GERS ____; include GERS number.
 NA - Component not affected by relays.
 CR - Corrective action required.
 OA - Operator action.
 - No entry necessary.

Prepared by W.K. Sibley 121
 Reviewed by _____ / Date

Prepared by W. K. Seelye Date 10/1
Reviewed by _____ Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System SERVICE WATERPage 2 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
SW-2927, BE1232, HIS2927	E-48B SHT. 27	OPEN/CLOSE	REES LEVER OPERATOR CAT #03845-000 IN NV2927. A=7, RM=603 EL=638	NV
		<u>ACISR</u> 1	CLARK TYPE PM 4-POLE CONVERTIBLE RELAY IN C6708 A=7, RM=603 EL=643	CA-VALVE OPENING IS ACCEPTABLE DURING STRONG SHAKING
		<u>IMX</u> 1	SAME AS ACISR/1	SAME AS ACISR/1
	<u>CC</u> OPENS, CLOSE (HIS2927)	<u>CC</u>	Cutter HAMMER TYPE E-30B ON C5720. A=7 RM=505, EL 623	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Belf 12/9/94
 Reviewed by _____ / Date

G.4 #128

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System SERVICE WATERPage 3 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
SW-2927, BE1232, HIS 2927	E-4BB SAT. 27	42a o, 42a c, 42b c, 42b/b	(W) L-56 AUXILIARY CONTACTS FOR STARTER IN MCC E12A A=6, RM=429 EL=603	GERS-MCC.9 (AREA 6)
"	"	42a o, 42a c (MAIN CONTACTS)	(W) SERIES A 200 STARTER IN MCC E12A A=6, RM=429 E=603	GERS-MCC.9 (AREA 6)

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by John Smith Date 12/9/94
 Reviewed by _____ / Date _____

c.4 #128

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System SERVICE WATER

Page 4 of 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

GERS-MCC.9 (AREA 6)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 6; 603', and 585'.

The effective grade for Area 6 is 573'.

Since $603' - 573' = 30'$, the ground spectra multiplied by (1.5×1.5) may be used to evaluate contactors/starters in Area 6 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} \leq 1.5g$ and bA_{33Hz} is $< 1.0g$, then contactors/starters in Area 6 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by JK Date 8/9/94
Reviewed by _____ / Date _____

IS NOT REQUIRED TO CHANGE
STATE DURING STRONG SHAKING.
OPENING/CLOSING IS ACCEPTABLE.

6.4 # 129

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System SERVICE WATER

Page 1 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
SW-2928, BFII32 HIS 2928	E-H8B SHT 27	DS	G.E. TYPE SB-9 CTRL. SW IN COFIA-1. A= 6 RM= 427 EL= 603	NV
NOTE SW-2928 REFERS TO THE VALVE, HIS 2928 REFERS TO VALVE OPERATOR	"	OL	(W) OVERLOAD RELAY CONTACTS IN MCC FIA A= 6 RM= 427 EL= 603	CAB
"	33/60, 33/6n%, 33/60, 33/6n%		LIMIT TORQUE LIMIT SWITCH IN MV2928 A= 7, RM= 603 EL= 638	NV
"	33/10, 33/1n%, 1/10, 1/n%		LIMIT TORQUE TORQUE OPERATED SWITCH IN MV2928. A } SEE ABOVE RM } EL	NV

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- | | |
|------|---|
| CA | - Chatter acceptable. |
| NV | - Not vulnerable (mechanically-actuated contacts and solid state relays). |
| GERS | - Seismically adequate based on GERS ____; include GERS number. |
| NA | - Component not affected by relays. |
| CR | - Corrective action required. |
| OA | - Operator action. |
| | - No entry necessary. |

Prepared by W.K. Schaff 12/9/94
Reviewed by _____ / Date _____

G.4 #129

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System SERVICE WATERPage 2 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
SW 2928, BF1132 HIS 2928	E-48B SHT. 27	STOP	PEES P.B. CAT # 01461-202 IN NV 2928. A = 1, RM = 603 EL = 638	NV
"		OPEN/CLOSE	PEES LEVER OPERATOR, CAT. #03845-000 IN NV 2928 (SEE ABOVE)	NV
"	ACISR 2	CLARK TYPE PM, 4 POLE IN C6709. (SEE ABOVE)	CA - OPENING of THIS VALUE DURING STRONG SHAKING IS ACCEPTABLE	
	IMX 2	SAME AS ACISR/2	SAME AS ACISR/2	

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS ____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by W.H. and Date 12/9/94
 Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

G.4 #129

System SERVICE WATER

Page 3 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
SW-2928, BF132, HIS 2928	E48B SHT 27	CS OPEN, CS CLOSE (HIS 2928)	CUTLER- HAMMER TYPE E-301B ON C5720. A=7, RM=505 EL=423	NV
		<u>42a</u> <u>42b</u> <u>42b</u> <u>O</u> , <u>C</u> , <u>O</u> , <u>42a</u> <u>C</u>	(W) L-56 AUX CONTACT FOR STARTER IN MCC F1A A=6, RM=427 EL=403	GERS-MCC.9 (AREA 6) SEE PG 4
		<u>42</u> <u>42</u> <u>O</u> , <u>C</u> (MAIN CONTACTS)	(W) SERIES A200 STARTER IN MCC F1A. SEE ABOVE.	GERS-MCC.9 (AREA 6) SEE PG 4

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. brief Date 12/9/94
 Reviewed by / Date

6.4 # 129

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System SERVICE WATER

Page 4 of 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

GERS-MCC.9 (AREA 6)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 6; 603', and 585'.

The effective grade for Area 6 is 573'.

Since $603' - 573' = 30'$, the ground spectra multiplied by (1.5×1.5) may be used to evaluate contactors/starters in Area 6 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} \leq 1.5g$ and $bA_{33Hz} \leq 1.0g$, then contactors/starters in Area 6 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NY - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Lipp Date 12/9/94
 Reviewed by _____ / Date _____

6.4 # 130

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System ESSENTIAL HVAC
EDG RMS.

Page 1 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
C25-1, HIS NC251	BE1255	E-GOB SHT. 2 (HIS NC251)	START, STOP PEES ROCKER #03845-000 IN NC0251, A=1p RM=318 EL=585	NV
NOTE C25-1 REFERS TO THE FAN, NC0251 REFERS TO THE FAN MTR.	"	CSIX1	SQUARE D 2501 TYPE KPD13V63 IN C3621 A=6, RM=318' EL=585	CA - A 30 SECOND DELAY (PERIOD OF STRONG SHAKING) IS ACCEPTABLE FOR STARTING FAN. CHATTER WILL NOT LOCK OUT FAN.
"	BL	"	(W) OVERLOAD RELAY CONTACTS IN MCC E12B A=6, RM=318, EL=585	CA8

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Lipp Date 10-16-94
 Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System ESSENTIAL HVAC
EDG RMS

Page 2 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
C25-1, BE1255, HIS NC251	E608 SHT 2	42b, 42a	(W) L-56 HDX CONTACT FOR SERIES A 200 STARTER IN MCC E-12B A=6, RM=318 E=535	CA- CHATTER ON THESE CONTACTS WILL NOT START OR STOP FAN.
		42 (MAIN CONTACTS)	(W) SERIES A200 STARTER WITH LATCH ATTACHMENT IN MCC E-12B (SEE ABOVE)	CA- Will NOT KICKOUT FAN.
		42xa, 42xb	(W) AR440A RELAY WITH ARLA LATCH ATTACHMENT IN MCC E-12B (SEE ABOVE)	CA 1

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Smith Date 10-16-94
 Reviewed by / Date

6.4 #131

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT Lewis-Besse Unit 1

System ESSENTIAL HVAC
EDS RMS,

Page 1 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
C25-2, HIS NC252	BE1256	E-60B SHT 2 (HIS NC252)	PEES Rocker #03845-000 IN NC0252 A=6, RM=318 EL= 585	NV
NOTE C25-2 REFERS TO THE FAN, NC0252 REFERS TO THE FAN MTR.	"	SSIXI	SQUARE D 8501 TYPE KPD13V63 IN C3621 A=6, RM=318 EL= 585	CA - A 30 SECOND DELAY (PERIOD OF STRONG SHAKING) IS ACCEPTABLE FOR STARTING FAN. CHATTER WITH NOTLOCKOUT FAN
	"	OL	(W) OVERLOAD RELAY CONTACT IN ACC E12b A=6, RM= 318 EL= 585	CA8

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Ladd, Date 10-16-94
Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System ESSENTIAL HVAC
EDS RMS

Page 2 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
C25-2, BE1256, HIS NC252	E60B SHT 2	42b, 42a	(W) L-56 AUX CONTACT FOR SERIES A 200 STARTER IN MCC E-12b. A=6, RM=318 EL=585	CA - CHATTER ON THESE CONTACTS WOULD NOT STOP OR START A FAN.
"	42 (MAIN CONTACTS)		(W) SERIES A 200 STARTER WITH LATCH ATTACHMENT IN MCC E12b. (SEE ABOVE)	CA - WILL NOT LOCK OUT FAN.
"	42xa, 42xb		(W) HR440A RELAY + CA1 AUX LATCH ATTACH. IN MCC E12b (SEE ABOVE)	

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Giff Date 10-16-94
 Reviewed by / Date

#132

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT INIS-DIESEL UNIT I

System EMER. DIESEL GENERATORPage 1 OF 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BE1261 (BKR FOR SOAK BACK OIL PUMP)	E-64/B SHT. 8	42 (MAIN CONTACTS)	(W) SERIES A200 STARTER IN MCC E12B H = 6, RM = 318 EL = 585	CA - WILL NOT LOCKOUT OIL PUMP
"	"	OL	(W) OVERLOAD RELAY CONTACT IN MCC E12B (SEE ABOVE)	CA1
"	42b, 42a	"	(W) L-56 AUX CONTACTS FOR SERIES A200 STARTER IN MCC E12B (SEE ABOVE)	CA1

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by OK bsh Date 12/22/94
 Reviewed by _____ / Date _____

G.4 #133

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS - BESSE

System EMERGENCY DIESEL GENERATORPage 1 OF 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BF1261	E-64B SHT. 8	42 (MAIN CONTACTS)	(W) SERIES A200 STARTER IN MCC F12B A=6 RM=319 EL='585	CA - WILL NOT LOCKOUT O/L PUMP NTR
"	"	OL	(W) OVERLOAD RELAY CONTACT IN MCC F12B (SEE ABOVE)	CA1
"	42b, 42a		(W) L-52 AUX CONTACTS FOR SERIES A200 STARTER IN MCC F12B	CA1

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by D. K. L. R. Date 12/22/94
 Reviewed by _____ / Date _____

6.4 #134

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System SERVICE WATERPage 1 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
F15-1, BE1274, C3017, PDIS1379A	E-48B SHT. 7	C3017	NONE	NA
	"	SS (SELECTOR SWITCH)	CUTLER HAMMER E-30 ON C3017 A = INTAKE RM = 52, EL = 585	NV
NOTE F15-1 REFERS TO THE STRAINER, MF0151 REFERS TO THE STRAINER MTR.	"	42b, 42a	(W) L-5G Aux CONTACTS FOR SERIES A200 STARTER IN NRC E12C, A = INTAKE RM = 52 EL = 585	CA - CHATTER ON THESE CONTACTS WILL NOT START OR STOP PMP MTR.
	"	HPR	DEUTSCH TYPE HAP IN RC3013 A = INTAKE, RM = 52, EL = 585	CA - ALSO AN ABBREVIATED BASKWASH CYCLE WILL NOT DEGRADE SYS.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Smith Date 2/28/95
Reviewed by _____ / Date _____

G.4 # 134

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System SERVICE WATERPage 2 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
F15-1, BE1274, C3017	E-48B SHT 7	TDR	AGHSTHT 7022AF IN C3017 A= INTAKE RM= 52, EL= 585	CA6 - SEE HPR
"	42xa, 42xb	(W) AR440A WITH AR LATCH IN MCC E12C A= INTAKE RM= 52, EL= 585.	(W) AR440A WITH AR LATCH IN MCC E12C A= INTAKE RM= 52, EL= 585.	CA1 CA8
"	OL	(O) OVERLOAD RELAY CONTACTS IN MCC E12C. (SEE ABOVE)	(O) OVERLOAD RELAY CONTACTS IN MCC E12C. (SEE ABOVE)	CA8
PSH (PSH2917)	STATIC-O-RING MODEL QV2-E5-TTX4 A= INTAKE, RM= 52 EL= 585	STATIC-O-RING MODEL QV2-E5-TTX4 A= INTAKE, RM= 52 EL= 585	CA - Abbreviated backwash cycle will not degrade system.	

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- | | |
|------|---|
| CA | - Chatter acceptable. |
| NV | - Not vulnerable (mechanically-actuated contacts and solid state relays). |
| GERS | - Seismically adequate based on GERS ____; include GERS number. |
| NA | - Component not affected by relays. |
| CR | - Corrective action required. |
| OA | - Operator action. |
| | - No entry necessary. |

Prepared by W.K. Bell Date 2-28-95
Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System SERVICE WATER

Page 3 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
F15-1, BE1274, C3017	E-48B SAT 7	PSHA (PSH2917A)	SAME AS PSH	CA - SAME AS PSH
"		PDIS (PDIS1379A)	ITT BURTON INSTRUMENTS MODEL 289A A = INTAKE RM = 52 EL = 585	CA - RUNNING STRAINER FOR TIME OUT OF TDR WILL NOT DEGRADE SYSTEM.
	42		⑩ SERIES A200 STARTER IN MCC E12C, A = INTAKE, RM = 52, EL = 585.	CA - WILL NOT LOCKOUT STRAINER MOTOR

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Bill Date 11/29/94
Reviewed by / Date

#135

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System SERVICE WATER

Page 1 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
F15-2, BF1274 C3018, PDIS1380A'	E-48B SHT. 7	C3018	NONE	NA
NOTE: F15-2 REFERS TO THE STRAINER, MFO152 REFERS TO STRAINER MTR.	"	SS (SELECTOR SWITCH)	CUTLER-HAMMER E-30 IN C3018. A = INTAKE, RM=52 EL 585	NV
"	42a, 42b	(1) L-56 Aux CONTACT FOR SERIES A200 CHATTER (1) MCC FILE, A = INTAKE, RM=52 EL = 585	CA-CHATTER ON THESE CONTACTS WILL NOT STOP OR START PMP.	
"	HPR	DEUTSCH TYPE HAX IN RC3014, A = INTAKE, RM = 52, EL = 585	CA6 - ALSO AN ABBRIDGED BACKWASH CYCLE WILL NOT DEGRADE SYSTEM	

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- DA - Operator action.
- No entry necessary.

Prepared by W. K. 6d Date 2/14/95
Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System SERVICE WATERPage 2 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
F15-2, BF1274, C3018	E-48B SHT. 7	TDR	AGASTAT MOD 7022AF IN C3018, A= INTAKE, RM=52, EL = 585	CAB - ALSO see HPR
		421a, 42xb	(W) AR RELAY AR40A CAL, WITH AR LATCH IN MCC F12c, A= INTAKE, RM= 52, EL=585	CAB
		OL	(W) OVERLOAD RELAY CONTACT IN MCC F12c (SEE ABOVE)	CAB

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS ____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by W.H. Bell Date 2/14/95
 Reviewed by _____ / Date

G.4 # 135

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System SERVICE WATERPage 3 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
F15-2, BF12714, C3018	E-48B SHT. 7	PSH	STATIC-O-RING MODEL # 6V2-E5-M2CTTY4. A= INT. 'E', RM=52 EL= 585	CA - Abbreviated Backwash Cycle WILL NOT DEGRADE SYSTEM
"		PSHA	SAME AS PSH	SAME AS PSH
"		PDIS (PDIS1380A)	ITT BARTON INSTRUMENTS MODEL = 289A. A= INTAKE RM= 52, EL= 585	CA - RUNNING STRAINER FOR TIME OUT OF TDR WILL NOT DEGRADE SYSTEM.
"	42		(W) SERIES A200 STARTER IN MCC F12C. A= INTAKE, RM= 52, EL= 585	CA - WILL NOT LOCK- OUT STRAINER MOTOR.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Smith Date 10-21-94
Reviewed by _____ / Date _____

6.4 #136

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System SERVICE WATERPage 1 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
SW-1379, BE1275	E-48B SHT 8	OL	(W) OVERHEAD RELAY IN MCC E12C. H= INTAKE RM= 52 EL= 585	CAB
NOTE: SW-1379 REFERS TO THE VALVE, MV1379 REFERS TO ACTUATOR.	"	33/60, 33/ 16n%	LIMIT TORQUE LIMIT SWITCHES IN MV1379. A= INTAKE RM=	NV
		33/60, 33/ 16n%	52, EL= 585	
"		33/ 60, 33/ 16e	LIMIT TORQUE TORQUE SWITCHES IN MV1379. (SEE ABOVE.)	NV
		TDR	AGASTAT MODEL 7022AF IN C3017. H= INTAKE. RM= 52 EL= 585	CAB

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by JK Date 10-14-94
 Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

G.4 # 136

System SERVICE WATER

Page 2 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
SW-1379, BE-1275	E-48B SHT 8	HPR	DEUTSCH TYPE 4AP IN RC3013 A=INTAKE RH= 52 EL= 585	CA4
"	42xb	(W) TYPE AR440A RELAY WITH ARLA LATCH IN MCC E12C	GERS-MCC.9 (INTAKE) & GERS-RLY- AI1.4	(SEE ABOVE)
42b _c , 42b _o 42a _c 42a _o	(W) L-56 Aux. CONTACTS FOR SERIES A200 STARTER IN MCC E12C	GERS-MCC.9 (INTAKE) SEE PG 4	(SEE ABOVE)	

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS ____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by

Reviewed by

LK Bif Date 10-14-94
 / Date

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

G.4 # 136

System SERVICE WATER

Page 3 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
SW-1379, BE1275	E48B SHT 8	42/b, 42/c (MAIN CONTACTS)	(N) SERIES A200 STARTER IN MCE E12C (SEE ABOVE).	GERS-MPC 9 (INTAKE) SEE PG 4

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Smith Date 10-14-94
 Reviewed by _____ / Date _____

6.4 #136

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System SERVICE WATER

Page 4 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

GERS-MCC.9 (AREA INTAKE)

Davis-Besse has Motor Control Centers (MCCs) on the following elevation in Area Intake; 567'.

The effective grade for Area Intake is 569'.

Since $569' - 567' = 2'$, the ground spectra multiplied by (1.5×1.5) may be used to evaluate contactors/starters in Area Intake MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} \leq 1.5g$ and bA_{33Hz} is $\leq 1.0g$, then contactors/starters in Area Intake MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Smith Date 2/28/95
Reviewed by _____ / Date _____

6.4 #137

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT ~~LUSIS-PESSE~~ UNIT 1

System SERVICE WATER

Page 1 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
SW-1380, BF1275	E-48B SHT. 8	OL	(W) OVERLOAD RELAY CONTACTS IN MCC F12C. A = INTAKE RM = 52 EL = 585	C48
NOTE, SW-1380 REFERS TO THE VALUE MV13800 REFERS TO VALUE ACTUATOR.	"	<u>33</u> / <u>33</u> <u>60</u> , <u>dn%</u> <u>33</u> / <u>33</u> , <u>an%</u>	LIMIT TORQUE LIMIT SWITCHES IN MV13800. A = INTAKE, RM = 52, EL = 585	NV
"	"	<u>33</u> / <u>33</u> <u>1tc</u> , <u>1tc</u>	LIMIT TORQUE TORQUE SWITCHES IN MV13800. (SEE ABOVE)	NV
"	TDR		HASTAT MODEL 7022AF IN C3018. A = INTAKE, RM = 52, EL = 585	C46

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. S. Date 2/28/95
Reviewed by _____ / Date _____

6.4 #137

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System SERVICE WATERPage 2 of 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT°
SW-1380, BF1275	E-48B SHT. 8	HPR	DEUTSCH TYPE HAX IN RC3014 A=INTAKE RM= 52 EL = 585	CA4
"	42a 0, c	42b c	(W) L-56 AUX CONTACTS FOR SERIES A200 STARTER IN MCC F12C. (SEE ABOVE)	GERS-MCC.9 (INTAKE) SEE Pg 3
"	42a c, 0	42b 0	(W) SERIES A200 STARTER IN MCC F12C (SEE ABOVE)	GERS-MCC.9 (INTAKE) SEE Pg 3
"	42b (NO BA)	42b c	(W) AR4404 WITH ARMA LATCH IN MCC F12C. (SEE ABOVE)	GERS-MCC.9 (INTAKE) GERS-RLY- AI1.4

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Seifert Date 2/14/95
Reviewed by _____ / Date _____

6.4 #137

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System SERVICE WATER

Page 3 of 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

GERS-MCC.9 (AREA INTAKE)

Davis-Besse has Motor Control Centers (MCCs) on the following elevation in Area Intake; 567'.

The effective grade for Area Intake is 569'.

Since $569' - 567' = 2'$, the ground spectra multiplied by (1.5x1.5) may be used to evaluate contactors/starters in Area Intake MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} < 1.5g$ and $bA_{33Hz} < 1.0g$, then contactors/starters in Area Intake MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by W.H. Lippert Date 2/28/95
Reviewed by _____ / Date _____

THIS VALVE DOES NOT HAVE
TO CLOSE DURING STRONG
SHAKING. CLOSER BY HARDWITCH?

6.4 #138

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT ~~DAVIS-BESSE UNIT 1~~

System SERVICE WATER

Page 1 OF 6

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
SW-2929, BE1281 HIS 2929	E-48B SHT. 28	DS	GE TYPE SB-9 CTRL. SWITCH IN CODE 12C. A= INTAKE RH= 51 EL= 576	NV
"	33% to, 33% ac	33% to, 33% ac	LIMIT TORQUE TORQUE SWITCH IN MV29290 A= INTAKE RH= 53 EL= 566	NV
"	33% to, 33% ac, 33% dc 33% to,	33% to, 33% ac, 33% dc	LIMIT TORQUE LIMIT SWITCH IN MV2929 (SEE ABOVE)	NV

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by
- CR - Corrective action required
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Lisch Date 12/12/94
Reviewed by _____ / Date _____

6.4 # 138

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System SERVICE WATER

Page 2 OF 6

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
SW-2929 BE1281 HIS 2929	E-4813 SHT. 28	PSH (PSH2929)	STATIC-O-RING, MODEL # GV2-E5-TTX4. A = INTAKE RM = 53 EL = 566	CA - CONTROLS DO 3SECOND TIME DELAY RELAY IN OPEN CKT. CHATTER WOULD MOST PROBABLY CAUSE RELAY RESET.
"	2X		AGASTAT MANSL 7012AD IN CDE12C. H = INTAKE RM = 51 EL = 576	GERS - RLY - PNT. 7 (SEE PG 6)
"	OL		(W) OVERLOAD RELAY CONTACTS IN MCC E12C A = INTAKE, RM = 51 EL = 576	CH8

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Schaff Date 5/15/95
Reviewed by _____ / Date _____

6.4 # 138

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System SERVICE WATERPage 3 OF 6

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
SW-2929, BE1281, HIS 2929	E-4813 SHT. 28	42%, 42%/ 42%/ 42%, 42%/ (MAIN CONTACTS)	(W) L-54 AUX CONTACTS FOR SERIES A200 STARTER. (SEE ABOVE)	GERS-MCC.9 (AREA INTAKE) SEE PG 5
"	"	42%, 42%/ (MAIN CONTACTS)	(W) SERIES A200 STARTER IN MCC E12C (SEE ABOVE)	GERS-MCC.9 (AREA INTAKE) SEE PG 5
"	"	CS OPEN, CS CLOSE (HIS 2929)	CUTLER-HAMMER E-30B 10 C5720, A=7 RM=505, EL- 623.	NV

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Sill, Date 12/12/94
Reviewed by _____ / Date _____

6.4 #138

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System SERVICE WATERPage 4 of 6

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
SW-2929, BE1281, HIS-2929	E-483 SHT. 28	STOP	REES PB CAT # 04161-202 IN NV2929. A = INTAKE RH = 53 EL = 566	NV
	"OPEN", "CLOSE"		REES RCKER CAT # 03845-000 SAME AS "STOP"	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by D.K. Lippert 12/12/94
 Reviewed by _____ / Date

A-46 RELAY SCREENING AND EVALUATION
 FORM G-4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System SERVICE WATER

Page 5 of 6

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
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GERS-MCC.9 (AREA INTAKE)

Davis-Besse has Motor Control Centers (MCCs) on the following elevation in Area Intake; 567'.

The effective grade for Area Intake is 569'.

Since $569' - 567' = 2'$, the ground spectra multiplied by (1.5×1.5) may be used to evaluate contactors/starters in Area Intake MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} < 1.5g$ and $bA_{33Hz} \leq 1.0g$, then contactors/starters in Area Intake MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS _____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Sill Date 8/1/95

Reviewed by _____ / Date _____

6.4 #138

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System SERVICE WATER

Page 6 OF 6

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

LEVEL 2 SCREENING FOR CDE12C

1. Natural frequency of CDE12C is greater than or equal to 8Hz.
2. CDE12C has been given an amplification factor (AF) of 3.
3. CDE12C is located in plant area I (Intake), elevation 585', which is less than about 40 feet above effective grade (Area I effective grade = 569')
4. For this area and elevation Peak GRS = .39g and Ground ZPA = .15g
5. Seismic capacity for Agastat E7012AD = 12.5g peak and 5g at the ZPA (ref. GERS-RLY-PNT.7).

thus, peak Seismic Demand (SD);

$$\begin{aligned} SD &= \text{Peak GRS} \times 1.5 \times 1.5 \times \text{AF} \\ &= .39g \times 1.5 \times 1.5 \times 3 \end{aligned}$$

$$SD = 2.63g$$

and ZPA Seismic Demand (SD)

$$\begin{aligned} SD &= \text{Ground ZPA} \times 1.5 \times 1.5 \times \text{AF} \\ &= .15g \times 1.5 \times 1.5 \times 3 \end{aligned}$$

$$SD = 1.01g$$

therefore, seismic capacity exceeds seismic demand.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NY - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- - No entry necessary.

Prepared by W.H. Biffle Date 5/15/95
Reviewed by _____ / Date _____

SCE REVIEW:

Jon G. Stark 9/18/95

VALVE CLOSER HANLSDWTC4
 VALVE NOT TO JUMPED DURING
 STRONG SHAKING

6.4 #139

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DEIS-BESE UNIT 1

System SERVICE WATER

Page 1 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
SW-2931, BE1282 HIS 2931	E-48B SHT. 28	DS	G.E. TYPE SB-9 CTRL SW. IN CDE12C. A= INTAKE RM= 51 EL= 576	NV
"	"	33/100, 33/100	LIMIT TORQUE TORQUE SW IN MV2931 A= INTAKE RM= 53 EL= 566	NV
"	"	33/100, 33/100, 33/100, 33/100	LIMIT TORQUE LIMIT SWITCH IN MV2931 (SAME AS ABOVE)	NV
"	"	STOP	REES ROCKER IN NV2931 (SAME HS ABOVE)	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by JK Libe Date 12/9/94
 Reviewed by _____ / Date _____

6.4 #139

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System SERVICE WATER

Page 2 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
SW-2931, BE1282, HIS-2931	E-48B SAT. 28	OPEN, CLOSE	REES P.B. CAT # 03845-000 IN NV2931 (SEE ABOVE)	NV
"		<u>CS</u> OPEN <u>CS</u> CLOSE (HIS-2931)	CUTLER-HAMMER TYPE E-30 P.B. ON C5720. A=1, RM=505 EL=623	NV
"	42a ₁₀ , 42b _c 42a _c , 42b ₀	(W) L-56 AUX SW FOR SERIES A 200 STARTERS IN MCC E12C	GERS-MCC.9 (AREA INTAKE) SEE Pg 4	

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Schaff Date 12/9/94
Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

6.4 #139

System SERVICE WATER

Page 3 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
SW 2931, BE 1282, HIS 2931	E48B SHT. 28	42%, 42% (MAIN CONTACTS)	(W) SERIES A200 STARTER IN MCC E12C (SEE ABOVE)	GERS-MCC.9 (AREA INTAKE) SEE P94
"	"	OL	(W) OVERLAPPED RELAY CONTACTS IN MCC E12C	CA8

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Siffler Date 12/9/94
 Reviewed by _____ / Date _____

C.4 #139

A-46 RELAY SCREENING AND EVALUATION
FORM A.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System SERVICE WATER

Page 4 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

GERS-MCC.9 (AREA INTAKE)

Davis-Besse has Motor Control Centers (MCCs) on the following elevation in Area Intake; 567'.

The effective grade for Area Intake is 569'.

Since $569' - 567' = 2'$, the ground spectra multiplied by (1.5×1.5) may be used to evaluate contactors/starters in Area Intake MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} \leq 1.5g$ and $bA_{33Hz} \leq 1.0g$, then contactors/starters in Area Intake MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Smith Date 3/1/95
Reviewed by _____ / Date _____

6.4 # 140

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT I

System ESSENTIAL HVAC
BATT. AND SWGR. RMS.

Page 1 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
HV-5305A , BE1240, NV-5305A	E-60B SHT. 25	OL	(W) OVERLOAD RELAY CONTACTS IN MCC E124. A = 6 RM = 429 EL = 603	CAB
NOTE HV5305A REFERS TO THE DAMPER, MV5305A REFERS TO THE DAMPER ACTUATOR.	"	33 _{b0} , 33 _{aC} 33 _{bC} , 33 _{a0}	LIMIT TORQUE LIMIT SWITCH IN MV5305A A=6, RM=429 EL=603	NV
"	"	33 _{b0} , 33 _{aC}	LIMIT TORQUE TORQUE SWITCH IN MV5305A (SEE ABOVE)	NV
"	" STOP "	"	REES P.B CAT# 01461-202 IN NV5305A A=6, RM=429 EL=603	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by El Kherifi Date 12/6/94
 Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System PENTAL HVAC
BATT. AND SWGR. RMS

Page 2 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
HV-5305A BE1240, NV53054	E60B SHT. 25	'OPEN', 'CLOSE'	FEES RECKER CAT # 03845- 000 IN NV5305A (SEE ABOVE)	NV
"	"	42X1	DEUTSCH TYPE 4PAP RELAY IN RC3B01 A=8 RM= 303 EL= 585	CA-VENT LO111 RETURN TO CORRECT STATE AFTER STRONG SHAKING.
"	42%, 42/ (MAIN CONTACTS)	(W) SERIES A200 STARTER IN MCC E12A A=6 RM=429 EL= 603	(W) SERIES A200 STARTER IN MCC E12A A=6 RM=429 EL= 603	GERS-MCC.9 (AREA 6) SEE PG 3
"	42%, 42b, 42/ 0	(W) L-56 AUX CONTACTS FOR SERIES A200 STARTER IN MCC E12A (SEE ABOVE)	(W) L-56 AUX CONTACTS FOR SERIES A200 STARTER IN MCC E12A (SEE ABOVE)	GERS-MCC.9 (AREA 6) SEE PG 3

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Schubel Date 3/1/95
 Reviewed by _____ / Date _____

c.e # 140

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System

ESSENTIAL NUCLEAR

Page 3 OF 3

BATT & SWR RMS

Subsystem/Component

Ref Dwg(s)

Contact/Contact Group

Relay
Type and
Location

SAT

GERS-MCC.9 (AREA 6)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 6; 603', and 585'.

The effective grade for Area 6 is 573'.

Since $603' - 573' = 30'$, the ground spectra multiplied by (1.5x1.5) may be used to evaluate contactors/starters in Area 6 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} \leq 1.5g$ and $bA_{33Hz} \leq 1.0g$, then contactors/starters in Area 6 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.L. Biffle Date 3/1/95
Reviewed by _____ / Date _____

G.4 #141

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System ESSENTIAL HVAC
BATT. AND SWGR. RMS

Page 1 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
HV-5305B, BE1241 NV-5305B	E-60B SHT. 25	33/ 1 _{co} , 33/ 1 _{tc}	LIMIT TORQUE TORQUE LIMIT SWITCH IN MV5305B. A=6, RM=429, EL=603	NV
NOTE: HV-5305B REFERS TO THE DAMPER, MV5305B REFERS TO THE ACTUATOR.	"	33/ 1 _{bo} , 33/ 1 _{ac} , 33/ 1 _{bc} , 33/ 1 _{ao}	LIMIT TORQUE LIMIT SWITCH IN MV5305B. (SEE ABOVE)	NV
"	STOP		REES P.B CAT #01461-202 IN NV5305B. A=6, RM=429 EL=603	NV
"	OPEN, CLOSE		REES ROCKER CAT # 03845- 000 IN NV5305B (SEE ABOVE)	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Gibb Date 12/6/94
 Reviewed by _____ / Date _____

6.4 #141

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System ESSENTIAL HVAC
BATT AND SENSR RMS.

Page 2 of 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
HV-5305B BE1241, NV5305B	E60B SHT. 25	OL	(W) OVERLOAD RELAY CONTACTS IN MCC E12A A=6, RM=429, EL=603	CAB
"	42 $\frac{1}{2}$, 42 $\frac{1}{2}$ %, %	(W) L-56 AUX. CONTACTS ON SERIES A200 STARTER IN MCC E12A (SEE ABOVE)	GERS-MCC.9 (AREA 6)	
	42 $\frac{1}{2}$, 42 $\frac{1}{2}$ (MAIN CONTACTS)	(W) SERIES A200 STARTER IN MCC E12A (SEE ABOVE)	GERS-MCC.9 (AREA 6)	

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by D. Kuehne Date 12/6/94
Reviewed by _____ / Date _____

6.4 #141

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System ESSENTIAL HVAC
BHTT AND SICKR RMS.

Page 3 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
HV-5305B, BE1241, NV5305B	E-60B SHT 25	42X1*	DEUTSCH TYPE 4AP IN RC3801. A=8, RM1303 EL = 585	CA-VENT WILL RETURN TO CORRECT STATE AFTER PERIOD OF STRONG SHAKING,

(*) NOTE THIS RELAY IS ALSO
EVALUATED ON 6.4 140.

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by J. Knobell Date 12/27/94
 Reviewed by _____ Date _____

C.4 #141

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System ESSENTIAL HVAC
BAT. AND SUGR. RMS

Page 4 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

GERS-MCC.9 (AREA 6)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 6; 603', and 585'.

The effective grade for Area 6 is 573'.

Since $603' - 573' = 30'$, the ground spectra multiplied by (1.5x1.5) may be used to evaluate contactors/starters in Area 6 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} < 1.5g$ and $bA_{33Hz} < 1.0g$, then contactors/starters in Area 6 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by W.L. Schiff Date 12/6/94
Reviewed by _____ Date _____

6.4 #142

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System ESSENTIAL HVAC
BATT. AND SENSR. RMS.

Page 1 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
C78-1, BE1285 HIS NC781	E-608 SHT. 22	33/ao	MICRO-SWITCH CAT# 1LS3 LIMIT SWITCH A=6, RM=429 EL=603	NV
THE FAN, MC0781 REFERS TO THE FAN MITZ.	STOP, START (HIS NC781)	REES P.B CAT# 02450032 IN NC0781 A=6, RM=429 EL=603	NV	

II OL O OVERLOAD RELAY CONTACTS CAB
 IN E12B,
 A= 6
 RM= 318
 EL= 585

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Lipp Date 11/29/94
 Reviewed by _____ / Date

6.4 #142

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System ESSENTIAL HVAC
BATT & SUGR RMS

Page 2 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
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078-1, BE1285, HIS NC781	E60P SHT 22	42a, 42b	(W) L-56 AUX. CONTACT FOR SERIES AC00 STARTER	CA1
-----------------------------	----------------	----------	--	-----

(D) L-56 AUX.
CONTACT
FOR SERIES
AC00 STARTER
ID MCC E12b
(SEE ABOVE)

"	42 (MAIN CONTACTS)	(W) SERIES A 200 STARTER IN MCC E12b (SEE ABOVE)	CA - WILL NOT LOCK-OUT MOTOR FAN WILL CONTINUE TO OPERATE IF DAMPER IS OPEN.
---	-----------------------	--	--

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Soyle Date 11/29/94
 Reviewed by _____ / Date _____

6.4 #143

A-46 RELAY SCREENING AND EVALUATION
TOPK 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System ESSENTIAL HVAC
BATT. AND ENGR. RMS

Page 1 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
C78-2, BF1259 HIS NC782	E-60B SHT 22	33/ <u>%co</u>	NAMCO LIMIT SWITCH MODEL EA749-8000 A = 4 RM = 429 EL = 603	NV
"	STOP, START (HISNC182)	PEES P.B. CAT # 02450032 IN NC182	A = 6 RM = 429 EL = 603	NV
"	OL	OVERLOAD RELAY CONTACTS IN MCC F12B	A = 6 RM = 319 EL = 585	CA8

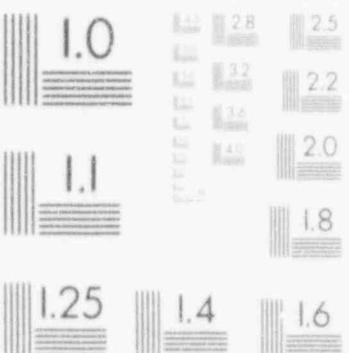
- Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- EA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Sibley Date 11/24/94
Reviewed by _____ / Date _____

1

IMAGE EVALUATION
TEST TARGET (MT-3)



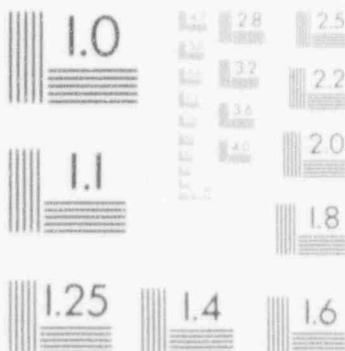
150mm

6"

PHOTOGRAPHIC SCIENCES CORPORATION
770 BASKET ROAD
P.O. BOX 338
WEBSTER, NEW YORK 14580
(716) 265-1600

1

IMAGE EVALUATION TEST TARGET (MT-3)



150mm

6"

PHOTOGRAPHIC SCIENCES CORPORATION
770 BASKET ROAD
P.O. BOX 338
WEBSTER, NEW YORK 14580
(716) 265-1600

6.4 #143

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System ESSENTIAL HVAC
BATT. AND BWR RAILS

Page 2 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT
C7B-2, BF1259 HIS NC782	E-60TB SHT 22	H2a, 42b	(W) L-54 AUX CONTACTS FOR STARTER IN MCC F12B (SEE ABOVE)	CA 1
"		42 (MAIN CONTACTS)	(W) SERIES A200 STARTER IN MCC F12B (SEE ABOVE)	CA - WILL NOT LOCK OUT FAN MTR. FAN WILL CONTINUE TO OPERATE IF DAMPER IS OPEN.

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Sief Date 11/29/94
Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

G.4 #144

System EMERGENCY DIESEL
GENERATOR

Page 1 OF 1

Relay
 Type and
 Location

SAT

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	
BE1289, NPI413	E-64B SHT 20	"ON" - "OFF"	SQUARE D CLASS 9999 TYPE SC-22 ON-OFF SELECTOR SW. A=6, RM=318 EL=585	NV
"	42, OL		SQUARE D AC SIZE I MAGNETIC STARTER CLASS 8536, TYPE SCO-3 WITH MELTING ALLOY OVERLOAD RELAY A=6, RM=318	CA-NO LOCKOUT
426			AUXILIARY CONTACT FOR SQUARE D CLASS 8536, TYPE SCO-3 AC SIZE I STARTER. A=6, RM=318	CA1

- Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Schell Date 12/27/94
 Reviewed by _____ / Date _____

c.e #145

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System EMERGENCY DIESEL
GENERATOR

Page 1 OF 1

Relay
 Type and
 Location

SAT*

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BF1289, NP1474	E-64B SHT. 20	"ON" "OFF"	SQUARE D CLASS 9999 TYPE SC-22 SELECTOR SW. A=6 RM=319, EL=585	NV
"	42, GL		SQUARE D, AC SIZE 1 MAGNETIC STARTER. CLASS 8536, TYPE SCO-3 WITH MELTING ALLOY OVER- LOAD RELAY, A=6, RM=319, EL=585	CA-10 LOCKOUT
	426		AUXILIARY CONTACT FOR SQ. D SIZE 1, CLASS 8536, TYPE SCO-3 STARTER. A=6, RM=319, EL=585.	CA1

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. G. Date 10/27/94
 Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

6.4 # 146

System ESSENTIAL HVAC
ECCS RM.

Page 1 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
C31-4, BE1292 HIS NC314 TSH 5422, TSL5422	E-40B SHT. 3	"STOP" "START" (HIS NC314)	REES Pb. CAT # 02450032 IN NC0314 A=7, RM=105 EL=545	NV
NOTE: C31-4 REFERS TO THE FAN, MC0314 REFERS TO THE FAN MTR.	"	TSL (TSL5422)	STATIC-O - RING MODEL 201TA-BB125-JTTX6 A=7, RM=105 EL=545	CA6
"	TSH (TSH5422)		STATIC-O - RING MODEL 201TH - BB125 - JTTX6 (SEE TSL)	CA6

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Bell, Date 10-16-94
 Reviewed by _____ / Date _____

6.4 #146

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System ESSENTIAL HVAC
ECCS RM.

Page 2 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
C31-4, BE1292, HIS NC314, TSH5422 TSL5422	E-60B SHT 3	OL	(W) OVERLOAD RELAY CONTACT IN MCC E12E A=8, RM=101 EL=545	CA8
"	42a, 42b		(W) L-56 Aux CONTACTS FOR STARTER IN MCC E12E. (SEE ABOVE)	CA - WILL NOT STOP FAN IF TEMP ABOVS TSH SETPOINT *
"	42 (MAIN Contacts)		(W) SERIES A 200 STARTER IN MCC E12E. (SEE ABOVE)	CA - WILL NOT LOCKOUT FAN MTR.

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Saif Date 10-16-94
Reviewed by _____ / Date _____

6.4 #147

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System ESSENTIAL HVAC
ECCS RM.

Page 1 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
C31-5, BE1293 HIS NC315	E60B SHT 3	"STOP", "START" (HIS NC315)	FEES P.B. CAT. # 02450032 A=B RM=105 EL=545	NV
TSH5421, TSL5421	"	TSL (TSL5421)	STATIC-O- RING MODEL Z01TA-BB125-JJTTX6 A=8 RM=105 EL= 545	CA4
"		TSH (TSH5421)	STATIC-O- RING MODEL Z01TA-BB125-JJTTX6 (SAME AS TSL)	CA6

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Bush Date 10-16-94
Reviewed by _____ / Date _____

6.4 #147

A-66 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System ESSENTIAL HVAC
ECCS RM.

Page 2 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
C31-5, BE1293, HIS - NC315, TSH5421, TSL5421	E60B SHT. 3	OL	(W) OVERLOAD RELAY CONTACT IN MCC E12E A=8 RM = 101 EL = 545	CA8
"	42a, 42b		(W) L-56 AUX CONTACTS FOR STARTER IN MCC E12E (SEE ABOVE)	CA - WILL NOT LOCKOUT FAN, WILL NOT STOP FAN IF TEMP ABOVE TSH SETPOINT
"	42 (MAIN CONTACTS)		(W) SERIES A 200 STARTER IN MCC E12E (SEE ABOVE)	WILL NOT STOP OR LOCKOUT FAN.

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by D. Kinsella Date 10-16-94
Reviewed by _____ / Date _____

6.4 # 148

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System ESSENTIAL HVAC
ECCS ROOM

Page 1 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
C31-1, BF1192 HIS NC311	E60B SHT. 3	"STOP" "START" (HIS NC311)	PEES Pb CAT. # 02450. 032 A=7 RM=115 EL=545	NV
TSH5425, TSL5425				

NOTE C31-1 REFERS TO
THE FAN MCO311 REFERS
TO THE FAN MTR.

"	TSL (TSL5425)	STATIC-O- RING MODEL 201TA-BB125- JTTX4. A=7 RM=115 EL=545	CA4
"	TSH (TSH5425)	STATIC-O- RING MODEL 201TA-BB125-JTTX4 A=7 RM=115 EL=545	CA4

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Loh Date 10-16-94
Reviewed by _____ / Date _____

6.6 #148

A-46 RELAY SCREENING AND EVALUATION
FORM 6.6 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System ESSENTIAL HVAC
ECCS RM

Page 2 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
C31-1, BF1192, HIS NC311 TSH5425, TSL5425	E6013 SHT 3	OL	(W) OVERLOAD RELAY CONTACT IN MCC FIE A = 8 RM = 101 EL = 545	CA8
"	42a, 42b		(W) L-56 Aux CONTACTS FOR STARTER IN MCC FIE (SEE ABOVE)	CA - WILL NOT LOCKOUT FAN. WILL NOT STOP FAN IF TEMP ABOVE TSH SETPOINT.
"	42 (MAIN CONTACTS)		(W) SERIES A200 STARTER IN MCC FIE (SEE ABOVE)	CA - WILL NOT LOCKOUT FAN.

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.L. Smith Date 10-16-94
Reviewed by _____ / Date _____

6.4 # 149

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System ESSENTIAL HVAC
ECCS RM.

Page 1 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
C31-2, BF1192, HIS NC312, TSH5424, TSL5424	E-60B SHT. 3	STOP "START" (HIS NC312) (TSL5424)	REES P.D. CAT. # 02450-032 A=7, RM=115 EL=545	NV
NOTE: C31-2 REFERS TO THE " FAN, NC312 REFERS TO THE PH11 MTR.		TSL	STATIC-O-RINGS MODEL 201TA- BB125-JTTX6. A=7, RM=115, EL=545	CA6
"		TSH (TSH5424)	SAME AS TSL	CA6
"	OL		① OVERLOAD RELAY CONTACT IN MEE F11E. A=8 RM=101, EL=545	CA8

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Loh Date 10-16-94
Reviewed by _____ / Date _____

6.4 #149

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System ESSENTIAL HVAC
ECCS RAI

Page 2 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
C31-2, BF1193, HIS 02312, BL5424, TS45424	E-60B SHT 3	423, 426	(W) L-56 AUX CONTACT FOR STARTER IN MCC FILE (SEE ABOVE).	CA-WILL NOT LOCKOUT FAN, WILL NOT STOP FAN IF TEMP MOVE TS4 SETPOINT
"	"	42 (MAIN CONTACTS)	(W) SERIES A 200 STARTER IN MCC FILE, (SEE ABOVE)	CA-WILL NOT LOCKOUT FAN.

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. 6/11 Date 10-16-94
 Reviewed by _____ / Date _____

THIS VALVE IS NOT OPERATED
DURING PERIOD OF SHOCK,
SHAKING, OR HAMMER CLOSED
URING S.S.

6.4 #150

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT I

System MAKEUP AND PURIFICATION

Page 1 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MU-6419, BE1295 HIS 6419	E-49B SHT 62A, 62B	DS	G.E. TYPE SB-0 CTRL SW IN CDYE2 A=B RM=304 EL=585	NV
NOTE: MU-6419 REFERS TO THE VALVE, MV6419 REFERS TO THE VALVE ACTUATOR	"	33% to, 33% tc	LIMIT TORQUE TORQUE SW IN MV6419 A=B, RM= 208 EL=565	NV
"	33% bo, 33% bn%, 33% bo, 33% bc		LIMIT TORQUE LIMIT SWITCHES IN MV6419 (SEE ABOVE)	NV
"	STOP		REES P.B CAT # 01461-202 IN NV6419 (SEE ABOVE)	NV

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. bish Date 12/6/94
Reviewed by _____ / Date _____

6.4 #150

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATIONPage 2 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MU-6419 BE1295 HIS 6419	E-49B SHTS 62A #62B	"OPEN", "CLOSE" "OPEN", "CLOSE" (HIS 6419)	REES ROCKER SW CAT # 03845-000 IN NV 6419. (SEE ABOVE)	NV
"	"	"OPEN", "CLOSE" (HIS 6419)	CUTLER-HAMMER P.B. TYPE E30B IN C5703, A=7 R-505, EL= 623	NV
"	"	OL	(W) OVERLOAD RELAY CONTACTS IN MCC E12E A=B, Rm=101 EL=545	CA8

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Baugh / Date 12/6/94
 Reviewed by _____ / Date _____

6.4 #150

A-66 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATION

Page 3 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MIL-6419, BE1295, HIS6419	E-49B SHTS 62A6 62B	42b C, 42a C 42b O, 42a O	(W) L-56 AUX SW FOR STARTER IN MCC E1ZE (SEE ABOVE)	CA4 (i.e. LOCAL & REMOTE OPERATORS)
"	"	42 O, 42 C (MAIN CONTACTS)	(W) SERIES A200 STARTER IN MCC E1ZE (SEE ABOVE)	GERS-MCC.9 (AREA 8)

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by J.K. Knobell Date 12/6/94
 Reviewed by _____ / Date _____

6.4 #151

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System DIESEL OILPage 1 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
P195-1, BE1298 LSL1128, LSH1128 NP1951A, NP1951	E-648 SHT. 10C	"START", "STOP" (NP1951A)	REES ROCKER CAT # 3845-000 IN NP1951A A=6, RM=318 EL= 585	NV
		"STOP", "START" (NP1951)	REES ROCKER CAT # 3845-000 IN NP1951 A= YARD EL= 585	NV

NOTE: P195-1 REFERS
TO THE PUMP, MP1951
REFERS TO THE PUMP
HTR.

LSL
(LSL1128)

MAGNETROL
MODEL #
B751-TOM-EP/VP-
X-SIMD4DCX-SIMD4DC
IN LSL1128, A=6
RM=318, EL=585

CA4
(SEE NOTE)

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Smith Date 10-16-94
Reviewed by _____ / Date _____

NOTE: STOPPING PUMP DURING STRONG SHAKING WILL NOT ADVERSELY AFFECT RUNNING FOR ENGINE, TANK WILL HEAT THROUGH OVERFILL IF PUMP STARTS AT HIGH LEVEL

6.4 # 151

A-66 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BISSE UNIT 1

System DIESEL OILPage 2 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
P195-1, BE1298	E-64B SHT 10C	LSH (LSH1128)	MAGNETROL MODEL # BT51-TDM- EP/VP-X- SIMD4C-SIMD4C A=6, RM 321A, EL 585	CA6 (SEE NOTE)
"	"	OL	(W) OVERLOAD RELAY CONTACTS IN MCC E12F. A=6, RM=318 EL=585	CA8
"	42a, 42b	"	(W) L-56 AUX. CONTACTS FOR SERIES A200 STARTER IN MCC E12F (SEE ABOVE)	CA - CHATTER OF THESE CONTACTS WILL NOT LOCKOUT PMP. ALSO SEE Pg 1 NOTE

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Kael, Date 10-16-94
Reviewed by _____ / Date _____

6.4 #151

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System DIESEL OILPage 3 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
P1951-1, BE1298	E-64B SHT 10C	42 (MAIN CONTACTS)	(W) SERIES A200 STARTER WITH LATCH ATTACHMENT. IN MCC E12F (SEE ABOVE)	CA - SAME AS 429, 426

- Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
 NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
 GERS - Seismically adequate based on GERS ____; include GERS number.
 NA - Component not affected by relays.
 CR - Corrective action required.
 OA - Operator action.
 - No entry necessary.

Prepared by OK Date 8/1/94
 Reviewed by _____ / Date

#152

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT 7A15-REEF UNIT 1

System DIESEL OIL

Page 1 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
P-195-2, BF-1230 LSL1122, LSH1122, NP1952, NP1952A	E-64B SHT. 10C	"START" "STOP"	REES ROCKER CAT # 03845-000 IN NP1952A. A=6, RM= 320A, EL= 585	NV
NOTE P-195-2 REFERS TO THE PMP, NP1952 REFERS TO THE PMP NTR.	"	"START" "STOP"	REES ROCKER CAT # 03845- 000 IN NP1952 A=YARD, EL= 585	NV
"	LSL	MAGNETROL MODEL # B751-TDM-EA/VP- X-SIM04DC-SIM04DC IN LSL1122 A=6, RM 320A, EL=585	CA6 (SEE NOTE)	

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GIRS - Seismically adequate based on GIRS ____; include GIRS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by OK Date 12/28/94
Reviewed by _____ / Date _____

NOTE: STOPPING PUMP DURING STRONG SHAKING WILL NOT
ADVERSELY AFFECT ENGINE'S SUPPLY OF FUEL, OVERFILL
BY STARTING A PUMP (WIND OVERFILL) THROUGH
TANK VENT.

6.4 # 152

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System DIESEL OIL

Page 2 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
P-195-2, BF1230	E-64B SHT. 10c	LSH	MAGNETROL MODEL # B751-TDM-EP/ VP-X-SIMD4DC- SIMD4DC IN LSH/1122 A=6, RM=320A EL=585	CA6 (SEE NOTE)
"		OL	(W) OVERLOAD RELAY CONTACT IN MCC F12A A=6, RM=428 EL=603	CA8
42b, 42a			(W) L-56 Aux. CONTACT FOR SERIES A200 STARTER IN MCC F12A (SEE ABOVE)	CA - CHATTER ON THESE CONTACTS WILL NOT LOCK- OUT PMP. ALSO SEE Pg 1 NOTE

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Gish Date 12/28/94
Reviewed by _____ Date _____

6.4 #152

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System DIESEL OIL

Page 3 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
P-195-2, BF1230	E-64B SHT 10C	42 (MAIN CONTACTS)	(W) SERIES A200 STARTER IN MCC F12A (SEE ABOVE)	CA - SEE 42a, 42b

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Bush Date 12/28/94
Reviewed by _____ / Date _____

MS107 MUST BE CAPABLE OF
OPENING DURING STRONG SHAKING.

6.4 # 153

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT ~~DAVIS-BESSE UNIT 1~~

System MAIN STEAM

Page 1 OF 10

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MS-107, BF1124 HIS107A, PSL41931A PSL107A, B, C + D	E-46B SHT. 4A, 4B	" DS "	G.E. TYPE SB-9 CTRL SW IN CDFIIA-2. A=7, R01427, EL=603	NV
<u>NOTE</u>	"	33% to, 33% tc	LIMIT TORQUE TORQUE SW. IN MV0107 A= 7 RM= 501 EL= 623	NV
* MS107 REFERS TO THE VALVE, MV01070 REFERS TO THE ACTUATOR	"	33% 33% 0n%, 0o, 33% 33% 0o, 0n%, 33% ac	LIMIT TORQUE LIMIT SW IN MV0107. (SEE ABOVE).	NV

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by OK, Date 12/6/94
Reviewed by _____ / Date _____

6.4 #153

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAIN STEAMPage 2 OF 10

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MS-107, BF1124, HIS107A, PSL4931A, PSL107A,B,C,D	E-46B SHT. 4A+4B	33% ac	LIMIT TORQUE LIMIT SW IN MVDH11 A=9, RM=290 EL=565	NV
"	PSL4931X1		AGASTAT MODEL # E1014AD IN COFIID A=7 RM=227, EL=565	GERS-PLY-PAT.7 (SEE Pg. 10)
"	R1, R2, R3 R4		DEUTSCH TYPE HAX RELAY IN CDFIIA-2 A=6 RM=427, EL=603	LEVEL 2 (PER SPECIFIC RELAY QUALIFICATION SEE Pg 9)

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Loeffelholz Date 12/6/94
Reviewed by _____ / Date _____

④ SEE 6.4 #100 FOR
EVALUATION OF OH-11.

6.4 #153

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAIN STEAMPage 3 OF 10

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MS-107, BF1124, HIS107A, PSL107A,B,C,D	E-46B SHTS. 4H AND 4B SF-0038 SN 14	K1, K2, K3, K61, K62, K63 K105, K45	STRUThER-DUNN Series 219 CCC # KGU431C P/N # 219XDK162 IN C5792 A=7 RM=502 EL=623	SEEG.4#312
"	CS (HIS107A) BLOCK		CUTLERHAMMER PB TYPE E300X IN C5709	NV
"	STOP		REES P.B. CAT # 01461-202 IN NVO107 A=7 RM=501 EL=623	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Giff / Date 12/6/94
Reviewed by _____ / Date _____

6.4 #153

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAIN STEAMPage 4 OF 10

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MS-107, BF1124, HIS107A, PSL4931A, PSL107A,B,C,D	E-46B SHT. 4A, 4B	"OPEN" "CLOSE"	REES Pb. CAT # 03845-000 IN NVO1070 A = 7 RM = 501 EL = 623	NV
"		<u>CS</u> OPEN, <u>CS</u> (HIS107A)	CUTLER HAMMER Pb. TYPE E30B ON C5709 A = 7 RM = 505 EL = 623	NV
"	PSL4931A		STATIC-O- RING MODEL # 12V2-E4-M2- C1ALLTTX3. A = 7 RM = 238 EL = 565	CA - CONTACTS SUPPLY TDPU RELAY SET FOR 60SEC

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by D. K. L. B. Date 12/6/94
Reviewed by _____ / Date _____

6.4 #153

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAIN STEAMPage 5 OF 10

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MS-107, BF1124, HIS107A, PSL4931A, PSL107A, B, C, D	E-46B SHT HA, HB	PSL107A PSL107B PSL107C PSL107D	STATIC-O RING MODEL GTA-B4-NXC1A- JTTX8. A = 7 RM = 238 EL = 565	SAT (see pg. 8)
"	PB	RESET/BLOCK	REES RESET PB CAT # 00294-001 IN NCDFIIA A=7 RM= 427, EL=603	NV
"	OL	"	OVERLOAD RELAY CONTACT IN MCC FIIA A=7, RM=427 EL=603	CAB

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

PSL: *R.C.W.B.L.* 4/28/95Prepared by *W.K. Bell* Date 5/15/95
Reviewed by _____ / Date _____

6.4 # 153

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAIN STEAMPage 6 OF 10

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MS-107, BF1124, HIS107A, PSL4931A PSL107A,B,C+D	E-46B 3HT 4A+4B	42a C, 42b 42a C, 42b C, 0	(W) L-56 AUX CONTACTS FOR STARTER IN MCC F1A. (SEE ABOVE)	GERS - MCC.9 (AREA 7) SEE PG 7
"		42 C, 42 (MAIN CONTACTS)	(W) SERIES A700 STARTER IN MCC F1A. SEE ABOVE	GERS - MCC.9 (AREA 7) SEE PG 7

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Smith / Date 12/6/94
 Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System MAIN STEAM

Page 7 OF 10

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

GERS-MCC.9 (AREA 7)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 7; 603', and 565'.

The effective grade for Area 7 is 562'.

Since $603' - 562' = 41'$, the ground spectra multiplied by (1.5x1.5) may be used to evaluate contactors/starters in Area 7 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz}):

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz}):

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} \leq 1.5g$ and $bA_{33Hz} \leq 1.0g$, then contactors/starters in Area 7 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Ladd Date 12/6/94
 Reviewed by _____ / Date _____

G.4 #153

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAIN STEAM/ AUXILIARY FEEDWATER

Page 8 of 10

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT
<u>AREA = AUXL7 ELEV = 565'</u>				
EQUIPMENT	MFG.	MODEL NO.	AMP.	>8HZ Setpoint/Nom.
PSL106A	S-O-R	6TA-B4-NX-C1A-JJTTX8	1.0	Y 18#/>900#
PSL106B	S-O-R	6TA-B4-NX-C1A-JJTTX8	1.0	Y 18#/>900#
PSL106C	S-O-R	6TA-B4-NX-C1A-JJTTX8	1.0	Y 18#/>900#
PSL106D	S-O-R	6TA-B4-NX-C1A-JJTTX8	1.0	Y 18#/>900#
PSL107A	S-O-R	6TA-B4-NX-C1A-JJTTX8	1.0	Y 18#/>900#
PSL107B	S-O-R	6TA-B4-NX-C1A-JJTTX8	1.0	Y 18#/>900#
PSL107C	S-O-R	6TA-B4-NX-C1A-JJTTX8	1.0	Y 18#/>900#
PSL107D	S-O-R	6TA-B4-NX-C1A-JJTTX8	1.0	Y 18#/>900#

Nominal Pressure based on steam line pressure seen at S/G exit.

The effective grade for area 7 is 562'

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

Since 565' - 562' = 3' < 40' , the ground spectra multiplied by (1.5 X 1.5) may be used to evaluate these pressure switches.

Natural frequency of each mounting is > 8 Hz (Ref. NED 95-10034)

The amplification factor for each mounting is 1.0. (Ref. NED 95-10034)

Device Capacity = 10g/ 6g (Ref. NED 95-10034)

Demand = .39g/.15g X 1.5 X 1.5 X 1.0 = 0.88g/0.34g < 10g/ 6g

Therefore these devices may be screened at level 2 as being seismically adequate using relay specific capacity data. In addition, per memo NED 95-10034, these devices are qualified to current standards and also screen at level 4.

Prepared by C.W.Bline Date 7/18/95
 Seismic Capability Engineer J.D.H. Hob Date 7-18-95

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS _____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by N/A / Date

Reviewed by N/A / Date

c. #153

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAIN STEAM

Page 9 OF 10

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

LEVEL 2 SCREENING FOR CDF11A-2

1. Natural frequency of CDF11A-2 is greater than or equal to 8Hz.
2. CDF11A-2 has been given two amplification factors (AF). AF = 3 for Deutsch relays and AF = 4.5 for Agastat relays.
3. CDF11C is located in plant area 7, elevation 565', which is less than about 40 feet above effective grade (Area 7 effective grade = 562')
4. For this area and elevation Peak GRS = .39g and Ground ZPA = .15g
5. Seismic capacity for Deutsch 4AP43AF = 6.7g peak and 5g at the ZPA (ref. NED 95-10022, "Seismic Evaluation of Deutsch Relays" and "Justification for Covering Older Deutsch Relays with the 1990 Farwell & Hendricks Report", copies attached, SEE G.4 # 72)
6. Seismic capacity for Agastat E7014AD = 10g peak and 4g ZPA (ref. GERS-RLY-PNT.7)

thus peak Seismic Demand (SD);

$$SD = \text{Peak GRS} \times 1.5 \times 1.5 \times AF$$

$$SD = 2.63g \text{ for } AF = 3 \text{ and}$$

$$SD = 3.9g \text{ for } AF = 4.5$$

and ZPA Seismic Demand (SD)

$$SD = \text{Ground ZPA} \times 1.5 \times 1.5 \times AF$$

$$SD = 1.01g \text{ for } AF = 3 \text{ and}$$

$$SD = 1.5 \text{ for } AF = 4.5$$

therefore, seismic capacity exceeds seismic demand.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by D. K. Hall Date 5/15/95
Reviewed by _____ / Date _____

SCE Review: Jon G. Hard Date 8/18/95

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System MAIN STREAMPage 10 OF 10

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
---------------------	------------	-----------------------	-------------------------	------

LEVEL 2 SCREENING FOR CDF11D

1. Natural frequency of CDF11D is greater than or equal to 8Hz.
2. CDF11D has been given an amplification factor (AF) = 7.
3. CDF11D is located in Plant Area 7, elevation 565', which is less than about 40 feet above effective grade (Area 7 effective grade = 562').
4. For this Area and elevation the Conservative Horizontal Floor Response Spectra (FRS) = .774g and the associated ZPA = .230g.
5. Seismic capacity for an Agastat E7014AD is 10g peak and 4g at the ZPA for all states (ref. GERS-RLY-PNT.7).

Thus, peak seismic demand (SD);

$$\begin{aligned} SD &= FRS * SAFETY FACTOR * AF \\ SD &= .774g * 1.5 * 7 \\ SD &= 8.13g \end{aligned}$$

And, ZPA seismic demand (SD);

$$\begin{aligned} SD &= ZPA * SAFETY FACTOR * AF \\ SD &= .230g * 1.5 * 7 \\ SD &= 2.41g \end{aligned}$$

Therefore, Seismic capacity exceeds seismic demand.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Lipp Date 5/18/95
 Reviewed by _____ Date _____

SCE REVIEW Jon G. Stark 8/2/95

THIS ORDER TO REMAIN CLOSED
DURING PERIOD OF STRONG
SHAKINGS.

6.4 #154

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System REACTOR COOLANT

Page 1 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
RC239A, BF1126 HIS 239A	E-52B SAT. 14A	DS AND DS1	GE TYPE SB-9 CTRL SWITCH IN CDFIIA-1 A=7 RM=427 EL=603	NV
NOTE: RC239A REFERS TO THE VALVE, MVO239A REFERS TO THE ACTUATOR	"	$\frac{33}{60}$, $\frac{33}{60\%}$, $\frac{33}{60}$,	LIMIT TORQUE TORQUE SWITCH IN MVO239A A=9 RM=315 EL=585	NV
	"	$\frac{33}{60}$, $\frac{33}{60\%}$, $\frac{33}{60}$,	LIMIT TORQUE LIMIT SWITCH IN MVO 239A (SEE ABOVE)	NV

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Hill Date 4/19/94
Reviewed by _____ / Date _____

6.4 #154

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System REACTOR COOLANTPage 2 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
RC239A, BF1126, HIS 239A	E-52B SHT. 14A	<u>CS</u> OPEN, <u>CS</u> CLOSE (HIS 239A)	CUTLER - HAMMER TYPE E30B ON C5705 A = 7 RM = 505 EL = 623	NV
"	"	OL	<u>W</u> OVERLOAD RELAY CONTACTS IN MCC F1A A = 7 RM = 427 EL = 603	CA8
"	"	"OPEN" "NEUTRAL" "CLOSE"	<u>W</u> TYPE OT2 SELECTOR SWITCH IN MCC F1A. (SEE ABOVE)	NV

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by JK Date 4/19/94
Reviewed by _____ / Date _____

S.4 #154

A-46 RELAY SCREENING AND EVALUATION
FORM 6.6 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System REACTOR COOLANT

Page 3 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
RCZ39A, BF1126, HIS239A	E-52B SHT. 14A	42a 0,	(W) L-54 AUX CONTACTS FOR SERIES A200 STARTER IN MCC F1A (SEE ABOVE)	GERS-MCC.9 (AREA 7) SEE Pg 4
"	"	42b, 42c (MAIN CONTACTS)	(W) SERIES A200 STARTER IN MCC F1A (SEE ABOVE)	GERS-MCC.9 (AREA 7) SEE Pg 4
		42a/c, 42b/c 42b/o	SAME AS 42a/o	CA - CHATTER WILL NOT CAUSE VALVE TO OPEN, ALSO, WILL NOT LOCK-OUT

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- | | |
|------|---|
| CA | - Chatter acceptable. |
| NV | - Not vulnerable (mechanically-actuated contacts and solid state relays). |
| GERS | - Seismically adequate based on GERS ____; include GERS number. |
| NA | - Component not affected by relays. |
| CR | - Corrective action required. |
| OA | - Operator action. |
| | - No entry necessary. |

Prepared by O.K. Gaff Date 4/19/94
Reviewed by _____ Date _____

6.4 # 154

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System REACTOR COOLANT

Page 4 of 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

GERS-MCC.9 (AREA 7)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 7; 603', and 565'.

The effective grade for Area 7 is 562'.

Since $603' - 562' = 41'$, the ground spectra multiplied by (1.5×1.5) may be used to evaluate contactors/starters in Area 7 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} \leq 1.5g$ and $bA_{33Hz} \leq 1.0g$, then contactors/starters in Area 7 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Sibley
Reviewed by _____ / Date _____

THIS VALVE MUST BE
CAPABLE OF CLOSING DURING
STRONG SHAKING. DUE TO INTERLOCK IN OPEN CKT,
THE CCI409 MUST GO CLOSED & REMAIN CLOSED

6.4 # 155

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATION

Page 1 OF 11

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MUL-1A , BF1237 HIS MULIA	E-52B SHT 17A	DS	G.E. TYPE SB-9 CTRL SWITCH IN CDF12A-2 A=4 RHI=423 EL=603	NV
"	"	33% to, 33% tc	LIMIT TORQUE TORQUE SWITCH IN MVMUO1A A=9 RHI=215 EL=565	NV
"	"	33% bo, 33% bn% 33% bo, 33% bn% 33% ac	LIMIT TORQUE LIMIT SWITCH IN MVMUO1H. (SEE ABOVE)	NV

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Biffle Date 11-7-94
Reviewed by _____ Date _____

6.4 #155

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATIONPage 2 OF 11

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MIL-1A, BA237, HISMULIA	E-52/3 SHT 17A	33/ 160	LIMIT TORQUE LIMIT SW IN MV14090 A= 9 RM= 215 EL= 565	NV
"	CS OPEN, CS (HISMULIA)		CUTLER - HAMMER TYPE E30B P.b. ON C5703, A= 7 RM= 505 EL= 623	NV
"	PSHX,		DEUTSCH TYPE HAX1603 RELAY IN RC4605. A= 6 RM= 428 EL= 603	LEVEL 2 - USING RELAY SPECIFIC TEST DATA (SEE pg 9)

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Kniff Date 11-7-94
 Reviewed by _____ / Date _____

6.4 #155

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATIONPage 3 OF 11

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MU-1A, BF1237, HISMUIA	E-5213 SHT. 17A	TSHX	DEUTSCH TYPE 44X RELAY 11 RC4605 (SEE ABOVE)	CA7 (MAY CAUSE) PRESSURE IS THE DESIRED CLOSING METHOD FOR THIS VALUE
"	"	OL	(W) OVERLOAD RELAY CONTACT IN MCE F12A R=6, RM=428 EL=585	CA8
"	"	BKR. SW'	(W) TYPE OTZ SELECTOR SW ON MCE F12A (SEE ABOVE)	NV

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- - No entry necessary.

Prepared by D.K. Lusk Date 11/7/94
Reviewed by _____ / Date _____

6.4 #155

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATIONPage 4 OF 11

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MU-1A, BF1237, HISMU1A	E52B SHT. 17A	<u>42a</u> <u>42b</u> <u>42b</u> <u>0</u> , <u>0</u> , <u>c</u>	(W) L-56 AUX. CONTACT FOR STARTER IN MCC F12A (SEE ABOVE)	GERS-MCC. 9 (AREA 6) SEE PG 8
"	"	<u>42</u> <u>42</u> <u>0</u> , <u>c</u>	(W) SERIES A200 STARTER IN MCC F12A (SEE ABOVE)	GERS-MCC. 9 (AREA 6) SEE PG 8
E52B SHT 57	PSH (PSH3711)		STATIC-O-RING MODEL # GV2- E5-M2CTTX4 IN PSH3711 A=9 R=215, EL=565	GERS-PS.5 (PAGE 10)
E52B SHT 57	TSH (TSH3745A)		BARKSDALE MODEL T2H-M2505-254 IN CTMT A=9 RM=215, EL=565	CA7 - SEE TSHX.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by D. W. Schaff Date 11/7/94
Reviewed by _____ / Date _____

6.4 #155

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATION

Page 5 OF 11

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MUL-1A, BF1237, HISMUL1A			NOTE: NEED TO EVALUATE CTRL CKT FOR CC1409, WHICH FOLLOWS, DUE TO 33% _o INTERLOCK.	
	E-52B SHT 17B	DS	G.E TYPE SB-9 CTRL SW IN CDF12A-2 A=4, RM=428 EL=603	NV
"		33% _o , 33% _c	LIMIT TORQUE TORQUE SW IN MV1409 A= RM= EL=	NV
"		33% _b , 33% _{bn} % 33% _{ao} , 33% _{an} %	LIMIT TORQUE LIMIT SWITCH IN MV1409 (SEE ABOVE)	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Gold Date 11/7/94
 Reviewed by _____ / Date _____

6.4 # 155

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATIONPage 6 OF 11

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MU-1A, RF1237, HISMU-1A	E-52B SHT. 17B	CL	(W) OVERLOAD RELAY CONTACT IN MCC F12A $H = 6$ $RNI = 42B$ $EL = 603$	CA8
		"OPEN", "NORMAL", "CLOSE"	(W) TYPE OT2 SELECTOR SW ON MCC F12A. (SEE ABOVE)	NV
	$\frac{42b}{C}, \frac{42b}{O}$		(W) L-56 AUX SWITCH FOR STARTER IN MCC F12A (SEE ABOVE)	GERS-MCC. 9 (AREA 6) SEE PG 8
	420, 42c		(W) SERIES 4200 STARTER IN MCC F12A (SEE ABOVE)	GERS-MCC. 9 (AREA 6) SEE PG 8

- Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
 NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
 GERS - Seismically adequate based on GERS ____; include GERS number.
 NA - Component not affected by relays.
 CR - Corrective action required.
 OA - Operator action.
 - No entry necessary.

Prepared by W.K. Gandy Date 11/7/94
 Reviewed by _____ / Date _____

6.4 #155

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATIONPage 7 OF 11

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MU-1A, BF1237, HISMU1A	E-52B SHT. 17B	CS OPEN	SEE (HISMU1A)	NV
		2 TDC	AGASTAT E7012 SERIES IN RC4605 H = 6 RM = 428 EL = 603	GERS-RLY - PNT. 7 (SEE PG. 9)

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS ____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by W.H. Smith Date 2/10/95
 Reviewed by _____ / Date _____

C.E # 155

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAKEUP & PURIFICATION

Page 8 of 11

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

GERS-MCC.9 (AREA 6)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 6; 603', and 585'.

The effective grade for Area 6 is 573'.

Since $603' - 573' = 30'$, the ground spectra multiplied by (1.5×1.5) may be used to evaluate contactors/starters in Area 6 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} < 1.5g$ and $bA_{33Hz} < 1.0g$, then contactors/starters in Area 6 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Smith Date 3/2/95
Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System MAKEUP & PURIFICATIONPage 9 OF 11

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
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LEVEL 2 SCREENING FOR RC4605

- X1603 4f
1. Natural frequency of RC4605 is greater than or equal to 8Hz.
 2. RC4605 has been given an amplification factor (AF) of 3.
 3. RC4605 is located in plant area 6, elevation 603', which is less than about 40 feet above effective grade (Area 8 effective grade = 573').
 4. For this area and elevation Peak GRS = .39g and Ground ZPA = .15g
 5. Seismic capacity for Deutsch 4AP~~4~~AF = 6.7g peak and 5g at the ZPA (ref. NED 95-10022, "Seismic Evaluation of Deutsch Relays" and "Justification for Covering Older Deutsch Relays with the 1990 Farwell & Hendricks Report"), see G.4 # 72.
 6. Seismic capacity for Agastat 7012 = 12.5g peak and 5g at the ZPA (ref. GEI S-RLY-PNT.7).

thus;

$$\begin{aligned} ERS &= \text{Peak GRS} \times 1.5 \times 1.5 \times \text{AF} \\ ERS &= 2.63 \end{aligned}$$

and

$$\begin{aligned} ZPA &= \text{Ground ZPA} \times 1.5 \times 1.5 \times \text{AF} \\ ZPA &= 1.01 \end{aligned}$$

therefore, seismic capacity exceeds seismic demand.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Siff Date 4-24-95
 Reviewed by _____ / Date _____

SCE Review: John G. Cook 8/21/95

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATIONPage 10 of 11

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
<u>AREA = CTMT9 ELEV = 565'</u>				
EQUIPMENT	MFG.	MODEL NO.	AMP.	>8HZ Setpoint/Nom.
PSH3711	S-O-R	6V2-E5-M2-CTTX4	1.0	Y 135#/80#
PSH3712	S-O-R	6V2-E5-M2-CTTX4	1.0	Y 135#/80#

Nominal Pressure based on pressure observed at computer point P069 for CCW header pressure.

The effective grade for area CTMT9 is 565'
Peak Ground Response Spectra = 0.39g
Ground ZPA = 0.15g

Since 565' - 565' = 0' < 40' , the ground spectra multiplied by (1.5 X 1.5) may be used to evaluate these pressure switches.

Natural frequency of each mounting is > 8 Hz (Ref. NED 95-10048)
The amplification factor for each mounting is 1.0. (Ref. NED 95-10048)

GERS-PS.5 = 3.0g/1.0g (EPRI NP-5223-SL) (JUSTIFICATION ATTACHED)

Demand = .39g/.15g X 1.5 X 1.5 X 1.0 = 0.88g/0.34g < 3.0g/1.0g

Therefore these devices may be screened at level 2 as being seismically adequate using GERS-PS.5

Prepared by J.W.Bidur Date 6/16/95

Seismic Capability Engineer J.Rook Date 7-18-95

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by N/A / Date
Reviewed by N/A / Date

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATIONPage 11 of 11

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT
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JUSTIFICATION TO USE GERS-PS.5 = 3.0g/1.0g (EPRI NP-5223-SL)

The GERS for Static-O-Ring Pressure switches is given for S-O-R models 4N6, 5N, 6N and 12N. Research of S-O-R catalogs back to 1975 indicate that the first number, 4,5,6 or 12 refers to the piston size. the second and third digits specify the type and size of the case. The 'N' code as used in the GERS is a general reference to S-O-R's NEMA 4 style enclosures. These enclosures are rigid boxes within which the moving components are mounted. Given that the enclosure is rigidly mounted, the exact dimension of the enclosure should not have any effect on the seismic capacity of the device.

Davis-Besse has several essential S-O-R pressure switches that these GERS may be used for with justification. They represent two piston sizes, 6 and 12. This portion of the model number exactly matches the number specified in the GERS. There are also two enclosure styles represented. These styles are known as V2 and V7. They are also NEMA 4 enclosures. The only difference between these enclosures and the 'N' enclosures is in their dimensions. The 'V' enclosures are of the same general shape but of slightly larger dimensions than the N series. These differences will not affect the seismic capacity of the instrument. Based on the above discussion regarding the similarity of these switches, GERS-PS.5 may be used for evaluating 6V and 12V series pressure switches.

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- | | |
|------|---|
| CA | - Chatter acceptable. |
| NV | - Not vulnerable (mechanically-actuated contacts and solid state relays). |
| GERS | - Seismically adequate based on GERS _____; include GERS number. |
| NA | - Component not affected by relays. |
| CR | - Corrective action required. |
| OA | - Operator action. |
| | - No entry necessary. |

Prepared by Jewell / Date _____
 Reviewed by Jewell / Date 7/19/95

THIS VALVE MUST BE CAPABLE OF
CLOSED DURING PERIOD OF STRONG
SHAKING. DUE TO INTERLOCK IN
ON CKT. 33 $\frac{1}{2}$ %, VALVE CC1410 MUST ALSO
CLOSE AND REMAIN CLOSED

6.4 #156

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATION

Page 1 OF 11

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MUL-1B, BF1238 HIS MUL1B	E-52R SHT. 17A	DS	G.E TYPE SB-9 CTRL SW IN CDF124-2 H=6, RM=429 EL=603	NV
"	33 $\frac{1}{2}$, 33 $\frac{1}{2}$ %co, %tc		LIMIT TORQUE TORQUE SW. IN MVMUL1B H=9, RM=215 EL = 565	NV
"	33 $\frac{1}{2}$, 33 $\frac{1}{2}$ %bn%, 33 $\frac{1}{2}$, 33 $\frac{1}{2}$ %an%, 33 $\frac{1}{2}$ ac		LIMIT TORQUE LIMIT SW. IN MVMUL1B (SEE ABOVE)	NV

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS ____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by W. K. Smith Date 11/7/94
Reviewed by _____ / Date _____

6.4 #156

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATIONPage 2 OF 11

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MUL1B, BF1238, HISMUL1B	E-52B SHT. 17A	33/ao	LIMIT TORQUE LIMIT SWITCH IN MVMUL01B $A=9$, $RM=215$ $EL=565$	NV
"	CS CLOSE, CS OPEN (HISMUL1B)		CUTLER-HAMMER TYPE E-30B P.D. ON C5703. $A=7$, $RM=505$ $EL=623$	NV
"	PSHX		DEUTSCH TYPE 4AX RELAY IN RC4605. $A=$ 6 , $RM=428$, $EL=603$	LEVEL 2 - USING RELAY SPECIFIC TEST DATA. (SEE PG 9)

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by D.K. Lipp Date 11/7/94
Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATION

Page 3 OF 11

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MU-1B, BF1238, HIS MU 1B	E-52B SHT 17A	TSHX	DEUTSCHE TYPE 4AX RELAY IN RC4605 (SEE ABOVE)	CA7 (MAY CAUSE) PRESSURE IS THE DESIRED METHOD FOR CLOSING THIS VALVE
"	"	OL	(W) OVERLOAD RELAY CONTACTS IN MCC F12A A = 6, RM = 428 EL = 603	CA8
"	" BKR. SW "		(W) TYPE OTZ SELECTOR SW ON MCC F12A. (SEE ABOVE)	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Saif Date 11/7/94
 Reviewed by _____ / Date _____

6.4 #156

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATIONPage 4 OF 11

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MULIB, BF123B, HISMULIB	E-52B SHT 17A	42a 0, 42b C, 42b 0	(W) L-56 AUX CONTACTS FOR STARTER IN MCC F12A. (SEE ABOVE)	GERS-MCC.9 (AREA 6) SEE PG 8
"	"	42 0, 42 C	(W) SERIES AZOO STARTER IN MCC F12A (SEE ABOVE)	GERS-MCC.9 (AREA 6) SEE PG 8
E-52B SHT 57	PSH (PSH3712)		STATIC-O-RINGS MODEL # 6V2-E5-M2CTK4 IN PSH3712 H=9, RHH=215 EL=565	GERS-PS.5 (PAGE 10)
E-52B SHT 57	TSH (TSH3745A)		SEE 6.4 #156	CAT - SEE TSHX.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS ____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by John Smith Date 11/7/94
Reviewed by _____ / Date _____

6.4 #154

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATIONPage 5 OF 11

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT [*]
MU-1B, BF1238, HISMU1B		NOTE: NEED TO EVALUATE CTRL CKT FOR OC1410, WHICH FOLLOWS, DUE TO 33% INTERLOCK.		
	E-52B SHT 17B	'DS'	GE TYPE SB9 CTRL SW IN CDFIZA-2 A=6, RM=428 EL=603	NV
		33% to, AC	LIMIT TORQUE LIMIT SW IN MV1410. A=9, RM= 215 EL=565	NV

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by D.K. Bell, Date 1/7/94
Reviewed by _____ / Date _____

6.4 # 156

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATIONPage 6 OF 11

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MULB, BF1238, HISMULB	E-5213 SHT 17B	<u>33</u> <u>60</u> , <u>33</u> <u>91%</u> , <u>33</u> <u>91%</u>	LIMIT TORQUE LIMIT SW. IN MV1410 (SEE ABOVE)	NV
"		<u>CS</u> <u>OPEN</u>	SEE HISMULB	NV
"		<u>2</u> <u>TDC</u>	AGASTAT SERIES E7012A RELAY IN RC4605, A=6, RM=428 EL=603	GERS-RLY- PNT. 7 (SEE PG 9)

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Knobell Date 3/10/95
 Reviewed by _____ / Date _____

6.4 # 156

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATIONPage 7 OF 11

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MULB, BF1238, HISMULB	E-52B SHT. 17B	OL	(W) OVERLOAD RELAY CONTACT IN MCC F12A A=6, RM=428 EL=603.	CAB
"		42b, 42b C, O	(W) L-56 AUX CONTACT FOR STARTER IN MCC F12A (SEE ABOVE)	GERS-MCC, 9 (AREA 14) SEE Pg 8
"		42, 42 O, C	(W) SERIES A200 STARTER IN MCC F12A (SEE ABOVE)	GERS-MCC, 9 (AREA 6) SEE Pg 8
"		"OPEN", "NORMAL", "CLOSE"	(W) TYPE OTZ SELECTOR SN. ON MCC F12A. (SEE ABOVE).	NV

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by D.K. Lefebvre Date 12/4/94
Reviewed by _____ / Date _____

C-4 #156

A-46 RELAY SCREENING AND EVALUATION
FORM G-4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATION

Page 8 OF 11

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
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GERS-MCC.9 (AREA 6)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 6; 603', and 585'.

The effective grade for Area 6 is 573'.

Since $603' - 573' = 30'$, the ground spectra multiplied by (1.5x1.5) may be used to evaluate contactors/starters in Area 6 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} < 1.5g$ and $bA_{33Hz} < 1.0g$, then contactors/starters in Area 6 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Sill Date 3/2/95

Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

G.4 #156

System MAKEUP AND PURIFICATION

Page 9 of 11

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
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LEVEL 2 SCREENING FOR RC4605

1. Natural frequency of RC4605 is greater than or equal to 8Hz.
2. RC4605 has been given an amplification factor (AF) of 3.
3. RC4605 is located in plant area 6, elevation 603', which is less than about 40 feet above effective grade (Area 8 effective grade = 573').
4. For this area and elevation Peak GRS = .39g and Ground ZPA = .15g
5. Seismic capacity for Deutsch 4AP43AF = 6.7g peak and 5g at the ZPA (ref. NED 95-10022, "Seismic Evaluation of Deutsch Relays" and "Justification for Covering Older Deutsch Relays with the 1990 Farwell & Hendricks Report"), see G.4 # 72.
6. Seismic capacity for Agastat 7012 = 12.5g peak and 5g at the ZPA (ref. GERS-RLY-PNT.7).

thus;

$$\begin{aligned} \text{ERS} &= \text{Peak GRS} \times 1.5 \times 1.5 \times \text{AF} \\ \text{ERS} &= 2.63 \end{aligned}$$

and

$$\begin{aligned} \text{ZPA} &= \text{Ground ZPA} \times 1.5 \times 1.5 \times \text{AF} \\ \text{ZPA} &= 1.01 \end{aligned}$$

therefore, seismic capacity exceeds seismic demand.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by W.K. Jilg Date 4-24-95
Reviewed by _____ / Date _____

SCG REVIEW: John K. York 8/21/95

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

G.4 #156

System MAKEUP AND PURIFICATION

Page 10 of 11

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT
AREA = CTMT9 ELEV = 565'				
EQUIPMENT	MFG.	MODEL NO.	AMP.	>8HZ
PSH3711	S-O-R	6V2-E5-M2-CTTX4	1.0	Y
PSH3712	S-O-R	6V2-E5-M2-CTTX4	1.0	Y

Nominal Pressure based on pressure observed at computer point P069 for CCW header pressure.

The effective grade for area CTMT9 is 565'
 Peak Ground Response Spectra = 0.39g
 Ground ZPA = 0.15g

Since 565' - 565' = 0' < 40' , the ground spectra multiplied by (1.5 X 1.5) may be used to evaluate these pressure switches.

Natural frequency of each mounting is > 8 Hz (Ref. NED 95-10048)
 The amplification factor for each mounting is 1.0. (Ref. NED 95-10048)

GERS-PS.5 = 3.0g/1.0g (EPRI NP-5223-SL) (JUSTIFICATION ATTACHED)

Demand = .39g/.15g X 1.5 X 1.5 X 1.0 = 0.88g/0.34g < 3.0g/1.0g

Therefore these devices may be screened at level 2 as being seismically adequate using GERS-PS.5

Prepared by J.W.Bidner Date 6/16/95

Seismic Capability Engineer J.Rook Date 7-18-95

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by _____ / Date _____
 Reviewed by NIA / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATIONPage 11 of 11

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT
---------------------	------------	-----------------------	-------------------------	-----

JUSTIFICATION TO USE GERS-PS.5 = 3.0g/1.0g (EPRI NP-5223-SL)

The GERS for Static-O-Ring Pressure switches is given for S-O-R models 4N6, 5N, 6N and 12N. Research of S-O-R catalogs back to 1975 indicate that the first number, 4,5,6 or 12 refers to the piston size. the second and third digits specify the type and size of the case. The 'N' code as used in the GERS is a general reference to S-O-R's NEMA 4 style enclosures. These enclosures are rigid boxes within which the moving components are mounted. Given that the enclosure is rigidly mounted, the exact dimension of the enclosure should not have any effect on the seismic capacity of the device.

Davis-Besse has several essential S-O-R pressure switches that these GERS may be used for with justification. They represent two piston sizes, 6 and 12. This portion of the model number exactly matches the number specified in the GERS. There are also two enclosure styles represented. These styles are known as V2 and V7. They are also NEMA 4 enclosures. The only difference between these enclosures and the 'N' enclosures is in their dimensions. The 'V' enclosures are of the same general shape but of slightly larger dimensions than the N series. These differences will not affect the seismic capacity of the instrument. Based on the above discussion regarding the similarity of these switches, GERS-PS.5 may be used for evaluating 6V and 12V series pressure switches.

- Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- | | |
|------|---|
| CA | - Chatter acceptable. |
| NV | - Not vulnerable (mechanically-actuated contacts and solid state relays). |
| GERS | - Seismically adequate based on GERS _____; include GERS number. |
| NA | - Component not affected by relays. |
| CR | - Corrective action required. |
| OA | - Operator action. |
| - | - No entry necessary. |

Prepared by *Bethel* / Date
 Reviewed by *Bethel* / Date 7/19/95

DAMPER IS NOT REQUIRED TO
OPERATE DURING EARTHQUAKE.
OPERATION BASED ON RMH, TEMP.

ON → VENT OPEN

6.4 #157

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System ESSENTIAL HVAC
BATT. AND SWGR. RMS,

Page 1 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT°
HV-5314A, BF1239 NV-5314A	E-60B SHT 26	<u>33</u> / <u>60</u> , <u>33</u> / <u>60</u> , <u>ac</u>	LIMIT TORQUE TORQUE SW IN MV5314A A=6, RM=428 EL=603	NV
NOTE: HV-5314A REFERS TO THE DAMPER, MV5314A REFERS TO THE ACTUATOR		<u>33</u> / <u>60</u> , <u>33</u> / <u>60</u> , <u>ac</u> , <u>33</u> / <u>60</u> , <u>33</u> / <u>60</u> , <u>ao</u>	LIMIT TORQUE LIMIT SW IN MV5314A. (SEE ABOVE)	NV
"	STOP		REES P.B. CAT. # 01461- 202 IN NV5314A (SEE ABOVE)	NV

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by W.K. Bill Date 10-16-94
Reviewed by _____ / Date _____

6.4 # 157

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.6 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System ESSENTIAL HVAC
BATT. AND SWGR. RMS.

Page 2 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
HV-5314A, BF1239, NV-5314A	E-60B SHT. 26	"OPEN", "CLOSE" (NV5314A)	PEES RCKER CAT # 03845-000 IN NV5314A (SEE ABOVE)	NV
"	OL	(W) OVERLOAD RELAY CONTACTS IN MCC F12A. A=6, RM=428, EL=603	CAB	
"	<u>42a</u> <u>O</u> , <u>42b</u> <u>C</u> , <u>42a</u> <u>C</u> , <u>42b</u> <u>O</u>	(W) L-56 AUX. CONTACTS IN MCC F12A. (SEE ABOVE)	CA - WILL NOT LOCK-OUT SHAMPER SPURIOUS OPENING, CLOSING DURING STRONG SHAKING ACCEPTABLE	

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. 6-14 Date 10-16-94
 Reviewed by _____ / Date _____

6.4 # 157

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System ESSENTIAL HVAC
BATT. AND SWGR. RMS.

Page 3 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
HV-5314A, BF1239, HIS5314A	E-60B SHT 26	42 0, 42 C	(W) SERIES AZOO STARTER IN MCC F1ZA (SEE ABOVE)	GERS-MCC.9 (AREA 6) SEE PG 4
"		42Xa, 42Xb (CORRESPONDS TO STATE OF VENT FAN)	(W) TYPE AR440A RELAY WITH ARIA LATCH ATTACHMENT IN MCC F1ZA (SEE ABOVE)	CA - WILL NOT LOCK-OUT DAMPER, SPURIOUS OPENING/ CLOSING DURING 30 SECOND ACCEPTABLE.

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-activated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Knapp Date 10-14-94
Reviewed by _____ / Date _____

c.e #157

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System E&S, HVAC, BATT & SWGR RMS

Page 4 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

GERS-MCC.9 (AREA 6)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 6; 603', and 585'.

The effective grade for Area 6 is 573'.

Since $603' - 573' = 30'$, the ground spectra multiplied by (1.5×1.5) may be used to evaluate contactors/starters in Area 6 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} \leq 1.5g$ and $bA_{33Hz} \leq 1.0g$, then contactors/starters in Area 6 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Smith Date 3/1/94
Reviewed by _____ / Date _____

#158

A-46 RELAY SCREENING AND EVALUATION
 FORM 64 - RELAY TABULATION
 PLANT ~~BNIS-BESSE UNIT 1~~

System ESSENTIAL HVAC
EDG RM.

Page 1 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
C25-3, BF1255 HIS NC253	E-60B SHT 2	"START", "STOP" (HISNC253)	REES ROCKER CATA # 03845-000 IN NC0253 A=6, RM=319 EL=585	NV
11	SSIXI	SQUARE D CUTSS B501 TYPE KPD13 IN C3622 A=6, RM=319 EL=585	CA - A 30SECOND DELAY (PERIOD OF STRONG SHAKING) IS ACCEPTABLE FOR STARTING THIS FAN. CHATTER WILL NOT LOCKOUT THIS FAN.	
11	OL	(W) OVERLOAD RELAY CONTACTS IN MCC F12B A=6, RM=319 EL=585		CA8

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Sill Date 11/29/94
 Reviewed by _____ / Date _____

6.4 # 158

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System ESSENTIAL HVAC
EDG RM

Page 2 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
C25-3, BF1255, HISNC253	E-60B SHT 2	42Xa, 42Xb	(W) AR440A RELAY WITH ARLA LATCH. IN MCC FIZB (SEE ABOVE)	CAL
"	"	42b, 42a	(W) L-56 Aux CONTACTS FOR STARTER IN MCC FIZB. (SEE ABOVE)	CA - CHATTER ON THESE CONTACTS DO NOT PREVENT FAN START OR LOCK OUT FAN
"	"	42	(W) SERIES A200 STARTER IN MCC FIZB. (SEE ABOVE)	CA - WILL NOT LOCK- OUT FAN MTR.

- Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- | | |
|------|---|
| CA | - Chatter acceptable. |
| NV | - Not vulnerable (mechanically-actuated contacts and solid state relays). |
| GERS | - Seismically adequate based on GERS ____; include GERS number. |
| NA | - Component not affected by relays. |
| CR | - Corrective action required. |
| OA | - Operator action. |
| | - No entry necessary. |

Prepared by W.L. Hill Date 11/29/94
Reviewed by _____ / Date _____

6.4 #159

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System ESSENTIAL HVAC
EDG RM.

Page 1 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
C25-4 BF1256 HIS NC254	E-603 SHT. 2	START, STOP (HISNC252)	REES PCKER DATA # 03845-000 IN NC0254 A=6, RM=317 EL = 585	NV
"	SSIXI		SQUARE D CLASS 8501 TYPE KPD 13 IN C3622. A=6, RM=319, EL = 585	CA - A 30 SECOND DELAY (PERIOD OF STRONG SHAKING) IS ACCEPTABLE FOR THIS FAN. CHATTER WILL NOT LOCK OUT
"	OL		OVERLOAD RELAY CONTACTS IN MCC F12B, A=6 RM=319, EL = 585	CA

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Giff Date 11/29/94
Reviewed by _____ / Date _____

6.4 # 159

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System ESSENTIAL HVAC
EDG RM

Page 2 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
C25-4, BF1256, HIS NC254	E-60B SHT. 2	42xa, 42xb	(W) AR440A WITH ARUA LATCH IN MCC F12B (SEE ABOVE)	CA1
"		42a, 42b	(W) L-56 Aux CONTACTS FOR STARTER IN MCC F12B (SEE ABOVE)	CA- CHATTER WILL NOT STOP OR LOCKOUT FAN
"	42		(W) SERIES A200 STARTER IN MCC F12B. SEE ABOVE)	CA- WILL NOT LOCKOUT FAN

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by D. K. Smith Date 11/29/94
Reviewed by _____ / Date _____

VALVE NEEDS TO BE CAPABLE OF
CLOSING DURING PERIOD OF
STROKE, SHAKING. WOULD CLOSE

SIGNAL GENERATED BY

PSL1377A

STROKE TIME = 29.2 SEC.

A-46 RELAY SCREENING AND EVALUATION
FORM G-4 - RELAY TABULATION
PLANT LUS-BESSE UNIT 1

6.4 #160

System SERVICE WATER

Page 1 OF 8

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
SW-1395, BF1277 HIS 1395, PSL-1377A	E-48B SHT. 9A # 9B	DS	G.E. TYPE SB-9 CTRL, SW IN CDFIIC A=INTAKE RM=52, EL= 576	NV
NOTE: SW-1395 REFERS TO " THE VALVE, MV1395 REFERS TO THE VALVE OPERATOR.	BA, BB (OPEN CKT)	AROMAT PN STIEL2DC24V IN C5755D / C5756C. A=7 RM=502, EL=623	CA4 (<u>OS</u> <u>OPEN</u> , OPEN, 42a) (<u>G</u>)	
KA, KB (OPEN. CKT)	DEUTSCHE TYPE HAP IN C5763C AND C5762D. A=7, RM= 505, EL=623	CA4 (SAME AS ABOVE)		

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Lippert 10/8/94
Reviewed by _____ / Date _____ / Date _____

6.4 #160

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System SERVICE WATERPage 2 OF 8

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
SW-1395, BF1277, HIS1395, BL1377A	E-48B SHTSGA+ 9B	33/ to, 33/ tc	LIMIT TORQUE TORQUE SW IN MV1395 A= INTAKE Rm= 53 EL= 546	NV
"		33/ 33/ bo, an%, 33/ 33/ tc, ac, 33/ ac	LIMIT TORQUE LIMIT SW IN MV1395 (SEE ABOVE)	NV
"		STOP	PEES P.D CAT # 01461-202 IN NV1395 A= INTAKE Rm= 53 EL= 566	NV

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Sulph Date 12/8/94
 Reviewed by _____ / Date _____

6.4 #160

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System SERVICE WATERPage 3 OF 8

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
SW-1395, BF1277, HIS1395, PSL1377A	E-48B SHTS 9A + 9B	"OPEN" "CLOSE"	REES ROCKER CAT # 03845-000 IN NV1395 (SEE ABOVE)	NV
"	CS OPEN, CLOSE (HIS1395)		CUTLER-HAMMER TYPE E-30B PB ON C5717. A= 7 RM=502, EL =423	NV
"	BA, BB (CLOSE CKT)	SEE BA, BB (OPEN CKT)		CAT (MAY CAUSE)

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS ____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by W.K. Sip Date 12/18/94
 Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

G.4 #160

System SERVICE WATER

Page 4 OF 8

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
SW-1395, BF1277, HIS1395, PSL-1377A	E-48B SHT.9A +95	KA+KB (CLOSE CKT)	SEE KA + KB IN OPEN CKT	CA7 (MAY CHUSE)
"	PSL		STATIC - O RING MODEL 6V7-E3-N4-F1A-TLL IN PSL1377A, A = INTAKE Rm = 52 EL = 576'	GERS - PS.5 (PAGE 7)
"	OL		W OVERLOAD RELAY CONTACTS IN MCC F12C. A = INTAKE RM = 52, EL 576	CAB

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by _____ / Date
 Reviewed by _____ / Date

6.4 #160

A-85 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System SERVICE WATER

Page 5 of 8

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
SW-1395, BF1277, HIS-1395, PSL1377A	E-48B SHTS 9A & 9B	$\frac{42a}{O}$, $\frac{42b}{C}$, $\frac{42a}{C}$, $\frac{42b}{O}$	(W) L-56 AUX CONTACTS FOR STARTER IN MCC F12C (SEE ABOVE)	GERS-MCC.9 (INTAKE) SEE PG 6
		$\frac{42}{O}$, $\frac{42}{C}$	(W) SERIES A 200 STARTER IN MCC F12C (SEE ABOVE)	GERS-MCC.9 (INTAKE) SEE PG 6

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- - No entry necessary.

Prepared by D.K. Griff 12/18/94
Reviewed by _____ / Date

6.4 # 160

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System: SERVICE WATER

Page 6 OF 8

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

GERS-MCC.9 (AREA INTAKE)

Davis-Besse has Motor Control Centers (MCCs) on the following elevation in Area Intake; 567'.

The effective grade for Area Intake is 569'.

Since $569' - 567' = 2'$, the ground spectra multiplied by (1.5×1.5) may be used to evaluate contactors/starters in Area Intake MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} \leq 1.5g$ and $bA_{33Hz} \leq 1.0g$, then contactors/starters in Area Intake MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Bill Date 3/1/95
Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System SERVICE WATER

Page 7 of 8

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT
<u>AREA = INTKE ELEV = 585'</u>				
EQUIPMENT PSL1377A	MFG. S-O-R	MODEL NO. 6V7-E3-N4-F1A-TTL	AMP. 1.0	>8HZ Y

Nominal Pressure based on Service water header discharge pressure as observed from computer points P945 and P946.

The effective grade for area INTKE is 569'
 Peak Ground Response Spectra = 0.39g
 Ground ZPA = 0.15g

Since 585' - 569' = 16' < 40' , the ground spectra multiplied by (1.5 X 1.5) may be used to evaluate these pressure switches.

Natural frequency of each mounting is > 8 Hz (Ref. NED 95-10048)
 The amplification factor for each mounting is 1.0. (Ref. NED 95-10048)

GERS-PS.5 = 3.0g/1.0g (EPRI NP-5223-SL) (JUSTIFICATION ATTACHED)

Demand = .39g/.15g X 1.5 X 1.5 X 1.0 = 0.88g/0.34g < 3.0g/1.0g

Therefore these devices may be screened at level 2 as being seismically adequate using GERS-PS.5

Prepared by C. L. Blash Date 6/16/85

Seismic Capability Engineer J. Book Date 7-18-85

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by _____ / Date _____
 Reviewed by N/A / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System SERVICE WATERPage 86f 8

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT
JUSTIFICATION TO USE GERS-PS.5 = 3.0g/1.0g (EPRI NP-5223-SL)				

The GERS for Static-O-Ring Pressure switches is given for S-O-R models 4N6, 5N, 6N and 12N. Research of S-O-R catalogs back to 1975 indicate that the first number, 4,5,6 or 12 refers to the piston size. the second and third digits specify the type and size of the case. The 'N' code as used in the GERS is a general reference to S-O-R's NEMA 4 style enclosures. These enclosures are rigid boxes within which the moving components are mounted. Given that the enclosure is rigidly mounted, the exact dimension of the enclosure should not have any effect on the seismic capacity of the device.

Davis-Besse has several essential S-O-R pressure switches that these GERS may be used for with justification. They represent two piston sizes, 6 and 12. This portion of the model number exactly matches the number specified in the GERS. There are also two enclosure styles represented. These styles are known as V2 and V7. They are also NEMA 4 enclosures. The only difference between these enclosures and the 'N' enclosures is in their dimensions. The 'V' enclosures are of the same general shape but of slightly larger dimensions than the N series. These differences will not affect the seismic capacity of the instrument. Based on the above discussion regarding the similarity of these switches, GERS-PS.5 may be used for evaluating 6V and 12V series pressure switches.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by *John Blodget* / Date _____
 Reviewed by *John Blodget* / Date 7/19/95

THIS VALVE MUST BE
CAPABLE OF OPENING
DURING STRONG SHAKING

6.4 #161

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System SERVICE WATER

Page 1 OF 5

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
SW-2930, BF1281 HIS 2930	E-48B SHT. 26	DS	6,E TYPE SB-9 CTRL. SN IN CDF12C. A = INTAKE, RM=52 EL= 576.	NV
NOTE SW2930 REFERS TO THE VALVE, NV2930 REFERS TO THE VALVE ACTUATOR.	"	<u>33</u> / <u>33</u> <u>60</u> , <u>ac</u> ,	LIMIT TORQUE LIMIT SWITCH IN MV2930 A= INTAKE RM= 53 EL= 566	NV
"	STOP	<u>33</u> / <u>33</u> <u>60</u> , <u>tc</u>	REES PB CHT. # 01461-202 IN NV2930 A= INTAKE RM= 53 EL= 566	NV
"			LIMIT TORQUE TORQUE SWITCH IN MV2930. A = INTAKE, RM= 53, EL= 566	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by D. K. Bish Date 12/9/94
Reviewed by _____ / Date _____

6.4 #161

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System SERVICE WATERPage 2 OF 5

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
SW-2930, BF1281, HIS 2930	E-48B SHT. 26	"OPEN" - "CLOSE"	REES ROCKER CHT #03845-000 IN NV2930 (SEE "STOP")	NV
"		<u>CS</u> OPEN) <u>CS</u> CLOSE (HIS 2930)	CUTLER-HAMMER TYPE E-30B P.B. ON C5720. A=7, RM=502 EL=623	NV
"	<u>PSHX</u> 2930		DEUTSCH TYPE 4AX RELAY IN RC3014 A= INTAKE, RM=52 EL=576	LEVEL 2 USING RELAY SPECIFIC TEST DATA (SEE Pg. 4 OF THIS G.4)
"	PSH		SOR MODEL # 6VZ-E5-TTX4 IN PSH2930. (SEE ABOVE)	CA (SEE BELOW) NOTE

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS ____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by _____ / Date

Reviewed by _____ / Date

NOTE: PER THE OPERATION REPRESENTATIVE (4/4/95) Service water can tolerate waiting 30sec. (the period of strong shaking) for this valve to open. NO LOCKOUTS WILL OCCUR *Ed W Blaine* G-4

G.4 # 161

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System SERVICE WATERPage 3 OF 5

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
SW-2930, BF1281, HIS 2930	E-48B SHT. 26	OL	(W) OVERLOAD RELAY CONTACTS IN MCC F12C. A = INTAKE RM = 52 EL = 576	CAB
		$\frac{42a}{O}, \frac{42b}{C}, \frac{42a}{C}$, $\frac{42b}{O}$	(W) L-56 AUX CONTACTS FOR STARTER IN MCC F12C. (SEE ABOVE)	GERS-MCC.9 (AREA INTAKE)
		$\frac{42}{O}, \frac{42}{C}$	(W) SERIES A700 STARTER IN MCC F12C. (SEE ABOVE)	GERS-MCC.9 (AREA INTAKE)

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by D. K. Saif Date 12/9/94
Reviewed by _____ / Date _____

G-4 # 161

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System SERVICE WATER

Page 4 OF 5

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT

LEVEL 2 SCREENING FOR RC3014

1. Natural frequency of RC3014 is greater than or equal to 8Hz.
2. RC3014 has been given an amplification factor (AF) of 3.
3. RC3014 is located in plant area Intake, elevation 585', which is less than about 40 feet above effective grade (Area Intake effective grade = 569)
4. For this area and elevation Peak GRS = .39g and Ground ZPA = .15g
5. Seismic capacity for Deutsch 4AX1603 = 6.7g peak and 5g at the ZPA (ref. NED 95-10022, "Seismic Evaluation of Deutsch Relays" and "Justification for Covering Older Deutsch Relays with the 1990 Farwell & Hendricks Report", ~~copies attached~~, SEE G.4 # 72)

thus;

$$ERS = \text{Peak GRS} \times 1.5 \times 1.5 \times AF$$

$$ERS = 2.63$$

and

$$ZPA = \text{Ground ZPA} \times 1.5 \times 1.5 \times AF$$

$$ZPA = 1.01$$

therefore, seismic capacity exceeds seismic demand.

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- - No entry necessary.

Prepared by W.H. Baile Date 4-27-95
Reviewed by _____ / Date _____

SUS Review Jon H. Haak 8/18/95

6.4 #161

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System SERVICE WATER

Page 5 OF 5

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

GERS-MCC.9 (AREA INTAKE)

Davis-Besse has Motor Control Centers (MCCs) on the following elevation in Area Intake; 567'.

The effective grade for Area Intake is 569'.

Since $569' - 567' = 2'$, the ground spectra multiplied by (1.5×1.5) may be used to evaluate contactors/starters in Area Intake MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} \leq 1.5g$ and $bA_{33Hz} \leq 1.0g$, then contactors/starters in Area Intake MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by D. K. Bell Date 3/1/95
Reviewed by _____ / Date _____

THIS VALUE DOES NOT
HAVE TO CLOSE DURING
STRONG SHAKING

6.4 #162

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System SERVICE WATER

Page 1 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
SW-2932, BF1282 HIS 2932	E-48B SHT. 28	DS	G.E. TYPE SB-9 CTRL SW IN CD F12C: A= INTAKE, RM= 52, EL= 576	NV
"	$\frac{33}{60}$, $\frac{33}{ac}$, $\frac{33}{bc}$ $\frac{33}{ao}$	LIMIT TORQUE LIMIT SW IN MV2932. A= INTAKE, RM= 53, EL= 566		NV
"	$\frac{33}{to}$, $\frac{33}{tc}$	LIMIT TORQUE LIMIT SW IN MV2932. (SEE ABOVE)		NV
"	"STOP"	FEES PB OUT. # 01461-202 IN NV2932, (SEE ABOVE)		NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- DA - Operator action.
- No entry necessary.

Prepared by W.K. Lippert / Date 12/9/94
Reviewed by _____ / Date _____

G.4 #162

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System SERVICE WATER

Page 2 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
SW-2932, BF1282, HIS2932	E-48B SHT. 28	"OPEN", "CLOSE"	REED ROCKER CAT. # 03845-000 IN NV2932. (SEE ABOVE)	NV
"		CS OPEN) CS CLOSE (HIS2932)	CUTLER HAMMER TYPE E-30B P.B. ON C5720. A = 7, RM = 502, EL = 623	NV
"	BL		W OVERLOAD RELAY CONTACTS IN MCC F12C. A = INTAKE, RM = 52, EL = 516	CA8

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS ____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by W.H. Lyle Date 12/9/94
Reviewed by _____ / Date _____

~~6.4~~ 162

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System SERVICE WATER

Page 3 OF 4

Subsystem/Component

Ref Dwg(s)

Contact/Contact Group

Relay
Type and
Location

SAT*

SW-2932, BF1282, HIS 2932	E-48B SHT 28	$\frac{42a}{O}$, $\frac{42b}{C}$, $\frac{42a}{C}$, $\frac{42b}{O}$,	(W) L-56 AUX CONTACTS FOR STARTER IN MCC F12C. (SEE ABOVE)	GERS-MCC. 9 (AREA INTAKE) SEE Pg 4
"		$\frac{42}{O}$, $\frac{42}{C}$	(W) SERIES A200 STARTER IN MCC F12C. (SEE ABOVE).	GERS-MCC. 9 (AREA INTAKE) SEE Pg 4

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by D. K. Bickford Date 12/9/94
Reviewed by _____ / Date _____

6.4 #162

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System SERVICE WATER

Page 4 of 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

GERS-MCC.9 (AREA INTAKE)

Davis-Besse has Motor Control Centers (MCCs) on the following elevation in Area Intake; 567'.

The effective grade for Area Intake is 569'.

Since $569' - 567' = 2'$, the ground spectra multiplied by (1.5×1.5) may be used to evaluate contactors/starters in Area Intake MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz}):

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz}):

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} \leq 1.5g$ and bA_{33Hz} is $\leq 1.0g$, then contactors/starters in Area Intake MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by JK Date 12-9-94
Reviewed by _____ / Date _____

VALVE TO REMAIN CLOSED DURING
PERIOD OF STRONG SHAKING

6.4 #163

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System REACTOR COOLANT

Page 1 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
RC-200, BF1285 HIS 200A	E-52B SHT. 11	DS	GE TYPE SB-9 CTRL SW IN CDF12A-2. A=6, RM=428 EL=603	NV
"		<u>33</u> <u>33</u> <u>33</u> <u>bo</u> , <u>bn%</u> , <u>ao</u> ,	LIMIT TORQUE LIMIT SW IN MVO200. A=9, RM=315, EL= 585	NV
"		<u>33</u> / <u>te</u> , <u>33</u> / <u>to</u>	LIMIT TORQUE TORQUE SW IN MUG200. (SEE ABOVE)	NV
"	<u>CS</u> <u>OPEN</u>) <u>CS</u> <u>CLOSE</u>		CUTLER-HAMMER TYPE E-30B PB ON C579②. A=7, RM=502, EL=623	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by D.K. Bish 12/4/94
Reviewed by _____ / Date

G.4 #163

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System REACTOR COOLANT

Page 2 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
RC-200, BF1285, HIS200A	E-52B SHT. 11	OL	(W) OVERLOAD RELAY CONTACT IN MCC F12A A=6, RM=428 EL=603	CAB
		$\frac{42a}{O}, \frac{42b}{C}, \frac{42a}{C}$, $\frac{42b}{O}$	(W) L-56 AUX CONTACT FOR STARTER IN MCC F12A. (SEE ABOVE).	GERS-MCC.9 (AREA 6) SEE Pg 3
		$\frac{42}{O}, \frac{42}{C}$	(W) SERIES A200 STARTER IN MCC F12A. (SEE ABOVE)	GERS-MCC.9 (AREA 6) SEE Pg 3
		'OPEN', 'NEUTRAL', 'CLOSE'	(W) TYPE OTZ SELECTOR SWITCH ON MCC F12A. (SEE ABOVE)	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Smith Date 12/7/94
Reviewed by _____ / Date _____

C.A #163

A-46 RELAY SCREENING AND EVALUATION
FORM C.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System REACTOR COOLANT

Page 3 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

GERS-MCC.9 (AREA 6)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 6; 603', and 585'.

The effective grade for Area 6 is 573'.

Since $603' - 573' = 30'$, the ground spectra multiplied by (1.5×1.5) may be used to evaluate contactors/starters in Area 6 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} \leq 1.5g$ and $bA_{33Hz} \leq 1.0g$, then contactors/starters in Area 6 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Self Date 3/1/95
Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

6.4 #164

System MAKEUP AND PURIFICATION

Page 1 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MU-3971, BF1617 HIS 3971	E-49B SHT. 70C, 70D	DS	G.E. TYPE SB-9 CTRL SW IN CONFIGA. A=6, RM=428, EL=603	NV
"		<u>33</u> <u>33</u> bn%, bm%, <u>33</u> <u>33</u> an%, an%	LIMIT TORQUE LIMIT SW. IN MV3971. A = 7 RM = 225, EL = 565	NV
"		<u>33</u> <u>33</u> to, tc	LIMIT TORQUE TORQUE SWITCH IN MV3971 (SEE ABOVE)	NV
"		"STOP"	REES PB CAT. # 04161-202 IN NV3971. A = 7 RM = 225, EL = 565	NV

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Lipp Date 12/20/94
 Reviewed by _____ Date _____

MU3971 IS A 3WAY VALVE
WHICH CAN ALIGN MAKE UP PUMP #2
TO EITHER MAKE UP TANK OR THE

~~ST. SWITCHING~~
FROM MUT TO BWST
DURING STROKES, SHAKING IS ACCEPTABLE.

6.4 #164

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION

PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATION

Page 2 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MIL-3971, BF1617, HIS 3971	E49B SHT. 70C 4-70D	"BWST" + "MUTK"	REES ROCKER CAT # 03845- 000 IN NV3971. (SEE ABOVE).	NV
"	<u>CS</u> BWST, MUTK (HIS 3971)	<u>CS</u>	CUTLER-HAMMER TYPE E30 JG ON E5703. A=7 RM=502, EL = 623	NV
"	OL		(W) OVERLOAD RELAY CONTACTS IN MCC FIGA. A=6, RM= 428, EL = 603	CA8
"	<u>42a</u> <u>O</u> , <u>42b</u> <u>C</u> , <u>42a</u> <u>42b</u> <u>O</u>		(W) L-56 AUX CONTACTS FOR STARTER IN MCC FIGA. (SEE ABOVE)	GERS-MCC.9 (AREA 6) SEE PG 4

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS ____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

- - No entry necessary.

Prepared by W.H. Boddy Date 12/20/94
Reviewed by _____ / Date _____

6.4 #164

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATIONPage 3 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MUL-3971, BF1617, HIS3971	E-49B SHT 70C AND 70D	42 0 , C	(W) SERIES A200 STARTER IN MCC F16A (SEE ABOVE)	GERS-MCC. 9 (AREA 6) SEE Pg 4
"	59X-2		AGASTAT CONTROL RELAY TYPE EGP IN RC460G A=6, RM 428, EL = 603	CA 4 (BUST CLOSED ; an & am ARE OPEN)
"	27X-2		AGASTAT CTRL. RELAY TYPE EGP IN RC460G. A=6, RM=428 EL=603	CA 7 - WOULD AUGN MAKEUP PMP #2 TO BUST WHICH IS ACCEPTABLE.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Lohf Date 12/20/94
Reviewed by _____ / Date _____

G.4 # 164

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAKE UP AND PURIFICATION

Page 4 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

GERS-MCC.9 (AREA 6)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 6; 603', and 585'.

The effective grade for Area 6 is 573'.

Since $603' - 573' = 30'$, the ground spectra multiplied by (1.5×1.5) may be used to evaluate contactors/starters in Area 6 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} < 1.5g$ and $bA_{33Hz} < 1.0g$, then contactors/starters in Area 6 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Smith Date 3/1/95
Reviewed by _____ / Date _____

6.4 #167

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System CTHT VENT. SYSTEM
CTHT COOLING

Page 1 OF 6

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
CI-1, BE1401 HIS5031	E-58B SHT 1A+ 1B	DS	GE TYPE SB-9 CTRL SW IN CDE12A-1 A=6, RM= 429 E= 603	NV
"	CS (HIS5031)		MICRO SWITCH TYPE CMIC ON C5716. A=7 RM= 505, EL= 623	NV
	52hb B) B	52b	Aux SWITCH ON GE TYPE AK-2A- 25 600A BKR* IN EL, A=9 RM= 429, EL = 603	NV

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Liff Date 10-14-94
 Reviewed by _____ / Date

6.4 # 167

A-45 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System CHMT VENT. SVS.Page 2 OF 6

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
C1-1, BE1401, HIS5031	E-58B SHT 1B	KA, KB (1K22A, 3K22A)	DEUTSCH TYP. 4CP IN C5762D & C5763C. A=7, RM= 502, EL=623	ESS. RLY SEE 6.4#311
	E-58B SHT 1B	BB, BH	AROMAT FORM (MODEL # 1A1B UATCHING STIEL2 DC 24V) RELAY IN C5762D & C5763C. A=7, RM=502 EL=623	CA4 KA+KB ARE CLOSED HIGH SPEED -PARALLEL CONTACT NO EFFECT AS LOW SPEED N.C. - OPENING HAS NO EFFECT (KA,KB)
	E-58B SHTS 1A- 1B	T01	AGASTAT SERIES E7022CB RELAY IN MCC E14. A=6 RM=429, EL=603	CA4 (i.e. (CS, KA, KB))

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Smith Date 10-14-94
Reviewed by _____ / Date _____

G.4 #167

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System CTMT. VENT SYSTEMPage 3 OF 6

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
E-53B SHT 1A, 1B	426 LX, LX 426 HX, HX	(W) AR RELAY ARG40A WITH ARLA LATCH ATTACHMENT IN MCC E14	GERS-MCC.9 (AREA 6) & GERS-RLY- AI1.4 (SC > 4.6g)	
"	426 HX, HX	(W) AR RELAY ARG40A IN MCC E14	GERS-MCC.9 (AREA 6) & GERS-RLY- AI1.4 (SC > 4.5g)	
"	426 LX1	(W) AR RELAY ARG40A WITH THE AR LATCH ATTACHMENT IN MCC E14	CA4 (e. CS, KA, KB, BA, BB)	

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Gandy Date 10-14-94
 Reviewed by _____ / Date _____

6.4 #167

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System CHAIT VENT SYSTEM

Page 4 OF 6

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
CI-1, BE1401, HIS5031	E-58B SHT. 1A+ IB	<u>42X</u> , <u>42X</u> <u>L</u> , <u>H</u>	(W) SIZE 5 STARTER IN MCC E14. (SEE PG 6) A=6, RM= 429, EL= 603	GERS-MCC.G (AREA G)
		42XL = GCL 530 42X/H = GCA 530		
	"	SLOW, NEUTRAL, FAST	(W) TYPE OT2 SELECTOR SWITCH ON MCC E14. (SEE ABOVE)	NV
	"	STOP	(W) TYPE PB1 PUSHBUTTON ON MCC E14. (SEE ABOVE)	NV

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Gaff Date 10-14-94
Reviewed by _____ / Date _____

G.4 #167

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System CTMT. COOLINGPage 5 OF 6

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
21-1, BE1401, HIS5031	E-58B SHT 1A & 1B	OL H + L	(W) OVERLOAD RELAY CONTACTS IN MCC E14. (SEE ABOVE)	CAL
	E-58B SH 1B	<u>B</u> <u>A</u> <u>B</u> <u>A</u>	(BYPASS SWITCHES)	SEE G.4A311
	E-52B SHT 1A	A2X H1	(W) SERIES E A200 SIZE 1 STARTER IN MCC E14 (SEE ABOVE)	GERS - MCC. 9 (AREA 6) SEE PG 4

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by L.K. Smith Date 12/20/94
Reviewed by _____ / Date _____

6.4 #167

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System CMMT VENT SYSTEM

Page 6 of 6

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT

GERS-MCC.9 (AREA 6)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 6; 603', and 585'.

The effective grade for Area 6 is 573'.

Since $603' - 573' = 30'$, the ground spectra multiplied by (1.5x1.5) may be used to evaluate contactors/starters in Area 6 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} < 1.5g$ and $bA_{33Hz} < 1.0g$, then contactors/starters in Area 6 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by W. K. Smith Date 3/2/95
Reviewed by _____ / Date _____

6.4 # 168

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System CMMT COOLING

Page 1 OF 6

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
C1-2, BF1401, HIS5032	E-58B SHTS 1A & 1B	DS	G.E. TYPE 58-9 CTRL SW IN CDF12A-1, A=6, RM=428, EL= 603	NV
"	CS (HIS5032)		MICRO SWITCH TYPE CMC ON C5716. A=7 RM= 505, EL= 423	NV
"	$\frac{52hb}{B}, \frac{52b}{B}$		AGX SWITCH OR G.E. TYPE AK2A 25 BKR IN SUB FL. A=6, RM= 428, EL= 603	NV

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Gandy Date 10-14-94
Reviewed by _____ Date _____

G.4 #168

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System CMMT COOLNG

Page 2 OF 6

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
CT-2, BF1401, HIS5032	E-52B SHT 1A4 IB	KA, KB (2K22A, HK22A)	DEUTSCH TYP. 4CP IN C5755D + C5756C, A = 7, RM = 502 EL = 623	ESS, RLY SEE G.4 #311
"	BB + BA	AROMAT FORM 1A1B LATCHING RELAY	(MODEL# ST1EL 2DC24V) IN C5755D + C5756C. (SEE ABOVE)	CA4 HIGH SPEED-PARALLEL CONTACT NO EFFECT LOW SPEED - N.C. OPENING NO EFFECT (KA, KB)
"	TD1	AGASTAT E7022CB CA4 SERIES RELAY	IN MCC F14. A=6, RM=429 FL=603	(I.E OS, KH KB, BA, BB)

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Salter Date 10-14-94
Reviewed by _____ / Date _____

A-45 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System CMMT COOLING

Page 3 OF 6

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
C1-2, BF1401, HIS5032	E-50B SHT 1A+1B	<u>42b</u> <u>LX</u>) <u>42a</u> <u>LX</u>	(W) AR RELAY WITH ARLA LATCH IN MCC F14 MODEL ARG40A	GERS-MCC.9 (AREA 6) + GERS-RLY- AI1.4 (SC74.5g)
		<u>42a</u> <u>HX</u>) <u>42b</u> <u>HX</u>	(W) AR RELAY IN MCC F14 MODEL ARG40A	GERS-MCC.9 (AREA 6) + GERS-RLY- AI1.4 (SC74.5g)
		<u>42b</u> <u>LX1</u>	(W) AR RELAY WITH ARLA LATCH IN MCC F14 (SEE ABOVE) MODEL ARG40A	CA4 (i.e. CS, KA, KB, BH, BB)

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Gandy Date 10-14-94
Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

G.4 #168

System CMMT COOLING

Page 4 OF 6

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
CI-2, BF1401 HIS5032	E-58B SHT 1A & 1B	<u>428</u> <u>L</u> , <u>H</u> <u>42X</u> <u>H</u>	(W) SIZE 5 STARTER IN MCC F14 (SEE ABOVE) # GCA 530 (MODEL)	GERS - MCC. 9 (AREA 6) SEE pg. 6
"	"	<u>42X</u> <u>H</u>	(W) SIZE 1 STARTER A800M47 IN MCC F14.	GERS - MCC. 9 (AREA 6) SEE pg. 6
"	OL H+L		(W) OVERLOAD RELAY CONTACTS IN (W) SIZE 5 STARTERS IN MCC F14.	CA1

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- DA - Operator action.
- No entry necessary.

Prepared by W.K. Gref Date 10-14-74
 Reviewed by _____ / Date _____

G.4 #168

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System CTM/T COOLING

Page 5 OF 6

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
CI-2, BFI401, HIS5032	E-52B SHTS 1A & 1A	"SLOW" "NEUTRAL" "FAST"	(W) TYPE OTL SELECTOR SWITCH ON MCC F14. SEE ABOVE	NV
"	STOP		(W) TYPE PB1 PUSHBUTTON ON MCC F14. SEE ABOVE	NV
/1	B5 A, B5 B	(BYPASS SWITCHES)		SEE G.4 #311

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Smith Date 12/20/94
 Reviewed by _____ Date _____

6.4 #168

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System PTMT COOLING

Page 6 of 6

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

GERS-MCC.9 (AREA 6)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 6; 603', and 585'.

The effective grade for Area 6 is 573'.

Since $603' - 573' = 30'$, the ground spectra multiplied by (1.5x1.5) may be used to evaluate contactors/starters in Area 6 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} < 1.5g$ and bA_{33Hz} is $< 1.0g$, then contactors/starters in Area 6 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Smith Date 3/2/95
Reviewed by _____ / Date _____

Relay Evaluation Report

Section 5.2 G-4 Forms

Binder 3

Docket Number 50-346

License Number NPF-3

Serial Number 2316

VALVE TO REMAIN) CLOSED

6.4 # 169

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT BAPS-BESSE UNIT 1

System AUXILIARY FEEDWATER

Page 1 OF 5

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AF-3869 (BKR BE114G)	E-441B SHT. 14A 414B	DS	G.E TYPE SB-3 CTRL. S103 N COE11E. A=8 RM=	NV
VALVE TO REMAIN CLOSED			402, EL=603	
"	$\frac{33}{60}$, $\frac{33}{DN\%}$, $\frac{33}{20}$ $\frac{33}{DN\%}$		LIMIT TORQUE LIMIT SWITCH IN MV3869. A=7, RM=237 EL=565	NV
"	$\frac{33}{60}$, $\frac{33}{TC}$		LIMIT TORQUE TORQUE SWITCH IN MV3869 (SEE ABOVE)	NV

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by W.K. Smith Date 12/13/94
Reviewed by _____ Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

G.4 # 169

System AUXILIARY FEEDWATER

Page 2 OF 5

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AF-3869	E-44B SHT. 14A & 14B	"STOP"	REES CAT # 01461-202 IN NV3869. A= 7, RM= 237, EL= 565	NV
"	"OPEN", "CLOSE"	REES ROCKER CAT # 03845-000 IN NV3869. SEE ABOVE		NV
"	<u>OS</u> <u>OPEN</u> , <u>CLOSE</u>	<u>CS</u> <u>CLOSE</u>	CUTLER HAMMER TYPE E30B P.B ON C5706. A = 7, RM = 505, EL = 623	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS ____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by W.K. Lefebvre 10/13/94
 Reviewed by _____ / Date _____

6.4 169

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System AUXILIARY FEEDWATER

Page 3 OF 5

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AF3869	E44 SHT. 1HA & 1HB	OL	(W) OVERLOAD RELAY CONTACTS IN MCC E11E, A=8, Rm=40Z, EL=603	CAB
"	$\frac{42a}{O}, \frac{42b}{C}$, $\frac{42a}{C}, \frac{42b}{O}$		(W) L-56 Aux CONTACTS FOR STARTER IN MCC E11E. SEE ABOVE	GERS-MCC.9 (AREA 8) SEE Pg 5
	$\frac{42}{O}, \frac{42}{C}$		(W) A200 SERIES STARTER IN MCC E11E. SEE ABOVE	GERS-MCC.9 (AREA 8) SEE Pg 5

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS ____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by J. Kimball Date 12/13/94
 Reviewed by _____ / Date _____

G.4 #169

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System ANNUALY FEEDWATER

Page 4 OF 5

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AF-3869			STRUTHERS-DUNN	
	SF-003B	K11, K12, K13,	Series 219	
	SH-3	K71, K72, K73	CCC# K6U431C	SEE
		K50, K10	P/N # 219XDX16Z	G.4 #312
			IN C576ZA	
			A=7 RM=502 CL=623	
II		<u>CS</u> BLOCK	CUTLER HAMMER TYPE E300X	NV
			IN C570G	

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by J.W. Shelly Date 11/07/91
 Reviewed by _____ / Date _____

G.4 # 169

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE

System AUXILIARY FEEDWATERPage 5 OF 5

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
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GERS-MCC.9 (AREA 8)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 8; 603', 585', 565' and 545'.

The effective grade for Area 8 is 567'.

Since $603' - 567' = 36'$, the ground spectra multiplied by (1.5×1.5) may be used to evaluate contactors/starters in Area 8 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} \leq 1.5g$ and $bA_{33Hz} \leq 1.0g$, then contactors/starters in Area 8 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS ____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by W.H. Sill Date 12/13/94
 Reviewed by _____ / Date _____

NORMAL : OPEN
DESIRED : OPEN

6.4 #170

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System AUXILIARY FEEDWATER

Page 1 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AF-3870 (BKR D107)	E-44B SHT 20	DS	GE, TYPE SB-9 CTRL SW IN CODEID A=7 RM=227, EL= 565	NV
"	$\frac{33}{60}$, $\frac{33}{60\%}$ $\frac{33}{60}$, $\frac{33}{60\%}$	LIMIT TORQUE LIMIT SWITCH IN MV3870. A=7, RM= 237, EL= 565	NV	
"	$\frac{33}{60}$, $\frac{33}{60\%}$	LIMIT TORQUE LIMIT SWITCH IN MV3870. SEE ABOVE	NV	
"	"STOP"	FREE CAT # 01461-202 IN MV3870. SEE ABOVE	NV	

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
DA - Operator action.
- No entry necessary.

Prepared by D.K. Gifford Date 12/28/94
Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT I

G.4 #170

System Auxiliary Feedwater

Page 2 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AF-3870	E-44B SHT. 20	"OPEN" - "CLOSE"	PEES POKER CAT # 03845-000 IN NV3870. SEE ABOVE	NV
"		<u>CS</u> <u>OPEN</u>) <u>CS</u> <u>CLOSE</u>	CUTLER-HAMMER TYPE E30B ON C5706 H=7 Rm=505, EL = 023	NV
		$\frac{42a}{O}, \frac{42b}{C}, \frac{42b}{O}$ $\frac{42a}{C}$	(W) AUX CONTACTS FOR (W) SIZE 3 STARTER MODEL A201K3CB IN MCC DIPA H=6, Rm= 429 EL= 603	GERS-MCC. 9 (AREA 6) SEE Pg 4

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by D.K. Grib Date 1/11/94
 Reviewed by _____ / Date _____

6.4 #170

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System Auxiliary FeedwaterPage 3 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AF3870	E-44B SHT 20	$\frac{42}{O}$, $\frac{42}{C}$ (MAIN CONTACTS)	(W) SIZE 3 STARTER #A201K3CS IN MCC DPA. (SEE ABOVE).	GERS-MCC.9 (AREA 6) SEE pg 4.
"	"	$\frac{42X}{O}$, $\frac{42X}{C}$	SAME AS 42/O	GERS-MCC.9 (AREA 6) SEE pg 4
"	SF-002B SH 5	<u>CS</u> BLOCK K6, K7, K8, K66, K67, K68 K105, K45	CUTLER HAMMER E 230X STRUTHERS-DUNN SERIES 219 CCC# KGU431C P/N ± 219 X DX16Z IN C5762A A=7 RM=502 EL=623	NV SEE 6.4#312

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by JK 6.4 Date 1/11/94
 Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System Auxiliary Feedwater

Page 4 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

GERS-MCC.9 (AREA 6)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 6; 603', and 585'.

The effective grade for Area 6 is 573'.

Since $603' - 573' = 30'$, the ground spectra multiplied by (1.5x1.5) may be used to evaluate contactors/starters in Area 6 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} \leq 1.5g$ and $bA_{33Hz} \leq 1.0g$, then contactors/starters in Area 6 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Smith Date 1/11/94
 Reviewed by _____ / Date _____

VE TO REMAIN CLOSED

6.4 #171

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System AUXILIARY FEEDWATER

Page 1 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AF-3871 (BKR. BF1R01)	E-44B SHT. 14A & 14B	DS	G.E. TYPE SB-9 CTRL SW IN CDF/2A-2 A=6, R=428, EL=603	NV
"	$\frac{33}{60}$, $\frac{33}{60}$ %	LIMIT TORQUE LIMIT SWITCH IN	MV3871, A-7 RM 238, EL=565	NV
"	$\frac{33}{60}$, $\frac{33}{60}$ %	LIMIT TORQUE TORQUE SWITCH IN	MV3871, SEE ABOVE	NV
"	STOP	REES CAT # 01461-202 IN	NV3871, A-7 RM=238, EL=565	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by W.K. Wilf Date 7/29/94
Reviewed by _____ / Date _____

6.4 #171

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System Auxiliary Feedwater

Page 2 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AF 3871	E44B SHT 14A & 14B	"OPEN" & "CLOSE"	REES ROCKER CAT. # 03845-000 10 NV3871. SEE ABOVE	NV
"		<u>CS</u> / <u>CS</u> <u>OPEN</u> / <u>CLOSE</u>	CUTLER-HAMMER TYPE E-30B ON C5706. A=7, RM = 505, EL = 623	NV
"		<u>42a</u> , <u>42b</u> , <u>42a</u> <u>0</u> , <u>c</u> , <u>c</u>) <u>42b</u> <u>0</u>	(W) TYPE L-56 AUX SWITCH FOR STARTER IN MCC F12A. A=6, RM = 428, EL = 603	GERS-MCC.9 (AREA 6) SEE Pg 4
		<u>42</u> , <u>42</u> <u>0</u> , <u>c</u>	(W) SERIES H200 STARTER IN MCC F12A. SEE ABOVE	GERS-MCC.9 (AREA 6) SEE Pg 4

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- DA - Operator action.
- No entry necessary.

Prepared by W. K. Wilhite Date 7/29/94
 Reviewed by _____ Date _____

6.4 #171

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System AUXILIARY FEEDWATER

Page 3 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AF 3871	E-441B SHT 14A + 14B	OL	(O) OVERLOAD RELAY CONTACT IN MCC F2A, SEE ABOVE	CA8
"	"	"	STRUTHERS - DUNN SERIES 219 CCC = KGU431C D/N = 219 X DK16Z III C57192	SEEG.4 M312
CF-003B	K11, K12, K13, K71, K72, K73 K50, K110	SH4	A=7 RM=502 EL=623	
"	"	CS BLOCK	CUTLER-HAMMER TYPE E300X INC5709	NV

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. P. Gaff Date 17/3/94
Reviewed by _____ Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM C.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System AUXILIARY FEEDWATER

Page 4 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

GERS-MCC.9 (AREA 6)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 6; 603', and 585'.

The effective grade for Area 6 is 573'.

Since $603' - 573' = 30'$, the ground spectra multiplied by (1.5×1.5) may be used to evaluate contactors/starters in Area 6 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} \leq 1.5g$ and $bA_{33Hz} \leq 1.0g$, then contactors/starters in Area 6 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Sill Date 7-29-94
 Reviewed by _____ / Date _____

VALVE TO REMAIN
OPEN

6.4 #172

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System AUXILIARY FEEDWATER

Page 1 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AF-3872 (BKR. BF1262)	E-44B SHT. 15	DS	G.E. TYPE SB-9 CTRL SW IN CDF72B, A=6 RM=319, EL=585	NV
"	$\frac{33}{60}$, $\frac{33}{60\%}$, $\frac{33}{60}$	LIMIT TORQUE LIMIT SWITCH IN	MV3872, A=7 RM=238, EL=565	NV
"	$\frac{33}{60}$, $\frac{33}{60\%}$	TORQUE SWITCH IN MV3872. SEE ABOVE	LIMIT TORQUE TORQUE SWITCH IN MV3872. SEE ABOVE	NV
"	STOP	REES CAT # 01461-202 IN NV3872, A=7 RM=238, EL=565		NV

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by J.K. Smith Date 12/13/94
Reviewed by _____ Date _____

6.6 #172

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.6 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System Auxiliary Feedwater

Page 2 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AF3872	E-44B SHT. 15	"OPEN" - CLOSE	FEES CAT # 03845-000 IN NV3872, SEE ABOVE	NV
"		<u>CS</u> <u>OPEN</u> | <u>CS</u> <u>CLOSE</u>	CUTLER-HAMMER. TYPE E30B ON C5709. H= ? RM=505, EL= 623	NV
		42a, 42b, O, C,	(W) TYPE L-56 AUX SWITCH FOR STARTER IN MCC F12B. A=6, RM= 819, EL=585	GERS-MCC.9 (AREA 6) SEE PG 4
		42a, 42b C, O	(W) SERIES A200 STARTER CONTACTS IN MCC F12B. SEE ABOVE	GERS-MCC.9 (AREA 6) SEE PG 4

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Sief 12/13/94
 Reviewed by _____ Date _____

6.4 #172

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System Auxiliary Feedwater

Page 3 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AF3872	E-44B SHT. 15	OL	(OVERLOAD RELAY CONTACTS IN NCC F12B. SEE ABOVE)	CAB
SF-0035	11 SH-6	K6, K7, K8, K66, K67, K68 K45, K105	STUTTERERS - DUNN SERIES 219 CCC # KGU431C P/N# 219XDX16Z IN C5792	SEE G.4 #312
			A = > Rm=502 E67623	
	11	<u>CS</u> BLOCK (HIS 3872B)	CUTLER-HAMMER TYPE E30DX	NV

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by J.K. Laff Date 12/13/94
 Reviewed by _____ / Date _____

C.4 #172

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System AUXILIARY FEEDWATER

Page 4 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT
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GERS-MCC.9 (AREA 6)

Davis-Besse has Motor Control Centers (MCCs) on the following locations in Area 6; 603', and 585'.

The effective grade for Area 6 is 573'.

Since $603' - 573' = 30'$, the ground spectra multiplied by (1.5x1.5) may be used to evaluate contactors/starters in Area 6 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} \leq 1.5g$ and $bA_{33Hz} \leq 1.0g$, then contactors/starters in Area 6 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- | | |
|------|---|
| CA | - Chatter acceptable. |
| NV | - Not vulnerable (mechanically-actuated contacts and solid state relays). |
| GERS | - Seismically adequate based on GERS _____; include GERS number. |
| NA | - Component not affected by relays. |
| CR | - Corrective action required. |
| OA | - Operator action. |
| | - No entry necessary. |

Prepared by W.K. Smith Date 12-18-94
Reviewed by _____ / Date _____

VALUE TO REMAIN OPEN

6.4 #173

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System AUXILIARY FEEDWATER

Page 1 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AF-599 (BKR. BF1118)	E-114B CHT 4C 4-4D	DS	G.E. TYPE SB-9 CTRL SW IN CDYF2, A=7 RM=427, EL=603	NV
"	$\frac{33}{60}$, $\frac{33}{60\%}$, $\frac{33}{60}$	LIMITORQUE LIMIT SW IN MV0599 A=6 RM=314, EL=585	NV	
"	$\frac{33}{60}$, $\frac{33}{60\%}$	LIMITORQUE TORQUE SW IN MV0599. SEE ABOVE.	NV	
"	STOP	REES CAT # 01461- 202 IN NV0599A. A=6, RM=314, EL=585	NV	
"	"OPEN" "CLOSE"	REES CAT # 03845- 000 IN NV0599A. SEE ABOVE	NV	
"	<u>CS</u> <u>OPEN</u> , <u>CLOSE</u>	CUTLER-HAMMER TYPE E30B ON C5709 A=7, RM=505, EL=623	N.V.	

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS ____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

DA - Operator action.

- No entry necessary.

Prepared by O.K. Sabo Date 12/13/94
Reviewed by _____ Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

6.4 #173

System Auxiliary Feedwater

Page 2 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AF599	E-44B SHT. 4C44D	CSR	SAME AS <u>CS</u> <u>OPEN</u>	NV
"	42a, 42b <u>O</u> , <u>C</u>		(W) L-56 AUX SW FOR STARTER IN MCC F1IA A=7, RM=427 EL=603	GERS-MCC.9 (AREA 7)
"	42a, 42b <u>C</u> , <u>C</u>	42, 42 <u>O</u> , <u>C</u>	(W) SERIES A200 STARTER IN MCC F1IA. SEE ABOVE.	GERS-MCC.9 (AREA 7)

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS ____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

DA - Operator action.

- No entry necessary.

Prepared by D.K. Smith Date 12/13/94

Reviewed by _____ Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM E.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System, AUXILIARY FEED WATER

Page 3 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
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GERS-MCC.9 (AREA 7)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 7; 603', and 565'.

The effective grade for Area 7 is 562'.

Since $603' - 562' = 41'$, the ground spectra multiplied by (1.5×1.5) may be used to evaluate contactors/starters in Area 7 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz}):

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz}):

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} \leq 1.5g$ and $bA_{33Hz} \leq 1.0g$, then contactors/starters in Area 7 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.L. Loh Date 12/13/94
 Reviewed by _____ / Date _____

VALUE TO REMAIN OPEN

6.4 #174

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DEVIS-BESSE UNIT 1

System AUXILIARY FEEDWATER

Page 1 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AF-608 (BKR. BE1160)	E-HHB SHT. 4C & 4D	DS	GE, TYPE SB-9 TRL SW IN CDYE2 A=8, RM=304, EL=585	NV
"	$\frac{33}{60}$, $\frac{33}{DN\%}$, $\frac{33}{90}$	LIMIT TORQUE LIMIT SW IN MV0608. A=8, RM=303, EL=585	NV	
"	$\frac{33}{60}$, $\frac{33}{TC}$	LIMIT TORQUE TORQUE SW IN MV0608. SEE ABOVE	NV	
"	STOP	REES CAT #01461- 202 IN NV0608A. A=8, RM=303, EL=585	NV	
"	OPEN CLOSE	REES CAT #03845- 000 IN NV0608A. SEE ABOVE	NV	
"	$\frac{CS}{OPEN}$, $\frac{CS}{CLOSE}$	CUTLER-HAMMER TYPE E30 IN C5709, A=7 RM=505, EL=623	NV	

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by D.K. Saif Date 12/13/94
Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT I

G.4 #174

System

Auxiliary Feedwater

Page

2 of 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AF-608	E-44B SHT 4C+4D	CSR	SAME AS CS OPEN	NV
"	$\frac{42a}{O}$, $\frac{42b}{C}$, $\frac{42a}{C}$, $\frac{42b}{C}$		(W) L-54 Aux SWITCH FOR STARTER IN MCC E11E A=8 Rm=402 EL=603	GERS-MCC.9 (AREA 8)
	$\frac{42}{O}$, $\frac{42}{C}$		(W) Series A200 Starter in MCC E11E. SEE ABOVE.	GERS-MCC.9 (AREA 8)

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by D.K. Griffith 12/13/94
 Reviewed by _____ / Date _____ / Date

G.4 #174

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS - BESSE

System AUXILIARY FEEDWATER

Page 3 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

GERS-MCC.9 (AREA 8)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 8; 603', 585', 565' and 545'.

The effective grade for Area 8 is 567'.

Since $603' - 567' = 36'$, the ground spectra multiplied by (1.5x1.5) may be used to evaluate contactors/starters in Area 8 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} \leq 1.5g$ and bA_{33Hz} is $< 1.0g$, then contactors/starters in Area 8 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by OK 6/19 Date 12/13/94
Reviewed by _____ Date _____

6.4 #175

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System COMPONENT COOLING WATER

Page 10F2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
CC-1467 HIS 1467	E-50B SHT. 11	"TEST JOG"	REES CAT # 01461-202 IN NVI467, A=7 RM= 113, EL=	NV
SV-1467			545	

KA KB DEUTSCH ESS RLY
(1K3K, 3K31C) RELAY SEE
#4CP(KEN 431A) 6.4#311
C5762C, C5763D
A=7 RM=502 EL=623

E-170SH15	LR1 (2F)	POTTER + BRO	CA4
E-30-14	LR1 (2I)	2 FORM C LATCHING RELAY	
E-30-35		# T83S11 D122-24	
E-30-341		C5762C, C5763D	
E-30-342		A=7, RM=502, EL=623	
VMAN E-30-352			

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by Burke / Date 1/17/85
Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS BESSE UNIT 1

System COMPONENT COOLING WATERPage 2 of 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
CC-1467 HIS H67 SV-1467	E-5013 SH.11	B5 A B	(BYPASS SWITCHES)	SEE G.4 311

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by Blashki Date 1/17/95
 Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT LAWNS-REESE UNIT 1

6.4 #176

System Concurrent Cooling Water

Page 10F 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
CC-1469, SV1469 HIS 1469	E-50B 3HT 11	'TEST JOG"	REES CAT # 01461-202 IN NV1469, A=7, RM=113 EL=545.	11V
	11	KA, KB (2K31C, 4K31C)	DEUTSCH RELAY # 4CP C5755C, C5756D A=7, RM=502 EL=623	ESS. RLY SEE G.4#311
	A B5 A B5	(BYPASS SWITCHES)		SEE G.4#311
E-17B SH15 E-30-24 E-30-28 E-30-341 E-30-342 VMAN E-30-252	LR1 (2F) LR1 (2I)	POTTER + BRO 2 frame latching relay, # T83511D122-24 C5755C, C5756D A=7, RM=502, EL=623	CA4	

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- | | |
|------|---|
| CA | - Chatter acceptable. |
| NV | - Not vulnerable (mechanically-actuated contacts and solid state relays). |
| GERS | - Seismically adequate based on GERS ____; include GERS number. |
| NA | - Component not affected by relays. |
| CR | - Corrective action required. |
| OA | - Operator action. |
| - | - No entry necessary. |

Prepared by Glynne Bly / Date 11/19/95
Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

6.4 # 177

System Component Cooling Water

Page 1 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
CC-1471, SV1471 HIS 1471 PDSH3981	E-50B SHT 16	PDSH (PDSH3981)	ITT BARTON MODEL 286A A=6, RM=318 EL= 585	CA - ACCEPTABLE TO OPEN, PER OPERATIONSREP REPRESENTATIVE. <i>C. C. W.</i>
"	SSIXI	SQUARE D CLASS 8501 TYPE KPD13 IN C3621. A=6, RM=318, EL= 585	BASED ON SSRP AND NP 7148-SL THIS RELAY IS SEISMICALLY ADEQUATE, SEE ATTACHED Q+A. PG 4	
"	PB	ALLEN BRADLEY TYPE 800T ON C3615. A=6 RM=318, EL= 585	NV	

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- DA - Operator action.
- No entry necessary.

Prepared by D.K. Hall Date 5/16/95
 Reviewed by _____ Date _____

6.4 #117

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System COMPONENT COOLING WATER

Page 20F4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
CC-1471, SV1471, HS1471 PDSH3981	E-50B SHT. 16	CS OPEN / CLOSE	CUTLER HAMMER E-30B ON C5715. A=7 RM=505 EL=623	NV
"		4 CW	G.E. 121HFA51A42H IN C3615. A=4 RM=318, EL=585	GERS-RLY-ARH.5 SEE Pg 3
E1040A ALSO SEE 6.4 # 55		CBD1P09 (125VDC POWER SOURCE)	G.E. NON-AUTO CB # TEO124Y100-SC IN D1P	NA

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS _____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Lai Date 1-16-95
Reviewed by _____ Date _____

G.4 #177

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System Containment Cooling Water

Page 3 OF 4

Relay
 Type and
 Location

SAT*

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
---------------------	------------	-----------------------	-------------------------------	------

LEVEL 2 SCREENING FOR
 C3615 AND C3616

1. The natural frequency of these cabinets is less than 8Hz.
2. These cabinets have been assigned an amplification factor (AF) of 4.5.
3. These cabinets are both located in plant area 6, elevation 585'.
4. For this area and elevation the peak Median Centered Floor Response Spectra (FRS) = .6038g and the associated ZPA = .242g.

thus peak Seismic Demand (SD); $SD = [ERS] * AF$ where ERS = FRS * 1.5
 $SD = [.6038g * 1.5] * 4.5$
 $SD = 4.1g$

and ZPA Seismic Demand (SD); $SD = [ERS_{ZPA}] * AF$ where $ERS_{ZPA} = ZPA * 1.5$
 $SD = [.242g * 1.5] * 4.5$
 $SD = 1.6g$

5. Level 2 screening in these cabinets is being applied to the following relay types: Agastat 7012 (seismic capacity = 12.5g peak and 5g ZPA per GERS-RLY-PNT.7) and G.E. HFA51A42H with either normally open contacts or an energized coil (seismic capacity = 6g or 7g peak and 2.4g or 2.8g ZPA respectively, per GERS-RLY-ARH.5).

therefore, seismic capacity exceeds seismic demand.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Ladd Date 5-15-95
 Reviewed by _____ / Date _____

SCE Review: Jon G. Hurl 9/21/85

G.4 # 177

Pg 4 OF 4

Date: Thursday, October 20, 1994 1:24pm

/RELAY

From: JonHook

To: Betlack

Re: Essential relays mounted on the EDG skid

Msg#: 4752

(1 reply)

If a cabinet which contains Emergency Diesel Generator control relays for which chatter is not acceptable is mounted on the engine skid, can these relays be considered seismically adequate by referencing page B-69 in NP 7148-SL and section 17 in SSRAP rev 4.0?

Also, can pressure switches which are mounted on attachments to the EDG skid be similarly screened?

Date: Tuesday, November 1, 1994 4:00pm

/RELAY

From: Betlack

To: JonHook

Re: Essential relays mounted on the EDG skid

(Reply to #4752)

Msg#: 4791

Yes to both questions. Section 17 of the SSRAP report states that "relays on reciprocating engines that routinely see high vibration due to operation" do not require a relay evaluation. The example on page B-69 of EPRI NP-7148 is based upon the SSRAP position. Accordingly, any contact device which satisfies the SSRAP report criteria is considered seismically adequate.

Used to screen SSIXI RELAY on G.4 # 177

USE THIS SHEET TO BACKUP SAT EVALUATIONS
FOR RELAYS IN C3621, C3622 AND SWITCHES
MOUNTED BELOW THE OIL TANK ON RACK FOR
EDG 1-1 AND EDG 1-2

COPY TO G.4 FORMS:

177, 178, 283, 291, 351, 352, 353, 354

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAIS-BESE UNIT 1

G.4 # 178

System COMPONENT COOLING WATER

Page 1 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
CC-1474 SV1474 HIS 1474, PDSH3982	E-50B SHT. 14	PDSH (PDSH3982)	ITT BARTON MODEL 288A. A=6, RM 319, EL=585	CA SEE G.4 #177 (PDSH3981) Review
"	SSIXI		SQUARE D CLASS 8501 TYPE KPD13 IN C3622, A=6 RM=319, EL=585	SEE (1) BELOW
"	P.B.		ALLEN BRADLEY TYPE 800T ON C3614. A=6, RM=319, EL=585	NV
"	CS OPEN	CS CLOSE	CUTLER-HAMMER E-30B ON C5715. A=7, RM=505, EL=623	NV
"	4 CW		G.E. 12HFA51A4ZL IN C3614. A=6, RM=319, EL=585	GERS-RLY-ARH.5 (SEE pg 3)

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by J.H. Lipe Date 5/15/95
Reviewed by _____ / Date _____

① BASED ON SSRP AND
NP 7148-SL THIS RELAY
IS CONSIDERED SEISMICALLY
ADEQUATE. SEE ATTACHED
Q+A.

G.4 #178

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System COMPONENT COOLING WATERPage 2 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
2C-1474, SV1474, HIS1474, PDSH3982	E-1040A SEE 6.4 #	CBDIN09 (25 VOC POWER SOURCE)	(W) EB2100N NON-AUTO CB IN D1N	NA

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- | | |
|------|---|
| CA | - Chatter acceptable. |
| NV | - Not vulnerable (mechanically-actuated contacts and solid state relays). |
| GERS | - Seismically adequate based on GERS _____; include GERS number. |
| NA | - Component not affected by relays. |
| CR | - Corrective action required. |
| OA | - Operator action. |
| - | - No entry necessary. |

Prepared by MK Date 1-17-95
 Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System Component Cooling Water

Page 3 OF 4

Relay
 Type and
 Location

SAT*

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
---------------------	------------	-----------------------	-------------------------------	------

LEVEL 2 SCREENING FOR
 C3615 AND C3616

1. The natural frequency of these cabinets is less than 8Hz.
2. These cabinets have been assigned an amplification factor (AF) of 4.5.
3. These cabinets are both located in plant area 6, elevation 585'.
4. For this area and elevation the peak Median Centered Floor Response Spectra (FRS) = .6038g and the associated ZPA = .242g.

thus peak Seismic Demand (SD); SD = [ERS] * AF where ERS = FRS * 1.5
 $SD = [.6038g * 1.5] * 4.5$
 $SD = 4.1g$

and ZPA Seismic Demand (SD); SD = [ERS_{ZPA}] * AF where ERS_{ZPA} = ZPA * 1.5
 $SD = [.242g * 1.5] * 4.5$
 $SD = 1.6g$

5. Level 2 screening in these cabinets is being applied to the following relay types: Agastat 7012 (seismic capacity = 12.5g peak and 5g ZPA per GERS-RLY-PNT.7) and G.E. HFA51A42H with either normally open contacts or an energized coil (seismic capacity = 6g or 7g peak and 2.4g or 2.8g ZPA respectively, per GERS-RLY-ARH.5).

therefore, seismic capacity exceeds seismic demand.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by J.W. Hark Date 5/15/95
 Reviewed by _____ / Date

SCE Review: J.W. Hark 8/24/95

G.4 # 178
Page 4 of 4

Date: Thursday, October 20, 1994 1:24pm

/RELAY

From: JonHook
To: Betlack

Re: Essential relays mounted on the EDG skid

Msg#: 4752

(1 reply)

If a cabinet which contains Emergency Diesel Generator control relays for which chatter is not acceptable is mounted on the engine skid, can these relays be considered seismically adequate by referencing page B-69 in NP 7148-SL and section 17 in SSRAP rev 4.0?

Also, can pressure switches which are mounted on attachments to the EDG skid be similarly screened?

Date: Tuesday, November 1, 1994 4:00pm

/RELAY

From: Betlack
To: JonHook

Re: Essential relays mounted on the EDG skid

(Reply to #4752)

Msg#: 4791

Yes to both questions. Section 17 of the SSRAP report states that "relays on reciprocating engines that routinely see high vibration due to operation" do not require a relay evaluation. The example on page B-69 of EPRI NP-7148 is based upon the SSRAP position. Accordingly, any contact device which satisfies the SSRAP report criteria is considered seismically adequate.

USED TO SCREEN THE SSIXI RELAY ON G.4 178

USE THIS SHEET TO BACKUP SAT EVALUATIONS
FOR RELAYS IN C3621, C3622 AND SWITCHES
MOUNTED BELOW THE OIL TANK ON RACK FOR
EDG 1-1 AND EDG 1-2

COPY TO G.4 FORMS:

177, 178, 283, 291, 351, 352, 353, 354

A-46 RELAY SCREENING AND EVALUATION
FORM 6.6 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System SAFETY FEATURES ACTUATION

Page 1 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT ^o
CV-2000B (BKR. BF1140)	E-588 SHT. 18A & 18B	$\frac{33}{00}$, $\frac{33}{0n\%}$, $\frac{33}{20}$	LIMIT TORQUE LIMIT SWITCH IN MV20000. A=8 RM=303, EL=585	NV
"	"	$\frac{33}{Ec}$, $\frac{33}{to}$	LIMIT TORQUE LIMIT SWITCH IN MV20000. SEE ABOVE	NV
"	" STOP "		PEES CAT # 01461-202 IN NV20000. A=8 RM=303, EL=585	NV
"	" OPEN - CLOSE "		PEES CAT # 03845-000 IN NV20000. SEE ABOVE	NV

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Smith Date 12/13/94
Reviewed by _____ / Date _____

6.4 #179

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System SAFETY FEATURES ACTUATIONPage 2 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
CV-2000B	E58 B SHT 18A & 18B	OL	(N) OVERLOAD RELAY CONTACT IN MCC F1IA A=7, RM=427 EL=603	CAB
"	$\frac{42a}{O}, \frac{42b}{C}$, $\frac{42a}{C}, \frac{42b}{O}$		(W) L-56 AUX CONTACTS FOR STARTER IN MCC F1IA. A=7 RM= 427, EL=603	GERS-MCC.9 (AREA 7) SEE pg 3
"	$\frac{42}{O}, \frac{42}{C}$		(W) SERIES A200 STARTER IN MCC F1IA. SEE ABOVE	GERS-MCC.9 (AREA 7) SEE pg 3

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
 NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
 GERS - Seismically adequate based on GERS ____; include GERS number.
 NA - Component not affected by relays.
 CR - Corrective action required.
 OA - Operator action.
 - No entry necessary.

Prepared by W.K. Smith Date 12/13/94
 Reviewed by _____ Date _____

C-4 #179

A-46 RELAY SCREENING AND EVALUATION
FORM G-4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System SAFETY FEATURES ACTUATION

Page 3 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

GERS-MCC.9 (AREA 7)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 7; 603', and 565'.

The effective grade for Area 7 is 562'.

Since $603' - 562' = 41'$, the ground spectra multiplied by (1.5x1.5) may be used to evaluate contactors/starters in Area 7 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} < 1.5g$ and $bA_{33Hz} < 1.0g$, then contactors/starters in Area 7 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- | | |
|------|---|
| CA | - Chatter acceptable. |
| NV | - Not vulnerable (mechanically-actuated contacts and solid state relays). |
| GERS | - Seismically adequate based on GERS ____; include GERS number. |
| NA | - Component not affected by relays. |
| CR | - Corrective action required. |
| OA | - Operator action. |
| | - No entry necessary. |

Prepared by Z/K Date 10/18/94
Reviewed by _____ / Date _____

Value to remain open

6-4 # 180

A-46 RELAY SCREENING AND EVALUATION
FORM G-4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System Safety Features Actuation

Page 1 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
CV-2001B (BKR. BEI123)	E-58B SHT 18A & 18B	$\frac{33}{60}$, $\frac{33}{60}$ %, $\frac{33}{60}$	LIMIT TORQUE LIMIT SWITCH IN MV2001. $A=7$, $Rm=427$, $EL=603$	NV
"	"	$\frac{33}{60}$, $\frac{33}{60}$ %	LIMIT TORQUE TORQUE SWITCH IN MV2001 (SEE ABOVE)	NV
"	STOP		REES CAT # 01461-202 IN NV2001. $A=7$ $Rm=427$, $EL=603$	NV
"	OPEN, CLOSE		REES CAT. # 03845-000 IN NV2001. (SEE ABOVE)	NV
"	OL		(W) OVERLOAD RELAY CONTACT 10 MCC E11A AUX. 8 $Rm=209$, $EL=565$	CAB

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NY - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by W.H. Bill, Date 12/13/94
Reviewed by _____, Date _____

#180

6.4

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System Safety Features Activation

Page 2 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
CV-2001TB	E-58B SHT 18A & 18B	$\frac{42a}{O}$, $\frac{42b}{C}$, $\frac{42a}{C}$, $\frac{42b}{O}$ $\frac{42b}{C}$	(W) L-56 AUX CONTACTS FOR STARTER IN MCC E11A (SEE ABOVE)	GERS-MCC.9 (AREA B) (SEE Pg 3)
		$\frac{42}{O}$, $\frac{42}{C}$	(W) SERIES A200 STARTER IN MCC E11A, (SEE ABOVE)	GERS-MCC.9 (AREA B) (SEE Pg 3)

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Smith 12/13/94
 Reviewed by _____ Date _____

G.4 # 180

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS - BESSIE

System SAFETY FEATURES ACTUATION

Page 3 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
---------------------	------------	-----------------------	-------------------------	------

GERS-MCC.9 (AREA 8)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 8; 603', 585', 565' and 545'.

The effective grade for Area 8 is 567'.

Since $603' - 567' = 36'$, the ground spectra multiplied by (1.5×1.5) may be used to evaluate contactors/starters in Area 8 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} \leq 1.5g$ and bA_{33Hz} is $\leq 1.0g$, then contactors/starters in Area 8 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS ____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by W.K. denis Date 12/13/94
Reviewed by _____ / Date _____

#181

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

6.4

System SAFETY FEATURES ACTUATION

Page 1 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
CV-2002B (BKR BF1144)	E-5BB SHT 18A-18B	33 00, 33 bn% 00	33 LIMIT TORQUE LIMIT SWITCH IN MV2002. A=B, RM=402, EL=603	NV
"	"	33 to, 33 tc	LIMIT TORQUE TORQUE SWITCH IN MV2002. (SEE ABOVE)	NV
"	STOP		PEES CAT. # 01401-202 IN NV2002, A=B RM=402, EL=603	NV
"	OPEN CLOSE		PEES CAT. # 03845-000 IN NV2002, (SEE ABOVE)	NV

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- DA - Operator action.
- No entry necessary.

Prepared by D. K. Smith Date 12/13/94
 Reviewed by _____ / Date _____

6.4 #181

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System SAFETY FEATURES ACTUATIONPage 2 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
CV-2002B	E-BB SHT 18A + 18B	6L	(W) OVERLOAD RELAY CONTACT IN MCC F1IA. A=7, RM=427, EL=603	CAB
"	$\frac{42a}{O}$, $\frac{42b}{C}$, $\frac{42a}{C}$		(W) L-56 AUX SWITCH IN MCC F1IA. (SEE ABOVE)	GERS-MCC.9 (AREA ?) (SEE PG 3)
"	$\frac{42}{O}$, $\frac{42}{C}$		(W) SERIES A200 STARTER IN MCC F1IA. (SEE ABOVE).	GERS-MCC.9 (AREA ?) (SEE PG 3)

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by D.K. Briff Date 12/13/94
Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System Safety Features Actuation

Page 3 of 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

GERS-MCC.9 (AREA 7)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 7; 603', and 565'.

The effective grade for Area 7 is 562'.

Since $603' - 562' = 41'$, the ground spectra multiplied by (1.5x1.5) may be used to evaluate contactors/starters in Area 7 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} \leq 1.5g$ and $bA_{33Hz} \leq 1.0g$, then contactors/starters in Area 7 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Bell Date 12/13/94
 Reviewed by _____ / Date _____

#182

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System SAFETY FEATURES ACTUATION

Page 1 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
CV-2003B (BKR, BE1124)	E-58B SHT. 1BAK/1BB	$\frac{33}{60}$, $\frac{33}{60\%}$ $\frac{33}{60}$	LIMIT TORQUE LIMIT SWITCH IN MV2003 A=7, RM 314	NV
"	"	$\frac{33}{60}$, $\frac{33}{60}$	LIMIT TORQUE TORQUE SWITCH IN MV2003, (SEE ABOVE)	NV
"	STOP		REES CAT # 01461-202 IN NV2003. A=7, RM=314, EL=585	NV
"	OPEN - CLOSE		REES CAT # 03845-000 IN NV2003. (SEE ABOVE)	NV
"	OL		(W) OVERLOAD RELAY CONTACT IN MCC EHA. A=8, RM= 209, EL=565	CA8

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- DA - Operator action.
- No entry necessary.

Prepared by D.K. Lohf Date 12/13/94
Reviewed by _____ / Date _____

6.4 #182

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System SFAS

Page 20F3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
CV-2003B	E-588 SHT. 18A & 18B	$\frac{42a}{O}, \frac{42b}{C}$, $\frac{42a}{C}, \frac{42b}{O}$	(W) L-56 - AUX CONTACTS FOR STARTER IN MCC E11A. (SEE ABOVE)	GERS-MCC.9 (AREA 8) (SEE PG. 3)
"		$\frac{42}{O}, \frac{42}{C}$	(W) SERIES A 200 STARTER IN MCC E11A. (SEE ABOVE)	GERS-MCC.9 (AREA 8) (SEE PG. 3)

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS ____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by J.L.K. 12/13/94
 Reviewed by _____ Date _____

G.4 #182

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE

System SAFETY FEATURES ACTUATION

Page 3 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
---------------------	------------	-----------------------	-------------------------	------

GERS-MCC.9 (AREA 8)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 8; 603', 585', 565' and 545'.

The effective grade for Area 8 is 567'.

Since $603' - 567' = 36'$, the ground spectra multiplied by (1.5×1.5) may be used to evaluate contactors/starters in Area 8 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz}):

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz}):

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} \leq 1.5g$ and $bA_{33Hz} \leq 1.0g$, then contactors/starters in Area 8 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Laff Date 12/3/94
Reviewed by _____ Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System CONTROL ROD DRIVE

Page 1 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

- NOTE • DUE TO SIMILARITIES BETWEEN CONTROL ROD DRIVE BREAKERS A AND B, C AND D, THIS SINGLE G.4 WILL ADDRESS ALL FOUR BREAKERS.
- THE DESIRED STATE OF THE BREAKERS IS OPEN, OPENING THESE BREAKERS IS REQUIRED TO TRIP THE REACTOR BY ALLOWING CONTROL ROD GROUPS 1 THRU 7 TO FALL INTO THE REACTOR. A SPURIOUS RECLOSE OF THESE BREAKERS IS NOT A CONCERN BECAUSE RECLOSED THE BREAKERS DOES NOT CAUSE ROD WITHDRAW. THUS, ALL CONTACTS IN THE BREAKERS' CLOSING CIRCUITS ARE CHATTER ACCEPTABLE.
 - THE REACTOR TRIP SWITCH IS BEING USED TO TRIP BREAKERS A, B, C AND D.

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- | | |
|------|---|
| CA | - Chatter acceptable. |
| NV | - Not vulnerable (mechanically-actuated contacts and solid state relays). |
| GERS | - Seismically adequate based on GERS _____; include GERS number. |
| NA | - Component not affected by relays. |
| CR | - Corrective action required. |
| OA | - Operator action. |
| | - No entry necessary. |

Prepared by W.H. Sibley Date 8/22/94
 Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System CONTROL Rod DRIVE

Page 2 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT°
BREAKER B / BREAKER A UNDERVOLTAGE TRIP CKT. PER NOTE 10 ON THE REF. DWG THIS IS TO NORMAL TRIP CKT FOR THE REACTOR TRIP SWITCH	E65B SHTS 13A/ 14A	NSNI 45+ HSNI 4G (REACTOR TRIP SWITCH)	EATON PB MODEL # 10250T ON C5704 A=7, RM=505 EL=623	NV
	E65B SHTS 13A/ 14A	K1.0, K4.0 K3.0, K2.0 (ONE SET PER RPS CHANNEL)	P+B KU-4203-1 IN C5762F (5755F (5756E,(5763E A=7, RM=502, EL=623	CA - USING REACTOR TRIP SWITCH TO OPEN BREAKERS

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- | | |
|---|---|
| CA | - Chatter acceptable. |
| NV | - Not vulnerable (mechanically-actuated contacts and solid state relays). |
| GERS | - Seismically adequate based on GERS ____; include GERS number. |
| NA | - Component not affected by relays. |
| CR | - Corrective action required. |
| OA | - Operator action. |
| - | - No entry necessary. |
| Prepared by <u>J. G. Blau</u> Date 1/18 | |
| Reviewed by _____ / Date _____ | |

Prepared by English Dept. Date 1/18/95
Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System CONTROL POOL DRIVE

Page 3 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BREAKER B/ BREAKER A, UNDERVOLTAGE TRIP CIRCUIT	E65B SHTS 13A / 14A	KB, KA	P+B KUP11A15-120VAC INC5784A, C5784B A=7, RM=502, EL=623	CA-USING REACTOR TRIP SWITCH TO OPEN BREAKERS.
BREAKER D/ BREAKER C, UNDERVOLTAGE TRIP CIRCUIT <i>(SEE NOTE 4 ON REF. DWGS.)</i>	E65B SHTS 15A / 16A	HSNI 46, HSNI 45 (REACTOR TRIP SWITCH)	EATON PB MODEL # 10250T ON C5706. A= 7, RM=505 EL=623	NV
ALSO TRIP SWITCHES HSNI 46 HSNI 45				

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by Perle Date 1/18/95
 Reviewed by Date

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System CONTROL ROD DRIVE

Page 4 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BREAKER D1	E-65B	K1.0, K2.0,	SEE SAME	CA - USING
BREAKER C	SHTS 15A/	,	GROUP, PAGE 2	REACTOR TRIP
UNDERVOLTAGE	16A	K3.0, K4.0		SWITCH TO
TRIP CKT.				OPEN BKRS.
"	"	KA, KB	P+B KUP11A15-120VAC	CA - USING
			IN C5784C, C5784D	REACTOR TRIP
			A=7, RM=502, EL=623	SWITCH TO
				OPEN BKRS.

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS ____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by J. Gaskins / Date 1/18/95
 Reviewed by / Date

6.4 186

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT LAVIS-BESE UNIT 1

System EDG AIR START

Page 1 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT ^o
DA-3783, RSL3783 (SV3783)	E-648 SHT. 12	PS-A (PSL3783)	STATIC-O-RING MODEL 6V2-E5-TTX4. A=6 RM= 318, EL=585	CA-See Page 2

125VDC POWER TO THIS CIRCUIT IS SUPPLIED FROM
 PANEL DIP CKT 9 (RFF E648 SHT 1C). SEE 6.4
 #55 FOR DIP RECH/ EVALUATION.

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by J. L. Johnson Date 6/16/85
 Reviewed by J. L. Johnson Date 6/16/85

Subject: SQUG EDG Air Receiver Blowdown Time

Page 2 of 3

Purpose: Justify screening PSL3783, PSL3784, PSL3785, PSL3786 as acceptable to malfunction during the SSE.

The function of these pressure switches is to provide a Q isolation boundary. The Non-Q piping in question connects the air receivers to the air compressors loadless start device.

References:

Drawings OS-41B, P&ID M-017B

Compressed Air and Gas Handbook

Initial Conditions: EDG air receivers are at minimum air pressure of 220 psig (ref. setpoint for PS1133). This scenario will consider one receiver and rupture of its line.

At time zero:

earthquake begins

Non-Q 3/8" piping shears between Air compressor and SV3783 shears.

Determine:

What is air pressure in the receiver at time zero plus 30 seconds?

Assumptions:

-sonic flow is assumed

-effective hole size is 1/4" diameter which is the size of the seismic/Q piping from the receiver to the solenoid valve

-initial air flow is maintained through event (calculated rate is bounding since air flow actually decreases as event proceeds)

-Ideal Gas Law is bounding.

Values:

Air receiver volume = 40 ft³

hole diameter = 1/4"

C=coefficient of flow = 1.0

T₁=70 degrees F (530 degrees R)p₁=upstream total pressure in psia=220+14.7=234.7 psiaa=area of hole ; $\Pi r^2=0.04909\text{in}^2$

w=weight of air flow, lb/second (@14.7 psia & 70°F)

density of air = 0.07494 lb/ ft³ (@14.7 psia & 70°F)v=volume of air flow, ft³/sec (SCFM)

Using approximate formula by S.A.Moss (attached):

$$w=0.5303 \cdot a \cdot C_p / \sqrt{T_1} \quad w=(0.5303) \cdot (0.04909) \cdot (1.0) \cdot (234.7) / \sqrt{530}$$

$$w=0.26539 \text{ lb/second} \quad v=w/0.07494 = 3.54 \text{ ft}^3/\text{sec} \quad ** \quad **=@\text{standard conditions}$$

SSE lasts 30 seconds therefore V_{delta} = 30sec*3.54 ft³/sec=106 ft³ ** of air lost during event

Remaining pressure (neglecting temperature effect):

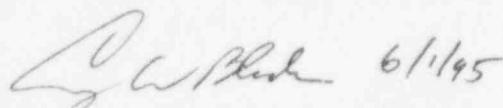
$$P_1 V_1 = P_S V_S ; (220\text{psi}+14.7\text{psi})(40 \text{ft}^3) = (14.7\text{psi})V_S ; V_S = 638 \text{ ft}^3 \quad **$$

$$V_{final} = V_S - V_{delta} = 638 \text{ ft}^3 - 106 \text{ ft}^3 = 532 \text{ ft}^3 \quad **$$

$$P_2 V_1 = P_S V_{final} ; P_2 = (14.7 \text{ psi}) (532 \text{ ft}^3) / (40 \text{ ft}^3) = 195.5 \text{ psia}$$

$$195.5 \text{ psia} - 14.7 \text{ psi} = 180.8 \text{ psig final pressure}$$

Since the PSL setpoint is 140#, given that the line fails at time zero, the switch will not be called upon to perform its function until after the earthquake is over.


 6/1/95

NOTE: THE ABOVE WAS REVIEWED BY THE MECHANICAL AND NUCLEAR ENGINEERING DISCIPLINES. BOTH PERFORMED ALTERNATE CALCULATIONS CONFIRMING THE CONCLUSIONS MADE ABOVE. GAB 6/1/95

TABLE 13.34 Discharge of Air through an Orifice

Gage Pressure before Orifice, psi	Diameter of Orifice, In.										
	1/16	1/8	1/4	1/2	5/8	3/4	7/8	1	5/16	11/16	13/16
	Discharge, Cu. Ft. Free Air Per Min.										
1	.028	0.112	0.450	1.80	7.18	16.2	28.7	45.0	64.7	88.1	115
2	.040	0.158	0.633	2.53	10.1	22.8	40.5	63.3	91.2	124	162
3	.048	0.194	0.775	3.10	12.4	27.8	49.5	77.5	111	152	198
4	.056	0.223	0.892	3.56	14.3	32.1	57.0	89.2	128	175	228
5	.062	0.248	0.993	3.97	15.9	35.7	63.5	99.3	143	195	254
6	.068	0.272	1.09	4.34	17.4	39.1	69.5	109	156	213	278
7	.073	0.293	1.17	4.68	18.7	42.2	75.0	117	168	230	300
9	.083	0.331	1.32	5.30	21.1	47.7	84.7	132	191	260	339
12	.095	0.379	1.52	6.07	24.3	54.6	97.0	152	218	297	388
15	.105	0.420	1.68	6.72	26.9	60.5	108	168	242	329	430
20	.123	0.491	1.96	7.86	31.4	70.7	126	196	283	385	503
25	.140	0.562	2.25	8.98	35.9	80.9	144	225	323	440	575
30	.158	0.633	2.53	10.1	40.5	91.1	162	253	365	496	648
35	.176	0.703	2.81	11.3	45.0	101	180	281	405	551	720
40	.194	0.774	3.10	12.4	49.6	112	198	310	446	607	793
45	.211	0.845	3.38	13.5	54.1	122	216	338	487	662	865
50	.229	0.916	3.66	14.7	58.6	132	235	366	528	718	938
60	.264	1.06	4.23	16.9	67.6	152	271	423	609	828	1,082
70	.300	1.20	4.79	19.2	76.7	173	307	479	690	939	1,227
80	.335	1.34	5.36	21.4	85.7	193	343	536	771	1,050	1,371
90	.370	1.48	5.92	23.7	94.8	213	379	592	853	1,161	1,516
100	.406	1.62	6.49	26.0	104	234	415	649	934	1,272	1,661
110	.441	1.76	7.05	28.2	113	254	452	705	1,016	1,383	1,806
120	.476	1.91	7.62	30.5	122	274	488	762	1,097	1,494	1,951
125	.494	1.98	7.90	31.6	126	284	506	790	1,138	1,549	2,023

Based on 100 per cent coefficient of flow. For well-rounded entrance multiply values by 0.97. For sharp-edged orifices a multiplier of 0.65 may be used. This table will give approximate results only. For accurate measurements see ASME Power Test Code, Velocity Volume Flow Measurement.

Values for pressures from 1 to 15 psig calculated by standard adiabatic formula.

Values for pressures above 15 psig calculated by approximate formula proposed by S. A. Moss: $w = 0.5303 aCp_1 / \sqrt{T_1}$, where w = discharge in lb per sec., a = area of orifice in sq. in., C = coefficient of flow, p_1 = upstream total pressure in psia, and T_1 = upstream temperature in deg F abs.

Values used in calculating above table were $C = 1.0$, $p_1 = \text{gage pressure} + 14.7 \text{ psi}$, $T_1 = 530 \text{ F abs}$.

Weights (w) were converted to volumes using density factor of 0.07494 lb. per cu. ft. This is correct for dry air at 14.7 psia and 70°F.

Formula cannot be used where p_1 is less than two times the barometric pressure.

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

6.4 187

System EDG AIR START

Page 1 OF 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
DAH-3784, PSL3784 (SV3784)	E-64B SHT. 12	PS-B (PSL3784)	STATIC-O-RING MODEL # 4V2-E5-TIX4. RM=318, A= 6, EL=585	CA- See 6.4#186 Page 2

125VDC POWER TO THIS CIRCUIT IS SUPPLIED FROM PANEL
DIP CKT 9 (REF. E64B SHT. 1C). SEE 6.4 # 55 FOR DIP
RELAY EVALUATION.

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by A. C. Miller Date 6/1/95
Reviewed by J. C. Miller Date 6/1/95

6.4 #188

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System E06 AIR START

Page 10F1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
DA-3785, PSL3785 (SV3785)	E-64B SHT 12	PS-A (PSL3785)	STATIC-O - RING MODEL 6V2-E5-TTX4	CA - See Page 2 6.4 #186

125 VDC POWER IS SUPPLIED TO THIS CIRCUIT FROM PANEL D2P,
CIRCUIT 9 (REF E64B SHT 26). SEE 6.4 #54 FOR
D2P RELAY EVALUATION.

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by J. C. Miller / Date 6/1/95
Reviewed by J. C. Miller / Date 6/1/95

A-45 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT LGSIS-BESE UNIT 1

6.4 189

System E64 AIR START

Page 10F1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
DA-3786, PSL3786 (SV3786)	E-64B SHT. 12	PS-B (PSL3786)	STATIC - O RING MODEL 6VZ-E5-11X4 IN RM=319, A=6, EL=585	CA- See G.4#186 Page 2

125 VAC POWER IS SUPPLIED TO THIS CIRCUIT FROM PANEL D2P,
 CIRCUIT 9 (REF. E64B SHT 26). SEE G.4 # 54 FOR D2P
 RELAY EVALUATION.

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- DA - Operator action.
- No entry necessary.

Prepared by John J. Date
 Reviewed by John J. Date 6/17/95

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT LOUIS REESE UNIT 1

6.4 190

System DECAY HEAT REMOVAL

Page 1 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
DH-13A (SVDH13A)	E-52B SHT. 25A #25B	KA, KB (2K31F 4K31F)	DEUTSH 4CP C5755C, C5756D A=7, RM=502 EL=623	CA-AOV RESTORED C12CDH13A

" BS BS (BYPASS SWITCHES) SEE G-4 #311

" "TEST LOG" REES CAT # 01461-202
IN NVDH13A. A=7
RM=113 EL=545 NV

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by C. W. Bell Date 10/12/94
 Reviewed by / Date

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS BESSE UNIT 1

System DECAT HEAT REMOVALPage 2 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
DH-13A (SVDH13A)	E-30-17 E-30-341 E-30-342 E-30-24 E-30-28 VMAN E-30-352	LR1(2F) LR1(2I)	P+B 2 FORMC LATCHING RELAY # T83SII D122-24 C5755C, C5756D A=7, RM=502 EL=623	CA4
E-52B SH25A	HISDH13A		EATON/CUTLER-HAMMER TYP. E30-JF-E200-E102-K11	NV
OS-4 SH-1 E-30B SH 7 E-30B SH 4				
OS-4 SH.1	ZCDH13A			NA
VMAN M-314Q-52	(VALTEK BETA POSITIONER)			

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by B. Weller / Date 10/12/94
 Reviewed by _____ / Date _____

A-85 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT LBNL-RESCF UNIT 1

6.4 #191

System DECAY HEAT REMOVAL

Page 10F2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
DH-13B (SVDH13B)	E-52B SHT. 25B #25A	"TEST LOG"	REES CAT. # 01H61-20Z IN NVDH13B, A=7, Rm=213, EL=545.	NV
"	KA, KB (1K31F, 3K31F)	DEUTSCH RELAY # 4CP	C5762C, C5763D A=7 Rm=502 EL=623	CA-AOV RESTORED BY ZCDH13B
E-30-17 E-30-241 E-30-242 E-30-14 E-30-35 VMAN-E-30-352	LR1(2F) LR1(2I)	Potter + Brumfield 2 FORM C LATCHING RELAY #T83S11D122-24	C5762C, C5763D A=7, Rm=502, EL=623	CA4

- Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by G. C. Loh / Date 10/12/91
 Reviewed by _____ / Date _____

G.4#191

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS BESSE UNIT 1

System DECAY HEAT REMOVALPage 2 of 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
DH-13B(SV0H13B)	OS-4SH1 VMAN M-314Q-52	ZC DH13B (VALTEK BETA POSITIONER)	-	NA
	OS-4SH1 E-30B SH.7 E-30B SH.4 E-52B SH.25A,25B	HIS DH13B	EATON (CUTLER HAMMER) TYPE E30-3F E 200-E102-XII	NV
	E-52B SH.25A	$\frac{BS}{A}, \frac{RS}{B}$ (BYPASS SWITCHES)		SEE G.4#311

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by R. W. Be / Date 10/12/84
 Reviewed by _____ / Date _____

6.4 #192

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System DECAY HEAT REMOVALPage 1 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
DH-14A (6VDH14A)	E-52B SHT. 25B #25A	"TEST Dog"	REES CT. # 01461-202 IN NVDH14A, A=7, RM=113, EL=545,	NU
		KA, KB (2K31E, 4K31E)	DEUTSCH RELAY #4CP	CA-AOV RESTORED BY POSITIONER
			C5755C, C5756D A=7 RM=502 EL=623	
E-30-17 E-30-341 E-30-342 E-30-24 E-30-28 VMAN E-30-352	LR 1 (2F) LR 1 (2I)	Potter + Br. 2 FORM C LATCHING RELAY #T83S11 D122-24 C5755C, C5756D A=7, RM=50L, EL=623	CA4	

- Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NY - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by Cluse Date 10/21/94
 Reviewed by / Date

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS BESSE UNIT 1

G.4#192

System DECAY HEAT REMOVAL

Page 2 of 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
DH14A(SV0DHMA)	OS4SH1 VMAN M-314Q-52	Z(DH14A (VALTEK BETA POSITIONER))	-	NA
	OS-4 SH.1 E-30B SH 4,7 E-52B SH 25A, 25B	HIS DH14A	EATON/CUTLER-HAMMER TYPE E30-JF-E200-E102-KIII	NV
E-52B SH 25A		$\frac{BS}{A}, \frac{BS}{B}$ (BYPASS SWITCHES)	SEE G.4#311	

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by L. W. Br, Date 10/12/94
 Reviewed by _____ / Date

S.A #193

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System DECAY HEAT REMOVAL

Page 1 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
DH-14B (SVDH14B)	E-52B SHT. 25B #25A	*TEST LOG"	PIERS CAT# 0461-202 IN NVDH14B, A=7, RM=113, EL=545	NV
		KA, KB (1K31E, 3K31E)	DEUTSCH RELAY #4CP C5762C, C5763D A=7, RM=502, EL=623	CA-AOV RESTORED BY POSITIONER
E-30-17 E-30-341 E-30-342 E-30-14 E-30-35 VMAN E-30-352	LR1 (2F) LR1(2I)	POTTER & BRUMFIELD 2 FORM C LATCHING RELAY # T835110122-24 C5762C, C5763D A=7, RM=502, EL=623		CA4

- Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- DA - Operator action.
- No entry necessary.

Prepared by L. W. Bell Date 10/12/94
Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS BESSE UNIT 1

G.4 # 193

System DECAY HEAT REMOVAL

Page 2 of 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
DH-14B (SDH14B)	OS-4SH1 VMAN M-314Q-52	2CDH14B (VALTEK BETA) POSITIONER	-	NA
	OS-4SH1 E-308SH4,7 E-52B SH25A, 258	HISDH14B	EATON/CUTLER HAMMER NV TYPE E30-3F-E200-E102-KH4	
E-52B SH25A		$\frac{BS}{A}$ $\frac{BS}{B}$ (BYPASS SWITCHES)	SEE G.4 #311	

-
- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by Larce / Date 12/29/94
 Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DOUGLAS UNIT 1

6.4 # 194

System DECAY HEAT REMOVAL

Page 1 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
DH-2736 <i>(PKR BF1125)</i>	E-52B SHT, 2B+2A	"DS"	G.E TYPE 38-9 CTRL. SW IN C0F11A-2. A=7, RM=427, EL=603	NV
"		33/60, 33/bn%, 33/100, 33/bc	LIMIT TORQUE LIMIT SWITCHES IN MV2736, A=7 RM=314, EL=585	NV
"		33/60, 33/te	LIMIT TORQUE TORQUE SWITCHES IN MV2736. (SEE ABOVE)	NV
"		"STOP"	REES CAT. # 01461-202 IN NV2738 (SEE ABOVE)	NV
"		"OPEN" "CLOSE"	REES CAT # 03845-000 IN NV2738, (SEE ABOVE)	NV

- Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Smith Date 12/13/94
 Reviewed by _____ / Date _____

6.4 ~~H~~ 194

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System DECAY HEAT REMOVAL

Page 2 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
D4-2736	E52B SHTS 2A4 2B	<u>CS</u> <u>OPEN</u> <u>CS</u> <u>CLOSE</u>	CUTLER HAMMER TYPE E-30B ON C5705. A=7 RM=505, EL= 623	NV
"		OL	(W) OVERLOAD RELAY CONTACTS IN MCC F1A. A=7, RM=427, EL=603	CA8
"		<u>42a</u> , <u>42b</u> <u>O</u> , <u>C</u> <u>42a</u> , <u>42b</u> <u>C</u> , <u>O</u>	(W) L-56 AUX CONTACTS FOR STARTER IN MCC F1A. (SEE ABOVE)	GERS-MCC.9 (AREA 7) (SEE Pg 3)
"		<u>42</u> , <u>42</u> <u>O</u> , <u>C</u>	(W) SERIES A200 STARTER IN MCC F1A. (SEE ABOVE)	GERS-MCC.9 (AREA 7) (SEE Pg 3)

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Smith Date 12/13/94
 Reviewed by _____ Date _____

c.4 # 194

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System DECAY HEAT REMOVALPage 3 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

GERS-MCC.9 (AREA 7)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 7; 603', and 565'.

The effective grade for Area 7 is 562'.

Since $603' - 562' = 41'$, the ground spectra multiplied by (1.5x1.5) may be used to evaluate contactors/starters in Area 7 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} \leq 1.5g$ and $bA_{33Hz} \leq 1.0g$, then contactors/starters in Area 7 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- | | |
|------|---|
| CA | - Chatter acceptable. |
| NV | - Not vulnerable (mechanically-actuated contacts and solid state relays). |
| GERS | - Seismically adequate based on GERS _____; include GERS number. |
| NA | - Component not affected by relays. |
| CR | - Corrective action required. |
| OA | - Operator action. |
| - | - No entry necessary. |

Prepared by W. K. Smith Date 12/13/94
 Reviewed by _____ / Date _____

6.4 #195

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT LOUIS-REBSE VISIT 1

System DECAY HEAT REMOVAL

Page 1 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
DH-63 (BKR BF1195)	E-52B SHT. 66	DC	GE TYPE SB-9 CTRL SW. IN CDFIID. A=7 RM=227, EL=565	NV
"	<u>33</u> <u>60</u> , <u>33</u> <u>b0</u> , <u>b1n%</u> , <u>33</u> <u>60</u>)	LIMIT TORQUE LIMIT	SWITCHES IN	NV
"	<u>33</u> <u>AC</u>	MVDH63, A=7 RM=115, EL=545	LIMIT TORQUE SWITCHES IN MVDH63 (SEE ABOVE)	NV
"	<u>33</u> <u>60</u>) <u>33</u> <u>TC</u>	LIMIT TORQUE SWITCHES IN MVDH63 (SEE ABOVE)	REES CAT. # 01461-202 IN NVDH63, A=7, RM=	NV
"	STOP	115, EL=545	REES CAT. # 03845-000 IN NVDH63, (SEE ABOVE)	NV
"	OPEN - CLOSE		REES CAT. # 03845-000 IN NVDH63, (SEE ABOVE)	NV
"	<u>OS</u> <u>OPEN</u> <u>CS</u> <u>CLOSE</u>	CUTLER-HAMMER TYPE E30B ON C5716, A=7 RM=	505, EL=623	NV

- Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- DA - Operator action.
- No entry necessary.

Prepared by W.K. Bell / Date 12/13/94
Reviewed by _____ / Date _____

6.4 # 195

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System DECAY HEAT REMOVALPage 2 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
DH 64	E-52B SHT 64	OL	(W) OVERLOAD RELAY CONTACTS IN MCC FILE. A=B, RM=101 EL=565	CA8
"		$\frac{42a}{O}, \frac{42b}{C}, \frac{42a}{C}$ $\frac{42b}{C}$	(W) L-56 AUX SW. FOR STARTER IN MCC FILE. (SEE ABOVE)	GERS-MCC. 9 (AREA 8) (SEE Pg 3)
"		$\frac{42}{O}, \frac{42}{C}$	(W) SERIES A200 STARTER IN MCC FILE. (SEE ABOVE)	GERS-MCC. 9 (AREA 8) (SEE Pg 3)

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Ball Date 12/13/94
 Reviewed by _____ / Date _____

c.e #195

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System DECAY HEAT REMOVAL

Page 3 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

GERS-MCC.9 (AREA 8)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 8; 603', 585', 565' and 545'.

The effective grade for Area 8 is 567'.

Since $603' - 567' = 36'$, the ground spectra multiplied by (1.5x1.5) may be used to evaluate contactors/starters in Area 8 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} \leq 1.5g$ and bA_{33Hz} is $\leq 1.0g$, then contactors/starters in Area 8 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Schipper Date 12/13/94

Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT LOUIS-REBSE UNIT 1

6.4 #196

System DECAY HEAT REMOVAL

Page 1 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
DH-64 (BKR. BE1187)	E-52B SHT. 64	DS	G.E. TYPE SB-9 CTRL SW IN CDP11D RM 227 A=B, EL=603	NV
"	<u>33</u> , <u>33</u> <u>DO</u> , <u>bN%</u>	LIMITORQUE LIMIT	SWITCHES IN	NV
"	<u>33</u> , <u>33</u> <u>DO</u> , <u>TAC</u>	MVDH64. A=8 RM=105, EL=545	MVDH64. A=8 RM=105, EL=545	NV
"	<u>33</u> , <u>33</u> <u>DO</u> , <u>TC</u>	LIMITORQUE TORQUE SW. IN MVDH64. (SEE ABOVE)	LIMITORQUE TORQUE SW. IN MVDH64. (SEE ABOVE)	NV
"	STOP	REES CAT. # 04161-202 IN NVDH64. A=8 RM=105, EL=545	REES CAT. # 04161-202 IN NVDH64. A=8 RM=105, EL=545	NV
"	OPEN CLOSE	REES CAT # 03845-000 IN NVDH64. (SEE ABOVE)	REES CAT # 03845-000 IN NVDH64. (SEE ABOVE)	NV
"	<u>CS</u> <u>CS</u> <u>OPEN</u>) <u>CLOSED</u>	CUTLER HAMMER TYPE E30B ON C5716. A=7, RM=505, EL=623	CUTLER HAMMER TYPE E30B ON C5716. A=7, RM=505, EL=623	NV

- Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
 NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
 GERS - Seismically adequate based on GERS ____; include GERS number.
 NA - Component not affected by relays.
 CR - Corrective action required.
 OA - Operator action.
 - No entry necessary.

Prepared by W.K. Hall, Date 12/13/94
 Reviewed by _____, Date _____

6.4 # 196

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System DECAY HEAT REMOVALPage 2 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
DH-64	E-52B SHT. 46	OL	(W) OVERLOAD RELAY CONTACT IN MCC E11E. A=8, RM=402 EL=603.	CAB
"	<u>42a</u> <u>42b</u> , <u>O</u> , <u>C</u> , <u>42a</u> , <u>42b</u> <u>C</u> , <u>O</u>		(W) L-56 AUX SW FOR STARTER IN MCC E11E. (SEE ABOVE).	GERS-MCC. 9 (AREA 8) (SEE Pg 3)
"	<u>42</u> <u>42</u> , <u>O</u> , <u>C</u>		(W) SERIES A200 STARTER IN MCC E11E (SEE ABOVE)	GERS-MCC. 9 (AREA 8) (SEE Pg 3)

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by D. K. Hill Date 12/13/94
Reviewed by _____ / Date _____

C.4 #196

A-46 RELAY SCREENING AND EVALUATION
FORM C.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System DRAV HEAT REMOVAL

Page 3 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT

GERS-MCC.9 (AREA 8)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 8; 603', 585', 565' and 545'.

The effective grade for Area 8 is 567'.

Since $603' - 567' = 36'$, the ground spectra multiplied by (1.5×1.5) may be used to evaluate contactors/starters in Area 8 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} \leq 1.5g$ and $bA_{33Hz} \leq 1.0g$, then contactors/starters in Area 8 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS _____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by O.H. Smith Date 12/13/94
Reviewed by _____ / Date _____

6.4 # 197

A-85 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System DECAY HEAT REMOVAL

Page 1 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
DH-7A (BKR. BF1148)	E-57B SHTS. 19A-19C	DS	GE TYPE SB-9 CTRL. SW IN CDFIB. A=8 RM=405, EL=603	NV
"		<u>33</u> , <u>33</u> , <u>33</u> <u>DC</u> , <u>0.1%</u> , <u>DC</u>	LIMIT TORQUE LIMIT SW. IN MVDH7A. A=YARD, RM=901, EL=585	NV
"		<u>33</u> , <u>33</u> <u>DC</u> , <u>TC</u>	LIMIT TORQUE TORQUE SW IN MVDH7A. (SEE ABOVE)	NV
"		<u>33</u> , <u>33</u> <u>DC</u> , <u>AC</u>	LIMIT TORQUE LIMIT SWITCH IN MVDH9A. A=7, RM=225, EL=565.	NV
"	STOP		REES CAT # 01461-202 IN MVDH7A. A=YARD, RM=901, EL=585	NV

- Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- | | |
|------|---|
| CA | - Chatter acceptable. |
| NV | - Not vulnerable (mechanically-actuated contacts and solid state relays). |
| GERS | - Seismically adequate based on GERS ____; include GERS number. |
| NA | - Component not affected by relays. |
| CR | - Corrective action required. |
| DA | - Operator action. |
| | - No entry necessary. |

Prepared by W.H. Giff Date 12/13/94
Reviewed by _____ / Date _____

6.4 #197

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System DECAY HEAT REMOVALPage 2 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
DH-7A	E-62B SHTS 19A MD 19C	"OPEN" "CLOSE"	PEES CAT # 03845-000 IN NVDH7A. (SEE ABOVE)	NV
"		<u>CS</u> OPEN, <u>CS</u> <u>CLOSE</u>	CUTLER-HAMMER TYPE E30B ON C571G. RM=505 A=7, EL=623	NV
"		<u>42b</u> , <u>42a</u> , <u>C</u> , <u>O</u> , <u>42a</u> , <u>42b</u> <u>C</u> , <u>O</u>	(W) L-54 AUX SW FOR STARTER IN MCC F11B A=8 RM=405, EL=603	GERS-MCC.9 (AREA 8) SEE PG 4
"		<u>42</u> , <u>42</u> <u>O</u> , <u>C</u>	(W) SERIES A200 STARTER IN MCC F11B (SEE ABOVE)	GERS-MCC.9 (AREA 8) SEE PG 4
"		OL	(W) OVERLOAD RELAY IN MCC F11B (SEE ABOVE)	CA8

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Smith Date 12/13/94

Reviewed by _____ Date _____

6.4 #197

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System DECAY HEAT REMOVALPage 3 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
DH 7A	E-52B SHEET 19A + 19C	KA,KB,KC,KD BA,BB,BC,BD (LRI) AROMAT	DEUTSCH 4AP LOCATED (SEE BELOW) STIEL2DC24V LOCATED IN C5755C1D,C5756C1D	CA4 OPEN CKT: 33 DO CLOSE CKT "CLOSE"; 424 C ES CLOSE

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by John Blasius Date 1/18/95
 Reviewed by / Date

c. #197

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT I

System DECAY HEAT REMOVAL

Page 4 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT

GERS-MCC.9 (AREA 8)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 8; 603', 585', 565' and 545'.

The effective grade for Area 8 is 567'.

Since $603' - 567' = 36'$, the ground spectra multiplied by (1.5×1.5) may be used to evaluate contactors/starters in Area 8 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} \leq 1.5g$ and $bA_{33Hz} \leq 1.0g$, then contactors/starters in Area 8 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS _____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Sif Date 12/13/94
Reviewed by _____ / Date _____

6.4 #198

A-85 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT IAIS-REES UNIT 1

System DECAY HEAT REMOVALPage 1 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
DH-7B (BKR BE1157)	E-52B 8410 19A & 19C	DS	GE TYPE SB-9 CTRL SW IN CDE11A, A=8 RM=304, EL = 585.	NV
"	<u>33</u> <u>33</u> <u>DC</u> <u>DC%</u>	LIMIT TORQUE LIMIT	SW IN MVDH7B A=YARD, RM= 901 EL= 585.	NV
"	<u>33</u> <u>33</u> <u>DC</u> <u>DC</u>	LIMIT TORQUE TORQUE	SW IN MVDH7B. (SEE ABOVE)	NV
" *	<u>33</u> <u>33</u> <u>DC</u> <u>DC</u>	LIMIT TORQUE LIMIT	SW IN MVDH9B, A=7, RM= 225, EL= 565	NV
"	STOP	PEES CAT # 01461-202 IN NVDH7B, A=YARD, RM= 901, EL= 585	NV	
"	OPEN CLOSE	PEES CAT # 03845-000 IN NVDH7B. (SEE ABOVE)	NV	

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- DA - Operator action.
- No entry necessary.

Prepared by W.K. Sulik Date 12/13/94
Reviewed by _____ / Date _____

c.4 #198

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System DECAY HEAT REMOVALPage 2 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
DH-7B	E-DB-SHTS 19A2-19C	OS OPEN, CS CLOSE	CUTLER-HAMMER E30B ON C5716 A=7, RM=505, EL 623	NV
"		42a, 42b, 42c, O, C, C 42b O	(W) L-56 AUX. SW FOR STARTER IN MCC E11A, A=8, RM=209 EL=565	GERS-MCC. 9 (AREA 8) (SEE Pg. 4)
"		42, 42 O, C	(W) SERIES A200 STARTER IN MCC E11A. (SEE ABOVE)	GERS-MCC. 9 (AREA 8) (SEE Pg. 4)
"		OL	(W) OVERLOAD RELAY CONTACTS IN MCC E11A (SEE ABOVE)	C48

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.L. Smith Date 12/13/94
 Reviewed by _____ Date _____

G.4 #198

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System DECAY HEAT REMOVALPage 3 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
DH-7B	E-523 SHTS 19A & 19C	KA,KB,KC,KD BA, BB, BC, BD	DEUTSCH 4AP LOCATION : see below (CR) AROMAT ST1EL2DC24V LOCATED IN C5762C1D C5763C1D	CA4 OPEN CKT: 33/60 CLOSE CKT: "CLOSE"; 420/C, OS CLOSE

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by Bawhly Date 11/86
 Reviewed by _____ / Date _____

C-4 #198

A-46 RELAY SCREENING AND EVALUATION
FORM G-4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System DECAY HEAT REMOVAL

Page 4 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

GERS-MCC.9 (AREA 8)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 8; 603', 585', 565' and 545'.

The effective grade for Area 8 is 567'.

Since $603' - 567' = 36'$, the ground spectra multiplied by (1.5×1.5) may be used to evaluate contactors/starters in Area 8 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} \leq 1.5g$ and bA_{33Hz} is $\leq 1.0g$, then contactors/starters in Area 8 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Sipe Date 12/13/94
Reviewed by _____ / Date _____

6.4 #199

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System DECAY HEAT REMOVALPage 1 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
DH-830 (BKR. BF1185)	E-52B SHT. 53	DS	GE, TYPE SB-9 CTRL, SW. IN CDFIID. A= 7 RM= 227 EL= 565	NV
"		<u>33</u> <u>33</u> <u>33</u> <u>33</u> <u>100</u> <u>bN%</u> <u>100</u> <u>AC</u>	LIMIT/TORQUE LIMIT SW. IN MV830. A= 7 RM= 113 EL= 545	NV
"		<u>33</u> <u>33</u> <u>10</u> <u>TC</u>	LIMIT/TORQUE TORQUE SW IN MV830 (SEE ABOVE)	NV
"		STOP (PUSHBUTTON)	REES CAT. # 01461-202 IN NV830 A= 7 RM= 113 EL= 545	NV
"		"OPEN" "CLOSE"	REES CAT. # 03845-000 IN NV830 (SEE ABOVE)	NV
"		<u>CS</u> <u>OPEN</u>) <u>CS</u> <u>CLOSE</u>	CUTLER-HAMMER TYPE E30R ON C5704. A= 7, RM= 505, EL= 623	NV

- Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- | | |
|------|---|
| CA | - Chatter acceptable. |
| NV | - Not vulnerable (mechanically-actuated contacts and solid state relays). |
| GERS | - Seismically adequate based on GERS ____; include GERS number. |
| NA | - Component not affected by relays. |
| CR | - Corrective action required. |
| OA | - Operator action. |
| - | - No entry necessary. |

Prepared by W.H. Schaff Date 12/13/94
Reviewed by _____ / Date _____

G.4 #199

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System DECAY HEAT REMOVALPage 2 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
DH-830	E-52B SHT. 53	$\frac{42b}{O}$, $\frac{42a}{C}$, $\frac{42b}{O}$	(W) L-66 AUX. CONTACT FOR STARTER IN MCC FID. A = 7 RM=327, EL=565	GERS-MCC. 9 (AREA 7) (SEE PG 3)
"		$\frac{42}{O}$, $\frac{42}{C}$	(W) SERIES A200 STARTER IN MCC FID. (SEE ABOVE)	GERS-MCC. 9 (AREA 7) (SEE PG 3)
"	OL		(W) OVERLOAD RELAY CONTACTS IN MCC FID. (SEE ABOVE)	CAB

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Bush Date 12/13/94
 Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System DECAY HEAT REMOVAL

Page 3 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

GERS-MCC.9 (AREA 7)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 7; 603', and 565'.

The effective grade for Area 7 is 562'.

Since $603' - 562' = 41'$, the ground spectra multiplied by (1.5×1.5) may be used to evaluate contactors/starters in Area 7 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} \leq 1.5g$ and $bA_{33Hz} \leq 1.0g$, then contactors/starters in Area 7 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Smith Date 12/13/94
 Reviewed by _____ / Date _____

A-86 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT 1A/1S-BESE UNIT 1

6.4 #200

System DECAY HEAT REMOVAL

Page 1 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
DH-831 (BKR. BE1195)	E-52B SHT. 53	DS	GE TYPE 38-9 CTRL SW. IN CODEID. A=7 RM=227, EL=565	NV
"		<u>33</u> <u>BD</u> , <u>33</u> <u>bn%</u> <u>AC</u>	LIMITORQUE LIMIT. SW. IN MV0831 A=8 RM=113 EL=545	NV
"		<u>33</u> <u>TO</u> , <u>33</u> <u>TC</u>	LIMITORQUE TORQUE SW. IN MV0831, (SEE ABOVE)	NV
"		STOP	REES CAT. # 34401-202 IN NV0831, A=7 RM=113 EL=545	NV
"		"OPEN", "CLOSE"	REES CAT. # 03845-000 IN NV0831 (SEE ABOVE)	NV
"		<u>CS</u> <u>OPEN</u> , <u>C3</u> <u>CLOSE</u>	CUTLER-HAMMER TYPE E30B ON C5704. A=7, RM=505 EL=623	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NC - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Grish Date 12/13/94
 Reviewed by _____ / Date _____

G.4 #200

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System DECAY HEAT REMOVAL

Page 2 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
DH-831	E-52B SHT. 53	<u>42b</u> , <u>42a</u> , <u>C</u> , <u>C</u> , <u>42b</u> <u>O</u>	(W) L-56 AUX CONTACT FOR STARTER IN MCC EID. A = 7, RM=227, EL=565	GERS-MCC.9 (AREA 7) (SEE Pg 3)
"	"	<u>42</u> , <u>42</u> <u>O</u> , <u>C</u>	(W) SERIES A200 STARTER IN MCC EID. (SEE ABOVE)	GERS-MCC.9 (AREA 7) (SEE Pg 3)
"	"	OL	(W) OVERLOAD RELAY CONTACTS IN MCC EID. (SEE ABOVE)	CA8

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Siegfried Date 12/13/94
 Reviewed by _____ / Date _____

C-4 #200

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System DECAY HEAT REMOVAL

Page 3 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

GERS-MCC.9 (AREA 7)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 7; 603', and 565'.

The effective grade for Area 7 is 562'.

Since $603' - 562' = 41'$, the ground spectra multiplied by (1.5x1.5) may be used to evaluate contactors/starters in Area 7 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} \leq 1.5g$ and bA_{33Hz} is $\leq 1.0g$, then contactors/starters in Area 7 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
HV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by W.K. Sill Date 12/13/94
Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.6 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

6.6 201

System DEMIN H₂O / COMPONENT COOLING H₂O

Page 1 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
DW-2643 (SV2643)	E-50B SHT. 14	"CLOSE", "OPEN"	FEES CAT # 02450 032 IN NVO 2643 A=7, RM=501, EL=623	NV
"	"	CS OPEN, CS CLOSE	CUTLER-HAMMER TYPE E30B ON C5720. A=7 RM=505, EL=623	NV
"	4		DEUTSCH TYPE 4AP IN RC3715. A=7 RM=313 EL=585	LEVEL 2 USING RELAY SPECIFIC QUAL. DATA (SEE Pg. 2)

NOTE +125 VAC POWER IS NOT REQUIRED TO KEEP THIS VALVE CLOSED.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable {mechanically-actuated contacts and solid state relays}.
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- DA - Operator action.
- No entry necessary.

Prepared by J.H. [Signature] Date 2/14/95
 Reviewed by _____ / Date _____

G.4 #201

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System DEMIN H₂O/Component
Cooling Water

Page 2 OF 2

Relay
Type and
Location

SAT*

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

LEVEL 2 SCREENING FOR RC3715

1. Natural frequency of RC3715 is less than 8Hz.
2. RC3715 has been given an amplification factor (AF) of 7.
3. RC3715 is located in plant area 7, elevation 585'.
4. For this area and elevation the peak Conservative Design Basis Floor Response Spectra (FRS) = .8487g and the associated ZPA = .245g.
5. Seismic capacity for Deutsch 4AP43AF = 6.7g peak and 5g at the ZPA (ref. NED 95-10022, "Seismic Evaluation of Deutsch Relays" and "Justification for Covering Older Deutsch Relays with the 1990 Farwell & Hendricks Report"), see G.4 # 72.

thus Peak Seismic Demand (SD);

$$\begin{aligned} SD &= FRS * AF \\ &= .8487g * 7 \end{aligned}$$

$$SD = 5.94g$$

and ZPA Seismic Demand (SD);

$$\begin{aligned} SD &= \text{associated ZPA} * AF \\ &= .245 * 7 \end{aligned}$$

$$SD = 1.71g$$

therefore, seismic capacity exceeds seismic demand.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS ____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by J.K. Harl Date 5/5/95
Reviewed by _____ / Date

SCE Review J.W. Harl 8/24/85

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT 2A'S-REESE UNIT 1

6.4 #202

System MAIN STEAM

Page 1 OF 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
ICS-IIA, SV-ICSIIA2 HIS ICSIIA	E-46B SHT. 79A, 79B	"TEST"	FEES CAT. # OH161- 202 IN NVICSI A= 7 RM= 602 EL= 443	NV
SF-0038	K31, K32, K33, K34, K60, K91, K92, K93, K94, K120	K31, K32, K33, K34, K60, K91, K92, K93, K94, K120	STRUThERS - DUNN SERIES 219 CCC # KGU481C (# 219 XDX162) Vendor's P/N ↑ IN C5792 A=7 RM=502 EL=623	SEE G.4 #312
II	CS (HIS ICSIIA) BLOCK	CUTLER HAMMER TYPE E300X		N ✓
II	CS (HIS ICSIIA) CTRL	CUTLER HAMMER TYPE E303A		NV

- Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- DA - Operator action.
- No entry necessary.

Prepared by J. Schleifer / Date 11/9/94
 Reviewed by _____ / Date _____

6.4 #203

A-85 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT LOUIS REESE UNIT 1

System MAIN STEAMPage 1 OF 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
ICS-11B, SV-ICS11B2 HIS ICS11B	E-46B SHT. 78A, 78B	TEST	REES CAT. # 01461-202 IN NIVCS11B. A= 8 RM= 601 EL= 443	NV
SF-003B	K31, K32, K33,		STRUCTURES - DOWN	
SH 23	K34, K60, K91, K92, K93, K94 K120		SERIES 219 CCC # K6U431C (P/N # Z19YDX16Z)	SEE 6.4 # 312
"			IN C5742A	
"	CS CTRL	(HIS ICS11B)	CUTLER HAMMER TYPE E303A	NV
"	CS BLOCK	(HIS ICS11D)	CUTLER HAMMER TYPE E303X	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by J. W. Blalock Date 11/19/94
Reviewed by _____ / Date _____

6.4 #204

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System HIGH PRESSURE INJECTION

Page 1 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
HP-2A (BKR BFII39)	E-52B SHT. 26A & 26B	DS	G.E. TYPE SB-9 CTRL. SW. IN CDFAC A = 7, RM = 236 EL = 545	NV
"	$\frac{33}{60}$, $\frac{33}{60\%}$, $\frac{33}{60}$	LIMIT TORQUE LIMIT SW. IN MVHPO2A A = 7, RM = 236 EL = 545	NV	
"	$\frac{33}{60}$, $\frac{33}{60}$	LIMIT TORQUE TORQUE SW. IN MVHPO2A (SEE ABOVE)	NV	
"	STOP	PEES CAT. # 01461-202 IN NVHPO2A A = 7 RM = 236 EL = 545	NV	
"	OPEN CLOSE	PEES CAT. # 03845-000 (SAME AS STOP)	NV	

- Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- | | |
|------|---|
| CA | - Chatter acceptable. |
| NV | - Not vulnerable (mechanically-actuated contacts and solid state relays). |
| GERS | - Seismically adequate based on GERS ____; include GERS number. |
| NA | - Component not affected by relays. |
| CR | - Corrective action required. |
| OA | - Operator action. |
| | - No entry necessary. |

Prepared by W.L. Gil / Date 10-16-94
Reviewed by _____ / Date _____

6.4 #204

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System HIGH PRESSURE INJECTIONPage 2 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
HP-2A	E-52B SHTS 86A #26B	<u>CS</u> <u>OPEN</u> , <u>CS</u> <u>CLOSE</u>	CUTLER-HAMMER TYPE E30B ON C5716. A = 7 RM = 505, RL = 623	NV
"		<u>42a</u> , <u>42b</u> , <u>42a</u> <u>C</u> , <u>C</u> , <u>C</u> <u>42b</u> <u>O</u>	(W) L-56 AUX SW. FOR STARTER IN MCC F11C A = 7 RM = 234 EL = 565	GERS - MCC. 9 (AREA 7) SEE PG 4
"		<u>42</u> , <u>42</u> <u>O</u> , <u>C</u>	(W) SERIES A200 STARTER IN (SAME AS ABOVE)	GERS - MCC. 9 (AREA 7) SEE PG 4
"		OL	(W) OVERLOAD RELAY CONTACTS IN (SAME AS ABOVE)	CAB

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Gandy Date 10-16-94
Reviewed by _____ / Date _____

6.4 # 204

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System HIGH PRESSURE INJECTIONPage 3 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
HP-2A	E-52B SHTS. 26A # 26B	TD CONTACTS (5+3)	AGASTAT E7024AC IN MCC FIIC. A=7 RM=236, EL= 565	GERS MCC. 9 (AREA 7) AND GERS-RLY- PNT. 7 FOR E7024AC = 7g WHICH IS > 4.5g
"	"	KA, KB (2 K21B, 4 K21B)	DEUTSCH RELAY # 4CP C5755D, C5756C A=7 Room=502 EL= 623	SEE 6.4# 311
"	"	BA, BB (LR 1) (LR 1)	AROMAT Form 1A1B LATCHING RELAY # ST1 EL2 DC 24V C5755D, C5756C A=7, Room=502 EL= 623 (BYPASS SWITCH)	CA - permissive SEE 6.4#311

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Lill Date 11/30/94
 Reviewed by _____ / Date _____

c.c #204

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System, HIGH PRESSURE INJECTIONPage 4 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

GERS-MCC.9 (AREA 7)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 7; 603', and 565'.

The effective grade for Area 7 is 562'.

Since $603' - 562' = 41'$, the ground spectra multiplied by (1.5x1.5) may be used to evaluate contactors/starters in Area 7 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} \leq 1.5g$ and bA_{33Hz} is $< 1.0g$, then contactors/starters in Area 7 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Schaff Date 10-16-94
 Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT LAWIS-BESSE UNIT 1

6.4 #205

System HIGH PRESSURE INJECTION

Page 1 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
HP-2B (BKR BF1141)	E-52B SHT. 26A & 26B	DS	G.E. TYPE SB-9 CTRL. SW. IN CD FIIC A = 7, RM = 236 EL = 565	NV
"	$\frac{33}{60}$, $\frac{33}{60\%}$, $\frac{33}{60}$	LIMIT TORQUE LIMIT SW. IN	MVHP02B A = 7, RM = 236 EL = 565	NV
"	$\frac{33}{60}$	MVHP02B A = 7, RM = 236 EL = 565	LIMIT TORQUE TORQUE SW. IN MVHP02B (SEE ABOVE)	NV
"	STOP	PEES CAT. # 01461-202 IN NVHP02B A = 7 RM = 236 EL = 565	PEES CAT. # 01461-202 IN NVHP02B A = 7 RM = 236 EL = 565	NV
"	OPEN CLOSE	PEES CAT. # 03845-000 (SAME AS STOP)	PEES CAT. # 03845-000 (SAME AS STOP)	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Seppelt Date 10/14/94
 Reviewed by _____ / Date _____

6.4 #205

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System HIGH PRESSURE INJECTIONPage 2 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
HP-2B	E-52B SHTS Q6A 426B	<u>CS</u> <u>OPEN</u> , <u>CLOSE</u>	CUTTER-HAMMER TYPE E30B ON C571G. A=7 RM=505, EL=623	NV
"		<u>42a</u> , <u>42b</u> , <u>42a</u> <u>C</u> , <u>C</u> , <u>C</u> <u>42b</u> <u>O</u>	(W) L-56 AUX SW. FOR STARTER IN MCC FIC A= 7 RM=234 EL= 505	GERS - MCC. 9 (AREA 7) SEE Pg 4
"		<u>42</u> , <u>42</u> <u>O</u> , <u>C</u>	(W) SERIES A200 STARTER IN (SAME AS ABOVE)	GERS - MCC. 9 (AREA 7) SEE Pg. 4
"		OL	(W) OVERLOAD RELAY CONTACTS IN (SAME AS ABOVE)	CAB

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. Keil Date 10-16-94
 Reviewed by _____ / Date _____

6.4 #205

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System HIGH PRESSURE INJECTIONPage 3 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
HP-2B	E-52B SHTS. 26A # 26B	TD CONTACTS (5+3)	AGASTAT E7024AC IN MCC FIIC, A=7 RM=236, EL=565	GERS-MCC.9 (AREA 7) AND GERS-RLY-PNT. 7 FOR E7024AC = 7g WHICH IS > 4.5g
"	BS A BS B	(BYPASS SWITCH)		See G.4#311
"	KA, KB (2K21C, 4K21C)	DEUTSCH RELAY #4CP C5755D, C5756C		SEE G.4 # 311
"	BA, BB (LR1) (LR1)	AROMAT FORM 1A1B LATCHING RELAY # ST1EL2DC24V C5755D, C5756C A=7 Room=502 EL=623		CA-(permissive)

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. 6/19 Date 1/30/94
Reviewed by _____ Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System, HIGH PRESSURE INJECTION

Page 4 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
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GERS-MCC.9 (AREA 7)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 7; 603', and 565'.

The effective grade for Area 7 is 562'.

Since $603' - 562' = 41'$, the ground spectra multiplied by (1.5x1.5) may be used to evaluate contactors/starters in Area 7 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g.

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} < 1.5g$ and bA_{33Hz} is $< 1.0g$, then contactors/starters in Area 7 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- RV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Burkhardt Date 10-16-94
 Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT LAWIS-BESSE UNIT 1

6.4 #206

System HIGH PRESSURE INJECTION

Page 1 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
HP-2C (BKR BE1103)	E-52B SHT. 26A & 26B	DS	G.E. TYPE SB-9 CTRL. SW. IN CDE11A A= 8, RM=304 EL= 585	NV
"	$\frac{33}{60}$, $\frac{33}{61\%}$, $\frac{33}{60}$	LIMIT TORQUE LIMIT SW. IN	NV	
"	$\frac{33}{60}$	MVHPO2C A= 8, RM=208 EL= 565		
"	$\frac{33}{60}$, $\frac{33}{60}$	LIMIT TORQUE TORQUE SW. IN MVHPO2C (SEE ABOVE)	NV	
"	STOP	PEES CAT. # 01461-202 IN NVHPO2C A= 7 RM=208 EL= 565	NV	
"	OPEN CLOSE	PEES CAT. # 03845-000 (SAME AS STOP)	NV	

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- ER - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Kell, Date 10-16-94
 Reviewed by _____ / Date _____

6.4 #204

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System HIGH PRESSURE INJECTIONPage 2 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
HP-2C	E-52B SHTS 86A #26B	<u>CS</u> <u>OPEN</u> , <u>CLOSE</u>	CUTLER-HAMMER TYPE E30B ON C5716. A = 7 RM = 505, RL = 623	NV
"		<u>42a</u> , <u>42b</u> , <u>42a</u> <u>C</u> , <u>C</u> , <u>C</u> <u>42b</u> <u>O</u>	(W) L-56 AUX SW. FOR STARTER IN MCC E11A A = B RM = 209 EL = 565	GERS - MCC. 9 (AREA 8)
"		<u>42</u> , <u>42</u> <u>O</u> , <u>C</u>	(W) SERIES A200 STARTER IN (SAME AS ABOVE)	GERS - MCC. 9 (AREA 8)
"		OL	(W) OVERLOAD RELAY CONTACTS IN (SAME AS ABOVE)	CAB

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Gaff Date 10-16-94
Reviewed by _____ / Date _____

G-4 # 206

A-46 RELAY SCREENING AND EVALUATION
 FORM G-4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System HIGH PRESSURE INJECTION

Page 3 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
HP-2C	E-52/B SHTS. 26A # 26B	TD CONTACTS (543)	AGASTAT E7024AC IN MCC E11A A=8 RM=20%, EL=565	GERS-MCC. 9 (AREA 8), GERS-RLY-PNT. 7 FOR E7024AC = 7g WHICH IS > 45g
"	KAKB (1K21B, 3K21B)		DEUTSCH RELAY # 4CP C5762D, C5763C	SEE. G-4 # 311
"	BS A BS B		A=7, Room = 502, EL=623 (BYPASS SWITCH) - SEE G-4 #311	
"	BA, BB (LR1)		AROMAT FORM 1A1B LATCHING RELAY # ST1 EL2 DC2 4V C 5762D, C5763C	CA- PERMISSIVE
			A=7, Room=502 EL=623	

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by J. K. Siff Date 11/30/94
 Reviewed by _____ / Date _____

G.4 #206

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS - BESSE

System HIGH PRESSURE INJECTION

Page 4 of 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

GERS-MCC.9 (AREA 8)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 8; 603', 585', 565' and 545'.

The effective grade for Area 8 is 567'.

Since $603' - 567' = 36'$, the ground spectra multiplied by (1.5×1.5) may be used to evaluate contactors/starters in Area 8 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} \leq 1.5g$ and $bA_{33Hz} \leq 1.0g$, then contactors/starters in Area 8 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS ____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by W.H. Sibley Date 10-16-94
Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

6.4 #207

System HIGH PRESSURE INJECTION

Page 1 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
HP-2D (BKR BE1105)	E-52B SHT. 26A & 26B	DS	G.E. TYPE SB-9 CTRL. SW. IN CDEIIA A = 8, RM = 304 EL = 585	NV
"	$\frac{33}{60}$, $\frac{33}{60\%}$, $\frac{33}{60}$	LIMIT TORQUE LIMIT SW. IN	MVHPG2D A = 7, RM = 236 EL = 565	NV
"	$\frac{33}{60}$, $\frac{33}{60}$	MVHPG2D TORQUE SW. IN (SEE ABOVE)	NV	
"	STOP	PEERS CAT. # 01461-202 IN NVHPG2D A = 7 RM = 236 EL = 565	NV	
"	OPEN CLOSE	PEERS CAT. # 03845-000 (SAME AS STOP)	NV	

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
 NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
 GERS - Seismically adequate based on GERS ____; include GERS number.
 NA - Component not affected by relays.
 CR - Corrective action required.
 OA - Operator action.
 - No entry necessary.

Prepared by W/K Giff Date 10-16-94
 Reviewed by _____ / Date _____

6.4 #207

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System HIGH PRESSURE INJECTIONPage 2 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT°
HP-2D	E-52B SHTS Q6A Q26B	CS OPEN, CLOSE	CUTTER-HAMMER TYPE E30B ON C571G. A = 7 RM = 505, EL = 623	NV
"		42a, 42b, 42a C, C, C 42b O	(W) L-56 AUX SW. FOR STARTER IN MCC E11A A = 8 RM = 209 EL = 565	GERS - MCC. 9 (AREA B) SEE Pg 4
"		42 O, 42 C	(W) SERIES A200 STARTER IN (SAME AS ABOVE)	GERS - MCC. 9 (AREA 8) SEE Pg 4
"		OL	(W) OVERLOAD RELAY CONTACTS IN (SAME AS ABOVE)	CAB

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS ____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by D. K. Smith Date 10-16-94
 Reviewed by _____ / Date _____

6.4 # 207

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System HIGH PRESSURE INJECTION

Page 3 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
HP-2D	E-52B SHTS. 26A # 26B	TD CONTACTS (5+3)	AGASTAT E7024AC IN MCC E11A A=8 RM=209, EL=565	GERS - MCC. 9 (AREA B) AND GERS-RLY - PNT. 7. FOR E7024AC = 7g WHICH IS > 4.5g
"	"	BS A BS B	(BYPASS SWITCHES.)	SEE G.4 # 311
"	"	KA, KB	DEUTSCH TYPE 4CP C5762D, C5763.C A=7, Room=502, EL=623	SEE G.4 # 311
"	"	BA, BB	AROMAT FOR 1A1B #STE1EL2DC24V C5762D, C5763C A=7 Room=502 EL=623	CA - (permissive)

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by W.K. Lipp Date 1/30/94
Reviewed by _____ Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE

System HIGH PRESSURE INJECTION

Page 4 of 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
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GERS-MCC.9 (AREA 8)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 8; 603', 585', 565' and 545'.

The effective grade for Area 8 is 567'.

Since $603' - 567' = 36'$, the ground spectra multiplied by (1.5×1.5) may be used to evaluate contactors/starters in Area 8 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} \leq 1.5g$ and bA_{33Hz} is $\leq 1.0g$, then contactors/starters in Area 8 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS ____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by JK Date 10-16-94
 Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS - BESSE

G.4 #208

System AUXILIARY FEED WATER

Page 1 OF 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
HIS 6403	E-45B SHT8 ALSO E-30B SHT. 20 FOR MODEL #.	CS (ALSO HIS 6401)	CUTLER-HAMMER TYPE - E30 MODEL E30 DX6 KB150 KG10 KLA4 ON C5707. A=7, RM= 505, EL= 623	NV
SF - 003B	SH 1	K29, K30, K44, K45, K50, K53, K54, K55, K60, K65, K60, K104, K105, K110, K113, K114, K115, K120	STRUTHERS - DUNN Series 219 CCC# KGU431C P/N# 219XDX16Z IN C5762A A=7 RM=502 EL=623	SEE G.4 #312
"		K35 <u>TDP4</u> , K95 <u>TDP4</u>	AGASTAT #7012NC TD 1.5-15 SEC 48V IN C5762A	SEE G.4 #312

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by L. W. Miller Date 12/13/94
 Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS - BESSE

G.4 #209

System Auxiliary Feedwater

Page 105/

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
HIS6404	E-65B SH.8A	CS (ALSO HIC6401)	CUTLER-HAMMER TYPE E30, MODEL NO. E30 DX6 KB150 KG10 KLA4 ON C5707. A=7, RM=505, EL= 623	NV
SF-003B	K29, K30,		STRUThERS-DUNN	
CH 2	K44, K45, K58, K58, K59, K55, K40, K89, K90, K104, K105, K106, K113, K114, K115, K120		SERIES 219 CCC# K60U431C P/N# 219XDX162 IN C5792	SEE G.4 #312
	K35 TDPM	K95 TDPM	A GASTAT #7012NC TD 1.5-15 SEC 48V IN C5792	SEE 6.4 #312

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by M. L. S. Date 3-8-94
 Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT LAVIS-BEESSE UNIT 1

6.4 #210

System ESSENTIAL HVAC
BATT. & SGR RMS

Page 1 OF 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
HV-5305, YE-104	E-60B SHT. 4C	4R	(W) SERIES A200 STARTER IN MCC YEI. A=6, RM 318, EL=585	CA-CHATTER WILL NOT LOCKOUT DAMPER, CHATTER ACCEPTABLE DURING STRONG SHAKING
VMAN	M-410-7161	42a	(W) L-56 AUX Switch IN MCC E-12A A=6, RM=429 EL=603	CA-SAME AS 42.
			LIMIT SWITCH IN MV5305 A=6, RM=429, EL=603	NV
	E-60B SHT 4C	OL	(W) OVERLOAD RELAY IN MCC YEI	CAB

- Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- | | |
|------|---|
| CA | - Chatter acceptable. |
| NY | - Not vulnerable (mechanically-actuated contacts and solid state relays). |
| GERS | - Seismically adequate based on GERS _____; include GERS number. |
| NA | - Component not affected by relays. |
| CR | - Corrective action required. |
| OA | - Operator action. |
| - | - No entry necessary. |

Prepared by W. K. L. 6/5/95
Reviewed by _____ / Date _____

A-45 RELAY SCREENING AND EVALUATION
FORM E.4 - RELAY TABULATION
PLANT LOUIS REEDER UNIT 1

E.4 #211

System ESSENTIAL HVAC
BATT. AND SWGR. PMS.

Page 1 OF 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
HV-5314, YF-104	E-60B SHT. 4C	42	(W) SERIES A200 CA - CHATTER WILL STARTER IN MCC NOT LOCK-OUT YFI, H=4, RM= DIMPERS. CHATTER 319, EL=585 ACCEPTABLE DURING STRONG SHAKING	
"		42b	(W) L-56 AUX SW. CA - SAME FOR STARTER IN MCC F12A. H=6, RM= 428 EL=603	
VMAN M-410-716-1	TRAVEL LIMIT SWITCH		LIMIT SWITCH IN HV5314. H=6, RM= 428 EL=603	NV
E-60B SHT 4C	OL	OVERLOAD RELAY IN MCC YFI		CA8

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Schipper Date 6-5-95
Reviewed by _____ / Date _____

G.4 #212

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System ESSENTIAL HVAC
EDG ROOM

Page 1 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
HV5329A, YE101	E-60B	"OFF", "ON"	REES CAT # 03845-000 IN NV5329A A= 6 RM= 318 EL= 585	NV
TC5329	SH 1BA			
TE5329				
TT5329				
"	OL		(W) OVERLOAD RELAY CONTACTS IN MCC YE1 . A= 6 RM= 318 EL= 585	CA8
42a, 42b,			(W) L-56 AUX SW. FOR STARTER IN MCC YE1 . (SEE ABOVE)	GERS- MCC. 9 (AREA 6) SEE PG 4
42			(W) SERIES A200 STARTER IN MCC YE1 . (SEE ABOVE)	CA - STARTER CONTACT CHATTER WILL NOT LOCKOUT DAMPER. A 30 SECOND DELAY IN STARTING DAMPER MOTOR ACCEPTABLE

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. Gil Date 4/6/94
 Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS - BESSE

G.4 # 212

System ESSENTIAL HVAC
EDG RM1

Page 2 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
(CONT. FROM Pg 1)	E-608 SHT 18A	42X1 & 42X2	DEUTSCH TYPE 4AX IN PC3605 A=6, RM=318, EL=585	CA - ACCEPTABLE TO SHUT DAMPER NTR WITHOUT EDG. RUNNINIE ACCEPTABLE TO DEACTVY OPENING DAMPER. CHATTER WILL NOT LOCKOUT DAMPER NTR.
E-608 SHT 2	42XA (SUPPLIES 42X & 42X COILS	(W)AR440 RELAY WITH ARIA LATCH IN MCC E12B A=6, RM= 318 EL=585	CA - SAME REASONING AS ABOVE	

NOTE: SEE G.4 FORM 180 & 181 FOR EVALUATION OF
 CONTACTS WHICH CONTROL 42XA COIL.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. bsd Date 4-6-94
 Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS BESSEY UNIT 1

ESSENTIAL HVAC
 System EDG ROOM

Page 30F4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
TC 5329	VMAN E-39-17 E64B, SH5	ALL / K1	FOXBORO PIN N01962N	CA ⁽¹⁾
		SW1 - SW7	See NOTE 2 BELOW	NV
TT 5329	VMAN E-39-18 E64B, SH5	-	-	NA
TE 5329	E64B, SH5	-	-	NA

(2) SWITCH PART NUMBERS - FOXBORO#

SW1	N0230E2
SW2	N0110XE
SW3A-B	N0196FW
SW4-5	N0230FX
SW7	N0230ML

(1) Contacts transfer from Auto/manual, Analog controller, ^{OPERATION} not degraded by chatter

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by Gurke / Date 1/18/95
 Reviewed by _____ / Date _____

6.4 #212

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System ESSENTIAL HVAC
EDG ROOM

Page 4 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
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GERS-MCC.9 (AREA 6)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 6; 603', and 585'.

The effective grade for Area 6 is 573'.

Since $603' - 573' = 30'$, the ground spectra multiplied by (1.5x1.5) may be used to evaluate contactors/starters in Area 6 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} \leq 1.5g$ and $bA_{33Hz} \leq 1.0g$, then contactors/starters in Area 6 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Smith Date 4-6-94
 Reviewed by _____ / Date _____

G.E. #213

A-46 RELAY SCREENING AND EVALUATION
 FORM G.E. - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

ESSENTIAL HVAC
System EDG ROOM

Page 1 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
HV5329B, YE102	E-60B SH 1BA	"OFF", "ON"	REES CAT. # 03845-000 IN HV5329B A= 4 RM= 31B EL= 585	NV
"	OL	(W) OVERLOAD RELAY CONTACTS IN MCC YE1 . A= 6 RM= 31B EL= 585		CA8
42a, 42b,	(W) L-54 AUX SW.	FOR STARTER IN MCC YE1 . (SEE ABOVE)	GERS-MCC .9 (AREA 4) SEE Pg 3	
42	(W) SERIES A200 STARTER IN MCC YE1 . (SEE ABOVE)	SIZE I STARTER.	CA - CHATTER ON STARTER CONTACTS WILL NOT LOC-L-OUT DAMPER	

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by JK 6.11 Date 4/6/94
 Reviewed by _____ / Date _____

G.4 # 213

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS - BESSIE

System ESSENTIAL HVAC
EDG RM1

Page 2 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
(CONT. FROM Pg 1)	E-60B SHT 18A	42X & 42X	DEUTSCH TYPE 4AX IN RC3605. A=6 RM=318 EL=585	CA - ACCEPTABLE TO START DAMPER MTR WITHOUT EDG. RUNNING ACCEPTABLE TO DELAY OPENING DAMPER. CHATTER WILL NOT LOCKOUT DAMPER MTR.
E60B SHT 2	42XA (SUPPLIES 42X & 42X COILS		(W) AR440 RELAY WITH ARLA LATCH IN MCC E12B, A=6, RM=318, EL=585	CA - SAME REASONING AS ABOVE

NOTE: SEE G.4 FORM 180 & 191 FOR EVALUATION OF
 CONTACTS WHICH CONTROL 42XA COIL.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. 6/19 Date 4-6-94
 Reviewed by _____ / Date _____

c.e #213

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System ESSENTIAL HVAC
EDG ROOM

Page 3 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT
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GERS-MCC.9 (AREA 6)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 6; 603', and 585'.

The effective grade for Area 6 is 573'.

Since $603' - 573' = 30'$, the ground spectra multiplied by (1.5×1.5) may be used to evaluate contactors/starters in Area 6 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} \leq 1.5g$ and $bA_{33Hz} \leq 1.0g$, then contactors/starters in Area 6 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Schaff Date 4-16-94
Reviewed by _____ / Date _____

c.t #214

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

ESSENTIAL HVAC
System EDG ROOM

Page 1 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
HV5329C, YE103	E-60B SH 18A	"OFF", "ON"	REES CAT. # 03845-000 IN HV5329C A=6, RM=318 EL=585	NV
"	OL	(W) OVERLOAD RELAY CONTACTS IN MCC YE1 . A=6 RM=318, EL=585		CA8
42a, 42b,	(W) L-516 Aux SW.	FOR STARTER IN MCC YE1 . (SEE ABOVE)	GERS-MCC-9 (AREA 4) SEE Pg 3	
42	(W) SERIES A200 STARTER IN MCC YE1 . (SEE ABOVE)		CA-CHATTER ON STARTER CONTACTS WILL NOT LOCK-OUT DAMPER	

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.D. Smith Date 4/6/94
 Reviewed by _____ / Date _____

G.4 #214

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE

System ESSENTIAL HVAC
EDG RM

Page 2 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
(CONT. FROM Pg 1)	E-608 SHT 18A	42X1 & 42X2	DEUTSCH TYPE 4AX IN RC3605. A=6, RM=318, EL=585	CA - ACCEPTABLE TO START DAMPER MTR WITHOUT EDG. RUNNING ACCEPTABLE TO DELAY OPENING DAMPER. CHATTER WILL NOT LOCKOUT DAMPER MTR.
E-608 SHT 2	42XA (SUPPLIES 42X & 42X COILS		(W) AR440 RELAY WITH ARLA LATCH IN MCC E12B A=6, RM=318, EL=585	CA - SAME REASONING AS ABOVE

NOTE: SEE G.4 FORM 130 & 131 FOR EVALUATION OF
 CONTACTS WHICH CONTROL 42XA COIL.

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. Knobell Date 4-6-94
 Reviewed by _____ / Date _____

c.k #214

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System ESSENTIAL HVAC
EDG ROOM

Page 3 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
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GERS-MCC.9 (AREA 6)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 6; 603', and 585'.

The effective grade for Area 6 is 573'.

Since $603' - 573' = 30'$, the ground spectra multiplied by (1.5×1.5) may be used to evaluate contactors/starters in Area 6 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} \leq 1.5g$ and bA_{33Hz} is $\leq 1.0g$, then contactors/starters in Area 6 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS _____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Smith Date 4-6-94
 Reviewed by _____ / Date _____

G.4 #215

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

ESSENTIAL HVAC
System EDG ROOM

Page 1 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
V5336A, YF101	E-60B SH 1BA	"OFF", "ON"	REES CAT. # 03B45-000 IN NV5336A A= 6 RM= 319 EL= 585	NV
TC5336				
TT5336				
TE5336	"	OL	(W) OVERLOAD RELAY CONTACTS IN MCC YFI . A= 6 RM= 319 EL= 585	CA8
42a, 42b,			(W) L-56 AUX SW. FOR STARTER IN MCC YFI . (SEE ABOVE)	GERS-MCC. 9 (AREA G) SEE Pg 4
42			(W) SERIES A200 STARTER IN MCC YFI . (SEE ABOVE)	CA - CHATTER ON STARTER CONTACTS WILL NOT LOCK OUT DAMPER

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Sif Date 10-16-94
Reviewed by _____ / Date _____

G.4 #215

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS - BESSIE

System ESSENTIAL HVAC
EDG RM1

Page 2 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
(CONT. FROM Pg 1)	E-608 SHT 18A	42X3 & 42X4	DEUTSCH TYPE 4AX IN 3606. A=6, RM=319, EL=585	CA - ACCEPTABLE TO START DAMPER MTR WITHOUT EDG. RUNNING ACCEPTABLE TO DECAY/ OPENING DAMPER. CHATTER WILL NOT LOCKOUT DAMPER MTR.
EDG8 SAT2	42XA (SUPPLIES 42X & 42X COILS	42XA WITH AREA LATCH IN MCC F12B. A=6, RM=319 EL=585	(W)AR440 RELAY	CA - SAME REASONING AS ABOVE

NOTE: SEE G.4 FORM 158 + 159 FOR EVALUATION OF
 CONTACTS WHICH CONTROL 42XA COIL.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by OK Date 12/28/94
 Reviewed by _____ / Date _____

G.4 #215

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS BESSE UNIT 1

System ESSENTIAL HVAC
EDG ROOM

Page 3 of 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
TC 5336	VMAN E-39-17 E-60B, SH18A	ALL/K1 SW1-SW7	FOXBORO PIN NO1962N	CA ⁽¹⁾ SEE G.4 #212 NV PAGE 4 NOTE(2)
TT 5336	VMAN E-39-18 E-60B, SH18A	-	-	NA
TE 5329	E-60B, SH18A	-	-	NA

(1) CONTACTS TRANSFER AUTO & MANUAL, CONTROLLER OPERATION NOT DEGRADED

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by G. Gil Blodet Date 1/18/95
 Reviewed by _____ / Date _____

c.e #215

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System EMERGENCY POWER
EDG ROOM

Page 4 OF 4

Relay
Type and
Location

Subsystem/Component Ref Dwg(s) Contact/Contact Group SAT*

GERS-MCC.9 (AREA 6)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 6; 603', and 585'.

The effective grade for Area 6 is 573'.

Since $603' - 573' = 30'$, the ground spectra multiplied by (1.5x1.5) may be used to evaluate contactors/starters in Area 6 MCCs.

Peak Ground Response Spectra = 0.39g
Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} \leq 1.5g$ and $bA_{33Hz} \leq 1.0g$, then contactors/starters in Area 6 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS _____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Smith Date 10-16-94
Reviewed by _____ / Date _____

G.4 # 216

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

ESSENTIAL HVAC
System EDG ROOM

Page 1 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
4V5336B, YF102	E-60B SH 1BA	"OFF", "ON"	REES CAT. # 03845-000 IN NV5336B A= 6 RM= 319 EL= 585	NV
"	OL	(W) OVERLOAD RELAY CONTACTS IN MCC YF102 . A= 6 RM= 319 EL= 585	CA8	
42a, 42b,	(W) L-54 Aux SW. FOR STARTER IN MCC YF102. (SEE ABOVE)		GERS - MCC. 9 (AREA 6) SEE PG 3	
42	(W) SERIES A200 STARTER IN MCC YF102. (SEE ABOVE)		CA - CHATTER ON THESE CONTACTS WILL NOT LOCKOUT DAMPER	

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by JK Date 4/16/94
 Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS - BESSE

G.4 # 216

System ESSENTIAL HVAC
EDG RM1

Page 2 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
(CONT. FROM Pg 1)	E-608 SHT 18A	42X3 & 42X4	DEUTSCH TYPE 4AX IN PC3606. H=6, RM=3R, EL=585.	CA - ACCEPTABLE TO START DAMPER MTR. WITHOUT EDG. RUNNING ACCEPTABLE TO DELAY/ OPENING DAMPER. CHATTER WILL NOT LOCKOUT DAMPER MTR.
E-608. SHT 2	42XA (SUPPLIES 42X & 42X COILS		(W) AR440 RELAY WITH ARLA LATCH IN MCC F72B A=6, RM=39, EL=585	CA - SAME REASONING AS ABOVE

NOTE: SEE G.4 FORM 158 & 159 FOR EVALUATION OF
 CONTACTS WHICH CONTROL 42XA COIL.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- DA - Operator action.
- No entry necessary.

Prepared by M. K. [Signature] Date 12/29/94
 Reviewed by _____ / Date _____

C.C #216

**A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1**

System ESSENTIAL HVAC
EWS ROOM

Page 3 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
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GERS-MCC.9 (AREA 6)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 6; 603', and 585'.

The effective grade for Area 6 is 573'.

Since $603' - 573' = 30'$, the ground spectra multiplied by (1.5×1.5) may be used to evaluate contactors/starters in Area 6 MCCs.

Peak Ground Response Spectra = 0.39g
 Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});
 $bA_{4-16Hz} = 0.39g(1.5 \times 1.5)$
 $= 0.88g$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});
 $bA_{33Hz} = 0.15g(1.5 \times 1.5)$
 $= 0.34g$

Since $bA_{4-16Hz} \leq 1.5g$ and $bA_{33Hz} \leq 1.0g$, then contactors/starters in Area 6 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NY - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS _____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Gibb Date 4-16-94
 Reviewed by _____ / Date _____

217

G.4

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

ESSENTIAL HVAC
System EDG ROOM

Page 1 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
4V5336C, YF103	E-GOB SH 1BA	"OFF", "ON"	REES CAT. # 03845-000 IN NV5336C A= 4 RM= 319 EL= 585	NV
"	OL	(W) OVERLOAD RELAY CONTACTS IN MCC YFI . A= 4 RM= 319 EL= 585		CA8
42a, 42b,	(W) L-54 Aux SW. FOR STARTER IN MCC YFI . (SEE ABOVE)		GERS - MCC. 4 (AREA 6) SEE Pg 3	
42	(W) SERIES A200 STARTER IN MCC YFI . (SEE ABOVE)		CA - CHATTER ON THESE CONTACTS WILL NOT LOCK OUT CHAMPER	

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Smith 4/6/94
 Reviewed by _____ / Date _____

G.4 #217

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS - BESSE

System ESSENTIAL HVAC
EDG RM1

Page 2 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
(CONT. FROM Pg 1)	E-60B SHT 18A	42X3 & 42X4	DEUTSCH TYPE 4AX IN R3606. A=6, RM=319, EL=585	CA - ACCEPTABLE TO START DAMPER MTR WITHOUT EDG. RUNNING ACCEPTABLE TO DELAY OPENING DAMPER. CHATTER WILL NOT LOCKOUT DAMPER MTR.
EDG B SHT 2	42XA (SUPPLIES 42X & 42X COILS		(W) AR440 RELAY WITH ARLA LATCH IN MCC F12B. A=6, RM=319, EL=585	CA - SAME REASONING AS ABOVE

NOTE: SEE G.4 FORM 158 & 159 FOR EVALUATION OF
CONTACTS WHICH CONTROL 42XA COIL.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
DA - Operator action.
- No entry necessary.

Prepared by W.K. Schaff Date 12/29/94
Reviewed by _____ / Date _____

c.e # 217

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System ESSENTIAL HVAC
EDG ROOM

Page 3 OF 3

Relay
 Type and
 Location

SAT

Subsystem/Component Ref Dwg(s) Contact/Contact Group

GERS-MCC.9 (AREA 6)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 6; 603', and 585'.

The effective grade for Area 6 is 573'.

Since $603' - 573' = 30'$, the ground spectra multiplied by (1.5x1.5) may be used to evaluate contactors/starters in Area 6 MCCs.

Peak Ground Response Spectra = 0.39g
 Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} < 1.5g$ and $bA_{33Hz} < 1.0g$, then contactors/starters in Area 6 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- HV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Smith Date 4-16-94
 Reviewed by _____ / Date _____

E.4 #218

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System ESSENTIAL HVAC
CCW PMP. ROOM

Page 1 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
HV5443A, YE209	E-60B SHT. 28	"OFF", "ON (TEST)" TSX1 ①	REES CAT. # 02450-032 IN NV5443A. A= 7 Rm= 328 EL= 585 DEUTSCH TYPE HAP IN RC3706 A= 8 Rm= 304 EL= 585	NV CAP
"	42a, 42b	(W) L-56 AUX CONTACTS FOR STARTER IN MCC YE2. A= 8 Rm= 304, EL= 585		CA1
"	42	(W) SERIES A200 STARTER IN MCC YE2. (SEE ABOVE).		CA - CHATTER ON STARTER CONTACTS WILL NOT LOCK-OUT DAMPER

① NOTE SEE G.4 FORM 96 FOR EVALUATION OF CONTACTS
AFFECTING TSX1 COIL.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Bush, Date 10-16-94
Reviewed by _____ / Date _____

G.4 # 218

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System ESSENTIAL HVAC
CCW PMP. ROOM

Page 2 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
HV5443A, YE209	E-60B SHT. 28	OL	(W) OVERLOAD RELAY CONTACTS IN MCC YE2. (SEE ABOVE)	CA8

NOTE FOR TEMPERATURE CONTROLLER EVALUATION
SEE G.4 # 219

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. Lubif Date 10-16-94
Reviewed by _____ / Date _____

C.4 # 219

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

ESSENTIAL HVAC
System CCW PMP. ROOM

Page 1 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
HV5443B, YE210	E-608 SHT. 28	"OFF", "ON (TEST)" TSX1 ①	REES CAT. # 02450-032 IN HV5443B. A= 7 RM= 328 EL= 585 DEUTSCH TYPE HAP IN RC3706 A= 8 RM= 304 EL= 585	NV CA6
"	42a, 42b	(W) L-56 AUX CONTACTS FOR STARTER IN MCC YE2. A= 8 RM= 304, EL= 585		CA1 OR CA8
	42	(W) SERIES A200 STARTER IN MCC YE2. (SEE ABOVE).		CA - CHATTER ON STARTER CONTACTS WILL NOT LOCKOUT DAMPER

① NOTE SEE G.4 FORM 96 FOR EVALUATION OF CONTACTS
AFFECTING TSX1 COIL.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Sippl 10-16-94
Reviewed by _____ / Date _____

G.4 #219

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

ESSENTIAL HVAC
System CCW PMP. ROOM

Page 2 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
HV5443B, YE210	E-60B SFT. 28	OL	(W) OVERLOAD RELAY CONTACTS IN MCC YE2. (SEE ABOVE)	CA8
TIC5443	V MAN M-324-139 Dwg. M-324-41 SH17	ALL/K1 <u>H</u> CWB 8/17/94	BAILEY METER CO. 6125 K6360700/1	CA ⁽¹⁾
		TC5441 CWB 8/17/94	S1 BAILEY 8159K40P0021 S2 II 8159K40P0022 S3 SEE S1 S4 BAILEY 8165K9360700 S201 SEE S1 K201 BAILEY METER CO 6109K98 P0001/2	NV NV NV NV NV NV
				CA ⁽²⁾

(2) ALARM/INDICATING FUNCTION ONLY

(1) AUTO/MANUAL TRANSFER RELAY, CONTROL UNIT OUTPUT UNAFFECTED BY CHATTER

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GFRS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by Lyle Blah Date 11/18/95
 Reviewed by Lyle Blah / Date _____

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS BESSEY UNIT 1

G.4 #219

System ESSENTIAL HVAC
CC61 PUMP ROOM

Page 3 of 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
TE 5443	M-324-41SH17	-	-	NA
TT 5443	"	-	-	NA
TY 5443	"	-	-	NA

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by L. J. Smith Date 1/16/85
Reviewed by _____ / Date _____

G.4 # 220

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

ESSENTIAL HVAC
System CCW PMP. Room

Page 1 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
HV5444A, YF209	E-600B SHT. 28	"OFF", "ON (TEST)" TSX1 ^①	REES CAT. # 02450-032 IN NV5444A. A= 7 RM= 318 EL= 585 DEUTSCH TYPE HAP IN RC3705 A= 7 RM= 314 EL= 585	NV CA6
"	42a, 42b	(W) L-56 AUX CONTACTS FOR STARTER IN MCC YF2. A=.7 RM=427, EL= 603		CA1 OR CA8
"	42	(W) SERIES A200 STARTER IN MCC YF2. (SEE ABOVE).		CA - CHATTER ON STARTER. CONTACTS WILL NOT LOCKOUT DAMPER.

① NOTE SEE G.4 FORM 97 FOR EVALUATION OF CONTACTS
AFFECTING TSX1 COIL.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Self Date 10-16-94
Reviewed by _____ / Date _____

6.4 # 220

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System ESSENTIAL HVAC
CCW PMP. ROOM

Page 2 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
HV5444A, YF209	E-60B SHT. 28	OL	(W) OVERLOAD RELAY CONTACTS IN MCC YF2. (SEE ABOVE)	CA8
TIC 5444	VMAN M-324-139 M-324-41 SH 17	ALL/K1 K201 S1,S3,S201 S2 S4	BAILEY METER CO 6125 K6360700/1 BAILEY METER C# 6 F109K#P0001/2 8159K40P0021 8159K40P0022 8165K9360700	CA(1) CA(2) NV NV NV

~~+ Curb
3/17/44 - TC5444~~

(1) AUTO/MANUAL TRANSFER RELAY, CONTROL UNIT OUTPUT UNAFFECTED BY CONTACT CHATTER

(2) ALARM/INDICATING FUNCTION ONLY

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by John B. / Date 11/15/85
Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

G.4 #220

System ESSENTIAL HVAC
CCW PMP ROOM

Page 3 of 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
TE 5444	M-324-415H17	-	-	NA
TT 5444	"	-	-	NA
TY 5444	"	-	-	NA

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by C. J. H. Date 1/17/65
 Reviewed by _____ / Date

G-4 # 221

A-46 RELAY SCREENING AND EVALUATION
FORM G-4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

ESSENTIAL HVAC
System CCW PMP. Room

Page 1 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
HV5444B, YF210	E-60B SHT. 28	"OFF", "ON (TEST)" TSX1 ①	REES CAT. # 02450-032 IN NV5444B. A= 7 RM=328 EL= 585	NV
"	"	TSX1 ①	DEUTSCH TYPE HAP IN RC3705 A= 7 Rm= 314 EL= 585	CA4
"	42a, 42b	(N) L-56 AUX CONTACTS FOR STARTER IN MCC YF2. A=7 RM=427, EL=603		CA1 OR CA8
42		(W) SERIES A200 STARTER IN MCC YF2. (SEE ABOVE).		CA - CHATTER ON STARTER CONTACTS Will NOT LOCKOUT DAMPER

① NOTE SEE G-4 FORM 97 FOR EVALUATION OF CONTACTS
AFFECTING TSX1 COIL.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by D. K. Siffler Date 10-16-94
Reviewed by _____ / Date _____

6.4 # 221

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System ESSENTIAL HVAC
CCW PMP. ROOM

Page 2 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
HV5444B, YF210	E60B SHT. 28	OL	(N) OVERLOAD RELAY CONTACTS IN MCC YF2. (SEE ABOVE)	CAB

+ ————— TC544
C.W.
31.7.94

NOTE: SEE 6.4 #200 FOR EVALUATION OF
THE TEMPERATURE CONTROLLER.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Sufficiently adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by D. K. brief Date 10/16/94
Reviewed by _____ / Date _____

A-4E RELAY SCREENING AND EVALUATION
FORM E-4 - RELAY TABULATION
PLANT L-415-RESCF UNIT 1

E-4 # 222

System ESSENTIAL HVAC
CCW PMP. RM.

Page 1 OF 2

Relay
Type and
Location

SAT

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	
HV-5443C, YE-212	E-60B SHT. 30	42xb	(W) TYPE AR440A RELAY WITH ARIA LATCH IN MCC EIIC A=8 RM=304 EL=585	CA6
" AND VIAHVN 410- 716	" 25		TRAVEL LIMIT SWITCH IN ITY GENERAL CONTROLS HYDRA MOTOR A=7 RM=328 EL=585	NV
E-60B SHT 30	42b		(W) L-56 AUX SW, FOR STARTER IN MCC EIIC. A=8, RM=304 EL=585	CA6

- Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
 AV - Not vulnerable (mechanically-actuated contacts and solid state relays).
 GERS - Seismically adequate based on GERS ____; include GERS number.
 NA - Component not affected by relays.
 CR - Corrective action required.
 OA - Operator action.
 - No entry necessary.

Prepared by W. Kuehl Jr. Date 12/29/94
Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System ESSENTIAL HVAC
COOL PMP RM.

Page 2 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
HV-5443C, YE212	E-60B SHT. 30	42	(W) SERIES A200 STARTER IN MCC YE2. A=8, RM=304, EL=585	CA - CHATTER ON THESE STARTER CONTACTS WILL NOT LOGIC-OUT LOUVERS
"	42a, 42b		(W) L-56 Aux Sw IN MCC YE2. (SEE ABOVE)	CAB
"	8L		(W) OVERLOAD RELAY CONTACTS IN YE2. (SEE ABOVE)	CAB

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W K Date 12/13/94
 Reviewed by _____ / Date _____

A-4E RELAY SCREENING AND EVALUATION
FORM E.6 - RELAY TABULATION
PLANT LOUIS RIESE UNIT 1

6.4 223

System ESSENTIAL HVAC
CCW PMP. RM.

Page 1 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
HV-5444C, YF-212	E-60B SHT. 30	42x6	(W) TYPE AR440A RELAY WITH ARIA LATCH IN MCC F1A A=7, RM=427 EL=603.	CA4
AUD VMAN 410-716	" ZS		HYDRAMOTOR LIMIT TRAVEL SW (ITT GEN. CONTROLS) H=7 RM=328, EL 585.	NV
E-60B SHT. 30	426		(W) L-5G AUX SW FOR STARTER IN MCC F1A, A=7 RM=457, EL=603	CA4

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- RV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by OK-603, Date 12/29/94
Reviewed by _____ / Date _____

G.4 #223

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System: ESSENTIAL HVAC
CCW PMP-RM

Page 2 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
HV5444C, YF212	E-60B SHT 30	42	(W) SERIES H 200 STARTER IN MCC YF2, A=7, RM=427, EL=603	CA - CHATTER ON THESE STARTER CONTACTS WILL NOT LOCK-OUT LOUVER
		42a, 42b	(W) L-56 Aux SW ON STARTER IN MCC YF2. (SEE ABOVE)	CA8
		OL	(W) OVER LOAD RELAY IN MCC YF2 (SEE ABOVE)	CA8

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Smith Date 12/13/94
 Reviewed by _____ / Date _____

A-4E RELAY SCREENING AND EVALUATION
FORM E-4 - RELAY TABULATION
PLANT LUIS REESE UNIT 1

E-4 #224

System MAIN STEAM

Page 1 OF 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MS-375 (SV375)	E-46B SHT. 3	"TEST"	REES CATT # 01461-202 IN NV375. A=7, RM=602, EL= 643	NV
SF-0038 S1A-18	K26, K55, K86, K115	STRUTTERS-DUNN SERIES 219 CCC# K6U481C P/N# 219 XDX16Z IN C5792 A=7, RM=502, EL=623	SEE 6.4#312 E=.. AT	
"	CS (HIS-375) CTRL	CUTLER HAMMER TYPE E30JA		NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by J. W. Blalock Date 11/2/94
Reviewed by J. W. Blalock / Date

THIS VALVE MUST BE CAPABLE
OF OPENING DURING PERIOD OF
STRONG SHAKING.

6.4 #225

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
UNIT 1E/1S-BESE UNIT 1

System MAIN STEAM

Page 1 of 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MS-5889A, SV-5889A HIS 5889A	E-551 SF-3B E-H6B SHT. 71	"OPEN" "CLOSE"	MEES CAT# 40704-000 & 40705-000 (CONTACT BLOCKS) IN NV5889A A=7 RM=238 EL=565	NV
SF-003B	K21, K50, SH 21	K81, K110	STRUThERS-DUNN SERIES 219 CCC# KGU431C P/N # 219 XD X16Z IN C 5762A A=7, RM=502, EL=623	SEE G.4. #312
II	CS CTRL	(HIS5889A)	CUTLER HAMMER TYPE E30JA	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by J. W. Bl / Date 11/9/94
Reviewed by / Date

6.4 #226

R-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT LEWIS-BEESSE UNIT 1

System MAIN STEAM

Page 10F

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MS-5889B, SV-5889B HIS 5889B	E-551 SF-0008 E-468 SHT.	"OPEN" "CLOSE" 71	REES CAT # 40704-0004 40705-000 (CONTACT BLOCKS) IN NV5889B A=7, RM=238 EL= 565	
	SF-0038 SH 22	K21, K50, K81, K110	STRUThERs - DUNN SERIES 219 CCC# KGU481C P/N # 219 X DX16Z IN CS792 A=7, RM = 502, EL= 623	SEE 6.4 #312
	II	<u>CS</u> (HIS5889B) CTRL	CUTLER-HAMMER TYPE E203A	NV

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by C. W. Blah / Date 11/9/94
 Reviewed by C. W. Blah / Date

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT 2615-RESE UNIT 1

6.4 #227

System MAKEUP AND PURIFICATION

Page 1 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MIL-66A, SV-MIL66A HIS MIL66A PSLLMUGGA	E-52B SHT. 18A	'TEST JOG'	REES CAT# 01461-202 IN NVMUGGA, A-8 RM=208, EL= 565	NV
	E-20-28 (SEE 6.4 #54)	D2P18	(W) NON AUTO CKT BREAKER #EBZ100N IN D2P. A=6, RM= 428, EL=403	NA

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Lipp Date 12/13/94
 Reviewed by / Date

A-46 RELAY SCREENING AND EVALUATION
FORM G 4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATION

Page 2 of 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MU-66A, SV-MU66A, HISMU66A	E-52B SH. 18A	KA,KB	DEUTSCH #4CP IN C5755C,C5756D A=7,RM=502,EL=623	CA\$1
		BA,BB (LR1,LR1)	Potter & Bru. 2 Form C latching relay #T83S11S122-24 IN C5755C,C5756D A=7,RM=502,EL=623	CA\$2
	E-52B SH. 61	KA,KB	DEUTSCH #4CP IN C5755C,C5756D A=7,RM=502,EL=623	CA\$1
		PSLL (PSLLMU66A)	S-O-R 6V2-T5-TTX5 (page 2) A=8,RM=208,EL=565	GERS PS.5
		CS/OPEN(HISMU66A) CS/CLOSE A-7,RM=505,EL=623	CULTER-HAMMER NV E30JAE200E102K11	

CA\$1 = No Lockout.

CA\$2 = Contact not energized, power applied by mechanically actuated switch.

-
- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
 NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
 GERS - Seismically adequate based on GERS ____; include GERS number.
 NA - Component not affected by relays.
 CR - Corrective action required.
 OA - Operator action.
 - - No entry necessary.

Prepared by P. W. Blon / Date _____
 Reviewed by P. W. Blon / Date 7/19/95

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

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Page 4 of 5
*Handwritten*System MAKEUP AND PURIFICATION

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
<u>AREA = AUXL8 ELEV = 565'</u>				
EQUIPMENT	MFG.	MODEL NO.	AMP.	>8HZ Setpoint/Nom.
PSLLMU66A	S-O-R	6V2-T5-TTX5	1.0	Y 75#/90#
PSLLMU66C	S-O-R	6V2-T5-TTX5	1.0	Y 75#/90#
PSLLMU66D	S-O-R	6V2-T5-TTX5	1.0	Y 75#/90#

Nominal Pressure based on associated PSL's setpoints for instrument air pressure.

The effective grade for area 8 is 567'
Peak Ground Response Spectra = 0.39g
Ground ZPA = 0.15g

Since 567' - 565' = 2' < 40' , the ground spectra multiplied by (1.5 X 1.5) may be used to evaluate these pressure switches.

Natural frequency of each mounting is > 8 Hz (Ref. NED 95-10048)
The amplification factor for each mounting is 1.0. (Ref. NED 95-10048)

GERS-PS.5 = 3.0g/1.0g (EPRI NP-5223-SL) (JUSTIFICATION ATTACHED)

Demand = .39g/.15g X 1.5 X 1.5 X 1.0 = 0.88g/0.34g < 3.0g/1.0g

Therefore these devices may be screened at level 2 as being seismically adequate using GERS-PS.5

Prepared by Clark Blvd Date 6/16/95

Seismic Capability Engineer J. Smith Date 7-18-95

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by _____ / Date
Reviewed by N/A / Date

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATION

4 up 4
 Page 5 of 5
 Cud
 7/19/95

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT
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JUSTIFICATION TO USE GERS-PS.5 = 3.0g/1.0g (EPRI NP-5223-SL)

The GERS for Static-O-Ring Pressure switches is given for S-O-R models 4N6, 5N, 6N and 12N. Research of S-O-R catalogs back to 1975 indicate that the first number, 4,5,6 or 12 refers to the piston size. the second and third digits specify the type and size of the case. The 'N' code as used in the GERS is a general reference to S-O-R's NEMA 4 style enclosures. These enclosures are rigid boxes within which the moving components are mounted. Given that the enclosure is rigidly mounted, the exact dimension of the enclosure should not have any effect on the seismic capacity of the device.

Davis-Besse has several essential S-O-R pressure switches that these GERS may be used for with justification. They represent two piston sizes, 6 and 12. This portion of the model number exactly matches the number specified in the GERS. There are also two enclosure styles represented. These styles are known as V2 and V7. They are also NEMA 4 enclosures. The only difference between these enclosures and the 'N' enclosures is in their dimensions. The 'V' enclosures are of the same general shape but of slightly larger dimensions than the N series. These differences will not affect the seismic capacity of the instrument. Based on the above discussion regarding the similarity of these switches, GERS-PS.5 may be used for evaluating 6V and 12V series pressure switches.

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS ____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by _____ / Date _____

Reviewed by *Bent Gist* / Date 7/19/95

A-46 RELAY SCREENING AND EVALUATION
FORM G 4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATION

Page 1 of 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MU-66B, SV-MU66B, HISMU66B	E-52B SH. 18A	"TEST JOG"	REES CAT# 01461-202 IN NVMU66B A=8,RM=208,EL=565	NV
		KA,KB	DEUTSCH #4CP IN C5762D,C5763C A=7,RM=502,EL=623	CA\$1
		BA,BB (LR1,LRI)	Potter & Bru. 2 Form C latching relay #T83S11S122-24 IN C5762D,C5763C A=7,RM=502,EL=623	CA\$2
	E-52B SH. 61	KA,KB	DEUTSCH #4CP IN C5762D,C5763C A=7,RM=502,EL=623	CA\$1
		PSLL (PSLLMU66B)	ASCO SA11AR/ TG10A42R A=8,RM=208,EL=565	SAT (NOTE 1)
		CS/OPEN(HISMU66B) CS/CLOSE A-7,RM=505,EL=623	CULTER-HAMMER NV E30JAE200E102K11	

CA\$1 = No Lockout.

CA\$2 = Contact not energized, power applied by mechanically actuated switch.

NOTE 1 - Pressure switch qualified to current standards reference memo NED 95-40030.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS _____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by B.W.Bell / Date _____
 Reviewed by B.W.Bell / Date 7/11/95

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATION

Page *10f* 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MU-66C, SV-MU66C, HISMU66C	E-52B SH. 18A	"TEST JOG"	REES CAT# 01461-202 IN NVMU66C A=8,RM=208,EL=565	NV
		KA,KB	DEUTSCH #4CP IN C5762D,C5763C A=7,RM=502,EL=623	CA\$1
		BA,BB (LR1,LR1)	Potter & Bru. 2 Form C latching relay #T83S11S122-24 IN C5762D,C5763C A=7,RM=502,EL=623	CA\$2
	E-52B SH. 61	KA,KB	DEUTSCH #4CP IN C5762D,C5763C A=7,RM=502,EL=623	CA\$1
		PSLL (PSLLMU66C)	S-O-R 6V2-T5-TTX5 A=8,RM=208,EL=565	GERS PS.5 (page 2)
		CS/OPEN(HISMU66C) CS/CLOSE A-7,RM=505,EL=623	CULTER-HAMMER NV E30JAE200E102K11	

CA\$1 = No Lockout.

CA\$2 = Contact not energized, power applied by mechanically actuated switch.

NOTE 1 - Pressure switch qualified to current standards reference memo NED 95-40030.

-
- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
 NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
 GERS - Seismically adequate based on GERS ____; include GERS number.
 NA - Component not affected by relays.
 CR - Corrective action required.
 OA - Operator action.
 - No entry necessary.

Prepared by *L.W.Blech* / Date _____
 Reviewed by *L.W.Blech* / Date 7/19/95

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

G.4 #229

System MAKEUP AND PURIFICATION

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 Page 3 of 4
^{6/16/95}

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AREA = AUXL8 ELEV = 565'				
EQUIPMENT	MFG.	MODEL NO.	AMP.	>8HZ
PSLLMU66A	S-O-R	6V2-T5-TTX5	1.0	Y
PSLLMU66C	S-O-R	6V2-T5-TTX5	1.0	Y
PSLLMU66D	S-O-R	6V2-T5-TTX5	1.0	Y
				Setpoint/Nom.
				75#/90#
				75#/90#
				75#/90#

Nominal Pressure based on associated PSL's setpoints for instrument air pressure.

The effective grade for area 8 is 567'
 Peak Ground Response Spectra = 0.39g
 Ground ZPA = 0.15g

Since 567' - 565' = 2' < 40' , the ground spectra multiplied by (1.5 X 1.5) may be used to evaluate these pressure switches.

Natural frequency of each mounting is > 8 Hz (Ref. NED 95-10048)
 The amplification factor for each mounting is 1.0. (Ref. NED 95-10048)

GERS-PS.5 = 3.0g/1.0g (EPRI NP-5223-SL) (JUSTIFICATION ATTACHED)

Demand = .39g/.15g X 1.5 X 1.5 X 1.0 = 0.88g/0.34g < 3.0g/1.0g

Therefore these devices may be screened at level 2 as being seismically adequate using GERS-PS.5

Prepared by Paul Blod Date 6/16/95

Seismic Capability Engineer J. John Date 7-18-95

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
 NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
 GERS - Seismically adequate based on GERS ____; include GERS number.
 NA - Component not affected by relays.
 CR - Corrective action required.
 OA - Operator action.
 - No entry necessary.

Prepared by N/A / Date
 Reviewed by N/A / Date

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATION

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 Page *4 of 4*
Cur 7/1/95

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT
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JUSTIFICATION TO USE GERS-PS.5 = 3.0g/1.0g (EPRI NP-5223-SL)

The GERS for Static-O-Ring Pressure switches is given for S-O-R models 4N6, 5N, 6N and 12N. Research of S-O-R catalogs back to 1975 indicate that the first number, 4,5,6 or 12 refers to the piston size. the second and third digits specify the type and size of the case. The 'N' code as used in the GERS is a general reference to S-O-R's NEMA 4 style enclosures. These enclosures are rigid boxes within which the moving components are mounted. Given that the enclosure is rigidly mounted, the exact dimension of the enclosure should not have any effect on the seismic capacity of the device.

Davis-Besse has several essential S-O-R pressure switches that these GERS may be used for with justification. They represent two piston sizes, 6 and 12. This portion of the model number exactly matches the number specified in the GERS. There are also two enclosure styles represented. These styles are known as V2 and V7. They are also NEMA 4 enclosures. The only difference between these enclosures and the 'N' enclosures is in their dimensions. The 'V' enclosures are of the same general shape but of slightly larger dimensions than the N series. These differences will not affect the seismic capacity of the instrument. Based on the above discussion regarding the similarity of these switches, GERS-PS.5 may be used for evaluating 6V and 12V series pressure switches.

- Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS ____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by

Reviewed by

Bent Blodget / Date
7/19/95

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATION

Page 1 of 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MU-66D, SV-MU66D, HISMU66D	E-52B SH. 18A	"TEST JOG"	REES CAT# 01461-202 IN NVMU66D <i>as 7/19/95</i> A=8,RM=208,EL=565	NV
		KA,KB	DEUTSCH #4CP IN C5755D,C5756C A=7,RM=502,EL=623	CA\$1
		BA,BB (LR1,LR1)	Potter & Bru. 2 Form C latching relay #T83S11S122-24 IN C5755D,C5756C A=7,RM=502,EL=623	CA\$2
	E-52B SH. 61	KA,KB	DEUTSCH #4CP IN C5755D,C5756C A=7,RM=502,EL=623	CA\$1
		PSLL (PSLLMU66D)	S-O-R 6V2-T5-TTX5 A=8,RM=208,EL=565	GERS PS.5 (page 2)
		CS/OPEN(HISMU66D) CS/CLOSE A-7,RM=505,EL=623	CULTER-HAMMER NV E30JAE200E102K11	

CA\$1 = No Lockout.

CA\$2 = Contact not energized, power applied by mechanically actuated switch.

NOTE 1 - Pressure switch qualified to current standards reference memo NED 95-40030.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by *J. Geiger* / Date _____
 Reviewed by *J. Geiger* / Date 7/19/95

G.4 #230

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATION

Page 2 of 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
<u>AREA = AUXL8 ELEV = 565'</u>				
EQUIPMENT	MFG.	MODEL NO.	AMP.	>8HZ Setpoint/Nom.
PSLLMU66A	S-O-R	6V2-T5-TTX5	1.0	Y 75#/90#
PSLLMU66C	S-O-R	6V2-T5-TTX5	1.0	Y 75#/90#
PSLLMU66D	S-O-R	6V2-T5-TTX5	1.0	Y 75#/90#

Nominal Pressure based on associated PSL's setpoints for instrument air pressure.

The effective grade for area 8 is 567'
Peak Ground Response Spectra = 0.39g
Ground ZPA = 0.15g

Since 567' - 565' = 2' < 40' , the ground spectra multiplied by (1.5 X 1.5) may be used to evaluate these pressure switches.

Natural frequency of each mounting is > 8 Hz (Ref. NED 95-10048)
The amplification factor for each mounting is 1.0. (Ref. NED 95-10048)

GERS-PS.5 = 3.0g/1.0g (EPRI NP-5223-SL) (JUSTIFICATION ATTACHED)

Demand = .39g/.15g X 1.5 X 1.5 X 1.0 = 0.88g/0.34g < 3.0g/1.0g

Therefore these devices may be screened at level 2 as being seismically adequate using GERS-PS.5

Prepared by C. L. Blair Date 6/16/95

Seismic Capability Engineer J. F. Smith Date 7-18-95

-
- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
 NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
 GERS - Seismically adequate based on GERS ____; include GERS number.
 NA - Component not affected by relays.
 CR - Corrective action required.
 OA - Operator action.
 - No entry necessary.

Prepared by N/A / Date
 Reviewed by N/A / Date

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATION

Page # 3 of 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT
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JUSTIFICATION TO USE GERS-PS.5 = 3.0g/1.0g (EPRI NP-5223-SL)

The GERS for Static-O-Ring Pressure switches is given for S-O-R models 4N6, 5N, 6N and 12N. Research of S-O-R catalogs back to 1975 indicate that the first number, 4,5,6 or 12 refers to the piston size. the second and third digits specify the type and size of the case. The 'N' code as used in the GERS is a general reference to S-O-R's NEMA 4 style enclosures. These enclosures are rigid boxes within which the moving components are mounted. Given that the enclosure is rigidly mounted, the exact dimension of the enclosure should not have any effect on the seismic capacity of the device.

Davis-Besse has several essential S-O-R pressure switches that these GERS may be used for with justification. They represent two piston sizes, 6 and 12. This portion of the model number exactly matches the number specified in the GERS. There are also two enclosure styles represented. These styles are known as V2 and V7. They are also NEMA 4 enclosures. The only difference between these enclosures and the 'N' enclosures is in their dimensions. The 'V' enclosures are of the same general shape but of slightly larger dimensions than the N series. These differences will not affect the seismic capacity of the instrument. Based on the above discussion regarding the similarity of these switches, GERS-PS.5 may be used for evaluating 6V and 12V series pressure switches.

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS ____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by

Reviewed by *Gen Blak* / Date *7/19/95*

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

6.4 # 231

System MAKEUP AND PURIFICATION

Page 1 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MU-38, SV-MU38 HIS MU38	E-49B SHT. 19A, 19B	TEST J06	REES CHT# 01461-202 IN NVMUL38. A= B, RM= 208 EL= 565	NV
" E1040A SCT. 8	CBD2P1B	(W) NON-AUTO	BREAKER # EB91001 IN	NA
E-20-28 (SEE 6.4 # 54)		D2P, A= 6 RM= 428, EL = 603		

- Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by JL K. Lai Date 12/13/94
 Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS BESSE UNIT 1

System Makeup Air SufficientPage 2 of 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MU-38, SU-MU38 HIS MU 38	E-49B SH 19A, 19B	KA KB (2K33F, 4K33F)	DEUTSCH RELAY #4CP C5755C, C5756D	CA*
			A=7 RM=502 EL=623	
E-30-341 E-30-342		LRI, LRI	Potter + Bru 2 Form C LATCHING RELAY # T83S11D122-24 C5755C, C5756D	CA4
			A=7, RM=502, EL=623	
E-49B SH 19A	BS A	CS B	(BYPASS SWITCH)	SEE G.4 #211

* NO LATCHIN OR COCKOUT, AIR OPERATION OF MU-38 WILL RESTORE POSITION

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- | | |
|------|---|
| CA | - Chatter acceptable. |
| NV | - Not vulnerable (mechanically-actuated contacts and solid state relays). |
| GERS | - Seismically adequate based on GERS ____; include GERS number. |
| NA | - Component not affected by relays. |
| CR | - Corrective action required. |
| OA | - Operator action. |
| | - No entry necessary. |

Prepared by C. W. W. / Date 10/12/94
 Reviewed by _____ / Date _____

A-4E RELAY SCREENING AND EVALUATION
FORM E-4 - RELAY TABULATION
PLANT JAMES REESE UNIT 1

E-4 #232

System MARGIN STEAM

Page 1 OF 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MS-100-1 (SV100-1)	E-46B SHT. 32A, 32B	TEST	REES CAT # 04161-202 IN NV1001. A=7 RM= 603 EL= 643.	NV
	<u>ZS1001</u> 60		MARX LIMIT SW, MODEL EA700 A=7 RM= 603, EL= 643	NV
SF-003B	K24, K25, SH12 K55, K44, K115		STRUCTURES-DUNN SERIAL 219 CCC# KG0431C	SEE 6.4 B
			F/H= 219 X DX162 IN 65792 A=7, RM= 602, EL= 623	-
	CS (HIS-100-1) CTRL		CUTLER HAMMER 718 E 203A	NV

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- AV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- US - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by John Pohl / Date 11/9/94
Reviewed by / Date

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT 2615-TECSE UNIT 1

6.4 #233

System MAIN STEAM

Page 1 OF 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MS-101-1 (SV-101-1)	E-46B SHT. 32A, 32B	TEST	REES CAT# 01461-202 IN NV1011, A=8 RM=401, EL=643	NV
		ZS 101A 08	NAMCO LIMIT SW MODEL EA700. A=8, RM=601, EL=643	NV
SF-0038 SH 11	K24, K24, K25, K84, K115	STRUTHERS-DUNN SERIES 219 CCC#KGU431C P/N# 219XDX162 IN 65762A A=7, RM=502, EL=623	SEE 6.4 # 312	
II	CS (HIS-101-1) CTRL	CUTLER HAMMER TYPE C307A		NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- AV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by Gen. Rel. Date 11/04/94
 Reviewed by / Date

6.4 #234

A-RE RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT JCNIS-PRISE UNIT 1

System MAIN STEAMPage 1 OF 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MS-394 (SV394)	E-46B SHT 3	TEST	PRERS CAT # 01461-202 IN NV394. A=8 RM=601, EL=. 643	NV
SF-003E SH 17	K26, K55, K86, K115	STRUThERS-DUNN SERIES 219 CCC # K60431C I/N # 219 X2 X 162 IN 65762A A=7, RM=502, EL=623	SEE 6.4 #312	-
II	CS (HIS-394) CTRL	CUTLER HAMMER TYPE E30JA		NV

- Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by Joe Doh Date 11/9/94
Reviewed by Date

#235

6.4

A-40 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT 2605-TRICE UNIT 1

System SECONDARY PLANT /
STEAM GENERATORS

Page 10F4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MS-603 (BKR. BF1111)	E-46B SHT. 33 ^a 33A	DS	GE TYPE SB-9 CTRL SW IN CDYF2 A = ? RM = 427 EL = 603	NV
"	$\frac{33}{60}$, $\frac{33}{60\%}$, $\frac{33}{60}$	LIMITORQUE LIMIT SW IN MV06030.	NV	
"	$\frac{33}{60\%}$	A = ? RM = 236 EL = 565		
"	$\frac{33}{60}$, $\frac{33}{60}$	LIMITORQUE TORQUE SW IN MV06030. A = ? RM = 236 EL = 565	NV	
"	STOP	REES CAT # 01401-202 IN NVO 6030. A = ? RM = 236 EL = 565	NV	
"	OPEN CLOSE	REES CAT # 03845-000 IN NVO 6030. (SEE ABOVE)	NV	

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- AV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Lub Date 12/13/94
Reviewed by _____ Date _____

6.4 #235

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

SECONDARY PLANT/
System STEAM GENERATORS

Page 2 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MS-603	E-46B SHTB 33 & 33A	<u>OS</u> <u>OPEN</u>) <u>OS</u> <u>CLOSE</u>	CUTLER-HAMMER TYPE E307B IN 25710. A=7, RM= 505, EL=623.	NV
"		OL	(W) OVERLOAD RELAY IN MCC F1IA A=7 RM=427 EL=603	CA8
"		<u>42b</u> , <u>42a</u> , <u>C</u> , <u>C</u> <u>42b</u> <u>O</u>	(W) L-56 AUX CONTACTS FOR STARTER IN MCC F1IA. (SEE ABOVE)	CA - CHATTER WHICH NOT OPEN VALVE.
"		<u>42</u> <u>O</u> , <u>42</u> <u>C</u>	(W) SERIES A200 STARTER SIZE 1 IN MCC F1IA. (SEE ABOVE)	GERS-MCC.9 (AREA 7)
		<u>42a</u> <u>O</u>	(W) L-56 AUX CONTACT FOR STARTER IN MCC F1IA (SEE ABOVE)	GERS-MCC.9 (AREA 7)

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Loh Date 10/19/94
Reviewed by _____ / Date _____

6.4 # 235

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

SECONDARY PLANT /
System STEAM GENERATORS

Page 3 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MS603	E-46B SHTS 334 ZBA	K28,K55,K27,K87	STRUThERS-DUNN 219YDX162 in C5792	CA4 - ALL SFRCs CONTACTS (i.e 33/any,
	SF003B SH 20			
	HIS 603B		CUTLER-HAMMER E300DX6B55AG30-LA4X in C5710	NV
	TAI/02 (TEST SWITCH)	SEE 6.4#312		NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by J. G. B / Date 3/22/95
 Reviewed by _____ / Date _____

c.c #235

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System SECONDARY PLANT/STEAM
GENERATORS

Page 4 OF 4

Subsystem/Component Ref Dwg(s) Contact/Contact Group Relay Type and Location SAT*

GERS-MCC.9 (AREA 7)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 7; 603', and 565'.

The effective grade for Area 7 is 562'.

Since $603' - 562' = 41'$, the ground spectra multiplied by (1.5x1.5) may be used to evaluate contactors/starters in Area 7 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz}):

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz}):

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} < 1.5g$ and $bA_{33Hz} < 1.0g$, then contactors/starters in Area 7 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS ____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by J. K. Smith Date 12-15-94
Reviewed by _____ / Date _____

6.4 #234

A-4E RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
PLANT LANS-REESF UNIT 1

System SECONDARY PLANT /
STEAM GENERATORS

Page 1 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MS-611 (BKR. BE1294)	E-468 SHT. 33 & 33A	" DS "	G.E. TYPE SB-9 CTEL. SW. IN CDYE2. A = 8 EL = 304 RM = 585	NV
"	33 33 33 60, bn%, tappo 33 60,	LIMITORQUE LIMIT SWITCH IN MV06110 A = 7 RM = 236 EL = 565	NV	
"	33 33 60, tce	LIMITORQUE LIMIT SWITCH IN MV06110 (SEE ABOVE)	NV	
" STOP		REES CAT # 01461-202 IN NV06110. A = 7 RM = 236 EL = 565	NV	
" OPEN CLOSE		REES CAT # 03345-000 IN NV06110. (SEE ABOVE)	NV	

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Bell Date 12/13/94
 Reviewed by _____ Date _____

6.4 #236

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

SECONDARY PLANT
System STEAM GENERATORS

Page 2 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MS-603	E-46B SHTS 33 & 33A	<u>CS</u> <u>OPEN</u> 1. <u>CS</u> <u>CLOSE</u>	CUTLER HAMMER TYPE E30B IN 05708. A=7 RM=505, EL=623	NV
"		OL	(W) OVERLOAD RELAY CONTACT IN MCC E12E. A=8 RM=101, EL 545.	CA8
"		<u>42b</u> , <u>42a</u> , <u>C</u> , <u>42L</u> <u>O</u>	(W) L-56 AUX. SW FOR STARTER IN MCC E12E. (SEE ABOVE)	CA-CHATTER ON THESE CONTACTS WILL NOT OPERATE UNLUE
"		<u>42</u> , <u>42</u> <u>O</u> , <u>C</u>	(W) SERIES A200 SIZE 1 STARTER IN MCC E12E. (SEE ABOVE)	GERS-MCC.9 (AREA 8) (SEE PG 4)
		42a/o	(W) L-56 AUX SW FOR	GERS-MCC.9 (AREA 8) (SEE PG 4)

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. 6/18 Date 12/13/94
Reviewed by _____ Date _____

E-4 #234

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

SECONDARY PUNIT
System STEAM GENERATORS

Page 3 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
HIS-611	E-46B SHTS. 33 & 33A SF-03C SH 19	K87, K115, K55 K88, X28, K27	STRUHRS-DUNN 21A X DX162 INC 5762 IN	CA 4-611 SFRCs CONTACTS (i.e. 33/an)
"	HIS611B		WEL HAMMER E30DX6B550630LA4X INC 5708	NV
"	TSB,TRB,TB/103 TRA,TS1/4,TA/104		SEE G.4#312	NV

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by L. G. Webster / Date 8/22/85
Reviewed by _____ / Date _____

C.E # 236

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System SECONDARY PAINT/STEAM
GENERATORS

Page 4 OF 4

Subsystem/Component Ref Dwg(s) Contact/Contact Group Relay Type and Location SAT*

GERS-MCC.9 (AREA 8)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 8; 603', 585', 565' and 545'. The effective grade for Area 8 is 567'.

Since $603' - 567' = 36'$, the ground spectra multiplied by (1.5x1.5) may be used to evaluate contactors/starters in Area 8 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} \leq 1.5g$ and $bA_{33Hz} \leq 1.0g$, then contactors/starters in Area 8 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by J.K.Schiff / Date 12-13-94
Reviewed by _____ / Date _____

A-RE RELAY SCREENING AND EVALUATION
FORM E-4 - RELAY TABULATION
PLANT LOUIS-REEF UNIT 2

E-4 #237

System MAKEUP AND PURIFICATION

Page 1 OF 5

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MUL-11 (BKR BE227B)	E-49B SHT. 35A & 35B	OL	(N) OVERLOAD RELAY CONTACT IN HICC E22B. A=8, RM= 565, EL = 565.	CA - VALVE IS NOT REQUIRED TO CHANGE POSITION DURING PERIOD OF STRONG SHAKING.
"	$\frac{33}{60}$, $\frac{33}{60\%}$, $\frac{33}{60\%}$, $\frac{33}{60\%}$, $\frac{33}{ac}$		LIMIT TORQUE LIMIT SW. IN MVMUL110 A= 8 RM= 211 EL= 565	NV
"	$\frac{33}{tc}$, $\frac{33}{tc}$ to	LIMIT TORQUE SW. IN MVMUL110. (SEE ABOVE)		NV
"	L/O STOP	REES CAT # 04161-001-002 IN NVMUL110. A=8 RM= 212 EL=565		NV

- Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chiller acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Lef Date 12/13/94
Reviewed by _____ Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATIONPage 2 OF 5

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MUL-11	E-49B SHT 35A & 35B	"TO MU TANK", "TO CLN WST"	REES CAT # 03845-000 IN NVMUL110. (SEE ABOVE)	NV
		<u>CS</u> <u>OPEN</u> , <u>CLOSE</u> (NORMAL), <u>BLEED</u>	CUTLER-HAMMER TYPE E-30 P.B IN C5702, A=7, RM= 505, EL=623	NV
		<u>33</u> <u>33</u> <u>33</u> <u>ac</u> , <u>ac</u> , <u>ac</u>	LIMIT/TORQUE LIMIT SWITCH IN NVMUL1400. A=B, RM=211, EL=565	NV
		<u>42a</u> <u>42b</u> <u>42a</u> <u>0</u> <u>c</u> <u>c</u> <u>42b</u> <u>0</u>	(W) L-56 AUX CONTACT FOR SIZE 1 STARTER IN MCC E12B. A=8, RM=209, EL= 565 (SEE PG 5)	GERS-MCC.1 (AREA B)

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Lutz Date 12/13/94
 Reviewed by _____ / Date _____

C-4 #237

A-46 RELAY SCREENING AND EVALUATION
 FORM G-4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATIONPage 3 OF 5

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MUL-11	E-H9B SHT 35A + 35B	42 / 42 C	(W) SERIES A200 SIZE 1 STARTER IN MCC E12B. (SEE ABOVE)	GERS - MCC. 9 (AREA 8) (SEE Pg 5)
"	RX-6		DEUTSCH TYPE 4AP RELAY IN RC2825. A=8 RM=209, EL=565	CA4 - OPEN CKT $3\frac{3}{4}\%$ + $3\frac{3}{4}\%$ on % CLOSE : 42% C, CS CLOSE
"	MUL-LS16-1A		(LSLMV161A) BAILEY SIGNAL MONITOR # 662 3819 Relay P+B # R40-E00411-2 INC5759E A: 7, RM: 502, EL: 623	CA4 (SAME AS RX6)

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by D.H. Lill 1/17/95
 Reviewed by _____ / Date
 _____ / Date

G-4 #237

A-46 RELAY SCREENING AND EVALUATION
 FORM G-4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATIONPage 4 OF 5

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MU-11	E-49B SHT 35A & 35B M-533-63	<u>86</u> <u>FB</u>	P+B R40-E071-1(24VDC) IN C5761B, A=7 RM=50, EL=623	CA4 (SAME AS RX-6)
	II	<u>96</u> <u>R615-W</u> , <u>86</u> <u>RG-W</u>	P+B R40-E0070-1(11EVAC) IN C5761B A=7, RM=50, EL=623	CA4 (SEE ABOVE)
	M-533-63 M-515-603 M-515-319	R67-W, R65-W	P+B KHU17D11-24VDC IN C4801X A=8, RM=402, EL=603	CA4 (See above)

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by J. W. H. / Date 1/18/95
 Reviewed by / Date

C-4 # 237

A-46 RELAY SCREENING AND EVALUATION
FORM C-4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAKEUP & Purification

Page 5 OF 5

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

GERS-MCC.9 (AREA 8)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 8; 603', 585', 565' and 545'.

The effective grade for Area 8 is 567'.

Since $603' - 567' = 36'$, the ground spectra multiplied by (1.5×1.5) may be used to evaluate contactors/starters in Area 8 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} \leq 1.5g$ and $bA_{33Hz} \leq 1.0g$, then contactors/starters in Area 8 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS _____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Sibley Date 12-13-94
Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.6 - RELAY TABULATION
 PLANT LGS/IS-PESSE UNIT 1

6.6 #238

System MAKEUP AND PURIFICATION

Page 1 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MU-12A (BKR BE1125)	E-498 SHTS 17A & 17B	OL	(W) OVERLOAD RELAY CONTACT IN MCC E11A. A=8, RM= 209, EL= 565	CA - CACHER WILL NOT ENERGIZE STARTER.
"	$\frac{33}{60}$, $\frac{33}{60\%}$, $\frac{33}{60}$ $\frac{33}{AC}$	LIMITORQUE LIMIT SWITCH IN AVAMU12A.	A=8, RM= 211, EL= 565	NV
"	$\frac{33}{60}$, $\frac{33}{60\%}$	LIMITORQUE TORQUE SWITCH IN MVAMU12A. (SEE ABOVE)		NV
"	L/O STOP	REES CAT # 04161-001-002 IN NVAMU12A. A=8, RM= 212 EL= 56.5		NV

- Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by John Lipp Date 4-5-94
 Reviewed by _____ / Date _____

E.4 # 238

A-45 RELAY SCREENING AND EVALUATION
FORM E.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATIONPage 2 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MU-12A	E-46B SHTS	OPEN, 17A + 17B	REES CAT# 03845-000 IN NVMU12A. (SEE ABOVE)	NV
"		$\frac{C}{C}$ OPEN, $\frac{C}{C}$ CLOSE	CUTLER-HAMMER TYPE E30 IN Q5703 A=7, RM=505, EL=	NV
		$\frac{42a}{O}, \frac{42b}{C},$ $\frac{42a}{C}, \frac{42b}{O}$	(W) L-56 Aux Contact FOR STARTER IN MCC EIHA, A=8. RM=209, EL=565	GERS-MCC. 9 (AREA 8) SEE Pg. 3
		$\frac{42}{O}, \frac{42}{C}$	(W) SERIES A200 SIZE 1 STARTER IN MCC EIHA. (SEE ABOVE)	GERS-MCC. 9 (AREA 8) SEE Pg. 3

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Lill Date 4-5-94
Reviewed by _____ / Date _____

C-4 #238

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAKEUP & PURIFICATION

Page 3 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
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GERS-MCC.9 (AREA 8)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 8; 603', 585', 565' and 545'.

The effective grade for Area 8 is 567'.

Since $603' - 567' = 36'$, the ground spectra multiplied by (1.5×1.5) may be used to evaluate contactors/starters in Area 8 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} < 1.5g$ and $bA_{33Hz} < 1.0g$, then contactors/starters in Area 8 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Smith Date 4-5-94
Reviewed by _____ / Date _____

A-4E RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT LBNL-TRICE UNIT 1

6.4 # 239

System MAKEUP AND PURIFICATION

Page 1 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MUL-12B	E-498 SHT. 17A & 17B	OL	(W) OVERLOAD RELAY CONTACT IN MCC FID. A=7, RM= 227, EL= 565.	CA - CHATTER WILL NOT ENERGIZE STARTER
"	<u>33</u> , <u>33</u> , <u>33</u> , <u>33</u> <u>40</u> , <u>20%</u> , <u>20</u> , <u>AC</u>		LIMITORQUE LIMIT SW. IN MVMU12B. A=8, RM= 211, EL= 565.	NV
"	<u>33</u> , <u>33</u> <u>60</u> , <u>TC</u>		LIMITORQUE TORQUE SW. IN MVMU12B (SEE ABOVE)	NV
"	4/0 STOP		REES CAT. # 04161-001-002 IN NVMU12B, A=8 RM= 212, EL= 565	NV
"	OPEN CLOSE		REES CAT. # 03845-000 IN NVMU12B. (SEE ABOVE)	NV
"	<u>CS</u> OPEN) <u>CS</u> CLOSE		CUTTER-HAMMER TYPE E-30 IN Q5103, A= 7, RM= 505, EL= 623.	NV

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- BL - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared By D.H. Lippert Date 4-5-94
 Reviewed By _____ / Date _____

c.e #239

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATION

Page 20F3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MU-12B	E-49B SHTS 17A+17B	$\frac{42a}{O}, \frac{42b}{C}, \frac{42a}{C}$ $\frac{42b}{O}$	(W) L-56 AUX SW FOR STARTER IN MCC FID. A=7 RN=227, EL=565	GERS-MCC.9 (AREA 7) (SEE PG 3)
"		$\frac{42}{O}, \frac{42}{C}$	(W) SERIES A200 SIZE 1 STARTER IN MCC FID. (SEE ABOVE)	GERS-MCC.9 (AREA 7) (SEE PG 3)

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Lish Date 4-5-94
 Reviewed by _____ / Date _____

6.4 # 239

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATIONPage 3 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

GERS-MCC.9 (AREA 7)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 7; 603', and 565'.

The effective grade for Area 7 is 562'.

Since $603' - 562' = 41'$, the ground spectra multiplied by (1.5×1.5) may be used to evaluate contactors/starters in Area 7 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} \leq 1.5g$ and $bA_{33Hz} < 1.0g$, then contactors/starters in Area 7 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- | | |
|------|---|
| CA | - Chatter acceptable. |
| NV | - Not vulnerable (mechanically-actuated contacts and solid state relays). |
| GERS | - Seismically adequate based on GERS ____; include GERS number. |
| NA | - Component not affected by relays. |
| CR | - Corrective action required. |
| OA | - Operator action. |
| - | - No entry necessary. |

Prepared by W. K. Lipp / Date 4-5-94
 Reviewed by _____ / Date _____

6.4 #240

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATIONPage 1 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MU59A	E-52B SHTS 30A & 30B	DS	G.E. TYPE SB-9 CTRL SW IN CDE11B-1 A=8, RM=304 EL=585	NV
"	$\frac{33}{20}$, $\frac{33}{20\%}$, $\frac{33}{20}$ $\frac{33}{20\%}$	LIMIT TORQUE LIMIT SWITCH IN MU59A A=9, RM=214 EL=565		NV
"	$\frac{33}{10}$, $\frac{33}{10\%}$	LIMIT TORQUE TORQUE SWITCH IN MU59A (SEE ABOVE)		NV
"	$\frac{CS}{OPEN}$, $\frac{CS}{CLOSE}$	CUTLER-HAMMER TYPE E30 ON C57117. A=7 RM=505, EL=623		NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by OK Date 7/5/74
 Reviewed by _____ / Date _____

6.4 # 240

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATIONPage 2 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
M459A	E-52 B SHTS 30A & 30B	"OPEN" "NEUTRAL" "CLOSE"	(W) TYPE OTZ SELECTOR SW ON MCC E11B. A=8 RM=304, EL=585	NV
"	42a 42b, O, C		(W) L-56 AUX SW FOR STARTER IN MCC E11B. (SEE ABOVE).	GERS-MCC 9 (AREA 8) (SEE PG 4)
"	42, 42 O, C		(W) SERIES A200 SRE 1 STARTER IN MCC E11B. (SEE ABOVE)	GERS-MCC 9 (AREA 8) (SEE PG 4)

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____ ; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by OK Lish Date 4/5/94
 Reviewed by _____ / Date _____

6.4 #240

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATIONPage 3 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MUL59A	E-52B SHTS 30A & 30B	KA, KB (1K33E, 3K33E)	DEUTSCH RELAY #4CP C 5762C, C5763D	SEE 6.4#311
"	BA, BB (LR1) (LR1)	"	AROMAT FORM 1A1B LATCHING RELAY # ST 1EL 2 DC24V C 5762C, C5763D	CA (seen note this page.)
"	BS A BS B (BYPASS SWITCH)	"	A=7 Rm=502 EL=623	SEE 6.4#311

NOTE: CLOSE CIRCUIT; CA4(KA,KB), WILL NOT CAUSE LOCKOUT

OPEN CIRCUIT; PERMISSIVE FUNCTION, CA ON OPEN CKT., WILL NOT CAUSE LOCKOUT

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by L. Wible / Date 10/12/94
Reviewed by _____ / Date _____

C.4 #240

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAKEUP & PURIFICATION

Page 4 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
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GERS-MCC.9 (AREA 8)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 8; 603', 585', 565' and 545'.

The effective grade for Area 8 is 567'.

Since $603' - 567' = 36'$, the ground spectra multiplied by (1.5×1.5) may be used to evaluate contactors/starters in Area 8 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} \leq 1.5g$ and $bA_{33Hz} \leq 1.0g$, then contactors/starters in Area 8 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Kelly Date 4-5-94
Reviewed by _____ / Date _____

c.e #241

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATIONPage 1 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MV59B	E-528 SHTS 30A & 30B	DS	G.E. TYPE SB-9 CTRL SW IN CDE11B-1 A=8, RM=304 EL=585	NV
"	$\frac{33}{50}$, $\frac{33}{50\%}$, $\frac{33}{20}$ $\frac{33}{20\%}$	LIMIT TORQUE LIMIT SWITCH IN MV59B A=9, RM=214 EL=565		NV
"	$\frac{33}{10}$, $\frac{33}{10}$	LIMIT TORQUE TORQUE SWITCH IN MV59B (SEE ABOVE)		NV
"	OPEN, CLOSE	CUTLER-HAMMER TYPE E30 ON C5717. A=7, RM= 505, EL=623		NV

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by D.K. Lipp Date 4/15/94
 Reviewed by _____ Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATIONPage 2 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MU59B	E-528 SHTS 30A & 30B	"OPEN" "NEUTRAL" "CLOSE"	(W) TYPE OT2 SELECTOR SW ON MCC E11B, A=8 RM=304, EL=535	NV
"	"	$\frac{42a}{0}, \frac{42b}{c}$	(N) L-56 Aux SW FOR STARTER IN MCC E11B. (SEE ABOVE).	GERS-MCC. 9 (AREA 8) SEE Pg. 4
"	"	$\frac{42}{0}, \frac{42}{c}$	(W) SERIES A200 SIZE 1 STARTER IN MCC E11B. (SEE ABOVE)	GERS-MCC. 9 (AREA 8) SEE Pg. 4

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by JK build Date 4/5/94
 Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

G.4 ~~241~~
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System MAKEUP AND PURIFICATION

Page 3 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MIL59B	E-528 SHTS 30A & 30B	KA, KB (1K33F, 3K33F)	DEUTSCH RELAY #4CP C5762C, C5763D A=7 RM=502 EL=623	SEE G.4 #311
"		BA, BB (LR1) (LR1)	AROMAT FORM 1A 1B LATCHING RELAY #STIEL 2 DC24V C5762C, C5763D A=7 RM=502 EL=623	CA- SEE G.4 #240 PAGE 3 NOT
"		B5 A , B	(BYPASS SWITCHES)	SEE G.4 #311

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by L. Miller / Date 10/12/94
 Reviewed by / Date

6.4 # 241

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAKEUP & Purification

Page 4 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

GERS-MCC.9 (AREA 8)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 8; 603', 585', 565' and 545'.

The effective grade for Area 8 is 567'.

Since $603' - 567' = 36'$, the ground spectra multiplied by (1.5x1.5) may be used to evaluate contactors/starters in Area 8 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} \leq 1.5g$ and bA_{33Hz} is $\leq 1.0g$, then contactors/starters in Area 8 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by D. K. Ladd, Date 4-5-94
Reviewed by _____ / Date _____

6.4 #242

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATIONPage 1 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MV59C	E-52B SHTS 30A & 30B	DS	G.E. TYPE SB-9 CTRL SW IN CDE11B-2 A=8, RM=304 EL=585	NV
"	$\frac{33}{50}$, $\frac{33}{50\%}$, $\frac{33}{20}$ $\frac{33}{20\%}$	LIMIT TORQUE LIMIT SWITCH IN MV59C A=9, RM=214 EL=565		NV
"	$\frac{33}{10}$, $\frac{33}{10\%}$	LIMIT TORQUE TORQUE SWITCH IN MV59C (SEE ABOVE)		NV
"	CS OPEN, CS CLOSE	CUTLER-HAMMER TYPE E30 ON C5717. A=9, RM=505, EL=623		NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Jett Date 4/5/94
 Reviewed by _____ / Date _____

6.4 #242

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATIONPage 2 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
M459C	E-52B SHTS 30A & 30B	"OPEN" "NEUTRAL" "CLOSE"	(W) TYPE OT2 SELECTOR SW.ON MCC E11B. A=8 RM=304, EL=585	NV
"	42a 42b, 0, c,		(N) L-54 Aux SW FOR STARTER IN MCC E11B. (SEE ABOVE).	GERS-MCC.9 (AREA 8) SEE Pg 4
"	42 42 0, c		(W) SERIES A200 SIZE 1 STARTER IN MCC E11B. (SEE ABOVE)	GERS-MCC.9 (AREA 8) SEE Pg 4

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. 67, Date 4/5/94
 Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

~~G.4~~ 3 OF
 #242

System MAKEUP AND PURIFICATION

Page 3 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MUL59	E-52B SHTS 30A & 30B	KA, KB. (1 K33G, 3 K33G)	DEUTSCH RELAY #4CP C5762C, C5763D A=7, RM=502, EL=623	SEE G.4#311
II	BA, BB (LR1)	Aromat Form 1A1B CA- LATCHING RELAY # ST1EL2DC24V C5762C, C5763D A=7, RM=502, EL=623	SEE G.4#240 PAGE 3 NOT	
II	<u>BS</u> <u>A</u> , <u>BS</u> <u>B</u>	(BYPASS SWITCHES)		SEE G.4#311

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by P. A. Bell / Date 10/12/94
 Reviewed by _____ / Date _____

6.4-242

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATION

Page 4 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

GERS-MCC.9 (AREA 8)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 8; 603', 585', 565' and 545'.

The effective grade for Area 8 is 567'.

Since $603' - 567' = 36'$, the ground spectra multiplied by (1.5x1.5) may be used to evaluate contactors/starters in Area 8 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} \leq 1.5g$ and bA_{33Hz} is $\leq 1.0g$, then contactors/starters in Area 8 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by JK Date 4-5-94
Reviewed by _____ / Date _____

c.4 #243

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATIONPage 1 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MU59D	E-52B SHTS 30A & 30B	DS	G.E. TYPE SB-9 CTRL SW IN CDE11B-2 A=8, RM=304 EL=585	NV
"	$\frac{33}{100}$, $\frac{33}{100\%}$, $\frac{33}{100}$ $\frac{33}{100\%}$	LIMIT TORQUE LIMIT SWITCH IN MV59D A=9, RM=214 EL=565		NV
"	$\frac{33}{100}$, $\frac{33}{100\%}$	LIMIT TORQUE TORQUE SWITCH IN MV59D (SEE ABOVE)		NV
"	OPEN, CLOSE	CUTLER-HAMMER TYPE E30 ON C5717. A=7, RM= 505, EL=623		NV

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by O.K. Lipp Date 4/5/94
 Reviewed by _____ / Date _____

G.E. # 243

A-46 RELAY SCREENING AND EVALUATION
 FORM G-4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATIONPage 2 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
M459	E-52 B SHTS 30A & 30B	"OPEN" "NEUTRAL" "CLOSE"	(W) TYPE OT2 SELECTOR SW ON MCC E11B, A=8 RM=304, EL=585	NV
"	42a, 42b, C, C		(N) L-56 Aux SW FOR STARTER IN MCC E11B. (SEE ABOVE).	GERS-MCC. 9 (AREA 8) (SEE PG 4)
"	42, 42 C, C		(W) SERIES A200 SIZE 1 STARTER IN MCC E11B. (SEE ABOVE)	GERS-MCC. 9 (AREA 8) (SEE PG 4)

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Bush Date 4/5/94
 Reviewed by _____ / Date _____

6.4 3 OF # 243

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATION

Page 3 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MUL59	E-528 SHTS 30A & 30B	KA, KB (1K33H, 3K33H)	DEUTSCH RELAY # 4CP C 5762C, C 5763D	<u>SEE G.4#311</u>
			A = 7, Rm = 502, EL = 623	
"		BA, BB (LR 1) (LR I)	AROMAT Form 1A1B LATCHING RELAY # ST 1EL 2 DC24V C 5762C, C 5763D	CA - SEE NOTE PAGE 3 of G.4#240
"		$\frac{BS}{A}, \frac{BS}{B}$	(BYPASS SWITCH)	<u>SEE G.4#311</u>

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- - No entry necessary.

Prepared by G. Wilhite Date 10/12/44
Reviewed by _____ / Date _____

C.E #243

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATIONPage 4 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
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GERS-MCC.9 (AREA 8)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 8; 603', 585', 565' and 545'.

The effective grade for Area 8 is 567'.

Since $603' - 567' = 36'$, the ground spectra multiplied by (1.5×1.5) may be used to evaluate contactors/starters in Area 8 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} \leq 1.5g$ and $bA_{33Hz} \leq 1.0g$, then contactors/starters in Area 8 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by D.K. Loh Date 4-5-94
 Reviewed by _____ / Date _____

ELECTRIC POWER IS
NOT REQUIRED FOR
THIS VALUE TO OPEN,
REMAIN OPEN

6.4 # 244

A-RE RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT LECIS-RESCF UNIT 1

System MAKEUP AND PURIFICATION

Page 1 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MU-6406 (SVMU6406)	E-49B SHT. 69	"OPEN" "CLOSE"	REES CAT # 02450 032 IN NV6406, A=7 RM=225, EL= 305	NV
"	"	<u>CS</u> <u>CLOSE</u>) <u>CS</u> <u>OPEN</u>	CUTLER-HAMMER TYPE E30 ON C5703, A=7 RM=505, EL=623	NV
"	4	"	AGASTHT TYPE EGP IN RC4606, A=6 RM=428, EL=603	GERS-RLY ARS. 4 (SEE Pg 2)

- * Identify reason for Contact/Contact Group Being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NY - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by D.K. Loh Date 5/5/95
Reviewed by _____ Date _____

c.c #244

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATION

Page 2 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
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LEVEL 2 SCREENING FOR RC4606

1. Natural frequency of RC4606 is greater than or equal to 8Hz.
2. RC4606 has been given an amplification factor (AF) of 3.
3. RC4606 is located in plant area 6, elevation 603', which is less than about 40 feet above effective grade (Area 6 effective grade = 573')
4. For this area and elevation Peak GRS = .39g and Ground ZPA = .15g
5. Seismic capacity for a non-operate Agastat EGP/GP = 3.3g peak and 1.32g at the ZPA (ref. GERS-RLY-ARS.4).

thus Peak Seismic Demand (SD);

$$SD = \text{Peak GRS} \times 1.5 \times 1.5 \times AF$$

$$SD = 2.63$$

and ZPA Seismic Demand (SD);

$$SD = \text{Ground ZPA} \times 1.5 \times 1.5 \times AF$$

$$SD = 1.01$$

therefore, seismic capacity exceeds seismic demand.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by W. Knobell Date 5/5/95
Reviewed by _____ / Date _____

See Review: Jon G. Hook 8/18/95

ELECTRIC POWER IS NOT
REQUIRED FOR VALVE TO
REMAIN/STAY OPEN.

6.4 #245

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT ZAIS-BESE WINT 1

System MAKEUP AND PURIFICATION

Page 1 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MUL-6407 (SVMUL6407)	E-49B SHT. 68	"OPEN" "CLOSE"	REES CAT. # 02450 032 IN NV6407, A=7, RM=225, EL=565	NV
"		<u>CS</u> <u>CLOSE</u>) <u>CS</u> <u>OPEN</u>	CUTLER-HAMMER TYPE E30 ON C5703, A=7, RM=505, EL=623	NV
"		4	AGASTAT TYPE EGP IN RC4801, A=8 RM=402, EL=603	GERS-RLY- ARS.4 (SEE Pg. 2)

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- AV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Loh Date 5/5/95
Reviewed by J. Date

c.e #245

A-46 RELAY SCREENING AND EVALUATION
FORM G-4 - RELAY TABULATION
PLANT JAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATION

Page 2 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

LEVEL 2 SCREENING FOR RC4801

1. Natural frequency of RC4801 is greater than or equal to 8Hz.
2. RC4801 has been given an amplification factor (AF) of 3.
3. RC4801 is located in plant area 8, elevation 603', which is less than about 40 feet above effective grade (Area 8 effective grade = 567')
4. For this area and elevation Peak GRS = .39g and Ground ZPA = .15g
5. Seismic capacity for a non-operate Agastat EGP/GP = 3.3g peak and 1.32g at the ZPA (ref. GERS-RLY-ARS.4).

thus Peak Seismic Demand (SD);

$$SD = \text{Peak GRS} \times 1.5 \times 1.5 \times AF$$

$$SD = 2.63$$

and ZPA Seismic Demand (SD);

$$SD = \text{Ground ZPA} \times 1.5 \times 1.5 \times AF$$

$$SD = 1.01$$

therefore, seismic capacity exceeds seismic demand.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by W.K. Smith Date 5/5/95
Reviewed by _____ / Date _____

See review: Jov G. Hood 8/18/95

6.6 #246

A-46 RELAY SCREENING AND EVALUATION
FORM 6.6 - RELAY TABULATION
PLANT LOUIS REESE UNIT 1

System MAKEUP AND PURIFICATION

Page 1 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MUL-6408 (BKR, BF1208)	E-49B SHT. 63A, 63B	DS	G.E. TYPE SB-9 CTRL SW. IN CDF12A-2, A=6, RM=428, EL=603	NV
"	$\frac{33}{40}$, $\frac{33}{60\%}$, $\frac{33}{20}$, $\frac{33}{AC}$		LIMITORQUE LIMIT SW IN MV6408. A=7 RM= 225, EL= 565.	NV
"	$\frac{33}{20}$, $\frac{33}{TC}$		LIMITORQUE TORQUE SW IN MVG408. A=7 RM= 225, EL= 565	NV
"	STOP		PEES CAT # 04161-202 IN NV6408 A=7, RM= 225, EL= 565	NV
"	OPEN CLOSE		PEES CAT # 03845-000 IN NV6408. (SEE ABOVE)	NV

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NY - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- DA - Operator action.
- No entry necessary.

Prepared by W.H. Liff Date 4-6-94
Reviewed by _____ / Date _____

G.4 #246

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATIONPage 2 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MU-6408	E-49B SHTS 63A & 63B	<u>CS</u> <u>OPEN</u> , <u>CLOSE</u>	CUTLER-HAMMER TYPE E30 ON C5703, A=7 RM=505, EL=623	NV
"	42a, 42b, 42a 0, C, C 42b 0	(W) L-56 AUX SW FOR STARTER IN MCC F12A. A=6, RM=428, EL=603	GERS-MCC.9 (AREA 6) (SEE PG 3)	
"	42, 42 0, C	(W) SERIES A200 SIZE 1 STARTER IN MCC F12A. (SEE ABOVE)	GERS-MCC.9 (AREA 6) (SEE PG 3)	
"	OL	(W) OVERLOAD RELAY CONTACT IN MCC F12A. (SEE ABOVE)	CAB	

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by JK Date 4-6-94
Reviewed by _____ / Date _____

C.S # 246

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATION

Page 3 of 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

GERS-MCC.9 (AREA 6)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 6; 603', and 585'.

The effective grade for Area 6 is 573'.

Since $603' - 573' = 30'$, the ground spectra multiplied by (1.5x1.5) may be used to evaluate contactors/starters in Area 6 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} < 1.5g$ and bA_{33Hz} is $< 1.0g$, then contactors/starters in Area 6 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NY - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Smith Date 4-6-94
Reviewed by _____ / Date _____

6.4 #247

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT LAVIS-REESE UNIT 1

System MAKEUP AND PURIFICATIONPage 1 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MUL-6409 (BKR. BE1147)	E-49B SHT. 64A, 64B	DS	GE TYPE 32-9 CTRL SW IN CLEND. A=7, RM=227, EL=565.	NV
"	$\frac{33}{50}$, $\frac{33}{bn\%}$, $\frac{33}{40}$	LIMITORQUE LIMIT SW	IN MV6409 A=7	NV
"	$\frac{33}{ac}$		RM 225, EL=565.	
"	$\frac{33}{to}$, $\frac{33}{tc}$	LIMITORQUE TORQUE SW	IN MV6409, (SEE ABOVE)	NV
"	STOP	PEES CIT# 04162-202 IN	NV6409, A=7, RM=225, EL=565	NV
"	OPEN CLOSE	PEES CIT# 03845-000 IN	NV6409. (SEE ABOVE.)	NV
"	$\frac{CS}{OPEN}$ / $\frac{CS}{CLOSE}$	CUTLER-HAMMER TYPE	E-30 IN C5703. A=7, RM=505, EL=623	NV
"	$\frac{42a}{O}$, $\frac{42b}{C}$, $\frac{42a}{C}$, $\frac{42b}{O}$	(W) L-56 AUX SW. FOR STARTER	IN MCC END. A=7, RM=225, EL=565	GERS-MCC-5 (AREA 7) (SEE PG 3)

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- AV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.L. B. Date 4/6/94
Reviewed by _____ Date _____

G.4 #247

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATION

Page 2 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MUL-6409	E-49B SHTS 64A & 64B	42 42 0) C	(W) SERIES A200 SIZE 1 STARTER IN MCC E110, (SEE ABOVE)	GERS - MCC.9 (AREA 1) (SEE PG 3)
"	CL		(W) OVERLOAD RELAY CONTACTS IN MCC E110. (SEE ABOVE)	CA8

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.L. Lipe / Date 4/6/94
 Reviewed by _____ / Date _____

C.C #247

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATION

Page 3 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

GERS-MCC.9 (AREA 7)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 7; 603', and 565'.

The effective grade for Area 7 is 562'.

Since $603' - 562' = 41'$, the ground spectra multiplied by (1.5x1.5) may be used to evaluate contactors/starters in Area 7 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} \leq 1.5g$ and $bA_{33Hz} \leq 1.0g$, then contactors/starters in Area 7 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by J. K. Smith Date 4-6-94
Reviewed by _____ / Date _____

6.4 #248

A-RE RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT LAURENCE BERKELEY UNIT 1

System MAKEUP AND PURIFICATIONPage 1 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MUL-6420 (BKR BF1616)	E-498 SHT. 65A, 65B	DS	6.E. TYPE SB-9 CTRL SW IN CD FIG A. A=6, RM=428, EL=603.	NV
"	<u>33</u> , <u>33</u> , <u>33</u> <u>DO</u> , <u>DN%</u> , <u>AO</u> ,		LIMIT TORQUE LIMIT SW IN MV6420. A=7, RM=225, EL=565.	NV
"	<u>33</u> <u>ac</u>		LIMIT TORQUE TORQUE SW IN MV6420. A= 1 RM= 225, EL= 565	NV
"	STOP		PEES CAT # 01461-202 IN NV6420 A=7, RM=225, EL=565	NV
"	OPEN CLOSE		PEES CAT # 03845-000 IN NV6420. (SEE ABOVE)	NV
"	<u>CS</u> OPEN, <u>CS</u> CLOSE		CUTLER-HAMMER TYPE E30 ON CS703. A=7, RM=505, EL=623	NV
"	OL		(W) OVERLOAD RELAY CONTACTS 110 MCC FIG A. A=6, RM=428, EL=603	CA8

- Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by D.K. Loh / Date 4/4/94
Reviewed by _____ / Date _____

6.4 #248

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATIONPage 2 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MU-LA20	E-49B SHTS 65A & 65B	<u>42a</u> , <u>42b</u> , <u>42c</u> , <u>O</u> , <u>C</u> , <u>C</u> , <u>42b</u> , <u>O</u>	(W) L-56 AUX SW FOR STARTER IN MCC FIGA. (SEE ABOVE)	GERS-MCC.9 (AREA 6) (SEE pg 3)
"	"	<u>42</u> , <u>42</u> <u>O</u> , <u>C</u>	(W) SERIES A200 SIZE 1 STARTER IN MCC FIGA, (SEE ABOVE)	GERS-MCC.9 (AREA 6) (SEE pg 3)

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. L. / Date 11/6/74
 Reviewed by _____ / Date _____

C.E #248

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATION

Page 3 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT

GERS-MCC.9 (AREA 6)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 6; 603', and 585'.

The effective grade for Area 6 is 573'.

Since $603' - 573' = 30'$, the ground spectra multiplied by (1.5×1.5) may be used to evaluate contactors/starters in Area 6 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} \leq 1.5g$ and $bA_{33Hz} \leq 1.0g$, then contactors/starters in Area 6 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Schaff Date 4-6-95
Reviewed by _____ / Date _____

VALVE TO REMAIN OPEN
DURING PERIOD OF
STRONG SHAKING,

A-4E RELAY SCREENING AND EVALUATION
FORM E-4 - RELAY TABULATION
PLANT L-445-BFCCF UNIT 1

E-4 #249

System MAKEUP AND PURIFICATION

Page 1 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MU-6422 (BAR. BF1108)	E-49B SHT. 60A, 60B	DS	GE TYPE SB-9 CTRL. SW IN CDFIA-1, A=7 RM=427, EL=603	NV
"	<u>33</u> , <u>33</u> , <u>33</u> <u>60</u> , <u>60%</u> , <u>60</u>		LIMITORQUE LIMIT SW IN MV6422. A=7, RM= 236, EL=565	NV
"	<u>33</u> , <u>33</u> <u>60</u> , <u>60%</u> , <u>60</u>	to tc	LIMITORQUE TORQUE SW IN MV6422. (SEE ABOVE)	NV
"	STOP		REES CAT# 01461-202 IN NV6422. A=7, RM= 236, EL=565	NV
"	OPEN CLOSE		REES CAT# 03845-000 IN NV6422 (SEE ABOVE)	NV
"	<u>CG</u> , <u>CG</u> OPEN, CLOSE		CUTLER-HAMMER TYPE E30 ON C5717. A=7, RM= 505, EL= 623.	NV
"	OL		(W) OVERLOAD DELAY CONTACTS IN MCC F11A A=7, RM=427, EL = 603	CA8

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- EA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS _____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Smith / Date 4/6/94
Reviewed by _____ / Date _____

G-4 #249

A-46 RELAY SCREENING AND EVALUATION
 FORM G-4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATIONPage 2 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MCC-6422	E-49B SHTS 60A & 66B	$\frac{42a}{O}$, $\frac{42b}{C}$, $\frac{42a}{C}$ $\frac{42b}{O}$	(W) L-56 AUX CONTACT FOR STARTER IN MCC FIIA. (SEE ABOVE).	GERS-MCC. 9 (AREA 7) (SEE PG 3)
		$\frac{42}{O}$, $\frac{42}{C}$	(W) SERIES A200 SIZE 1 STARTER IN MCC FIIA. (SEE ABOVE)	GERS-MCC. 9 (AREA 7) (SEE PG 3)

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Gifford Date 4/6/94
 Reviewed by _____ / Date _____

6.4 #249

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAKEUP AND PURIFICATION

Page 3 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

GERS-MCC.9 (AREA 7)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 7; 603', and 565'.

The effective grade for Area 7 is 562'.

Since $603' - 562' = 41'$, the ground spectra multiplied by (1.5x1.5) may be used to evaluate contactors/starters in Area 7 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} \leq 1.5g$ and $bA_{33Hz} \leq 1.0g$, then contactors/starters in Area 7 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Griff Date 4-6-94
Reviewed by _____ / Date _____

THIS VALVE MUST BE CAPABLE
OF OPENING DURING THE PERIOD
OF STRONG SHAKING.

G.4 #250

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System AUX FEEDWATER +
125VDC DISTRIBUTION

Page 1 OF 8

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
DINA (MCC FOR FEED TO MS106)	E6 SHT3	NONE	NONE	NA
MS-106, D135, HIS 106A,	E-416B SHT 54A & 54B	2S	G.E. TYPE SB-9 DISCONNECT SW	NA
PSKH935A, PSL106A,B,C,D	"	$\frac{33}{60\%}$, $\frac{33}{60}$, $\frac{33}{90}$	IN COEHC. A=8 RM=304, EL=585	NV
"	$\frac{33}{60\%}$	$\frac{33}{60}$	LIMIT TORQUE LIMIT SW IN MVO106. A=8 RM=500, EL=623	NV
"	$\frac{33}{60}$, $\frac{33}{60}$	$\frac{33}{60}$	LIMIT TORQUE TORQUE SWITCH. A=8, RM=500, EL=623	NV
"	$\frac{33}{60}$	$\frac{33}{60}$	LIMIT TORQUE LIMIT SW IN MVOH12 A=9, RM=220, EL=505	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.L. Ladd Date 10/13/94
Reviewed by _____ Date _____

SFE MOD 91-0043 FOR
CHANGES TO 33Y, PSL4930A
TB44, C-4
AND PSL4930X1

6.4 #250

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System AUX. FEEDWATER &
125 VDC DISTRIBUTION

Page 2 OF 8

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MS-106, D135, HIS106A, PSL4930A, PSL106A, E, G, P	E-46B SHT 54A & 54B	PB RESET-BLOCK	REES CAT # 00294-000 IN NDEIIC. A=3, RM=304, EL=385	NV
"	"	<u>CO</u> OPEN), <u>CS</u> CLOSE	CUTLER-HAMMER TYPE 30B ON C5706. A=7, RM=505, EL=623	NV
"	PSL4930X1	"	AGASTHT SERIES E7014PD IN RC3701. A=7 RM=314, EL=585	GERS- RLY. PNT. 7 (SEE Pg 6)
R1, R2, R3, R4	"	"	DEUTSCH TYPE 4AP IN CDEIIC. A=3, RM=304 EL=585	LEVEL 2 (A SPECIFIC RELAY QUIL (SEE Pg 7)

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by J.K. Lark Date 5/15/95
 Reviewed by _____ / Date _____

6.4 #250

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System ANX FEEDWATER &
125 KDC DISTRIBUTION

Page 3 OF 8

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MS-106, D135	E-46B-3473	PGL	STATIC-O-RING	CA - SUPPLYING
HIS106A, D147501,	54A & 54B	4930A	Model: 12V2-Fil-M2-	AN AGASTAT
REL106A, E, C&L			CIA/LTTX3. A=7, Rm=237, El=565	RELAY WITH 60SECOND DELAY, WILL NOT INTERFERE WITH OPENING OR INITIATE A SUBSEQUENT CLOSING.
"		PSL106A, PSL106B, PSL106C, PSL106D	STATIC - O-RING MODEL 6TA-R4-NCIA-JTTX8. A=7, RM=237, EL=565	SAT (SEE PG 6)
SF-0038 SH. 13	HIS106AB	CUTLER HAMMER E30DX6B550G30LP4K INC5717 TA,TC,TRA,TSA,TB,TD,TRB,TSB/ CCC# KDN7182A /013 K1,K2,K3 K61,K62,K63 K45, K105	NV STRUTHERS-DUNN 219 XD X162 C5762A	NV SEE 6.4#312

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by J. W. Miller Date 3-2-05
Reviewed by Date

G.4 #250

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT JANIS-BESSE UNIT 1

System

AUX FEEDWATER &
125 VAC DISTRIBUTION

Page 4 OF 8

Subsystem/Component

Ref Dwg(s)

Contact/Contact Group

Relay
Type and
Location

SAT*

MS106 D135 HIS100A	B400 SHT	<u>H2a</u> <u>42a</u> <u>O</u> <u>C</u>	(W) L-56 AUX. SWITCH FOR A200 SERIES STARTER IN MCC DIN A A = 6 RM = 429 E = 603	GERS-MCC.9 (AREA 6) (SEE PG 8)
RCL4030A, RCL106A, R, C 00	S4A 454B	<u>42b</u> <u>40b</u> <u>C</u> <u>O</u>	(W) SIZE 3 STARTER MODEL A201K3CS IN MCC DIN A. SEE ABOVE.	GERS-MCC.9 (AREA 6) (SEE PG 8)
		<u>40x</u> <u>42x</u> <u>C</u> <u>O</u>	(W) SIZE 3 STARTER MODEL A201K3CS IN MCC DIN A. SEE ABOVE	GERS-MCC.9 (AREA 6) (SEE PG 8)

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. 6-9 Date 12/13/95
Reviewed by _____ Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

G.4 # 153

250

System MAIN/STEAM/AUX FD

Page 8,5

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT
AREA = AUXL7 ELEV = 565'				
EQUIPMENT	MFG.	MODEL NO.	AMP.	>8HZ Setpoint/Nom.
PSL106A	S-O-R	6TA-B4-NX-C1A-JJTTX8	1.0	Y 18#/>900#
PSL106B	S-O-R	6TA-B4-NX-C1A-JJTTX8	1.0	Y 18#/>900#
PSL106C	S-O-R	6TA-B4-NX-C1A-JJTTX8	1.0	Y 18#/>900#
PSL106D	S-O-R	6TA-B4-NX-C1A-JJTTX8	1.0	Y 18#/>900#
PSL107A	S-O-R	6TA-B4-NX-C1A-JJTTX8	1.0	Y 18#/>900#
PSL107B	S-O-R	6TA-B4-NX-C1A-JJTTX8	1.0	Y 18#/>900#
PSL107C	S-O-R	6TA-B4-NX-C1A-JJTTX8	1.0	Y 18#/>900#
PSL107D	S-O-R	6TA-B4-NX-C1A-JJTTX8	1.0	Y 18#/>900#

Nominal Pressure based on steam line pressure seen at S/G exit.

The effective grade for area 7 is 562'

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

Since 565' - 562' = 3' < 40' , the ground spectra multiplied by (1.5 X 1.5) may be used to evaluate these pressure switches.

Natural frequency of each mounting is > 8 Hz (Ref. NED 95-10034)
 The amplification factor for each mounting is 1.0. (Ref. NED 95-10034)

Device Capacity = 10g/ 6g (Ref. NED 95-10034)

Demand = .39g/.15g X 1.5 X 1.5 X 1.0 = 0.88g/0.34g < 10g/ 6g

Therefore these devices may be screened at level 2 as being seismically adequate using relay specific capacity data.

In addition, per memo NED 95-10034, these devices are qualified to current standards and also screen at level 4.

Prepared by J.W.Bald Date 4/28/95

Seismic Capability Engineer J.W.Bald Date 8-18-95

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by N/A / Date _____
 Reviewed by _____ / Date _____

6.4 #250

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System AUX. FEEDWATER @ 125VDC
DIST.

Page 6 OF 8

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

LEVEL 2 SCREENING FOR RC3701

1. Natural frequency of RC3701 is greater than or equal to 8Hz.
2. RC3701 has been given an amplificaton factor (AF) of 4.5
3. RC3701 is located in plant area 7, elevatin 585', which is less than about 40 feet above effective grade (Area 7 effective grade = 562').
4. For this area and elevation Peak GRS = .39g and Ground ZPA = .15g.
5. Seismic capacity for Deutsch 4AX1603 = 6.7g peak and 5g at the ZPA (ref. NED 95-10022, "Seismic Evaluation of Deutsch Relays" and "Justification for Covering Older Deutsch Relays with the 1990 Farwell & Hendricks Report", copies attached).
6. GERS LEVEL for Agastat E7014PD = 10g and ZPA = 4.0g (ref. GERS-RLY-PNT.7)

thus;

$$\begin{aligned} \text{ERS} &= \text{Peak GRS} \times 1.5 \times 1.5 \times \text{AF} \\ \text{ERS} &= 3.94\text{g} \end{aligned}$$

and

$$\begin{aligned} \text{ZPA} &= \text{Ground ZPA} \times 1.5 \times 1.5 \times \text{AF} \\ \text{ZPA} &= 1.52\text{g} \end{aligned}$$

therefore, seismic capacity exceeds seismic demand.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
RV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by W. K. Kelly Date 5/15/95
Reviewed by _____ / Date _____

SCE Review: Jon G. Hark 8/18/95

C-4 #250

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System AUX FEED, + 125VDC
DIST.

Page 7 OF 8

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

LEVEL 2 SCREENING FOR CDE11C

1. Natural frequency of CDE11C is greater than or equal to 8Hz.
2. CDE11C has been given an amplification factor (AF) of 3.
3. CDE11C is located in plant area 8, elevation 585', which is less than about 40 feet above effective grade (Area 8 effective grade = 567')
4. For this area and elevation Peak GRS = .39g and Ground ZPA = .15g
5. Seismic capacity for Deutsch 4AP43AF = 6.7g peak and 5g at the ZPA (ref. NED 95-10022, "Seismic Evaluation of Deutsch Relays" and "Justification for Covering Older Deutsch Relays with the 1990 Farwell & Hendricks Report", copies attached) SEE G.4 # 72).
6. Seismic capacity for an Agastat E7014 = 10g peak and 4g at the ZPA (ref. GERS-RLY-PNT.7).

thus peak Seismic Demand (SD);

$$\begin{aligned} SD &= \text{Peak GRS} \times 1.5 \times 1.5 \times \text{AF} \\ &= .39g \times 1.5 \times 1.5 \times 3 \end{aligned}$$

$$SD = 2.63g$$

and ZPA Seismic Demand (SD)

$$\begin{aligned} SD &= \text{Ground ZPA} \times 1.5 \times 1.5 \times \text{AF} \\ &= .15g \times 1.5 \times 1.5 \times 3 \end{aligned}$$

$$SD = 1.01g$$

therefore, seismic capacity exceeds seismic demand.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by J. K. Hank Date 5/15/95
Reviewed by _____ / Date _____

SCC Review: Jon G. Hark 8/18/95

c. #250

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System Aux Feed & 125 VAC
DIST.

Page 8 of 8

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT
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GERS-MCC.9 (AREA 6)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 6; 603', and 585'.

The effective grade for Area 6 is 573'.

Since $603' - 573' = 30'$, the ground spectra multiplied by (1.5×1.5) may be used to evaluate contactors/starters in Area 6 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} \leq 1.5g$ and $bA_{33Hz} \leq 1.0g$, then contactors/starters in Area 6 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by D. K. Loh / Date 12/13/94
 Reviewed by _____ / Date _____

A-4E RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT Louisville UNIT 1

6.4 #251

System REACTOR COOLANT

Page 1 OF 57

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
RC-2 (BKR, BF1260)	E-52B SHT. 10	DS	6.E TYPE SB-9 CTRL SW IN CDF12B. A=6, RM=319, EL=585	NV
		OL	⑥ OVERLOAD RELAY CONTACT IN MCC F12B. A=6, RM=319, EL=585	CA - CHATTER WITH NOT ENERGIZE STARTER
		33% 100%, 33% 100%, 33% 100%	LIMIT TORQUE LIMIT SW IN MMRC 2. A=9 RM FORV, EL=644	NV
		33% 100%, 33% 100%	LIMIT TORQUE TORQUE SW IN MMRC 2 (SEE ABOVE)	NV
		OPEN, NEUTRAL, CLOSE	⑥ TYPE OTZ CTRL. SWITCH ON ARE F12B A=6, RM=319, EL=585	NV
		CS OPEN/AUTO, CLOSE	ACROS 3W TYPE CMC ON C5705. A=1, RM=505, EL=623	NV

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by JK Date 4/19/94
 Reviewed by _____ Date _____

6.4 #251

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System Reactor CoolantPage 2 OF 5

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
RC-2	E-52B SHT. 10	PSLX	DEUTSCH TYPE HAP IN CDF12B A=6, RM=319, EL=585	CA4 (i.e., 33/tc 33/ao)
"		PSH X	DEUTSCH TYPE HAX IN CDF12B (SEE ABOVE)	CA- IT HAS BEEN SHOWN THAT UNDERR SPRAY DURING STRIK SHAKING IS ACCEPTABLE. (SEE CASE ON Pg 5)
"	$\frac{4}{3}a$, $\frac{4}{3}b$ 0, C		(W) 156 Hax Contact FOR STARTER IN MCC FR2B. A=6, RM=319, EL=585	CA8
"	$\frac{4}{3}$, $\frac{4}{3}c$		(W) SERIES H200 SIZE 1 STARTER IN MCC FR2B. (SEE ABOVE)	MCC-GERS. 9 (AREA 6) (SEE Pg 6)

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.L. Lipp Date 4/19/94
Reviewed by _____ Date _____

6.4 #251

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System REACTOR COOLANTPage 3 OF X 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
RC-2 (BKR, BF1260)	E-52B SH 59 M-530-312	<u>PSL</u> RC2-1	PBR40-E044-2 IN C5759D	CA (SEE RSLX)
"		<u>PSH</u> RC2-1	PBR40-E044-2 IN C5759E	CA \$2
M-530-309		<u>86</u> <u>SV</u>	PBR40-E070-1 IN C5759D	CA \$2
"		<u>27X</u> <u>B</u> + <u>27-IP</u> , <u>27-IN</u> <u>B</u> , <u>B</u>	PBR40-E071-1 IN C5759D	CA - WILL CAUSE VALVE TO STAY IN DESIRED POSITION

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatier acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by
Reviewed by

[Signature] Date *7/25/95*

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System REACTOR COOLANT

Page 4 of 7

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT
RC-2 (BKR, BF1260)	M-530-309 M-533-85	62/0SV 86/0SV	Timed Delay Relay IN CS761C	CA - NC CONTACT CHATTER WILL NOT ENERGIZE 86/1SV
		86/0SV	PB R40-E071-1 IN CS761C	CA #2
	M-530-309 M-533-85	86/RT 86/TT 86/GCT	[PB R40-E070-1] [IN CS761C]	CA \$1 CA \$2 CA \$2
	M-533-85	59/NP-1	PB R40-E041-1 IN CS761D	CA \$1
M-533-79 E-42B SH31	TT		URGEON THERMOPLAY IN CS757A	CA \$2
M-533-81	GRT		Power plant cold SF10/IN CS750A	CA \$2

59/NP-1

CA \$1 - CHATTER ACCEPTABLE - 86/RT NORMALLY IS ENERGIZED AND CLOSED
 CHATTER OPEN WILL NOT INITIATE SPRAY

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by Asst. Plant Manager / Date 10/26/04
 Reviewed by Asst. Plant Manager / Date 10/26/04

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System REACTOR Coolant

Page 5 of 5

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Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT
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RC-2
(BKR, BF1206)

CA#2: Chatter acceptable, Pressurizer Spray valve may open and remain open for the duration of the SSE. This transient was modeled on the simulator and judged acceptable. The additional pressure drop of 40# did not result in any unacceptable conditions or safety system activations.

-
- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
 NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
 GERS - Seismically adequate based on GERS ____; include GERS number.
 NA - Component not affected by relays.
 CR - Corrective action required.
 OA - Operator action.
 - No entry necessary.

Prepared by G. L. Blak / Date 4/15/98
 Reviewed by John / Date 4/15

C.S # 251

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System REACTOR Coolant

Page 6 OF 7

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

GERS-MCC.9 (AREA 6)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 6; 603', and 585'.

The effective grade for Area 6 is 573'.

Since $603' - 573' = 30'$, the ground spectra multiplied by (1.5x1.5) may be used to evaluate contactors/starters in Area 6 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} < 1.5g$ and $bA_{33Hz} < 1.0g$, then contactors/starters in Area 6 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- RV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Lippert Date 4/14/94
Reviewed by _____ / Date _____

INFORMATION
IN SUPPORT OF:

G.4#251

Mr. Shadw.

Please find the attached data package from the requested simulation run of 4/21/95. Two runs were completed. The first run failed the spray valve open for 30 seconds, coincident with a Reactor Trip.

The second shows the "normal" pressure drop post trip, with no spray valve failure. Please note on Plant 7 that the RCS Normal Range Pressure indicates approximately 40 psig less than it does for a "normal" trip. Based on this data, it would appear that the spray valve failing full open for 30 seconds, coincident with the Reactor Trip, post no moderate burden. No SFAS actuation occurred. Should you have any questions please contact me at extension 7124.

Thank you

W.H. Gandy

A-4E RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT LOUIS REICHE UNIT 1

6.4 #252

System REACTOR COOLANT

Page 1 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type & Location	SAT*
RC-11 (BKR. BE1602)	E-52B SHT. 12	DS	GE TYPE SB-9 CTRL SW IN CDE16B, A=8 RM=402, EL=603	NV
"	$\frac{33}{100}$, $\frac{33}{100}$, $\frac{33}{100}$	LIMIT TORQUE LIMIT SW IN MURCII	NV	
"	$\frac{33}{100}$, $\frac{33}{100}$	A=9 RM=407 EL=640		
"	$\frac{33}{100}$, $\frac{33}{100}$	LIMIT TORQUE TORQUE SW IN MURCII. (SEE ABOVE)	NV	
"	OPEN CLOSE	W TYPE OTI PB ON MCC E16B, A=8 RM=402, EL=603.	NV	
"	OPEN, CLOSE	CUTTER-HAMMER TYPE E20 SW ON C5705, A=7, RM=505, EL=623	NV	

- Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NE - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by JFK / Date 4/19/94
Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System _____

Page 2 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
E-52B SHT	42a, 42b 12	$\frac{1}{O}, \frac{C}{C}$	(W) L-56 AUX CONTACTS FOR STARTER IN MCC E-16B, A=8 RAI=40, EL=603	GERS-MCC .9 (AREA B) (SEE PG 3)
"	42, 42 1/2, 1/2	$\frac{1}{O}, \frac{C}{C}$	(W) SERIES A200 SIZE 1 STARTER IN MCC E16B. (SEE ABOVE)	GERS-MCC .9 (AREA B) (SEE PG 3)
"	0		(W) OVERLOAD RELAY CONTACTS IN MCC E16B (SEE ABOVE)	CAB

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Lippert Date 4/19/94
 Reviewed by _____ / Date _____

c.e #252

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System REACTOR COOLANT

Page 3 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
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GERS-MCC.9 (AREA 8)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 8; 603', 585', 565' and 545'.

The effective grade for Area 8 is 567'.

Since $603' - 567' = 36'$, the ground spectra multiplied by (1.5×1.5) may be used to evaluate contactors/starters in Area 8 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} \leq 1.5g$ and bA_{33Hz} is $< 1.0g$, then contactors/starters in Area 8 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Lipp Date 6-5-95
Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 2

System REACTOR COOLANTPage 1 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
RC-239B	E-52B SHT 14	DS	GE TYPE SB-7 CTRL SG H) CDFIA-1, A=9, RM= 427, EL= 603	NV
"	33 33 33 % 64% %	20 20 20	LIMITORQUE UNIT SW IN MVO239B A=9 RM=315, EL = 585	NV
"	33 33 % 64%	% tc	LIMITORQUE TORQUE SW IN MVO239B. A=9, RM=315, EL=585	N.
"	OPEN, NEUTRAL CLOSE	(N)	TYPE OTL SELECTOR SW ON ARC FIH A=7, RM=427, EL=602	NV
"	CLOSE CLOSE OPEN		CUTLER-HAMMER TYPE E30. ON C5705 A=7 RM=305, EL=603	NV

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Lafferty / Date 4/19/94
 Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

6.4 #253

System REACTOR Coolant

Page 2 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
RC-239B	E-52B SHT. 14	OL	(W) OVERLOAD RELAY IN MCC FI/A, A=7 RM=407, EL=603	CAB
"	$\frac{42a}{O}$, $\frac{42b}{C}$, $\frac{42c}{C}$, $\frac{42b}{C}$		(W) L56 AIR SW FOR STARTER IN MCC FI/A. (SEE ABOVE)	GERS-MCC.9 (AREA 7) (SEE Pg 3)
"	$\frac{42}{O}$, $\frac{42}{C}$		(W) SERIES A 200 SIZE 1 STARTER IN MCC FI/A, (SEE ABOVE)	GERS-MCC.9 (AREA 7) (SEE Pg 3)

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Smith Date 4/19/94
 Reviewed by _____ Date _____

C.4 #253

A-46 RELAY SCREENING AND EVALUATION
 FORM C.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System REACTOR COOLANT

Page 3 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

GERS-MCC.9 (AREA 7)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 7; 603', and 565'.

The effective grade for Area 7 is 562'.

Since $603' - 562' = 41'$, the ground spectra multiplied by (1.5x1.5) may be used to evaluate contactors/starters in Area 7 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &\approx 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} \leq 1.5g$ and bA_{33Hz} is $\leq 1.0g$, then contactors/starters in Area 7 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by J.K.W. Date 6-5-95
 Reviewed by _____ / Date _____

6.4 254

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT LOUIS PISSE UNIT 1

System REACTOR COOLANT

Page 1 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT [*]
RC-240A (EKR BE1181)	E-52B SHT. 15	DS	GE TYPE SB-9 CTRL SW IN ODE118-2 A=88, RM=304 EL=585	NV
"		33% 700, 33% 700, 33% 700%	LIMIT TORQUE LIMIT SW IN MV0240A, A=9, RM=315, EL=585	NV
"		33% 700, 33% 700	LIMIT TORQUE TORQUE SW IN MV0240A. (SEE ABOVE)	NV
"		OPEN, NEUTRAL, CLOSE	(W) TYPE OTL SECTOR SW ON MRC E11B. A=8, RM 304, EL=585	NV
"		OPEN, CLOSE	CUTTER-HAMMER TYPE E30 SW ON C5717 A=7, RM=505, EL=623.	NV

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Loh Date 10/13/94
Reviewed by _____ Date _____

6.4 #254

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System REACTOR COOLANTPage 2 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
FC-240A	E-52B SHT 15	$\frac{42a}{O}$, $\frac{42b}{C}$, $\frac{42a}{C}$, $\frac{42b}{O}$	(W) TYPE L-56 AUX SW FOR STARTER IN MCC E11B. A = 8, RM = 304, EL = 585	GERS-MCC.9 (AREA 8) SEE Pg 4
"	"	$\frac{42}{O}$, $\frac{42}{C}$	(W) SERIES A 200 SIZE 1 STARTER IN MCC E11B. (SEE ABOVE)	GERS-MCC.9 (AREA 8) SEE Pg 4
"	OL		(W) OVERLOAD RELAY CONTACT IN MCC E11B (SEE ABOVE)	CAB

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by D. Kunkel Date 10/13/94
 Reviewed by _____ Date _____

6.4 #254

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System Reactor ControlPage 3 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
RC24014	E-52B SHT	KA + KKB 15	DEUTSCH 4AP	CA4 OPEN CUT: 42a/0, CS OPEN, NEUTRAL CLOSE - LIMIT 0/0G.
		BA + BB (LRI)	AROMAT ST1EL2 DC24V FURMIAIR	CA4 SAME AS ABOVE
			C5763C & C5762D A=7, RM=502, EL=623	C5763C & C5762D A=7, RM=502, EL=623

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by Burke Date 4/84
 Reviewed by / Date

G.4 # 254

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE

System REACTOR COOLANT

Page 4 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
---------------------	------------	-----------------------	-------------------------	------

GERS-MCC.9 (AREA 8)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 8; 603', 585', 565' and 545'.

The effective grade for Area 8 is 567'.

Since $603' - 567' = 36'$, the ground spectra multiplied by (1.5x1.5) may be used to evaluate contactors/starters in Area 8 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} \leq 1.5g$ and $bA_{33Hz} \leq 1.0g$, then contactors/starters in Area 8 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS ____; include GERS number.

NA - Component not affected by _____.

CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by W. K. Smith Date 10/13/94
Reviewed by _____ / Date _____

VALUE TO REMAIN CLOSED DURING
PERIOD OF STRONG SHAKING.

6.4 # 255

A-4E RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT 2AUS-BIESE UNIT 1

System REACTOR COOLANT

Page 10F-3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
RC-2A, HIS RC2-6 (PSVRC2A)	E-52B SHT.13 J-102 SHT.53A, 53B	<u>CS CLOSE</u> , <u>CS OPEN</u> ← <u>CS LOCK</u> ; (HISRC2-6) <u>OPEN</u>	MICRO SWITCH TYPE CMC ON CS705, A=7 RM= 502 EL= 623	NV
		4	AGUSTAT GP SERIES CONTROL RELAY STYLE EGPD001 IN RC4606 A=6, RM=428, EL- 603,	GERST- RLY- ARS. (SEE P- 3)
SOURCE OF POWER	CBD2N12	W NON-HATO CKT BKR EBC100N SEE G.H # 54	NV	
4A	SAME AS 4		CA - ULV TO REMAIN CLOSE DURING STRONG SHAKING	

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. H. L., Date 5/10/95
Reviewed by , Date

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS FESSE UNIT 1

System REACTOR COOLANT

Page 2 of 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
RC-2A, HISRC2-6	E-52B SH.13 M-530-312 M-530-309	PSH/RC2-5	PB/R40-E044-2 CR(note 1) IN C5759D	
		PSL/RC2-5	PB/R40-E044-2 CA\$1 IN C5759D	
		27X/B,27-1P/B, 27-1N/B	PB/R40-E071-1 CA\$2 IN C5759D	
		NNI POWER SUPPLIES (note 2)		CA\$2

CA\$1 = Chatter Acceptable - Chatter in close circuit is acceptable, PORV is desired to remain closed during period of strong shaking to prevent loss of RC inventory in the event offsite power is lost (SSEL note 50).

CA\$2= Chatter Acceptable - Chatter of the 27 contacts or chatter or loss of the NNI power supplies will cause the PORV to close (if open). Automatic control could be lost during the period of strong shaking, but manual control is unaffected. Per SSEL note 50 all that is required is that the PORV remain closed if offsite power is lost, therefore the control mode is unimportant.

Notes:

1. Corrective action required as seismic information is unavailable for C5759D.
2. These power supplies may contain thermal switches and on/off or overload switches. These devices are not specifically identified and the power supply is assumed to fail for this evaluation.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS _____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by

Reviewed by

/ Date

Date

L.W.Hall / Date *3/3/95* -

C.E #255

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System REACTOR Coolant

Page 3 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

LEVEL 2 SCREENING FOR RC4606

1. Natural frequency of RC4606 is greater than or equal to 8Hz.
2. RC4606 has been given an amplification factor (AF) of 3.
3. RC4606 is located in plant area 6, elevation 603', which is less than about 40 feet above effective grade (Area 6 effective grade = 573')
4. For this area and elevation Peak GRS = .39g and Ground ZPA = .15g
5. Seismic capacity for a non-operate Agastat EGP/GP = 3.3g peak and 1.32g at the ZPA (ref. GERS-RLY-ARS.4).

thus Peak Seismic Demand (SD);

$$SD = \text{Peak GRS} \times 1.5 \times 1.5 \times AF$$

$$SD = 2.63$$

and ZPA Seismic Demand (SD);

$$SD = \text{Ground ZPA} \times 1.5 \times 1.5 \times AF$$

$$SD = 1.01$$

therefore, seismic capacity exceeds seismic demand.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
HV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by J.H. Hook Date 5/15/95
Reviewed by _____ / Date _____

SCE Review: Jon H. Hook 8/18/95

6.4 #256

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT 2A15-RECEF UNIT 1

System REACTOR COOLANT

Page 1 OF 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT°
RC-4608A (SV4608A)	E-52.B SHT. 71A	08	MICRO SWITCH TYPE CANC. ON C5799, A=7 RM=505, EL=623 (MAINTAINED CONTACTS)	NV

- Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- RV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared By W.H. Sifford 4-22-94
Reviewed By _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT 2A/5-PSESF UNIT 1

6.4 #257

System REACTOR COOLANT

Page 1 OF 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
RC-4610A (SV4610A)	E-52B SHT. 71A	CS	MED SWITCH TYPE CMC ON C5798, A=7 RM=505, EL=623, (MAINTAINED CONTACTS)	NV

- Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- RV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by Mike Lingle 4-22-94
 Reviewed by _____ / Date _____

6.4 # 258

A-4E RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System REACTOR COOLANTPage 1 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
RC-4632 (SV4632)	E-56B SHT 47B	CS	CUTLER HAMMER TYPE E30 CTRL SW ON C5705. A=7, RM= 505, EL=623	NV
		4	AGASTAT GP SERIES GP RELAY STYLE # EGP001 IN RC4607 A=7, RM= 427, EL= 603.	GERS-R, ARS-4 (SEE Pg.)

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- RV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Babb Date 5/5/95
Reviewed by _____ Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System PENICILLIUM Content

Page 2 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
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LEVEL 2 SCREENING FOR RC4607

1. Natural frequency of RC4607 is greater than or equal to 8Hz.
2. RC4607 has been given an amplification factor (AF) of 3.
3. RC4607 is located in plant area 7, elevation 603', which is less than about 40 feet above effective grade (Area 7 effective grade = 562')
4. For this area and elevation Peak GRS = .39g and Ground ZPA = .15g
5. Seismic capacity for a non-operate Agastat EGP/GP = 3.3g peak and 1.32g at the ZPA (ref. GERS-RLY-ARS.4).

thus Peak Seismic Demand (SD);

$$\begin{aligned} SD &= \text{Peak GRS} \times 1.5 \times 1.5 \times \text{AF} \\ SD &= 2.63 \end{aligned}$$

and ZPA Seismic Demand (SD);

$$\begin{aligned} SD &= \text{Ground ZPA} \times 1.5 \times 1.5 \times \text{AF} \\ SD &= 1.01 \end{aligned}$$

therefore, seismic capacity exceeds seismic demand.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS ____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by J.H. Hark Date 5/5/95
 Reviewed by _____ / Date _____

SCE Review: J.H. Hark 5/5/95

A-65 RELAY SCREENING AND EVALUATION
FORM E-4 - RELAY TABULATION
PLANT 2A/1S-RISE UNIT I

E-4 # 260

System SERVICE WATER

Page 1 OF 5

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Delay Type and Location	SAT*
SW-2944 (SV2944)	E-4B&34732	4/0 CLOSE, OPEN	REES CNT # 04062-032 IN NV2944, A= INTAKE, RM= 52, EL= 576	NV
		4	OBITSCH TYPE 4AP IN RC3004. A= INTAKE, RM= 50, EL= 585	LEVEL 2 (USING SPECIFIC RELAY QUALIF. DATA - SEE PAGE 2 AND ATTACHMENTS)

- Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- RV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____ ; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Schaff Date 5/18/95
Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE

G.4 # 260

System SERVICE WATER

Page 2 OF 5

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
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LEVEL 2 SCREENING FOR RC3004

1. The natural frequency of RC3004 is less than 8Hz.
2. RC3004 has been given an amplification factor (AF) = 7.
3. RC3004 is located in Plant Area Intake (I) on the 585' elevation.
4. For this Area and Elevation the Median-Centered Floor Response Spectra (FRS) is .9556g peak and 0.464g at the ZPA.
5. The seismic capacity of a Deutsch 4AP43AF is 11.8g peak and 6.99g at the ZPA (ref. NED 95-10043 and "Justification for Covering Older Deutsch Relays with the 1991 Farwell & Hendricks Report", copies attached).

Thus, peak seismic demand (SD); *copy up*
SD = FRS * SAFETY FACTOR * AF
SD = .9556g * 1.5 * 7
SD = 10.03g

And, ZPA seismic demand (SD);
SD = .ZPA * SAFETY FACTOR * AF
SD = .464g * 1.5 * 7
SD = 4.87g

Therefore, seismic capacity exceeds seismic demand.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by W.H. Smith Date 5/18/95
Reviewed by _____ / Date _____

SCE Review Jon H. Head 8/18/95

JUSTIFICATION
FOR
COVERING OLDER DEUTSCH RELAYS
WITH THE 1991
FARWELL & HENDRICKS REPORT

The Farwell & Hendricks report which is referenced in NED 95-10043 qualified both DC and AC Deutsch Series 4A rotary relays. Using code numbers printed on the qualified relays' case, it was determined that the DC relays were manufactured in 1987 and the AC relays were manufactured in 1990. To extend the Farwell & Hendricks seismic testing to relays manufactured prior to 1987, Deutsch Relays Inc. was contacted to learn about any changes made in these relays between the years 1974 and 1987. This contact is documented by Toledo Edison letter NED 95-30004, dated 1-23-94, and Deutsch's response, dated 2-2-95 (copies of both letters are attached).

The response from Deutsch Relays Inc., indicates there were no changes in the Series 4A rotary relays during the time period in question. In fact, changes in the relay housing material and in the hermetic sealing process, which occurred in 1994, would not change the g level where contact chatter is exhibited. Therefore, the results of the Farwell & Hendricks report referenced in NED 95-10043 will be used as the seismic capacity for Deutsch model 4AP43AF installed in RC3004.



A Centerior Energy Company

EDISON PLAZA
300 MADISON AVENUE
TOLEDO, OHIO 43652-0001

January 23, 1995

NED 95-30004

Deutsch Relays Incorporated
65 Daly Road
East Northport, New York 11731

Attention: Mr. Mike Moutuz, QA Manager

Subject: Deutsch Series 4A Rotary Relays

Dear Mr. Moutuz:

Davis-Besse Nuclear Power Station uses the Deutsch Series 4A rotary relay for a variety of control applications. In 1990, we contracted the services of Farwell & Hendricks, Inc. to perform environmental qualification testing on these relays (model numbers 4AP43AF and 4AX1603). This testing included Seismic Qualification per IEEE 344-1975.

We would like to apply the results of this Seismic Qualification to relays which were purchased and installed prior to the Farwell and Hendricks testing. Based on codes stamped to the sides of the tested relays (code numbers 8704 and 9025), we believe they were manufactured in 1987 or 1990. Extending the results of the Farwell and Hendricks to earlier vintage relays requires a comparison between the tested and the earlier vintage relays. To assist in making this comparison, we would like to know of any changes in the manufacturing process of these relays between the dates of 1974 and 1987 which may affect seismic characteristics and seismic performance.

This letter is a follow-up to the telephone conversation between yourself and Mr. William Kreinbihl on January 18, 1995. Questions concerning this request may be directed to William Kreinbihl at (419) 321-8246.

Sincerely,

A handwritten signature in cursive script, appearing to read "J. H. Lash".

J. H. Lash
Manager - Design Engineering

WJK/lmk

DEUTSCH RELAYS INC.

65 DALY ROAD • EAST NORTHPORT, NEW YORK 11731 • PHONE (516) 429-6000 • FAX (516) 429-6015

Pg 5 of 5

FEBRUARY 2, 1995

TOLEDO EDISON
EDISON PLAZA
300 MADISON AVE
TOLEDO, OH 43652-0001

ATTENTION: MR. WILLIAM KREINBIHL
SUBJECT: DEUTSCH SERIES 4A ROTARY RELAYS
REFERENCE: NED 95-30004

DEAR MR. KREINBIHL,

IN RESPONSE TO THE REFERENCED LETTER, WE ARE PROVIDING THE FOLLOWING INFORMATION:

1. DESIGN AND MANUFACTURING CHANGES.

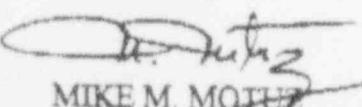
OUR RECORDS SHOW THAT IN APRIL 1994, RELAY HOUSING MATERIAL WAS CHANGED FROM BRASS TO CUPRONICKEL, AND HERMETIC SEALING PROCESS BETWEEN THE HOUSING AND THE HEADER WAS CHANGED FROM SOLDER TO LASER SEALING.

2. RELAYS IN YOUR INVENTORY DATE CODED 8704 AND 9025.

WE RECOMMEND THAT THESE RELAYS BE RECERTIFIED BY RETESTING TO ELECTRICAL AND HERMETIC REQUIREMENTS PRIOR TO INSTALLATION INTO THE NEXT HIGHER ASSEMBLY.

SHOULD YOU REQUIRE ANY ADDITIONAL INFORMATION ON THIS SUBJECT, PLEASE DO NOT HESITATE TO CONTACT ME ON EXTENSION 262.

REGARDS,


MIKE M. MOTTER

COPY: J BEDELL



A-46 RELAY SCREENING AND EVALUATION
 FORM E-4 - RELAY TABULATION
 PLANT LOUIS RICCI UNIT 3

E-4 #261

System SERVICE WATER

Page 1 OF 5

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
SW-2945 (SV2945)	E-48B SHT 32	40 OPEN, CLOSE	REES CAT# C4862-032 IN NV2945 A= INTAKE, RM= 52, EL= . 576	NV

" " " H DEUTSCH TYPE 4AP LEVEL 2
 IN RC3004, A= (USING Specific
 INTAKE, RM= 50, EL= RELAY Qualif.
 585 DATA - SEE Pg 2 &
 Attachments)

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- 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.
- No entry necessary.

Prepared by W.H. Siegfried 5/18/95
 Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE

G.4 # 261

System SERVICE WATER

Page 2 of 5

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

LEVEL 2 SCREENING FOR RC3004

1. The natural frequency of RC3004 is less than 8Hz.
2. RC3004 has been given an amplification factor (AF) = 7.
3. RC3004 is located in Plant Area Intake (I) on the 585' elevation.
4. For this Area and Elevation the Median-Centered Floor Response Spectra (FRS) is .9556g peak and 0.464g at the ZPA.
5. The seismic capacity of a Deutsch 4AP43AF is 11.8g peak and 6.99g at the ZPA (ref. NED 95-10043 and "Justification for Covering Older Deutsch Relays with the 1991 Farwell & Hendricks Report", copies attached).

Thus, peak seismic demand (SD); *copy up*

$$SD = FRS * SAFETY FACTOR * AF$$

$$SD = .9556g * 1.5 * 7$$

$$SD = 10.03g$$

And, ZPA seismic demand (SD);

$$SD = .ZPA * SAFETY FACTOR * AF$$

$$SD = .464g * 1.5 * 7$$

$$SD = 4.87g$$

Therefore, seismic capacity exceeds seismic demand.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS ____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by W.H. Smith Date 5/18/95
Reviewed by _____ Date _____

SCE Review: J.W.B. Moh Date 5/18/95

G.4# 261

Ag 3 of 65

JUSTIFICATION
FOR
COVERING OLDER DEUTSCH RELAYS
WITH THE 1991
FARWELL & HENDRICKS REPORT

The Farwell & Hendricks report which is referenced in NED 95-10043 qualified both DC and AC Deutsch Series 4A rotary relays. Using code numbers printed on the qualified relays' case, it was determined that the DC relays were manufactured in 1987 and the AC relays were manufactured in 1990. To extend the Farwell & Hendricks seismic testing to relays manufactured prior to 1987, Deutsch Relays Inc. was contacted to learn about any changes made in these relays between the years 1974 and 1987. This contact is documented by Toledo Edison letter NED 95-30004, dated 1-23-94, and Deutsch's response, dated 2-2-95 (copies of both letters are attached).

The response from Deutsch Relays Inc., indicates there were no changes in the Series 4A rotary relays during the time period in question. In fact, changes in the relay housing material and in the hermetic sealing process, which occurred in 1994, would not change the g level where contact chatter is exhibited. Therefore, the results of the Farwell & Hendricks report referenced in NED 95-10043 will be used as the seismic capacity for Deutsch model 4AP43AF installed in RC3004.



A Centerior Energy Company

EDISON PLAZA
300 MADISON AVENUE
TOLEDO, OHIO 43652-0001

January 23, 1995

NED 95-30004

Deutsch Relays Incorporated
65 Daly Road
East Northport, New York 11731

Attention: Mr. Mike Moutuz, QA Manager
Subject: Deutsch Series 4A Rotary Relays

Dear Mr. Moutuz:

Davis-Besse Nuclear Power Station uses the Deutsch Series 4A rotary relay for a variety of control applications. In 1990, we contracted the services of Farwell Hendricks, Inc. to perform environmental qualification testing on these relays (model numbers 4AP43AF and 4AX1603). This testing included Seismic Qualification per IEEE 344-1975.

We would like to apply the results of this Seismic Qualification to relays which were purchased and installed prior to the Farwell and Hendricks testing. Based on codes stamped to the sides of the tested relays (code numbers 8704 and 9025), we believe they were manufactured in 1987 or 1990. Extending the results of the Farwell and Hendricks to earlier vintage relays requires a comparison between the tested and the earlier vintage relays. To assist in making this comparison, we would like to know of any changes in the manufacturing process of these relays between the dates of 1974 and 1987 which may affect seismic characteristics and seismic performance.

This letter is a follow-up to the telephone conversation between yourself and Mr. William Kreinbihl on January 18, 1995. Questions concerning this request may be directed to William Kreinbihl at (419) 321-8246.

Sincerely,

A handwritten signature in black ink, appearing to read "J. H. Lash".

J. H. Lash
Manager - Design Engineering

WJK/lmk

6.4 #261 8 5 OF 5

DEUTSCH RELAYS INC.

DALY ROAD • EAST NORTHPORT, NEW YORK 11731 • PHONE (516) 499-6000 • FAX (516) 499-6015

FEBRUARY 2, 1995

TOLEDO EDISON
EDISON PLAZA
300 MADISON AVE
TOLEDO, OH 43652-0001

ATTENTION: MR. WILLIAM KREINBIHL

SUBJECT: DEUTSCH SERIES 4A ROTARY RELAYS

REFERENCE: NED 95-30004

DEAR MR. KREINBIHL,

IN RESPONSE TO THE REFERENCED LETTER, WE ARE PROVIDING THE FOLLOWING INFORMATION:

1. DESIGN AND MANUFACTURING CHANGES.

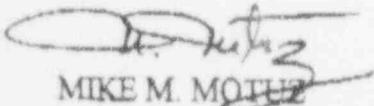
OUR RECORDS SHOW THAT IN APRIL 1994, RELAY HOUSING MATERIAL WAS CHANGED FROM BRASS TO CUPRONICKEL, AND HERMETIC SEALING PROCESS BETWEEN THE HOUSING AND THE HEADER WAS CHANGED FROM SOLDER TO LASER SEALING.

2. RELAYS IN YOUR INVENTORY DATE CODED 8704 AND 9025.

WE RECOMMEND THAT THESE RELAYS BE RECERTIFIED BY RETESTING TO ELECTRICAL AND HERMETIC REQUIREMENTS PRIOR TO INSTALLATION INTO THE NEXT HIGHER ASSEMBLY.

SHOULD YOU REQUIRE ANY ADDITIONAL INFORMATION ON THIS SUBJECT, PLEASE DO NOT HESITATE TO CONTACT ME ON EXTENSION 262.

REGARDS,


MIKE M. MOTTE

COPY: J BEDELL



#262

A-RE RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT LEWIS-PINEY WOODS

System SERVICE WATERPage 10F3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
SW-5067 (EER. BE1133)	E-48B SHT 44	33% 60%, 33% 60%, 33% 7AC	LIMIT TORQUE LIMIT SWITCH CONTACTS IN MV5067. A=7, RM=314, EL=585	NV
"	"	33% 7AC, 33% 7AC	LIMIT TORQUE TORQUE SW IN MV5067. (SEE ABOVE)	NV
"	STOP		REES CAT # G1461-202 IN NV5067. H=7 RM=314, EL=585	NV
"	OPEN, CLOSE		REES CAT. # 03845-000 IN NV5067. (SEE ABOVE)	NV
"	OL		W OVERLOAD RELAY CONTACT IN MCC EHD. H=7, RM=227, EL=565	CAB

* Identify reason for Contact/Contact Group Being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NY - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by JK Date 4/22/94
Reviewed by _____ Date _____

G.4 #262

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System SERVICE WATERPage 2 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
SW5067	E-48B SHT. 44	$\frac{42a}{O}$, $\frac{42b}{C}$, $\frac{42a}{C}$ $\frac{42b}{O}$	(W) L-56 AUX CONTACTS FOR STARTER IN MCC EIID (SEE ABOVE)	GERS-MCC.9 (INTAKE) SEE Pg 3
"	"	$\frac{42}{O}$, $\frac{42}{C}$	(W) SERIES A200 SIZE 1 STARTER IN MCC EIID (SEE ABOVE)	GERS-MCC.9 (INTAKE) SEE Pg 3
+ E-58B SHT 4	"	42a, 42b	(W) L-56 AUX CONTACTS FOR SIZE 2 STARTER IN MCC EIIA. A=8, RM=209, EL=565	GERS-MCC.9 (AREA 8) THESE CONTACTS SUPPLY (W) A200 STARTER

NOTE 42 COIL IS BLOCKED
BY RUGGED CONTACTS
IN E-58B SHT 4 CKT.

CA4

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by John J. Date 4/22/94
Reviewed by / Date

1

IMAGE EVALUATION TEST TARGET (MT-3)



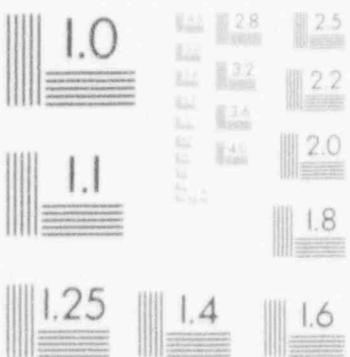
150mm

"9"

PHOTOGRAPHIC SCIENCES CORPORATION
770 BASKET ROAD
P.O. BOX 338
WEBSTER, NEW YORK 14580
(716) 265-1600

1

IMAGE EVALUATION TEST TARGET (MT-3)



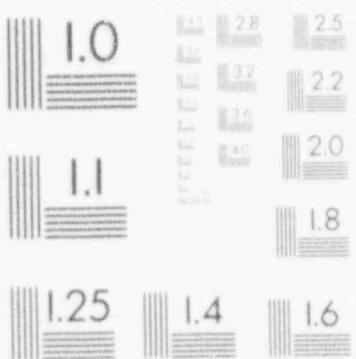
150mm

"9"

PHOTOGRAPHIC SCIENCES CORPORATION
770 BASKET ROAD
P.O. BOX 338
WEBSTER, NEW YORK 14580
(716) 265-1600

1

IMAGE EVALUATION
TEST TARGET (MT-3)



150mm

6

PHOTOGRAPHIC SCIENCES CORPORATION
770 BASKET ROAD
P.O. BOX 338
WEBSTER, NEW YORK 14580
(716) 265-1600

C.E #262

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System SERVICE WATER

Page 3 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

GERS-MCC.9 (AREA INTAKE)

Davis-Besse has Motor Control Centers (MCCs) on the following elevation in Area Intake; 567'.

The effective grade for Area Intake is 569'.

Since $569' - 567' = 2'$, the ground spectra multiplied by (1.5x1.5) may be used to evaluate contactors/starters in Area Intake MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} < 1.5g$ and $bA_{33Hz} < 1.0g$, then contactors/starters in Area Intake MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS _____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Lof Date 4-22-94
Reviewed by _____ / Date _____

A-4E RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT 2EUS-REESE UNIT 1

6.4 #263

System SERVICE WATER

Page 1 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
SW-5068 (BKR, BF1164)	E-4BB SHT 44	33/ 160, 33/ 1An%, 33/ 1ac	LIMIT TORQUE LIMIT SW IN MV5068, A=8 RM=209, EL=565	NV
"	"	33/ 160, 33/ 1tc	LIMIT TORQUE TORQUE SW IN MV5068, (SEE ABOVE)	NV
"	STOP	"	REES CAT. # 014601-202 IN NVS068, A=8 RM=209, EL=565	NV
"	OPEN, CLOSE	"	REES CAT. # 03845-000 IN NVS068, (SEE ABOVE)	NV
"	OL	"	W OVERLOAD RELY/ CONTACT IN MCC FID, A=7, RM=227, EL=565	CAB

- Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- EA - Chatter acceptable.
- RV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Cagle 4-22-94
Reviewed by / Date

G.4 # 263

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System SERVICE WATERPage 2 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
SW-5068	E-48B SHT. 44	42a, 42b, 42a, C C C 42b C	(W) L-56 AUX CONTACT FOR STARTER IN MCC FIID. (SEE ABOVE)	GERS-MCC.9 (AREA 7)
"	"	42a, 42b C C	(W) SERIES A200 SIZE 1 STARTER IN MCC FIID. (SEE ABOVE)	GERS-MCC.9 (AREA 7)
" & E-58B SHT. 4		42a, 42b	(W) L-56 Aux CONTACT FOR SIZE 2 STARTER IN MCC FIID. A=7 PMI=427, EL=603	GERS-MCC.5 (AREA 7)

NOTE: THE 42 COIL IS BLOCKED
BY RUGGED CONTACTS
IN E-58B SHT. 4 CKT

CA4

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by D. H. Langford Date 4-02-94
Reviewed by _____ / Date _____

6.4 #263

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System SERVICE WATER

Page 3 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT

GERS-MCC.9 (AREA 7)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 7; 603', and 565'.

The effective grade for Area 7 is 562'.

Since $603' - 562' = 41'$, the ground spectra multiplied by (1.5x1.5) may be used to evaluate contactors/starters in Area 7 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} \leq 1.5g$ and $bA_{33Hz} \leq 1.0g$, then contactors/starters in Area 7 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. [Signature] / Date 4-22-94
 Reviewed by _____ / Date _____

VALVE DOES NOT HAVE TO CHANGE STATE WHEN
STRONG SHAKING. TO REMAIN OPEN

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

6.4 #265

System SERVICE WATER

Page 1 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
SW1356, SV1356A SV1356B, HIS 1356	E-488 SHT. 13	" OPEN CLOSE	REES P.B. CAT. # 00294- 002, -003 IN NV1356. A=7 RM=314, EL= 585.	NV
"		CS OPEN, CS CLOSE (HIS1356)	CUTLER-HAMMER TYPE E-30 ON C57116. A=7, RM= 505, EL= 623	NV
ALSO SEE E-57B SHAK (6.4 107)	1/2X ₂ 4		(W) L-56 AUX CONTACT FOR (W) GCA530 SIZE 5 STARTER IN MCC E14. (SEE BELOW)	GERS-MCC.9 (AREA 6) SEE Pg 4
	426 LX1		(W) TYPE AR640A RELAY IN MCC E14. RM 429 A=6. EL 603	GERS-MCC.9 (AREA 6) AND GERS- RLY-AII.4, AR > 4.5g

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- DA - Operator action.
- No entry necessary.

Prepared by JHK Date 4-27-95
Reviewed by _____ / Date _____

6.4 # 265

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System SERVICE WATERPage 2 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
SW-1356, SV1356A, SV-1356B, HIS1356	E-48B SHT. 13	4A, 4B	DEUTSCH TYPE 4AP IN RC3701, A=7 RM=314, FL=	LEVEL 2 USING RELAY SPECIFIC SEISMIC DATA SEE Pg 3
			585	

DC POWER TO THIS CIRCUIT IS FROM PANEL D1P CKT 21
REF E-517 AND E-737A SH-2.

PWR SOURCE FOR SW-1356	E-8459-74 CBD1P21 (SEE 6.4 # 55)	NON-AUTO CIRCUIT BREAKER GE# TED124Y100-50C IN D1P A=6, RM=429, EL-603	NV
---------------------------	--	--	----

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by J.H. Lef Date 4-27-95
Reviewed by _____ / Date _____

C.E #265

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System SERVICE WATER

Page 3 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
---------------------	------------	-----------------------	-------------------------	------

LEVEL 2 SCREENING FOR RC3701

- 1. Natural frequency of RC3701 is greater than ~~or~~ equal to 8Hz.
- 2. RC3701 has been given an amplificaton factor (AF) of 4.5
- 3. RC3701 is located in plant area 7, elevatin 585', which is less than about 40 feet above effective grade (Area 7 effective grade = 562').
- 4. For this area and elevation Peak GRS = .39g and Ground ZPA = .15g.
- 5. Seismic capacity for Deutsch 4AX1603 = 6.7g peak and 5g at the ZPA (ref. NED 95-10022, "Seismic Evaluation of Deutsch Relays" and "Justification for Covering Older Deutsch Relays with the 1990 Farwell & Hendricks Report", ~~copies attached~~). SEE 6.4 # 72).
- 6. GERS LEVEL for Agastat E7014PD = 10g and ZPA = 4.0g (ref. GERS-RLY-PNT.7)

thus;

$$ERS = \text{Peak GRS} \times 1.5 \times 1.5 \times AF$$

$$ERS = 3.94g$$

and

$$ZPA = \text{Ground ZPA} \times 1.5 \times 1.5 \times AF$$

$$ZPA = 1.52g$$

therefore, seismic capacity exceeds seismic demand.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by J.W. Keel Date 4-27-95
Reviewed by _____ / Date _____

See Review: J.W. Keel 8/18/95

C-4 #865

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System SERVICE WATERPage 4 of 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
---------------------	------------	-----------------------	-------------------------	------

GERS-MCC.9 (AREA 6)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 6; 603', and 585'.

The effective grade for Area 6 is 573'.

Since $603' - 573' = 30'$, the ground spectra multiplied by (1.5x1.5) may be used to evaluate contactors/starters in Area 6 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} \leq 1.5g$ and $bA_{33Hz} \leq 1.0g$, then contactors/starters in Area 6 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operate action.
- No entry necessary.

Prepared by JK Date 4-27-95
 Reviewed by _____ / Date _____

VALUE DOES NOT HAVE TO CHANGE
STATE DURING PERIOD OF ? ?
STRONG SHAKING : VALUE TO REMAIN THROTTLED.

6.4 #266

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT BONIS-BESSE UNIT 1

System SERVICE WATER

Page 1 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
SW-1357, SV-1357A SV-1357B, HIS 1357	E-488 SHT. 13	OPEN CLOSE	FEES P.B CAT# 00294- 002 + -003 ON NV1357. A=7, RM=314 E=685	NV
		<u>CG</u> OPEN, CLOSE	CUTLER-HAMMER TYPE E30 ON C5716. A=7, RM= 505, EL=623	NV
		(HIS 1357)		
		<u>HXA</u>	(W) L-56 AUX CONTACT ON GCA530 SIZE 5 STARTER IN MCC F14. (SEE BELOW)	GERS-MCC.9 (AREA 6) SEE Pg 3
		<u>426</u> LXI	(W) TYPE AR640A RELAY IN MCC F14 RM 428, A=6 EL=603	GERS-MCC.9 (AREA 6) & GERS-RLY-A22 4, ie >4.5g

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.L. Smith Date 4-27-85
Reviewed by _____ / Date _____

6.4 # 266

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System SERVICE WATERPage 2 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
SW-1357, SV1357A, SV1357B, HIS1357	E-48B SH. 13	4A, 4B	DEUTSCH TYPE HAP IN RC3702, A=7, RM=314 EL=585	LEVEL 2, ISING, RELAY SPECIFIC QUA. REPORT, SEE H 4

SOURCE OF DC POWER FOR THIS CIRCUIT IS DC DISTRIBUTION
 PANEL D2P CKT 21

E-10-28 CBD2P21 (W) NON-AUTO
 (SEE 6.4 #
 54)
 BREAKER
 EB2100N IN
 D2P A=6, RM
 428, EL=603

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Sibley, Date 1-27-95
 Reviewed by _____ / Date _____

c.e # 366

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System SERVICE WATER

Page 3 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

GERS-MCC.9 (AREA 6)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 6; 603', and 585'.

The effective grade for Area 6 is 573'.

Since $603' - 573' = 30'$, the ground spectra multiplied by (1.5x1.5) may be used to evaluate contactors/starters in Area 6 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} \leq 1.5g$ and $bA_{33Hz} \leq 1.0g$, then contactors/starters in Area 6 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Gold Date 4-27-95

Reviewed by _____ / Date _____

6.4 #266

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System SERVICE WATER

Page 4 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

LEVEL 2 SCREENING FOR RC3702

1. Natural frequency of RC3702 is greater than or equal to 8Hz.
2. RC3701 has been given an amplification factor (AF) of 4.5
3. RC3701 is located in plant area 7, elevation 585', which is less than about 40 feet above effective grade (Area 7 effective grade = 562').
4. For this area and elevation Peak GRS = .39g and Ground ZPA = .15g.
5. Seismic capacity for Deutsch 4AX1603 = 6.7g peak and 5g at the ZPA (ref. NED 95-10022, "Seismic Evaluation of Deutsch Relays" and "Justification for Covering Older Deutsch Relays with the 1990 Farwell & Hendricks Report", copies attached, SEE 6.4 # 72)

thus;

$$\begin{aligned} \text{ERS} &= \text{Peak GRS} \times 1.5 \times 1.5 \times \text{AF} \\ \text{ERS} &= 3.94\text{g} \end{aligned}$$

and

$$\begin{aligned} \text{ZPA} &= \text{Ground ZPA} \times 1.5 \times 1.5 \times \text{AF} \\ \text{ZPA} &= 1.52\text{g} \end{aligned}$$

therefore, seismic capacity exceeds seismic demand.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by W.H. Schell Date 4-17-95
Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BEESLE UNIT 1

System SERVICE WATERPage 1 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
SW-1399, HIS 1399 (BKR BE1277)	E-488 SHT. 9A+9B	DS	G.E. TYPE SB-9 CTRL SW IN CDE12C. A = INTAKE, RM = 51, EL = 576	NV
"	$\frac{33}{60}$, $\frac{33}{60\%}$, $\frac{33}{60}$, $\frac{33}{20}$, $\frac{33}{AC}$		LIMITORQUE. LIMIT SW IN NV1399. A = INTAKE, RM = 53, EL = 566	NV
"	$\frac{33}{60}$, $\frac{33}{60}$		LIMITORQUE TORQUE SW IN NV1399. (SEE ABOVE)	NV
"	STOP		REES CAT. # 01461-202 IN NV1399. A = INTAKE, RM = 53, EL = 566.	NV
"	OPEN, CLOSE		REES CAT. # IN NV1399. (SEE ABOVE)	NV

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Lef Date 4-27-94
Reviewed by _____ / Date _____

6.4 #267

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System SERVICE WATERPage 2 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
SW-1399, HIS 1399	E-43B SHT. 9A 69B	<u>CS</u> <u>OPEN</u> , <u>CLOSE</u>	CUTTER-HAMMER TYPE E30 ON C5717. A=7, RM 505, EL=623	NV
"		<u>42a</u> , <u>42b</u> , <u>42b</u> , <u>O</u> , <u>C</u> , <u>O</u> , <u>42a</u> <u>C</u>	(W) L-56 AUX. SW FOR STARTER IN MCC E12C. A= INTAKE, RM=51, EL=576	GERS-MCC.9 (INTAKE) SEE Pg 4
"		<u>42</u> , <u>42</u> <u>O</u> , <u>C</u>	(W) SERIES A 200 SIZE 1 STARTER IN MCC E12C. (SEE ABOVE)	GERS-MCC.9 (INTAKE) SEE Pg 4
"		OL	(W) OVERLOAD RELAY CONTACT IN MCC E12C. (SEE ABOVE)	CAB

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Gilmore Date 4-87-94
 Reviewed by _____ Date _____

G.4 #267

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System SERVICE WATERPage 3 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
SW-1399, HIS 1399	E-4BB SHT. 9A & 9B	PSL	SOR MODEL 6V2-E3-TTX4. A=INTAKE, RM=52, EL= 576.	CA4 (1.e 33%oC, 33%e, 33%ao)
		BA, BB		CA4 <u>OPEN CKT</u> 'OPEN', <u>CS</u> , <u>42</u> <u>OPEN</u> , <u>O</u>
		KA, KB		<u>CLOSE CKT</u> 33%oC, 33%e, 33%ao SAME AS BA, BB

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by JK Date 4-27-94
 Reviewed by _____ / Date _____

6.4 #267

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System SERVICE WATER

Page 4 of 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

GERS-MCC.9 (AREA INTAKE)

Davis-Besse has Motor Control Centers (MCCs) on the following elevation in Area Intake; 567'.

The effective grade for Area Intake is 569'.

Since $569' - 567' = 2'$, the ground spectra multiplied by (1.5x1.5) may be used to evaluate contactors/starters in Area Intake MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz}):

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz}):

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} \leq 1.5g$ and $bA_{33Hz} \leq 1.0g$, then contactors/starters in Area Intake MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Schaff Date 4-27-94
Reviewed by _____ / Date _____

THIS VALVE SHOULD NOT
CHANGE STATE DURING
STRONG SHAKING.

6.4 #268

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAUS-RESE UNIT 1

System SERVICE WATER

Page 1 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
SW-1124, SV1424 HIS1424	E-48B SHT 30	"TEST" JOG	PEES CAT. # 01461-202 IN NV1424 $A=7, RM=328$ $EL=525$	NV
	II	KA, KB (1K24C, 3K24C)	DEUTSCH RELAY #4CP C5762C, C5763D $A=7, RM=502, EL=623$	CA- (AOV CONTROL B1Z1424)
	II	LRI-2F LRI-2F	POTTER + BRU Z-Form C Latching Relay = T83SH D122-24 C5762C, C5763D $A=7, RM=502, EL=623$	CA4
	II	$\frac{BS}{A}, \frac{BS}{B}$	(BYPASS SWITCH)	SEE G.4#311

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by Cervenka / Date 10/14/04
Reviewed by Cervenka / Date

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS BESSE UNIT 1

G.4 #268

System SERVICE WATER

Page 2 of 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
SLJ-1424, SV1424	E-48BSHT30	ZC 1424	—	NA
HIS 1424	OS-20 SH1	NELLES-JAMESON		
	VMAN M-3196A-3	NP 600		
	E-48BSH30	HIS 1424	EATON/CUTLER-HAMMOND	NV
	E-30B SH7		E20-JF-E200-E102-K11	
	E-30B SH4			

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by C. WILSON Date 10/14/94
 Reviewed by _____ / Date _____

NEED CAPABILITY TO
OPEN THIS DURING PERIOD
STRONG OF STRONG SHAKING.

6.4 #269

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System SERVICE WATER

Page 1 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
SW-1434 SV-1434 HIS 1434	E-48B SHT. 30	TEST JOG	REBS CAT# 01461-202 IN NV1434. A=7 RM=328, EL=585	NV
"	KA, KB (ZK24C, LK24C)	Deutsch Relays #4CP	CA (AOV CONTROLLED BY 2C1434)	CA
"	LR1-2F LR1-2T	Inter → Bru. 2 Form C contacts Relay # T83 S11 D122-24 A=7, RM=502, EL=623	CA 4	
"	<u>B5</u> <u>A</u> , <u>B</u>	(BYPASS SCH.)	SEE G.4#311	

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by John B. Date 10/14/94
Reviewed by / Date

G.4 #269

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS BESSE UNIT 2

System SERVICE WATERPage 2 of 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
SW1434, SV1434	E-48B5H30	2C1434	—	NA
HIS1434	OS-205H 1	NELLES-JAMES PNR NP 726		
	VMANM-319BQ-3			
	E-48B5H30	HIS1434	EATON/CUTLER-HAMMER E30-J1-E200-E102-K11	NV
	E-30B5H7			
	E-30B5H4			

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by Globe / Date 10/14/94
 Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT 2615-RESE Unit 1

6.4 #270

System NON-ESSENTIAL HVAC
 CTRL. RM.

Page 1 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
HIS 5301, SV-5301	E-60B SHT. 14A	TEST JDS.	REES CAT# 01461-202 IN NV5301.	NV
SV-5301A			A=7, RM=623, EL=638	
HV-5301A, HV-5301B				
HV-5301C, HV-5301D				
HV-5301E, HV-5301F				
HV-5301G, HV-5301H	E-60B SH. 14D	OPEN/CLOSE	CUTTLER HAMMER TYPE E-30 #E30 JFE200E102KII	NV
HV-5361A, HV-5361B				

THE ABOVE DIMERS (HV's)
 CLOSE when SV5301, SV5301A
 E-ENERGIZE

E-60B SH.
14A, 14D KA, KB
 (1K1ZL, 3K1ZL) - - - - - RELAY CA **
 #4CP
 C3762L, C3763L
 A=7, RM=502, GL=623

E-60B SH/14A (BYPASS SWITCH) SEE 6.4#311
 BS BS
 A B

- Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- | | |
|------|---|
| CA | - Chatter acceptable. |
| NV | - Not vulnerable (mechanically-actuated contacts and solid state relays). |
| GERS | - Seismically adequate based on GERS ____; include GERS number. |
| NA | - Component not affected by relays. |
| CR | - Corrective action required. |
| OA | - Operator action. |
| | - No entry necessary. |

Prepared by R. W. Blatt / Date 10/27/94
 Reviewed by _____ / Date _____

G.4 # 270

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS BESSIE UNIT 1

System 110V-24V CONT. HVAC
CTRL. & LM.

Page Z-F 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
SEE PAGE 1	E-60B SH14A	BA, BB (LP1) (LR1)	Potter + Brumfield Series Latching # 100-24T83511D122-24 C 57626 C 57630 A=2, BM=502, GL=623	CA ***
J117SH 1 E-60B SH14D		RIS-A (RSN 4598AAA) RIS-B (RSN 4598AAB) RIS-C (RSN 4598AAC)	KAMAN # 822922-001 " " " "	CA **
				CA **
				CA **

** CHATTER CAUSES DAMPERS TO GO FROM OPEN TO CLOSED,
 WHICH IS THE DESIRED STATE

*** CONTACT DOES NOT HAVE POWER APPLIED, POWER APPLICATION
 IS BY MECH. SL. SEE G.4 # 311

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by John Baker / Date 14/27/94
 Reviewed by _____ / Date _____

6.4 #271

A-66 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System Non-ESSENTIAL HUNG
CTRL. RM.

Page 1 OF 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
HIS 5311, SV-5311, SV-5311A	E-60B SHT. 14A	TEST JOG	PIEZO CAT # 01461-202 IN NV5311, A=7, RM=603, EL=	NV
HV-5311A, HV-5311B			638	
HV-5311C, HV-5311D				
HV-5311E, HV-5311F				
HV-5311G, HV-5311H	E-60B SH. 14D	OPEN/CLOSE	CUTLER HAMMER TYPE E-30 #E30JFE200E102K11	NV
HV-5362A, HV5362B				
E-60B SH 14A, 14D		KAKE (2K12L, 4K12L)	DENTON RELAY #4CP C-5750C, C-575103	CA**
11	BS A	BS B	A=7, RM=502, EL=672 (BYPASS SWITCH)	SEE G.4#3H
E-60B SH 14D		BA, BB (LR1) (LR1)	HANCOCK Z-FORM LATCHING Relay #T83S110122-24 C-5755C, C-5756D A=7 RM=502, EL=672	CA**

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- | | |
|------|---|
| CA | - Chatter acceptable. |
| NV | - Not vulnerable (mechanically-actuated contacts and solid state relays). |
| GERS | - Seismically adequate based on GERS ____; include GERS number. |
| NA | - Component not affected by relays. |
| CR | - Corrective action required. |
| OA | - Operator action. |
| | - No entry necessary. |

Prepared by John / Date 10/27/84
Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS BESSE UNIT 1

System NON-ESSENTIAL HVACPage 2 of 2CTRL. R.M.

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
SEE PAGE 1	JH8 SH.1	RIS-A (RSY4598BAA)	KAMAN #822922-001	CA**
	E-60B SH.14D	RIS-B (RSY4598BAB)	"	CA**
		RIS-C (RSY4598BAC)	"	CA**

** CHATTER CAUSES DAMPERS TO GO FROM OPEN TO CLOSER,
 WHICH IS THE DESIRED STATE

*** CONTACT DOES NOT HAVE POWER APPLIED, POWER IS APPLIED

BY MECH. SW. SEE G.4#311

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS ____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by C. Miller / Date 10/27/94
 Reviewed by _____ / Date _____

VALVE TO REMAIN OPEN
DURING STRONG SHAKING

A-66 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

6.4 #072

System SAMPLING

Page 1 of 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
SV-598, HIS 598 55598	E-46B SHT. 23B #23A	TEST Jog	REES CAT # 01461-202 IN NV598 A=7, RM=314 EL=585	NV
		KA, KB		
	E30B5H4	KA, KB	DEUTSCH RELAY #4CP	SEE 6.4 #311
	E46B SH23A	(2K27I, 4K27I)	IN C5755C, C5756D	
			A=7, RM=502, EL=623	
	E-30-341 E-30-342 E-17B	BA, BB (LR1) (LA1)	ROTHER & ERICSON Z-Facing Contact F1002-TR3511D122-24 C5755C, C5756D	CA**

** CONTACT NOT ENERGIZED, POWERPLIED BY MECH SW

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by Gaston Date 11/1/94
Reviewed by / Date

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS BESSE UNIT 1

G.4
#272

System SAMPLING

Page 2 of 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
SEE PG 1.	E30B SH4	OPEN/CLOSE	CUTLER-HAMMER TYPE E-30 E30JFE200EK2KIT	NV
	E-46B SH123A	BS A BS B	(BYPASS SWITCH) SEE G.4 #311	

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by L. W. C. / Date 11/1/94
Reviewed by _____ / Date _____

VALVE TO REMAIN OPEN
DURING PERIOD OF
STRONG SHAKING.

6.4 #273

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT 2A15-REESE UNIT 1

System SAMPLING

Page 1 of 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
SV-607, HIS 607	E-46B SHT. 23B	TEST Log	PFES CAT # 01461-202 IN NV607. A=7, RM=314, EL=585	NV
"	E 3085H4	KA, KB KA, KB (1K27E, 3K27E)	DEUTSCH RELAY #4CP IN C5762C, G5762D A=7, RM=502, EL=623	SEE 6.4 #311
E-17B E30-341 E30-342	EA, EB (LR1) (LR1)	Potter + Brum 2-Firm C Latching Relay	#T83S11 D122-24 IN C5762C, G5762D A=7, RM=502, EL=623	CA**
**CONTACT NOT ENERGIZED, POWER APPLIED BY MECH. SW.		Identify reason for Contact/Contact Group being satisfactory or unsatisfactory		
CA	- Chatter acceptable.			
NV	- Not vulnerable (mechanically-actuated contacts and solid state relays).			
GERS	- Seismically adequate based on GERS _____; include GERS number.			
NA	- Component not affected by relays.			
CR	- Corrective action required.			
OA	- Operator action.			
	- No entry necessary.			

Prepared by Glenda Blue Date 11/11/94
Reviewed by / Date

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS BESSE UNIT 1

G.4

#273

System SAMPLING

Page 2 of 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
SEE PG 1	E30B5H4	OPEN/CLOSE	CUTLER-HAMMER TYPE E-32 # E303FE200E42KIT	NV
	E46B5H23A	B5 A B	(BYPASS SWITCH)	SEE G.4#311

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by J. W. Blalock Date 11/14/94
Reviewed by _____ / Date _____

A-RE RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT LOUIS REESE UNIT 1

6.4 #274

System CTNIT. SPRAY

Page 1 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
P56-1 (BKR. BEIII)	E52B SH 7A67B		NOTE: BREAKER IS OPEN AND REQUIRED TO REMAIN OPEN THEREFORE CONTACT CHATTER IN BKR. TRIP CKT CONTACTS IS ACCEPTABLE	
"	DS		G.E TYPE SB-1 CTRL SW IN U.S. EI. A=6, RM=421, EC=603	NV
"	591b.		BPAWTR A01 201794 FOR TESTING CHAT GL MIT 24W144 NORM 42000000 IN BEIII. A=6, RM=421, EC=603	111
CC			G.E. TYPE S8M CTRL CH ON C591b. A 1, RM=525, EC 603	NV

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Gifford Date 4-28-94
 Reviewed by _____ Date _____

6.4 # 274

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System CINT 2P EAY

Page 2 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
P56-1	E-52B SHT TA & YR	STRIKT	PEES CIR # C3845-000 11 NP0561, A-3 RM=105, EL=545	NV
4	E-7-51-6	STRIKT	Pushbutton on UNIT 3UR E1 A=6, RM=429 EL=603	NV
E-7-51-6 E-30 SHT 16 VMAN E-7-142-1	aa, bb 52X	MECHANICALLY OPERATED SWITCH IN E1. (SAME AS ABOVE)	X RELAY FOR AR IA 25 BKR G.E# 116B7197P3 (SEE NOTE IN UNIT 3UR E1, A=6 RM=429, EL=603	NV GER-MVS/LVS THIS SHT.)

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. 6.1 Date 5-31-95
Reviewed by _____ / Date

NOTE: USE OF GERS-MVS/LVS, 7 ON HOLD UNTIL BREAKER HOIST
HOOK IS MODIFIED. THIS MODIFICATION IS BEING TRACKED
IN SEISMIC EVALUATION PROGRAM.

G.4 #274

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System CTHAT SHFTPage 3 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
P56-1	E-7-51-6 E-3013 SH 16 VMAN E-7-142-1	52Y	1 Y' RT 4, PDE AK 2A 25 BKR. G.E # 2753444P3 IN E1 (SEE NOTE)	GERS-MVS/LVS, 1/ (SEE NOTE PAGE 2)
E-52B SHF	33 AP%		LIMITQUE LIMIT SW IN MIV1530, N=8, RM 503, EL=585	CAH (see CTHAT, cc)
"	START		REFS LEVER OPERATOR CAT# 03845-000 IN NP0561 A=8, RM=105 EL=545	NV

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by Wm. Goss, Date 5-31-95
Reviewed by _____ / Date _____

6.4 #274

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BYSSÉ UNIT 1

System CNT SPRAY

Page _____

4 OF 4

Subsystem/Component Ref Dwg(s) Contact/Contact Group Type and Location SAT*

R53-1 E-52B SAT.
7A & 7B

SEE G.O.

4cf

431

E-17B
D-343-2

(L.R.2)
(L.R.1)

RECEIVED FEB 12 1974 CA4

E-52 BSH

79

B5 B5

(B. 1900 - 1971)

SEE 6.4#311

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
 HV - Not vulnerable (mechanically-actuated contacts and solid state relays).
 GERS - Seismically adequate based on GERS ____; include GERS number.
 NA - Component not affected by relays.
 CR - Corrective action required.
 OA - Operator action.
 - No entry necessary.

Prepared by John Bly Date 1/12/94
Reviewed by _____ / Date _____

A-4E RELAY SCREENING AND EVALUATION
FORM E-4 - RELAY TABULATION
PLANT 2A/1S-BESE UNIT 1

E-4 # 275

System CHMT. SPRAY

Page 1 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
P56-2 (BKR. BF111)	E-31B SHT. 7A, 7B		NOTE: BREAKER FOR P56-2 IS NORMALLY OPEN AND IS REQUIRED TO REMAIN OPEN DURING THE PERIOD OF STRONG SHAKING. THEREFORE, CONTACT CHATTER IN THE BREAKER TRIP CIRCUIT IS ACCEPTABLE.	
"	DS	GE TYPE SB-1 CTRL SW IN UNIT SUB F1. $A=6$, $R_{TH}=428$, $EL=603$		NV
"	52ha	BREAKER Auxiliary SW FOR TESTING IN UNIT SUB F1. (SEE ABOVE)		NV
"	CS	GE TYPE SBM CTRL 36 ON CS710, A=7 $R_{TH}=505$, $EL=623$		NV

* Identify reason for Contact/Contact Group Being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- RV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Sprague 4-28-94
Reviewed by _____ / Date _____

G.4 #275

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System CHMT SPRAYPage 2 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
P56-2	E-37B SHT TH-6-7B	START	REES CAT. # C3845 000 IN NPO562, A=7 RM=115, EL= 545	NV
"	E-1-51-6	START	PUSHBUTTON ON HOIST SUB F1. A=L, RM=428 EL=603	NV
E-7-51-4 E-30B SHT 16 VINAH E-7-142-1	aa, bb		MECHANICALLY OPERATED SWITCH IN F1. (SAME AS ABOVE)	NV
"	52x	'X' RELAY FOR AK 2A 25	GERS-MVS/LVS.7 BKR, G.E # 11687191P3 (SEE NOTE THIS SHT.)	
			IN UNIT SUB EL. A=6, RM=428, EL=603	

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS ____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by OK 6/1 Date 5/31/95
Reviewed by _____ Date _____

NOTE: USE OF SWGR GERS ON HOLD UNTIL BREAKER HOIST HOOK IS MODIFIED. THIS MODIFICATION IS BEING TRACKED IN SEISMIC EVAL PORTION

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System CINT SPKRYPage 3 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
P56-2	E-7-51-6 E-30B SAT16 VMAU E-7-142-1	52Y	"Y" RELAY FOR AK 2A 25 BKR GE # 295B444P3 IN UNIT SUB FT. (SEE ABOVE)	GERS-MVS/LVS.77 (SEE NOTE Pg 2)
E-52B SAT. TH-F-1B	33 CP%		LIM TORQUE LIMIT SWITCH IN MV1531. A=7, RM=314, EL=585	CA4 (i.e. START & CS)
		START	REES LEVER OPERATOR CNT. # 03845-000 IN NPO542, A=1 RM=115, EL=545	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS ____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by W.L. Schaff Date 5-21-95Reviewed by I.D. Z.

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS BESSE UNIT 1

System GTATPage 4 of 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
PS6-2	E52E m-343-2	R1 2-5 (2kVA - 400A)	On-Area Relays #4CP GTR200, GTR300 A-7-10-532, A-7-10-533	SEE G.4#211
E-17P	E52	R1 2-5	None from 1A1B CA9 (GTR200)	
E-52B-7H7A	E52	R1 2-5 (2kVA - 400A)	GTR200, GTR300	SEE G.4#211

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by C. Hall Date _____
 Reviewed by _____ / Date _____

G.4 #276

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE

System EMERGENCY DIESEL GEN
IMMERSION HEATER

Page 1 OF 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BE1258	E-64B SHT. 9 + M188-9	TS-8 (TS-20158)	SQUARE D CLASS 9025 TYPE R6WZ529 ON ENGINE SKID	CA6
	E-64B SHT. 9	42a, 42b	(W) L-56 AUX CONTACT FOR SERIES A200 STARTER IN MCC E123 A=6 RM=318 EL=585	CA1
	E-64B SHT 9	42	(W) SERIES A200 STARTER IN MCC E123 A=6, RM=318 EL=585	CA - CHATTER ON STARTER WILL NOT STOP OR LOCK OUT EDG.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Schaff Date 8-1-94
Reviewed by _____ / Date _____

G.4 #277

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS - BESSIE

System EMERGENCY DIESEL GEN
IMMERSION HEATER

Page 1 OF 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
BF1258	E-64B SHT. 9	TS-3 (TS-20158)	SQUARE D CLASS 9025 TYPE R6W2529 ON ENGINE SKID - SEE G.4 # 276 FOR Dwg M-180-9	CA6
	E-64B SHT. 9	42a, 42b	(W) 1-56 AUX CONTACT FOR SERIES A200 STARTER IN MCC F12B A=6, RM=319 EL=585	CA1
	E-64B SHT 9	42	(W) SERIES A200 STARTER IN MCC F12B A=6, RM=319 EL=585	CA - CHATTER ON STARTER. WILL NOT STOP OR LOCK OUT EDG.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by D. K. Lef Date 8-1-94
Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS - BESSIE

G.4 #278

System 480 VAC ELECTRICAL

Page 1 OF 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
---------------------	------------	-----------------------	-------------------------	------

CE1-1	E-H&M-2	NONE	NONE	NA
-------	---------	------	------	----

416KV TO 480V
TRANSFORMER

FOR SUPPLY BKR. (AC1CE11)
SEE G.4 # 286.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS ____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by W. K. Saly Date 8/18/94
Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS - BESSE

G.4 #279

System 480 VAC ELECTRICAL

Page 1 OF 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
DF1-2	E-4 SHT. 2	NONE	NONE	NA
416KV TO 480V TRANSFORMER			FOR DF1-2 SUPPLY BKR, ADIDF12, SEE 6.4# 294.	

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Hill Date 8/19/94
Reviewed by _____ / Date

G.4 #280

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System 480V AC ELECTRICALPage 1 OF 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MCC F12B	E-6 SHT. 2	NONE	NONE -	NA

NOTE MCC F12B IS
 SUPPLIED BY
 MCC F12A.

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Lusk Date 8/22/94
 Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System 480V AC ELECTRICAL

Page 1 OF 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MCC FIIC	E-6 S4T 2	NONE	NONE	NA
(MCC FIIC IS SUPPLIED BY MCC FIIA)				

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- | | |
|------|---|
| CA | - Chatter acceptable. |
| NV | - Not vulnerable (mechanically-actuated contacts and solid state relays). |
| GERS | - Seismically adequate based on GERS _____; include GERS number. |
| NA | - Component not affected by relays. |
| CR | - Corrective action required. |
| OA | - Operator action. |
| | - No entry necessary. |

Prepared by JK Date 8/22/94
 Reviewed by _____ Date _____

6.4 #282

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System 480VAC ELECTRICAL

Page 1 OF 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MCC E12B <i>(SUPPLIED BY MCC E12A)</i>	E-6 SHT. 1	NONE	NONE	NA

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- - No entry necessary.

Prepared by D.H. Siff Date 8-22-94
Reviewed by _____ / Date _____

BKR MUST BE CAPABLE
OF CLOSING & REMAINING
CLOSED DURING PERIODS OF
STRONG SHAKING.

C1 BUS - A=6
RM=325
EL=585
C. #283

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System EMERGENCY DIESEL
GEN. (OUTPUT BKR)

Page 1 OF 37

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	
AC101	E-64B SHT. 1A	DS (ALL)	(W) TYPE W CTRL SW. ON C1 BUS, UNIT 1	NV
		CS HS6222	GE, TYPE SBM CTRL SW. ON C5715. A=7 RM=505, EL=623	NV
	CS/D AC101		GE TYPE SB1 CTRL SW. ON C3615. A=6, RM=318, EL=585	NV
	CS		GE, TYPE SB9 CTRL. SWITCH ON C1 BUS	NV
	25SD HS6221		GE, TYPE SBM CTRL. SW. ON C5715. A=7 RM=505, EL=623	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Bell Date 1-4-95
Reviewed by _____ / Date _____

6.4 #283

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System EDG 1-1 (OUTPUT BKR)Page 2 OF 37

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AC101	E64B SHT 1A	<u>25SD</u> <u>D61</u>	G.E TYPE SBI CTRL. SW. ON C3615, A=6 RM=318, EL=585	NV
AC101-CLOSE CKT.		<u>52S1b</u> + <u>ABDC1</u> <u>52S1b</u> <u>AC110</u>	(W) MOC ⁽¹⁾ SW IN CI BUS UNITS 2 AND 10	NV
		52H1	(W) TOC ⁽²⁾ SW IN CI BUS, UNIT 1	NV
		<u>25</u> <u>DG</u>	ABB 25V SYNCH. CHECK RELAY IN C3615. A=6 RM= 318, EL=585	CA4 (i.e CS/HIS6222 & esp AC101)
		<u>27X-6</u> <u>C1</u> CUV START. SIGNAL	AGASTAT MODEL 7012PR IN CI BUS, UNIT 1	GERS - RLY - PNT. 7 (SEE Pg 30)

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Smith, Date 5/3/95
Reviewed by _____ / Date _____

- (1) MECHANISM OPERATED CELL SWITCH
(2) TRUCK OPERATED CELL SWITCH

6.4 #283

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System EDG 1-1 (OUTPUT BKR)

Page 30F 37

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
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THE FOLLOWING CONTACTS CONTROL THE OPERATION OF
THE ~~27X-6/CI~~ 27X-6/CI RELAY

	E-34B SHT 14C	<u>27Y-1</u> <u>C1</u>	GE TYPE HFAS1A42H IN CI BUS, UNIT 3	GERS-RLY-ARH.5 (SEE PG. 25)
	E-34B SHT 14	<u>27X-1</u> <u>C1</u> , <u>27X-2</u> <u>C1</u>	AGASTAT E-7014HA IN CI BUS, UNIT 3	GERS-RLY-PNT.7 (SEE PG. 30)
	E-34B SHT 14	<u>27-1</u> , <u>27-2</u> <u>C1</u> , <u>C1</u> <u>27-3</u> , <u>27-4</u> <u>C1</u> , <u>C1</u>	G.E. TYPE NGV13825A IN CI BUS, UNIT 3	GERS-RLY- PMM.4 (SEE PG. 30)
	E-22 SHT 1	TSI-4	METER DEVICES TEST SW ON CI BUS, UNIT 3	NV
	"	TS-UV	G.E. TYPE S139 CTRL SW ON CI BUS, UNIT 3	NV

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NY - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Schell Date 5/3/95
Reviewed by _____ / Date _____

G.4 #283

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System EDG 1-1 (OUTPUT BKR)Page 4 OF 37

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AC101 - CLOSE CKT	E64B SHT 1A	CR3-X	ALLEN BRADLEY MOD. 700 BR4-00A1 SERIES A IN C3617, A=6, RM=318, EL=585	CR - OBTAIN SEISMIC DATA OR REPLACE

THE FOLLOWING CONTACTS CONTROL THE OPERATION OF THE CR3-X RELAY.

77449 - M1480-31	V/f	AUTOMATIC SWITCH CO. VOLTAGE/FREQ RELAY. P.N. 207E10 IN C3617, A=6, RM= 318, EL=585	CR - SEISMIC CAPACITY L SEISMIC DEMAND. REPLACE RLY.
---------------------	-----	---	---

AC101 - CLOSE CKT.	E64B SHT 1A	86-1 D61) 86-2 D61	G.E. TYPE HFA 53K91H IN C3615, A=6, RM= 318, EL=585	CR - OBTAIN SEISMIC DATA OR REPLACE
--------------------	----------------	------------------------------	--	---

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Lohf Date 5/15/95
Reviewed by _____ / Date _____

#283

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System EDG 1-1 (OUTPUT BKR)

Page 5 OF 37

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
THE FOLLOWING CONTACTS CONTROL THE OPERATION OF <u>EDG 1-1</u>				
E-6413 SHT 1C	<u>87</u> <u>DG</u>		G.E. TYPE CFD22B1A IN C3615.	BA - CR REQUIRED REPLACE RLY'S.
		TD5 - TD6	METER DEVICES TEST SW IN C3615	NV
		<u>86Y</u> <u>DG1</u>	G.E. TYPE HFA51A42H IN C3615	GERS - RLY - ARH. 5 (SEE Pg 37)
		SDRX	SQUARE D CLASS B501 TYPE KPD13 IN C3621	SEE NOTE 1 THIS PAGE

THE FOLLOWING CONTACTS CONTROL
THE OPERATION OF THE SDRX RELAY:

12501-M- 86-2 SEE PAGE 4 OF THIS G.4 FOR
1809-14 DG1 RELAY TYPE AND SAT. EVALUATION.

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NY - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Beck Date 5/15/95
Reviewed by _____ Date _____

NOTE 1

PER SECTION 17 IN GCRAP REV. 4.0
AND NP-7148-3L, THESE CONTACTS
ARE CONSIDERED SEISMICALLY
ADEQUATE. SEE PAGE 34.

C3621
C3621A
C3615
C3617 } Rm 318
A=6
EL=585

203
c.4

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System EDG 1-1 (OUTPUT BKR)

Page 6 OF 37

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
OPERATION OF SDRX CONTACTS (CONT.)	12501-M- 1809-14	OTR	SQUARE D CLASS 8501 TYPE KPD13 IN C3618 C3621	SEE NOTE 1 Pg. 5
		R2	SAME AS OTR	
		CPR	SAME AS OTR	
		SDRX1	SAME AS OTR	
		R3X*	SAME AS OTR	
		TDI	AGH3TAJ MODEL E7012PD ₄ IN C3622 C3621	
			NOTE, TDI IS A 6 SECONDS ON DELAY RELAY. THEREFORE, CHATTER ON CONTACTS UPSTREAM OF TDI COIL CAN NOT CAUSE TDI TO CHANGE STATE.	

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Koch Date 1-4-94
 Reviewed by _____ / Date _____

* SEE EVALUATION OF R3 ON Pg 12 FOR
 EVALUATION OF CONTACTS SUPPLYING R3X COIL.

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS - BESSE

System EDG 1-1(OUTPUT BKR)Page 7 OF 37

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
OPERATION OF SDR X CONTACTS CONT.	M180Q-14	OTS, CPS, LOPS, HJWTS	SWITCHES WHICH ARE ENGINE MTD. BY EMD AT FACTORY	NV- SEE NOTE 1 Pg 5.
		SW-4, RESET P/B	ALLEN BRADLEY PUSHBUTTON TYPE BOOT ON C3615	NV
		TDSX	SAME AS OTR	SEE NOTE 1 Pg 5
CONTACTS WHICH SUPPLY TDSX	M-180Q-13	TDS	AGASTAT E7012PE IN C3621	SEE NOTE 1 Pg 5
CONTACTS SUPPLYING TDS	M180Q-13	SDR	SAME AS OTR	SEE NOTE 1 Pg 5. ALSO SEE SDR NOTE ON Pg 15
	M-180Q-13	SS2	SAME AS OTR	SEE NOTE 1 Pg 5
CONTACTS SUPPLYING SS2	M-180Q-13	SS2A	SYNCRD START SPEFO SW ESSB-4AT IN C3621	SEE NOTE 1 Pg 5

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Smith Date 1-4-95
 Reviewed by _____ / Date _____

G.4 #283

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS - BESSE

System E61-1 (OUTPUT BKR)

Page 7A OF 7

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

THE FOLLOWING CONTACTS CONTROL THE OPERATION OF THE
86-1/D61 AND 86-2/D61 COIL:

E-64B SHT SS2X SQUARE D
1C CLASS B501
 TYP. KPD13
 IN C3621 SEE NOTE 1
 Pg 5

M-180Q-13 SS2A SEE Pg
(THESE CONTACTS 7 SEE NOTE 1
ENERGIZE Pg 5
SS2X) Pg 5

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by OK Date 1-4-95
Reviewed by _____ / Date

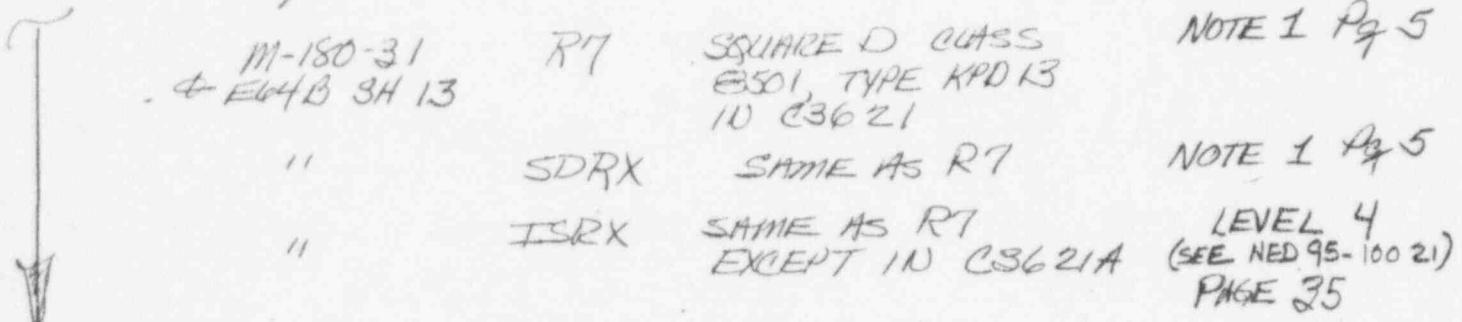
C.A #283

A-46 RELAY SCREENING AND EVALUATION
FORM G-4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System E06 1-1 (OUTPAT BKR)Page 8 OF 37

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
OPERATION OF E6-1 & E6-2 D61 & D62 (CONT).	E-64/B SHT 1C	FSS-X	ALLEN BRADLEY CAT. # 200-6110Z1 IN C3617 RM 318	CR - SEISMIC CAPACITY UNKNOWN, REPLACE RELAY.
	<u>E6Y</u> <u>D61</u>	G.E. TYPE HFA51A42H	IN C3615 (R) RM 318	GERS - RLY - ARH.5 (SEE Pg 36)

THE FOLLOWING CONTACTS CONTROL THE OPERATION OF
THE FSS-X RELAY:



* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Ball Date 6-8-95
Reviewed by _____ / Date _____

6.4 #2B3

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System EDG 1-1(OUTPUT BKR)Page 9 OF 37

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
OPERATION OF FSS-X RELAY (CONT.)	E64B SHT 13 M-180-31	86-1 D61	SEE PAGE 4 OF THIS 6.4 FOR RELAY TYPE AND SAT EVALUATION.	
	7749- M-180-31	CS	G.E. TYPE SBM CTRL SW ON C36184 IN RM 318	NV
<i>CONTACTS WHICH CONTROL THE ISRX RELAY</i>				
M180G - 13	R3X3	SQUARE D CLASS 8501 TYPE KPD13 IN C3621A	LEVEL 4 (SEE NED 95-10021) PAGE 35	
		SEE EVALUATION OF R3 RELAY FOR CONTACTS WHICH CAN CTRL. R3X3.		
PB1, PB2		CUTTER-HAMMER P/B ON C3621A RM 318		NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Schaff Date 1-4-75
Reviewed by _____ Date _____

{ M-180-31
E64B
SHT 13

52S2b

G-4

(W) mod SW
FOR 5kV BKR
DHP IN CI
B19, UNIT 1

NV

6.4 # 283

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System E06 1-1 (OUTPUT BKR)

Page 10 OF 37

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
ISRX RELAY (CONT.)	12501- M-1809- 13	ISR	SQUARE D TYPE KPD/3 IN C362A 4K	LEVEL 4 (SEE NED 95-10021) Pg 35

THE FOLLOWING CONTACTS MAY CAUSE E06-1/DG1 TO CHANGE STATE.

NOTE: IF RELAYS SS2X, FSS-X, R3 AND THEIR ASSOCIATED STRINGS HAVE SEISMIC CAPACITY > SEISMIC DEMAND; THEN, THE FOLLOWING INTERPOSING RELAYS CAN ALL BE CLASSIFIED AS CA

E04B SHT. 1C	PB RESET	ALLEN-BRADLEY CAT# 800T PB ON C361A IN RM 318	NV
	74X DG1	G.E TYPE HGA14AF52 IN C3615 IN RM 318.	CA- SS2X+R3 SCREENED FSS-X CR SEE NOTE THIS PAGE

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Bill Date 6-8-95
Reviewed by _____ Date _____

6-4

NOTE: SS2X+R3 ARE SCREENED USING SSRAP REPORT. SEE PAGES 12 AND 74 RESPECTIVELY. FSS-X IS CLASSIFIED AS A CR OUTLIER WHICH WILL BE REPLACED - SEE Pg 8

6.4 #283

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System EDG 1-1 (OUTPUT BKR)

Page 11 OF 37

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
86-1/D61 SUPPLYING CONTACTS	E-64B SHT 1C	<u>51G</u> <u>DG</u>	GE TYPE JACT77A802A IN C3615.	CA - SEE NOTE Pg 10
	E-64B SHT 1D	<u>32</u> <u>DG</u>	G.E TYPE GGP53B1A IN C3615	CA - SEE NOTE Pg 10
	E-64B SHT 1C	<u>51V-1</u> <u>D6</u>	(W) COV-9 STYIE 1876246 IN C3615	CA - SEE NOTE Pg 10
	E-64B SHT. 1D	<u>46</u> <u>DG</u>	G.E. TYPE INC77B3A IN C3615	CA - SEE NOTE Pg 10
"		<u>40</u> <u>DG</u>	(W) TYPE KLF STYIE 290R481A09 IN C3615	CA - SEE NOTE Pg 10

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. Knobell Date 6-8-95
Reviewed by _____ / Date _____

G-4 #283

A-46 RELAY SCREENING AND EVALUATION
FORM G-4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System E66 1-1 (OUTPUT SKR)Page 12 OF 37

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
86-1/D61, SUPPLY CONTACTS	E64B SHTS 1C,1D,	TD-3 TD-4, TD-7 TD-8 TD-9	METER DEVICES TEST SW'S ON C3615	NV
	E-64B SHT 1C	R3	SQUARE D TYPE KPD13 IN C3621 IN RM 318	NOTE 1 P9 5
THE R3 COIL IS SUPPLIED BY THE FOLLOWING CONTACTS:				
	E-64B SHT. 1F	PB START HS1147C	ALLEN-BRADLEY PB TYPE 800T ON C3615	NV
	"	PB/START HS1147B	CUTLER HAMMER PB TYPE E30 ON C36 C5715. A=7 RM=505, EL=623	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Schubert Date 1-4-95
Reviewed by _____ / Date _____

6.4 #283

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System EDG 1-1 (OUTPUT BKR)Page 13 OF 37

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
R3 OIL SUPPLY CONTACTS	E-64B SHT 1E	<u>27Z-3</u> , <u>C1</u> , <u>27Z-1</u> , <u>C1</u>	G.E. TYPE HFA51A4/2H IN C3615 RM 318	GERS- RLY- ARH.5 (SEE Pg 36)
	E-64B SHT 1E	<u>97</u> <u>C1</u>	AGASTAT MODEL 7012PC IN C3615 RM 318	GERS- RLY- PNT.7 (SEE Pg. 36)
	E-64B SHT 1E	<u>52S2A</u> , <u>ABDC1</u> , <u>52S2A</u> , <u>AC110</u>	(W) MOC SW IN C1 BUS, UNITS 2 & 10	NV
"		<u>27Y-4</u> <u>C1</u>	G.E. TYPE HFA51A4/2H IN C3615, RM=318	GERS- RLY- ARH.5 (SEE Pg 36)
▼ M-180G-13	DSA 1 (AII)		G.E TYPE SB-9 CTRL SW. ON C3621 IN RM 318	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Lark Date 5/15/95
Reviewed by _____ Date _____

c.4 #083

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System E06 1-1 (OUTPUT BKR)Page 14 OF 37

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
R3 COIL SUPPLY	E-64B SHT 1E	<u>27X-1</u> , <u>27X-2</u> <u>C1</u> , <u>C1</u>	AGASTAT MOD. E7014PA IN C1 BUS	SEE Pg 3 OF THIS 6.4 FOR SAT. EVAL.
	E-34B SHT. 14	<u>27-1</u> , <u>27-2</u> , <u>27-3</u> , <u>C1</u> , <u>C1</u> , <u>C1</u> , <u>27-4</u> <u>C1</u>	G.E. TYPE. NGV13825A ON C3615, C1 BUS, UNIT 3	GERS- RLY-PMM.4 (SEE Pg 30)
	E-64B SHT 1F	KA, KB	DEUTCH 4CP (5763)C5762	SEE G.4#311
OTHER SHOULD REMAIN OPEN TO PREVENT LOCA SWLIT		BA, BB	AROMAT FORM 1A1B STIEL2DC24V	CA4 (SEE KA,KB)

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Bell Date 5/3/95
Reviewed by _____ / Date _____

G.4 #283

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System EDG 1-1 (OUTPUT BKR)Page 15 OF 37

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
F3 COIL CONTROL (CONT.)	M-180G-13	SDR	SQUARE D CLASS 8501 TYPE KPD13 IN C3621	SEE NOTE 1 Pg 5

NOTE: FOR EVALUATION OF CONTACTS WHICH SUPPLY THE SDR COIL SEE THE SDRX EVALUATION STARTING ON PAGE 5 OF THIS G.4.

AB AC101- CLOSING CKT (CONT.)	E64B SHT 1A	86-1 C1	G.E. TYPE HFA53K91 H IN C1 BUS, UNIT 3.	CR-OBTAIN SEISMIC DATA, REPLACE IF NECESSARY
THE FOLLOWING CONTACTS CONTROL THE <u>86-1</u> <u>C1</u> COIL:				
	E64B SH. 1A 13A	RESET Pb	(W) TYPE OTI PUSHBUTTON ON C1 BUS, UNIT 3	NV
"	51-1X C1		G.E. TYPE HFA53K91F IN C1 BUS, UNIT 3	CR-OBTAIN SEISMIC DATA, REPLACE IF NECESSARY.

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Schell Date 5/15/95
Reviewed by _____ / Date _____

c.4 #283

A-4 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System EOD 1-1 (OUTPUT BKR)Page 16 OF 37

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
86-1 C1 COIL CTRL	E-34B SHT 13A	5IX/ AC110	G,E, TYPE HGA17C61 IN C1 BUS, UNIT 10 (NO. CONTACT)	GERS-RLY-ARH, 5 (SEE PG. 25)
<u>5IX AC110 COIL IS CONTROLLED BY THE FOLLOWING CONTACTS:</u>				
	E34B SHT 5	516S-3	ABB CO-11 #1456CD5R30 CLASS 1E, IN C1 BUS, UNIT 10	LEVEL 4 (SEE NED 95-10027) Pg 37
"		51-4 (DA, DB, DC)	(W) CO-2 # 1875234A ON C1 BUS, UNIT 10	CR
"		51-5 (DA, DB, DC)	(W) CO-5 # 1875234A ON C1 BUS, UNIT 10	CR

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Schaff Date 5/15/95
Reviewed by _____ Date _____

c.4 #283

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System EDG 1-1 (OUTPUT BKR)Page 17 OF 37

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
86-1 C1 CTRL,	E348 SHT 13A	52S1b ABDC1	(W) MOC SW IN C1 BUS, UNIT 2	NV
T	E-34B SHT 13A	51-1 (OA, OB, OC)	(W) CO-9 H110IN #264C901A85 IN C1 BUS, UNIT 2	CR
"	5165-1		ABB TYPE CO-11 STYLE 1456C05A30 CLASS 1E ON C1 BUS, UNIT 2	LEVEL 4 (SEE NED 95-10027) Pg 37
"	51-2 (OA, OB, OC)		(W) CO-2 # 1875223A ON C1 BUS, UNIT 2	CR
	52S1b		(W) MOC SW IN D1 BUS UNIT 3	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W/K Date 5/15/95
Reviewed by _____ / Date _____

c.4 #283

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System EMERGENCY DIESEL GENERATOR 1-1
(OUTPUT BKR)

Page 18 OF 37

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
86-1 C1 COIL CTRL.	E34/B SHT 13A	51-3 (QA, QB, QC)	(W) CO-5 #1875234A ON C1 BUS, UNIT 2	CR
"	51GS-2		ABB TYPE CO-11 STYLE 1456C05A30 CLASS 1E ON C1 BUS, UNIT 2	LEVEL 4 (SEE 95-10027) Pg. 34
AC101 CLOSE CKT (CONT)	E-64B SHT 1A	CLOSE	→ SEE BELOW FOR ITINERATED CONTACT EVAL.	
VMAN E-5-168 "D" STATUS DWG E-5-43	Y	(W) MODEL RFD32S CTRL RELAY FOR 5KV DIA BKL IN C1 BUS UNIT 1	GERS-MVS/LUS.7	

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Smith Date 5/15/95
Reviewed by _____ / Date _____

#983
C.C.

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System EDG 1-1 (OUTPUT BKR)

Page 19 OF 37

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AC101 CLOSE CKT	#MAN E-5-1684 E-5-43	b	AUXILIARY SW FOR (W) 5KV DHF BKR.	NV
"	LCSW		LATCH CHECK SW FOR (W) 5KV DHF BKR.	NV
"	LSa, LSb		MOTOR CUT OFF SW FOR (W) 5KV DHF BKR	NV

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Smith Date 1-4-95
Reviewed by _____ / Date _____

G-4 #283

**A-46 RELAY SCREENING AND EVALUATION
FORM G-4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1**

System ED6 1-1 (OUTPUT SKR)

Page 20 OF 37

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AC101-TRIP ~ CKT.	E-64B SHT 1A	R7	SQUARE D CLASS 8501 TYPE KAO13 IN C3621, RM 318	SEE NOTE 1 Pg 5

THE FOLLOWING CONTACTS CTRL THE OPERATION OF THE R7 COIL :

E-64B SHT. IF & M-180Q- 14	PB STOP HS1147D (REMOTE STOP)	ALLEN BRADLEY PB TYPE E80T ON C3615 IN RM 318	NV
"	PB/STOP HS1147A (REMOTE STOP)	CUTLER HAMMER TYPE E80 ON C5715, A=7, RM=505 EL=	NV

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Gandy Date 1-4-95
Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM C-4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System ED6 1-1 (OUTPUT BKR.)

Page 21 OF 37

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
R7 RELAY COIL CTRL	M-180Q- 14	SW-6 (NORMAL C STOP)	ALLEN-BRADLEY PB TYPE E80T ON C3621 - IN RM 318	NV
"	SG1		SQUARE D CLASS 8501 TYPE KPD13 IN C3621 IN RM 318	4K NOTE 1 PG 5
"	T08		AGASTAT MODEL E7012PC IN C3621 IN RM 318	NOTE 1 PG 5
"	R3		SQUARE D CLASS 8501 TYPE KPD13 IN C3621 IN RM 318	NOTE 1 PG 5

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by J.K. Schaefer Date 1/4/95
 Reviewed by _____ Date _____

G-4 #283

A-46 RELAY SCREENING AND EVALUATION
FORM G-4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System EDG 1-1 (OUTPUT BKR)Page 22 OF 37

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AC101 TRIP CKT. (cont)	E-64B SHT. 1A	KA, KB BA, BB	SEE PG 14 OF THIS 6.4 FOR TYPE & LOCATION.	CA - DURING STRONG SHAKING THESE CONTACTS ARE CLOSED, TRIP SIGNALS WILL BE BLOCKED BY MANUAL SWITCHES
"	86-2 & 86-1 DG1 DG1		SEE PAGE 4 OF THIS 6.4 FOR TYPE & SAT EVAL. OF THESE ESSENTIAL RELAYS.	
"	51V-2 DG DC	(AH, AB)	(W) COV-9 STYLE # 1876245 IN C1 BUS, UNIT 1	GERS-MVS-LVS. 7

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by J.H. Lipp Date 5/15/95
Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
PLANT DAVIS-BYSSSE UNIT 1

System EDG 1-1 (OUTPUT BKR)

Page 23 OF 37

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AR101 TRIP CKT	E-6413 SHT 1A	<u>60</u> <u>DG</u>	G.E. TYPE CFVBIIA3A IN C3615 RM 318	CA4 (i.e. 5IV-2 <u>DG</u> CONTACTS)
"		<u>86-1</u> <u>C1</u>	SEE Pg 15 OF THIS 6.4 FOR TYPE AND SAT EVAL. OF THIS ESSENTIAL RELAY.	
"		<u>27Z-2</u> <u>C1</u>	G.E. TYPE HFAS1A 42H IN C3615 RM 318	GERS-RLY-ARH.5 (SEE Pg 36)

FOR CONTACTS WHICH CONTROL THE 27Z-2/C1 COIL
 SEE R3 COIL EVALUATION STARTING WITH 27Z-3/C1
 ON PAGE 13 OF THIS 6.4.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Schuh Date 5/15/95
 Reviewed by _____ / Date _____

c.e #283

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System E06 1-1 (OUTPUT BKR)

Page 24 OF 37

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*	NOTE / Pg 5
AC101 TRIP CKT.	E-64B SHT 1A	SS4	SQUARE D CLASS 6501 TYPE KRD13 IN C3621, RM 318		
M-180 Q - 13		SS4A → CONTROLS SS4 COIL	SYNCHRO-START ELECTRONIC SPEED SWITCH MOD. ESSB-4AT IN C3621, RM 318		NOTE / Pg 5
E-64B SHT 1A		TRIP			
E-5-43 & VMAN E-5-168		Q	AUXILIARY SWITCH FOR <u>W</u> 5KV DHP BKR. IN CI BUS, UNIT 1		NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by G. L. Knobell Date 1-4-95
Reviewed by _____ / Date _____

C.E. #283

A-46 RELAY SCREENING AND EVALUATION
FORM C.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System EMERGENCY DIESEL
GENERATOR

Page 25 OF 37

Subsystem/Component Ref Dwg(s) Contact/Contact Group Relay Type and Location SAT

LEVEL 2 SCREENING FOR C1 AND D1 SWITCHGEAR

Level 2 screening is being applied to the following essential relay types, which are located in the Westinghouse medium voltage switchgears C1 and D1: Agastat model 7022, General Electric models HFA51A, HGA17C (see attached sheets for comparison between General Electric models HGA17A and HGA17C). (Pgs 26 → 29)

Level 2 screening requires that the seismic capacity of the relay exceed its seismic demand. Both C1 and D1 are located in Plant Area 6, elevation 585', which is less than about 40' above effective grade (Area 6 effective grade = 573'). The median-centered floor response for Peak and ZPA for this area and elevation are .6038g and .242g respectively. Per NED 95-10027 (copy attached) an amplification factor of 5.5 has been assigned to the C1 and D1 switchgears. The natural frequency of the C1 and D1 switchgears is less than 8Hz, therefore, seismic demand (SD) is calculated: SD = medium centered floor response X safety factor X amplification factor.

Peak seismic demand:

$$SD = .6038g \times 1.5 \times 5.5$$

$$SD = 4.98g$$

ZPA seismic demand:

$$SD = .242g \times 1.5 \times 5.5$$

$$SD = 1.99g$$

Relay capacities from GERS-RLY-ARH.5 and GERS-RLY-PNT.7

	HGA17A	HFA51A	7022
Peak	6	6	6
ZPA	2.4	2.4	2.4

therefore, seismic capacity exceeds seismic demand.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by W.H. Schaff Date 5/3/95
Reviewed by _____ / Date _____

JUSTIFICATION
FOR
SCREENING G.E. HGA17C52 AND HGA17C61 RELAYS
WITH GERS-RLY-ARH.5

Table 2 in GERS-RLY-ARH.5 lists a GERS level of 6g for the normally open contact of a direct current G.E. HGA17A relay in the non-operate condition. Figure 1 in GERS-RLY-ARH.5 gives a ZPA of 3.6g for this same relay. Davis-Besse uses a G.E. HGA17C relay in some of 4.16kV breaker control circuits (C1 and D1 switchgear). Data provided by G.E. will be used to show that the above "g" levels are applicable to normally open contacts on the G.E. HGA17C52 and HGA17C61 DC relays in the non-operate condition.

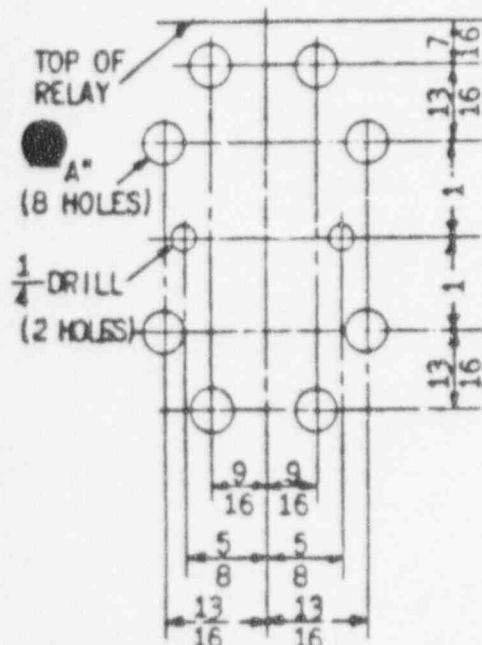
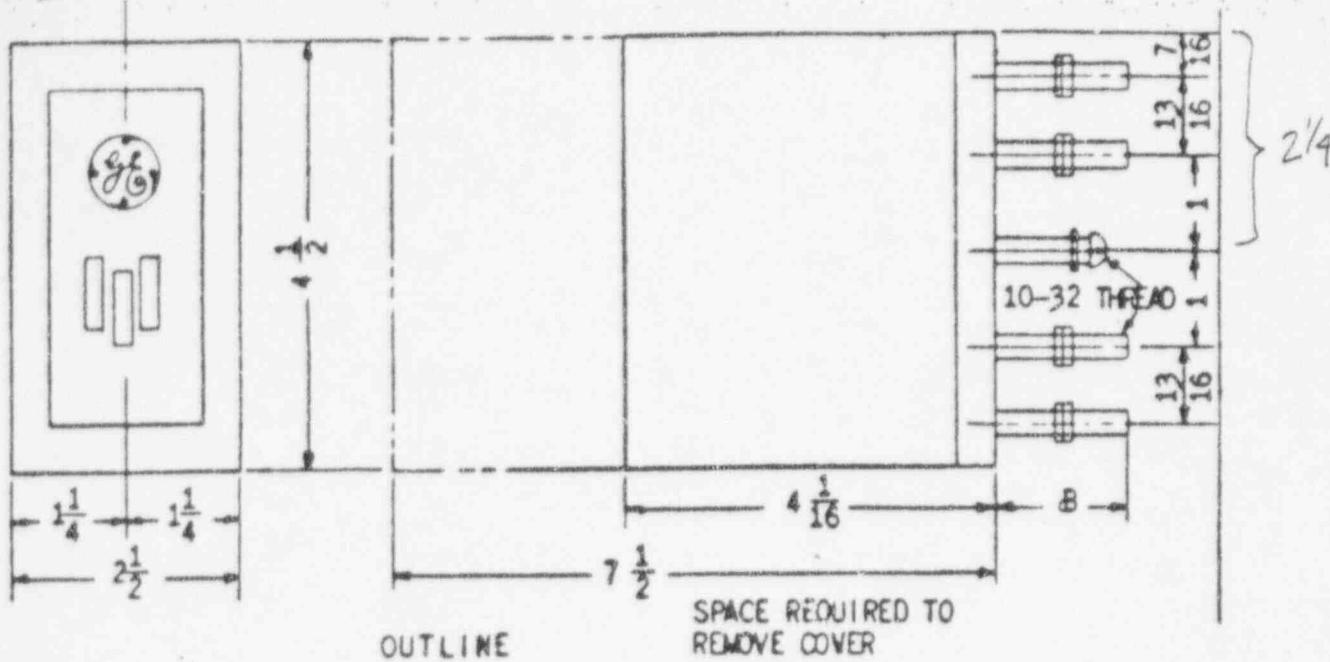
1. MOUNTING: Both the HGA17A and HGA17C (hereafter referred to as A and C respectively, are surface mounted. Both the A and C use two #10-32 screws for attachment to the mounting surface. The difference is, A is backconnected whereas C is front connected (see GEI-10190 pages 8 & 10 which are attached). Method of connecting conductors to these relays will not affect the g level at which contacts chatter.
2. CONTACTS & SPRINGS: G.E. Renewal Parts list for HGA relays, GEF-2623F (copy attached) shows that the A and C relay use the same contacts and springs. The differences between the A and C relays are the operating coil and the cover, neither of which will affect chatter in the non-operate state.

110187

39-14-2

13424

GEI-10190

6.4 #283
Pg 27 of 37

TYPE OF PANEL	"A"	"B"
INSULATING	7/16"	2-13/16"
STEEL	9/16"	1-3/8"

PANEL DRILLING (FRONT VIEW)

Fig. 4 (06077058-019) Outline and Panel Drilling for Surface Mounting of HGA17A and HGA17H Relays

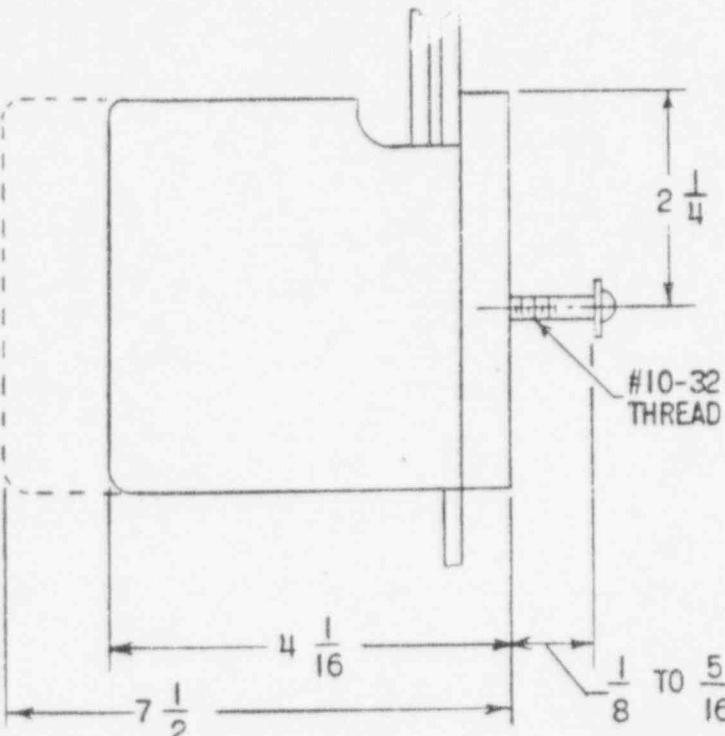
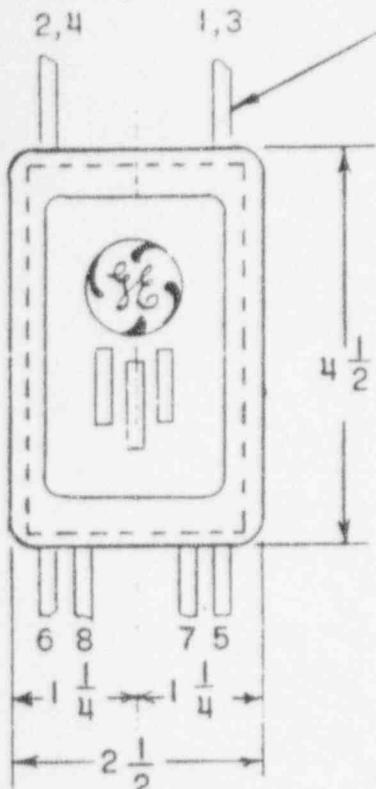
00189

E-39-14-2
#3432)

GEI-10190

G.4 #283
Pg 28 OF 37

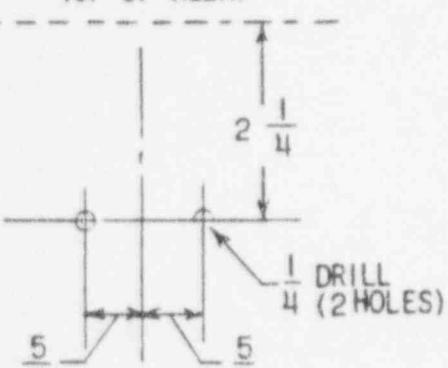
NOTE: WIRE SIZE MUST NOT EXCEED
0.2" OVER INSULATION



UNLESS PANEL
THICKNESS IS
SPECIFIED

OUTLINE

TOP OF RELAY



PANEL DRILLING
(FRONT VIEW)

Fig. 6 (06375628-005) Outline and Panel Drilling for Surface Mounting of HGA17C, HGA17D and HGA17E Relays

6.4 # 283
Pg 29 of 37

RELAY MODEL
NUMBER

Page		Stationary Contact, Left Front or Right Back		Stationary Contact, Right Front or Left Back		*A	*B	*C	*D	*E	*F	*G	*H	*J	*K	*L	*M	*N	*P	*Q	*R	*S	*T	*U	*V	*W	*X	*Y	*AA	*AB	*AC	*AE
Ref.																																
12HGA15N1 to 5, 7 to 9, 13, 14, 19, 22 to 25	2	2	2	2	2	2	2	3	4	4	4	4	4	4	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
12HGA15N6, 10 to 12, 19 to 18, 21	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
12HGA15R1 to 37	2	2	2	2	2	2	2	3	4	4	4	4	4	4	4	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
12HGA15S1 to 20	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
12HGA15V2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
12HGA15W11 to 17	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
12HGA16A1 to 15	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
12HGA16B1 to 4	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
12HGA17A51 to 78	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
12HGA17B51 to 78	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
12HGA17C51 to 78	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
12HGA17D51 to 78	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
12HGA17E51 to 78	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
12HGA17F51 to 78	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
12HGA17H51 to 78	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
12HGA17J1A to 10A	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
12HGA17L1A to 7A	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
12HGA17M51 to 78	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
12HGA17N1A to 4A	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
12HGA17R51 to 78	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
12HGA17S51 to 78	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
12HGA17T51 to 78	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
12HGA18A1A to 13A	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
12HGA18B1A to 3A, 5A, 10A to 13A, 15A, 21A to 23A, 25A	2	2	2	2	2	2	2	3	4	4	4	4	4	4	4	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
12HGA18B4A, 6A, 14A, 16A, 24A, 26A	2	2	2	2	2	2	2	3	4	4	4	4	4	4	4	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
12HGA18E21A to 35A	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
12HGA18F31A to 60A	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
12HGA18H1A to 2A	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	

* Recommended for normal maintenance

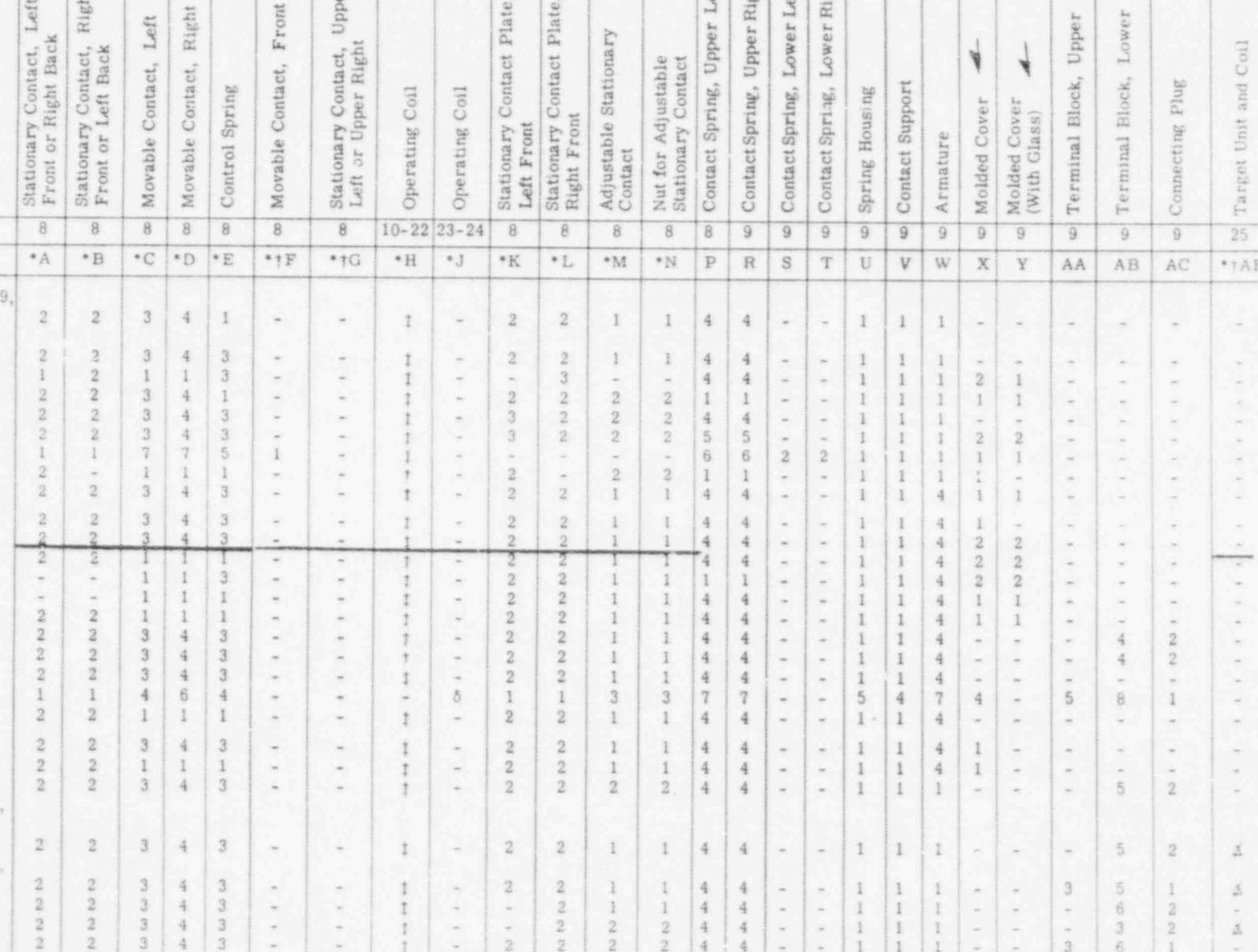
† Not illustrated

‡ Select proper coil from table starting on page 10

§ Select proper coil from table starting on page 23

▲ Select proper target unit assembly and target coil from table on page 25.

COPIED FROM GEF-2623F
1-16-95 SK



25 Target Unit and Coil

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System	<u>EMERGENCY DIESEL</u>	Page	<u>30 OF 37</u>
Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location

LEVEL 1 SCREENING FOR C1 AND D1 SWITCHGEAR

Level 1 screening is being applied to the following essential relay types which are located in the Westinghouse medium voltage switchgears C1 and D1: Agastat models 7012PB, 7012PE and E7014PA, General Electric model NGV13B¹, Westinghouse model MG-6 and ITE27D.

To apply level 1 screening, the following conditions are considered.

1. Davis-Besse is bounded by the SSRAP bounding spectrum.
2. Switchgears C1 and D1 are located in Area 6, elevation 585' which is less than about 40 feet above effective grade (area 6 effective grade = 573').
3. GERS Levels for affected relays are $\geq 5g$.
 - a. GERS for Agastat 7012 = 12.5g (ref. GERS-RLY-PNT.7)
 - b. GERS for Westinghouse MG-6 (DC, N.O. contact) = 10g (ref. GERS-RLY-ARH.5)
 - c. GERS for General Electric NGV13A = 15g (ref. GERS-RLY-PMM.4)
 - d. GERS for ITE27 = 15g (ref. GERS-RLY-PPM.4)
 - e. GERS for Agastat E7014 = 10g (ref. GERS-RLY-PNT.7)

¹ See JUSTIFICATION FOR SCREENING NGV13B RELAYS WITH GERS-RLY-PPM.4 which is included with this G.4 form. (PAGES 31, 32 & 33)

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by J. K. Hall, Date 5/3/95
Reviewed by _____ / Date _____

G.4 # 283

Pg 31 OF 37

JUSTIFICATION
FOR
SCREENING G.E. NGV13B RELAYS
WITH GERS-RLY-PPM.4

Table 1 in GERS-RLY-PPM.4 lists a peak GERS level of 15g for the G.E. NGV13A relay in all modes of operation. Davis-Besse uses the G.E. NGV13B relay to initiate Emergency Diesel Generator starting in response to a bus undervoltage. Data provided by General Electric will be used to show the 15g level given for the NGV13A relay is applicable to the NGV13B relay.

The complete part number of the relay in use at Davis-Besse is 12NGV13B25A, this "corresponds" to a 12NGV13A11A (reference G.E. Bulletin 7335 page 12-14, copy attached). The 12NGV13A11A is explicitly covered by GERS-RLY-PPM.4. G.E. Bulletin GEF-4376 page 4 (copy attached) shows that both the 12NGV13A11A and the 12NGV13B25A contain the same telephone relay. Since it's the telephone relay which contains parts subject to contact chatter, both relays will have equivalent GERS levels. Moreover, the difference between the NGV13A and NGV13B relays is that the NGV13B is equipped with a target coil for providing trip indication. The presence of this target coil does not affect the seismic capacity of the relay' essential contacts.



Type NGV
Voltage Relays

G.4 # 283
Pg 32 OF 37

7335

Protective Relays

SELECTION GUIDE—AC

No. Units	Rating		Contacts (Per Unit)	Calibrated on Dropout①				Calibrated on Pickup②				Case Size	Approx. Wt. in lbs (kg)	
				Cal. Range (V)	W/O Target	With Target		Cal. Range (V)	W/O Target	With Target				
	Volt	Freq. (Hz)		Model Number	Model Number	Model Number	Tar. Rat. (Amps)	Model Number	Model Number	Model Number	Tar. Rat. (Amps)		Net	Ship.
1	69	60	+ + + +	40-58	12NGV15A30	Molded △	3(1.4)	5(2.3)
	120	50/60		70-100	A21	.....	.....	.....	.....	.....	.....
	208			121-173	A22	.....	.....	.....	.....	.....	.....
	240			140-200	A23	.....	.....	.....	.....	.....	.....
	480			280-400	A11	.....	.....	.....	.....	.....	.....
1	69	60	+ + + +	40-58	12NGV13A14A	S1	10(4.5)	14(6.8)
	120			100-140	A15A	.....	.....	.....	.....	.....	.....
	208			121-173	A12A	.....	.....	.....	.....	.....	.....
	240			140-200	A13A	.....	.....	.....	.....	.....	.....
	69	50/60		40-58	12NGV13B28A	0.2	.....	.....	.....	.....	.....
	120			35-50	A11A	B39A	0.2	.....	.....	.....	.....
	120			70-100		B25A	0.2	.....	.....	.....	.....
	120			70-100		B21A	2.0	.....	.....	.....	.....
	120			80-120		B30A	0.2	.....	.....	.....	.....
	120			80-120		B29A	2.0	.....	.....	.....	.....
2*	208	50/60	+ + + +	121-173		B26A	0.2	S2	11(5)	16(7.3)
	240			121-173		B22A	2.0	.....	.....	.....	.....
	240			140-200		B27A	0.2	.....	.....	.....	.....
	240			140-200		B23A	2.0	.....	.....	.....	.....
	120	50/60		70-100	A11A	B11A	2.0	.....	.....	.....	.....
3*	69	60	+ + + +	40-58	12NGV12A12A	0.2	S2	12(5.4)	18(8.2)
	120			70-100	A13A	.....	.....	.....	.....	.....	.....
	120			70-100		12NGV11B18A	0.2	.....	.....	.....	.....
	120			70-100		B15A	0.2	80-120	80-120	.....	.....	
	208			121-173		B11A	2.0	121-173	121-173	.....	.....	
3*	69	50/60	+ + + +	40-58	12NGV11A20A	0.2	.....	.....	.....	.....	.....
	120			70-100	A11A	.....	.....	.....	.....	.....	.....
	120			121-173	A12A	.....	.....	.....	.....	.....	.....
	240			140-200	A13A	.....	.....	.....	.....	.....	.....

* 2-unit and 3-unit relays have two targets.

① In two-unit and three-unit relays, the normally open contacts are wired out in series, and the normally closed are wired out in parallel.

② In these three-unit relays, the normally closed contacts are wired out in series, and the normally open are wired out in parallel.

STATION BATTERY MONITORING

Number of Units per Relay	Volts Dc	Calibration Range Dropout Volts	Ac Supply Voltage		Model Number	Time Delay (sec)	Case Size	Approx. Wt. in lbs (kg)	
			Volts	Hertz				Net	Ship.
1	48	40-54	120	60	12NGV19A5A	0.5	S1	10(4.5)	15(6.8)
	125	54-66	120		ABA				
	125	100-140	120		A1A				
	125	100-140	208		A2A				
	125	100-140	240		A3A				

G.4 # 283
Ag 33 OF 37

GEF-4376, TYPE NGV RELAYS

RELAY MODEL NUMBER	Zener Diode												
	A+	B+	C	D1	E1	F1	G	H1	J	K	L1	M1	N	P
12nGv12A1AA	-	-	-	1	2	-	2	1	2	-	18	10	-
12nGv12A1SA	-	-	-	1	1	-	1	1	2	-	9	10	-
12nGv12B1AA	-	-	-	1	1	-	1	1	1	-	34	10	-
12nGv12B12A	-	-	1	2	-	2	3	-	3	1	-	17	10
12nGv12B13A	-	-	1	2	-	2	3	-	3	1	-	17	10
12nGv12B14A	-	-	1	1	-	1	2	-	2	1	-	18	10
12nGv12B15A	-	-	2	1	-	1	1	-	1	1	-	34	10
12nGv12B16A	-	-	2	2	-	2	3	-	3	1	-	17	10
12nGv12B17A	-	-	2	2	-	2	3	-	3	1	-	17	10
12nGv12B18A	-	-	2	1	-	1	2	-	2	1	-	18	10
12nGv12B19A	-	-	1	1	-	1	1	-	1	1	-	9	10
12nGv12C2A	-	-	1	-	1	-	1	-	1	1	-	34	10
12nGv13A1AA	-	-	-	1	-	-	1	-	1	3	-	36	2
12nGv13A12A	-	-	-	2	-	-	3	-	1	3	-	37	2
12nGv13A13A	-	-	-	2	-	-	3	-	1	3	-	37	2
12nGv13A14AA	-	-	-	1	-	-	4	-	1	3	-	38	1
12nGv13A15A	-	-	-	3	-	-	1	-	1	3	-	39	2
12nGv13A16A	-	-	-	1	-	-	1	-	1	3	-	14	2
12nGv13A17A	-	-	-	4	-	-	3	-	1	3	-	25	4
12nGv13A18A	-	-	-	1	-	-	1	-	1	3	-	14	5
12nGv13A20A	-	-	-	3	-	-	6	-	1	3	-	52	3
12nGv13B21A	-	-	-	1	-	-	1	-	1	4	-	36	2
12nGv13B22A	-	-	-	2	-	-	3	-	1	4	-	37	2
12nGv13B23A	-	-	-	2	-	-	3	-	1	4	-	37	2
12nGv13B24A	-	-	-	1	-	-	2	-	1	4	-	16	2
12nGv13B25A	-	-	2	-	1	-	1	-	1	4	-	36	2
12nGv13B26A	-	-	2	-	-	-	3	-	1	4	-	37	2
12nGv13B27A	-	-	2	-	-	-	3	-	1	4	-	37	2
12nGv13B28A	-	-	2	-	-	-	4	-	1	4	-	38	1
12nGv13D29A	-	-	1	-	4	-	1	-	1	4	-	36	2

G.4 #283
Pg 34 OF 37

Date: Thursday, October 20, 1994 1:24pm
/RELAY
From: JonHook
To: Betlack
Re: Essential relays mounted on the EDG skid

Msg#: 4752

(1 reply)

If a cabinet which contains Emergency Diesel Generator control relays for which chatter is not acceptable is mounted on the engine skid, can these relays be considered seismically adequate by referencing page B-69 in NP 7148-SL and section 17 in SSRAP rev 4.0?

Also, can pressure switches which are mounted on attachments to the EDG skid be similarly screened?

Date: Tuesday, November 1, 1994 4:00pm
/RELAY
From: Betlack
To: JonHook
Re: Essential relays mounted on the EDG skid
(Reply to #4752)

Msg#: 4791

Yes to both questions. Section 17 of the SSRAP report states that "relays on reciprocating engines that routinely see high vibration due to operation" do not require a relay evaluation. The example on page B-69 of EPRI NP-7148 is based upon the SSRAP position. Accordingly, any contact device which satisfies the SSRAP report criteria is considered seismically adequate.

USE THIS SHEET TO BACKUP SAT EVALUATIONS
FOR RELAYS IN C3621, C3622 AND SWITCHES
MOUNTED BELOW THE OIL TANK ON RACK FOR
EDG 1-1 AND EDG 1-2

COPY TO 6.4 FORMS:

197, 178, 283, 291, 351, 352, 353, 354

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

G.4 #283

System AC101

Page 35 OF 37

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
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INTENTIONALLY BLANK

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by _____ / Date
Reviewed by _____ / Date

C-4 #2B3

A-46 RELAY SCREENING AND EVALUATION
FORM C-4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System EDG 1-1 (OUTPUT BKR)
AC101

Page 36 OF 57

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

LEVEL 2 SCREENING FOR
C3615 AND C3616

1. The natural frequency of these cabinets is less than 8Hz.
2. These cabinets have been assigned an amplification factor (AF) of 4.5.
3. These cabinets are both located in plant area 6, elevation 585'.
4. For this area and elevation the peak Median Centered Floor Response Spectra (FRS) = .6038g and the associated ZPA = .242g.

thus peak Seismic Demand (SD); $SD = [ERS] * AF$ where ERS = FRS * 1.5
 $SD = [.6038g * 1.5] * 4.5$
 $SD = 4.1g^3$

and ZPA Seismic Demand (SD); $SD = [ERS_{ZPA}] * AF$ where $ERS_{ZPA} = ZPA * 1.5$
 $SD = [.242g * 1.5] * 4.5$
 $SD = 1.6g$

5. Level 2 screening in these cabinets is being applied to the following relay types: Agastat 7012 (seismic capacity = 12.5g peak and 5g ZPA per GERS-RLY-PNT.7) and G.E. HFA51A42H with either normally open contacts or an energized coil (seismic capacity = 6g or 7g peak and 2.4g or 2.8g ZPA respectively, per GERS-RLY-ARH.5).

therefore, seismic capacity exceeds seismic demand.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
HV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by J.H. Barkley Date 5/15/95
Reviewed by _____ / Date _____

See Review:

John H. Barkley 8/18/95

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

G.4 #283

System AC101

Page 37 OF 37

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
---------------------	------------	-----------------------	-------------------------	------

INTENTIONALLY BLANK

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by _____ / Date
Reviewed by _____ / Date

Relay Evaluation Report

Section 5.2 G-4 Forms

Binder 4

Docket Number 50-346

License Number NPF-3

Serial Number 2316

THIS BKR IS NORMALLY OPEN AND MUST
REMAIN OPEN TO ENSURE ENG 1-1 REMAINS
WITHIN OPERATING LIMITS.

C1 BUS: A=6
RM=325
EL=585

BKR CLOSES, MUST ENSURE TRIPPING IF LOOP

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT ~~DAVIS-BESSE UNIT 1~~

G.4 #284

System 4.16kV ELECTRICAL

Page 1 of 20

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and location	SAT*
ABDC1	E-34B SHT. 3, 4	DS (NLL)	(W) TYPE W CONTROL SW ON C1 BUS UNIT 2	NV
ABDC1	"	CS HIS6220	G.E. TYPE SBM (MAINTAINED CONTACT) ON C5715 IN RM 505, A=7, EL=623	NV
ABDC1-CLOSE CKT	"	25SD HIS6221	G.E. TYPE SBM (MAINTAINED CONTACT) ON C5715 IN RM 505.	NV
ABDC1	"	CS/2 ABDC1	G.E. TYPE SBI BKR CTRL SW ON C3615 IN RM 318	NV
ABDC1 - CLOSE CKT.	"	25SD D61	G.E. TYPE SBI (MAINTAINED CONTACT) ON C3615 IN RM 318	NV

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by OK Date 9-22-94
Reviewed by _____ / Date _____

IF This Bkr closes w/ loop
Or need to trip open

MOC = MECHANISM OPERATED
CELL SW.

TOC = TRUCK OPERATED CELL SW.

G.4 #284

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System 4.16KV ELECTRICAL

Page 2 OF 20

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
ABDC1 - CLOSE CKT	E-34B SHT. 3, 4	52S1b AC101	(W) MOC SW IN BKR AC101 IN C1 BUS UNIT 1	NV
"		52S1b AC110	(W) MOC SW IN BKR AC110 IN C1 BUS UNIT 10	NV
"		52H1 TEST POS	(W) TOC SW IN BKR ABDC1 IN C1 BUS UNIT 2.	NV
"		526 AC110	(W) AUX SW FOR 5KV DHP BKR ON BKR AC110 IN C1 BUS UNIT 10	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by W.K. Smith, Date 9-22-94
Reviewed by _____ / Date _____

G.4 # 284

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS - BESSIE UNIT 1

System 416 KV ELECTRICALPage 3 OF 30

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
ABOC1- CLOSE CKT.	E-34B SHTS 34 4	52X1 <u>AACC2</u>	GE TYPE HFA151A2H IN CI BUS UNIT 10	CA4 (i.e <u>CS</u> <u>HIS6220</u>) <u>CS/D</u> <u>ABOC1</u>)
		25X C1	GE TYPE HFA151Z4H IN CI BUS UNIT 3	CA4 (i.e <u>CS</u> <u>HIS6220</u>) <u>CS/D</u> <u>ABOC1</u>)
		62 TDO	GE, TYPE HGA17C52 IN CI BUS UNIT 10 (SEE NOTE 1 BELOW)	GERS-RLY-ARH.5 (SEE Pg 11)
		51-2X C2	GE TYPE HFA53KG1F IN CI BUS UNIT 10	CA - CHATTER ON THIS NC CONTACTS IS ACCEPTABLE AS THIS WOULD BLOCK A RKR. CLOSE SIGNAL.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Smith Date 5-3-95
Reviewed by _____ / Date _____

NOTE 1. THIS CONTACTS WILL BLOCK CLOSE SIGNAL
FROM 86-3/C2 15 CYCLES AFTER AC110
TRIPS OPEN.

G.4 #284

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS - BESSIE UNIT 1

System 11.16 KV ELECTRICAL

Page 4 OF 20

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
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NOTE: Attempting to ensure this breaker remains open greatly expands the number of relays requiring an essential classification. This is due to the various contacts which control the operation of the 86-3/C2 and the 86-3/AC relays. Moreover, making these various contacts essential extends our seismic evaluations to include the stations 13.8 KV and non-1E 4KV buses. Therefore, to limit the number of essential relays and seismic evaluations, this breaker is being allowed to close due to contact chatter. Then, should a loss of offsite power occur, undervoltage relaying will be assured for tripping.

<u>ABDC1 - CLOSE</u>	<u>E-34B</u>	<u>86-3</u>	<u>G.E. TYPE HFA53K9IF</u>	<u>CA - SEE ABOVE NOTE</u>
<u>CKT</u>	<u>SHT 3</u>	<u>C2</u>	<u>IN C2 BUS UNIT 3</u>	
"		<u>86-3</u>	<u>G.E. TYPE HFA53K9IF</u>	<u>CA - SEE ABOVE NOTE</u>
"		<u>AC</u>	<u>IN C1 BUS UNIT 10</u>	
"		<u>95</u>	<u>G.E. TYPE HFA53K9IF</u>	<u>CR - OBTAIN</u>
		<u>AACC2</u>	<u>IN C1 BUS UNIT 10</u>	<u>SEISMIC DATE.</u>
			<u>(SEE NOTE 1 BELOW)</u>	<u>Possible Replacement.</u>

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Kiel Date 5/31/95
Reviewed by _____ / Date

NOTE 1: THESE CONTACTS WILL
BLOCK CLOSE SIGNAL BY 86-3/AC 15 CYCLES AFTER AACC2
TRIPS OPEN.

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System 416 kV ELECTRICAL

Page 5 OF 20

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
ABDC1 - CLOSE CIRCUIT	THE FOLLOWING CONTACT CONTROLS OPERATION OF <u>62</u> TDO RELAY			
	E-34B SHT 5	52S1a	(W) MOC SWITCH IN 5kV DHP BKR IN C1 BUS, UNIT 10.	NV
THE FOLLOWING CONTACTS CONTROL THE OPERATION OF <u>95</u> AACC2 RELAY				
	E-34B SHT 1	<u>62</u> TDO	G.E. TYPE HGH11C52 IN C2 BUS, UNIT 9 (SEE NOTE 1 BELOW)	CR - RELAY IN C2 BUS MOVE TO C1 BUS.
	"	52b	BREAKER AUXILIARY SWITCH FOR (W) 5kV DHP BKR. IN C2 BUS, UNIT 9	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by M.H. Ladd Date 5-31-95
 Reviewed by _____ Date _____

NOTE 1: THESE CONTACTS DEENERGIZE 95/AACC2 15 CYCLES
 AFTER AACC2 TRIPS OPEN.

G-4 #284

A-46 RELAY SCREENING AND EVALUATION
 FORM G-4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System 4.16kV ELECTRICALPage 6 OF 20

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT
ABDC1	E-348 SHT 3	CS	GE TYPE SB9 CTRL SW ON CI BUS, UNIT 2	NV
ABDC1-CLOSE CKT	"	52S12	(W) MOC SWITCH FOR 5kV DHP BKR IN CI BUS, UNIT 2	NV
ABDC1-TRIP CIRCUIT	E-348 SHT 3	86-2 CI	G.E. TYPE HFA53K91F IN CI BUS, UNIT 3	CAT - MAY CAUSE TRIP
	"	86-4 BD	G.E. TYPE HFA53K91F IN CI BUS UNIT 10	CAT - MAY CAUSE TRIP

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Laff Date 5-3-95
 Reviewed by _____ / Date _____

c.e # 284

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System 416kV ELECTRICALPage 7 OF 20

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
HBDC1-TRIP OKT	E-34B SHT 3	<u>52X</u> HBDC1	G.E. TYPE HGA17C52 IN C1 BUS UNIT 2	BA - USING NC CONTACT.
NOTE ON <u>52X</u> ABDC1			THIS RELAY IS RELIED UPON TO TRIP BREAKER ON UNDERVOLTAGE SHOULD BREAKER CLOSE DURING PERIOD OF STRONG SHAKING.	
E-34B SHT 3		<u>27Y-1</u> C1	G.E. TYPE HFA51A42H ON C1 BUS, UNIT 3	SEE 6.4 # 283 Pg 1546 FOR EVALUATION OF THIS RELAY + CONTROLLING CONTACTS <input checked="" type="checkbox"/>
"		<u>27X-5</u> C1	(W) TYPE MG-6 MULTI-CONTACT AUXILIARY RELAY IN C1 BUS, UNIT 1 # 289B360A20 (NO CONTACTS)	LEVEL 1 GERS-RLY-ARH.5 SEE Pg. 16

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Early Date 5/3/95
Reviewed by _____ / Date _____

USED LEVEL 2
SCREENING;
GERS-RLY-ARH.5

c.c #284

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System 4100 kV ELECTRICALPage 8 OF 20

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
ABDC1 TRIP CKT	E34B SHT.14C	27X-4 C1	(W) TYPE MIG-4 MULTI-CONTACT AUX RELAY IN C1 BUS, UNIT 1 # 2898360A20 (NO. CONTACTS)	LEVEL 1 GERS-RLY-ARH, 5 (SEE PG 16)
CONTACTS UPSTREAM OF 27X-4/C1 AND 27X-5/C1 COILS	E34B SHT.14C	27A-1/C1 27A-2/C1 27A-3/C1 27A-4/C1	ITE IMPERIAL CORP. ITC 210 CHT # 211B4175 ON C1 BUS, UNIT 1	SEE G.4 # 285 fo SAT EVAL (LEVEL 1 GERS-RLY-PPM.4 SEE PG 16)

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- | | |
|------|---|
| CA | - Chatter acceptable. |
| NV | - Not vulnerable (mechanically-actuated contacts and solid state relays). |
| GERS | - Seismically adequate based on GERS _____; include GERS number. |
| NA | - Component not affected by relays. |
| CR | - Corrective action required. |
| OA | - Operator action. |
| | - No entry necessary. |

Prepared by W.K.6018 Date 5/3/95
Reviewed by _____ / Date _____

G.4 #284

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System 4.16RU ELECTRICALPage 9 OF 20

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
ABDC1	E-34B SHT 3	CLOSE	SEE DWG E-5-43 AND BELOW FOR EVAL OF CONTACTS IN CLOSE	
E-5-43	LSb, LSa		MOTOR CUT-OFF SWITCH IN <u>W</u> 5KV DHP BKR IN C1 BUS.	NV
LCSW			LATCH CHECK SWITCH IN <u>W</u> 5KV DHP BKR IN C1 BUS	NV
b			AUXILIARY SWITCH FOR <u>W</u> 5KV DHP BKR IN C1 BUS	NV

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. L. Schaff Date 9-22-94
Reviewed by _____ / Date _____

c.e #284

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System 4160V ELECTRICAL

Page 10 OF 20

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AB021	E-5-43	Y	(W) TYPE BFD22S CTRL RELAY FOR ANTI PUMPS IN 500 VHP BKR. IN CI BUS	GERS-SWGR (GERS-MVS/LVS.7)

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NY - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by W.K. Lipp Date 9-22-94
Reviewed by _____ / Date _____

#284

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System 416KV ELECTRICAL

Page 11 OF 20

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
---------------------	------------	-----------------------	-------------------------	------

LEVEL 2 SCREENING FOR C1 AND D1 SWITCHGEAR

Level 2 screening is being applied to the following essential relay types, which are located in the Westinghouse medium voltage switchgears C1 and D1: Agastat model 7022, General Electric models HFA51A, HGA17C (see attached sheet for comparison between General Electric models HGA17A and HGA17C).

Level 2 screening requires that the seismic capacity of the relay exceed it's seismic demand. Both C1 and D1 are located in Plant Area 6, elevation 585', which is less than about 40' above effective grade (Area 6 effective grade = 573'). The median-centered floor response for Peak and ZPA for this area and elevation are .6038g and .242g respectively. Per NED 95-10027 (~~copy attached~~) an amplification factor of 5.5 has been assigned to the C1 and D1 switchgears. The natural frequency of the C1 and D1 switchgears is less than 0Hz, therefore, seismic demand (SD) is calculated: SD = medium centered floor response X safety factor X amplification factor.

uf

Peak seismic demand:

$$\begin{aligned} SD &= .6038g \times 1.5 \times 5.5 \\ SD &= 4.98g \end{aligned}$$

ZPA seismic demand:

$$\begin{aligned} SD &= .242g \times 1.5 \times 5.5 \\ SD &= 1.99g \end{aligned}$$

Relay capacities from GERS-RLY-ARH.5 and GERS-RLY-PNT.7

	HGA17A	HFA51A	7022
Peak	6	6	6
ZPA	2.4	2.4	2.4

therefore, seismic capacity exceeds seismic demand.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- NO - No entry necessary.

Prepared by W. K. Smith Date 5/3/95
 Reviewed by _____ / Date _____

SCE REVIEW:

Jar G. Stark 8/18/95

G.4 # 254

Pg 12 OF 20

JUSTIFICATION
FOR
SCREENING G.E. HGA17C52 AND HGA17C61 RELAYS
WITH GERS-RLY-ARH.5

Table 2 in GERS-RLY-ARH.5 lists a GERS level of 6g for the normally open contact of a direct current G.E. HGA17A relay in the non-operate condition. Figure 1 in GERS-RLY-ARH.5 gives a ZPA of 3.6g for this same relay. Davis-Besse uses a G.E. HGA17C relay in some of 4.16kV breaker control circuits (C1 and D1 switchgear). Data provided by G.E. will be used to show that the above "g" levels are applicable to normally open contacts on the G.E. HGA17C52 and HGA17C61 DC relays in the non-operate condition.

1. MOUNTING: Both the HGA17A and HGA17C (hereafter referred to as A and C respectively, are surface mounted. Both the A and C use two #10-32 screws for attachment to the mounting surface. The difference is, A is backconnected whereas C is front connected (see GEI-10190 pages 8 & 10 which are attached). Method of connecting conductors to these relays will not affect the g level at which contacts chatter.
2. CONTACTS & SPRINGS: G.E. Renewal Parts list for HGA relays, GEF-2623F (copy attached) shows that the A and C relay use the same contacts and springs. The differences between the A and C relays are the operating coil and the cover, neither of which will affect chatter in the non-operate state.

00187

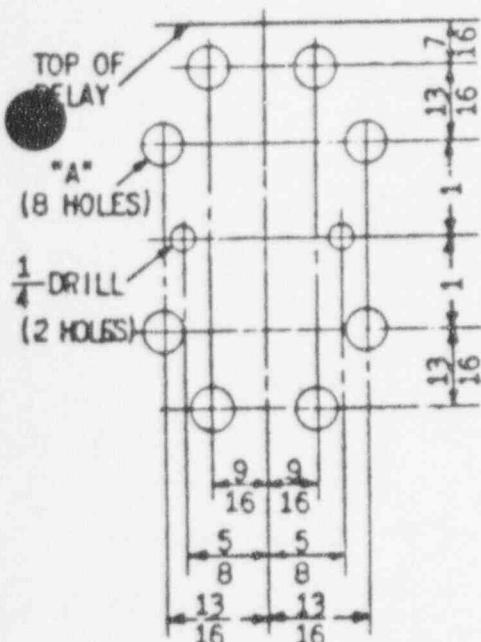
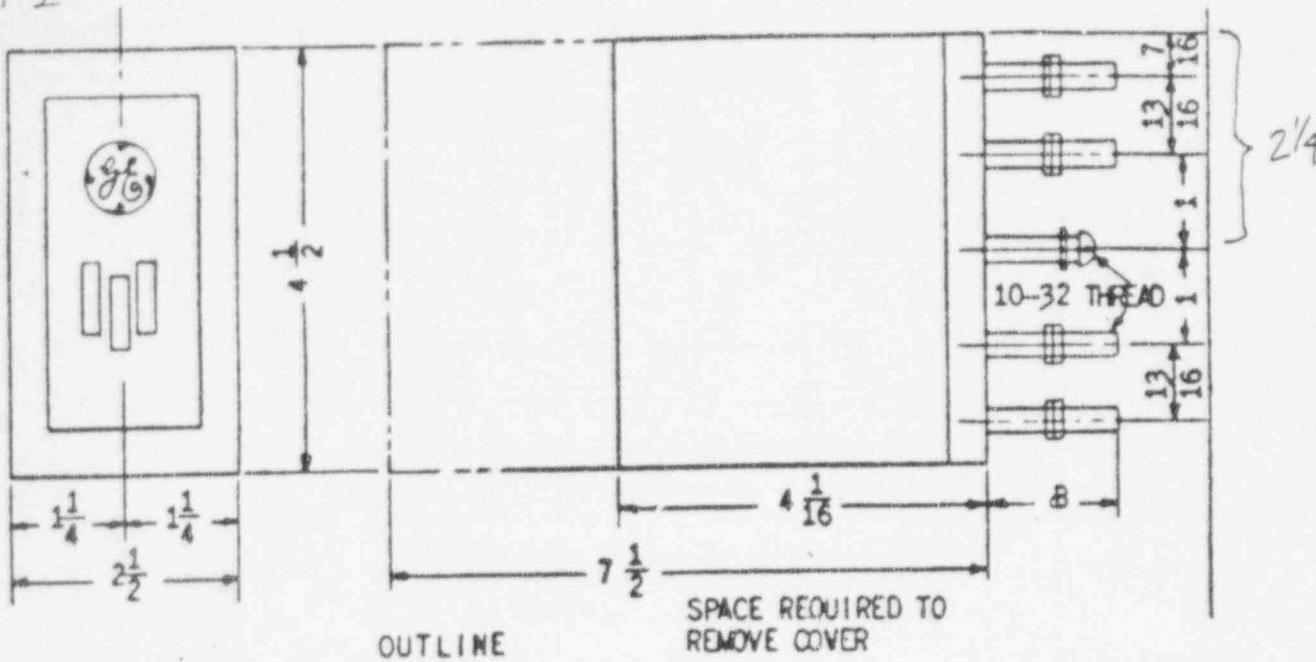
3814-2

3432

GEI-10190

G.4 # 284
Ag 13 OF 20

Pg 2 of 4



TYPE OF PANEL	"A"	"B"
INSULATING	7/16"	2-13/16"
STEEL	9/16"	1-3/8"

PANEL DRILLING (FRONT VIEW)

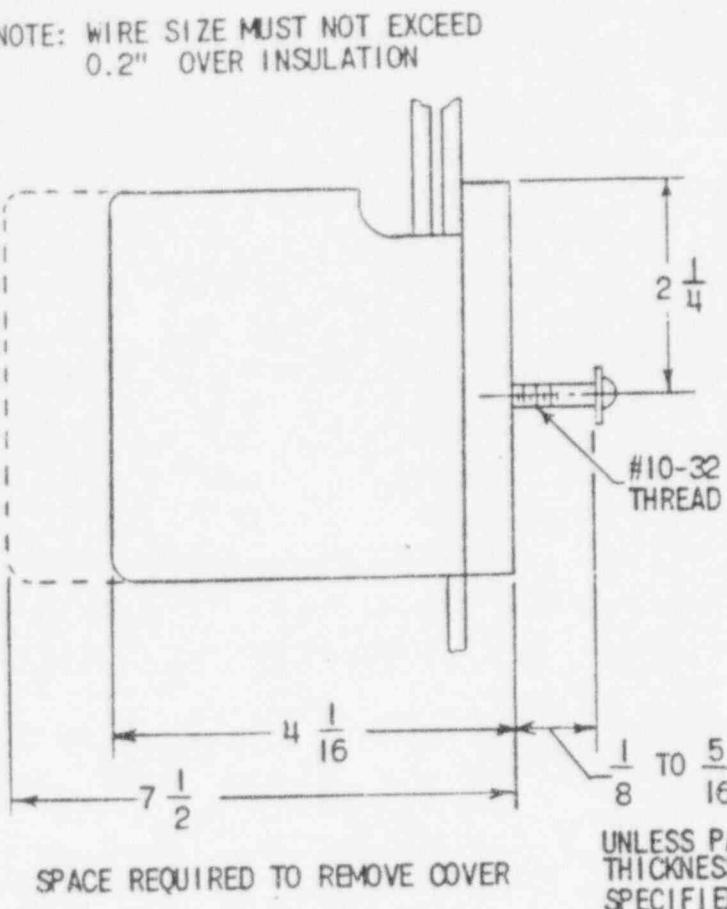
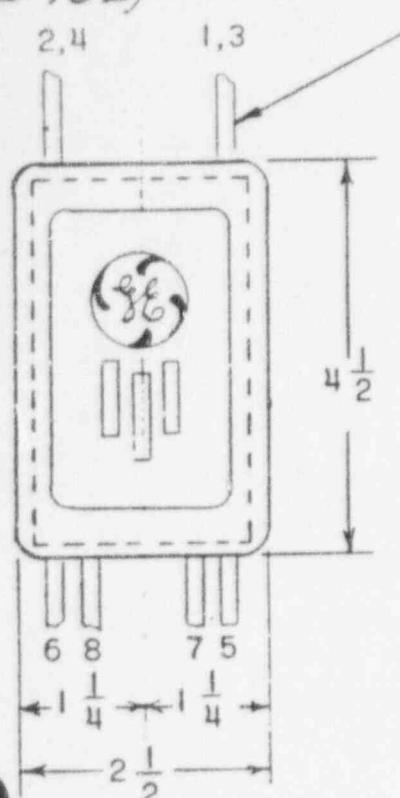
Fig. 4 (06077058-019) Outline and Panel Drilling for Surface Mounting of HGA17A and HGA17H Relays

00189

70-14-2

(3432)

GEI-10190

G.4 #384
Pg 14 OF 20

OUTLINE

TOP OF RELAY

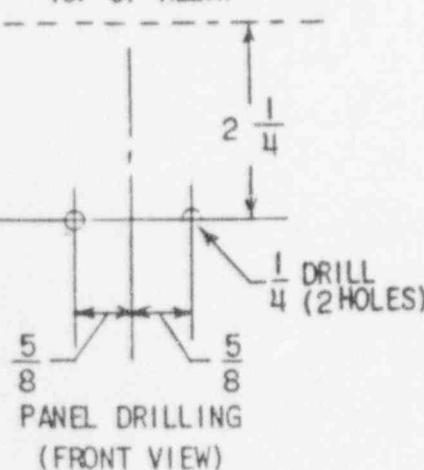


Fig. 6 (06375628-005) Outline and Panel Drilling for Surface Mounting of HGA17C, HGA17D and HGA17E Relays

- Recommended for normal maintenance

† Not Illustrated

1 Select proper coil from table starting on page 10

8 Select proper coil from table starting on page 23

Select proper target unit assembly and target coil from table on page 25

For more information about the study, please contact Dr. John P. Morrissey at (212) 639-7300 or via email at jmorrissey@nyp.edu.

COPIED FROM GEF-2123F

1-16-95

c.c # 284

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System 4.16kV ELECTRICAL

Page 16 OF 20

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
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LEVEL 1 SCREENING FOR C1 AND D1 SWITCHGEAR

Level 1 screening is being applied to the following essential relay types which are located in the Westinghouse medium voltage switchgears C1 and D1: Agastat models 7012PB, 7012PE and E7014PA, General Electric model NGV13B¹, Westinghouse model MG-6 and ITE27D.

To apply level 1 screening, the following conditions are considered.

1. Davis-Besse is bounded by the SSRAP bounding spectrum.
2. Switchgears C1 and D1 are located in Area 6, elevation 585' which is less than about 40 feet above effective grade (area 6 effective grade = 573').
3. GERS Levels for affected relays are \geq 5g.
 - a. GERS for Agastat 7012 = 12.5g (ref. GERS-RLY-PNT.7)
 - b. GERS for Westinghouse MG-6 (DC, N.O. contact) = 10g (ref. GERS-RLY-ARH.5)
 - c. GERS for General Electric NGV13A = 15g (ref. GERS-RLY-PMM.4)
 - d. GERS for ITE27 = 15g (ref. GERS-RLY-PPM.4)
 - e. GERS for Agastat E7014 = 10g (ref. GERS-RLY-PNT.7)

¹

See JUSTIFICATION FOR SCREENING NGV13B RELAYS WITH GERS-RLY-PPM.4 which is included with this G.4 form. (SEE PGS 18, 19 & 20)

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____ ; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Smith Date 5/3/95
 Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

G.4 #284

System 4.16kV ELECTRICAL

Page 17 OF 20

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
---------------------	------------	-----------------------	-------------------------	------

Intentionally Blank

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- | | |
|------|---|
| CA | - Chatter acceptable. |
| NV | - Not vulnerable (mechanically-actuated contacts and solid state relays). |
| GERS | - Seismically adequate based on GERS ____; include GERS number. |
| NA | - Component not affected by relays. |
| CR | - Corrective action required. |
| OA | - Operator action. |
| | - No entry necessary. |

Prepared by _____ / Date
Reviewed by _____ / Date

JUSTIFICATION
FOR
SCREENING G.E. NGV13B RELAYS
WITH GERS-RLY-PPM.4

Table 1 in GERS-RLY-PPM.4 lists a peak GERS level of 15g for the G.E. NGV13A relay in all modes of operation. Davis-Besse uses the G.E. NGV13B relay to initiate Emergency Diesel Generator starting in response to a bus undervoltage. Data provided by General Electric will be used to show the the 15g level given for the NGV13A relay is applicable to the NGV13B relay.

The complete part number of the relay in use at Davis-Besse is 12NGV13B25A, this "corresponds" to a 12NGV13A11A (reference G.E. Bulletin 7335 page 12-14, copy attached). The 12NGV13A11A is explicitly covered by GERS-RLY-PPM.4. G.E. Bulletin GEF-4376 page 4 (copy attached) shows that both the 12NGV13A11A and the 12NGV13B25A contain the same telephone relay. Since it's the telephone relay which contains parts subject to contact chatter, both relays will have equivalent GERS levels. Moreover, the difference between the NGV13A and NGV13B relays is that the NGV13B is equipped with a target coil for providing trip indication. The presence of this target coil does not affect the seismic capacity of the relay' essential contacts.



Type NGV

Voltage Relays

6.4 #284
Pg 19 OF 20

Protective Relays

7335

SELECTION GUIDE—AC

No. Units	Rating		Contacts (Per Unit)	Calibrated on Dropout ^①			Cal. Range (V)	Calibrated on Pickup ^②			Case Size	Approx. Wt in lbs (kg)		
				W/O Target	With Target	Model Number		Model Number	Model Number	Tar. Rat. (Amps)		Net	Ship.	
1	69 120 208 240 480	60 50/60	+ + + +	40-58 70-100 121-173 140-200 280-400	12NGV15A30 A21 A22 A23 A11						Molded △	3(1.4)	5(2.3)	
1	69 120 208 240	60	+ + + +	40-58 100-140 121-173 140-200	12NGV13A14A A15A A12A A13A									
1	69 120 120 120 120 208 240 240	50/60	+ + + +	40-58 35-50 70-100 70-100 80-120 80-120 121-173 121-173 140-200 140-200	12NGV13B28A A11A B39A B25A B21A B30A B29A B26A B22A B27A B23A	0.2 0.2 0.2 2.0 0.2 2.0 0.2 2.0 0.2 2.0					S1	10(4.5)	14(6.8)	
2*	120 208 240	60	+ + + +	70-100 121-173 140-200	12NGV12A12A A13A	12NGV12B15A	0.2					S2	11(5)	16(7.3)
2*	120	50/60	+ + + +	70-100	A11A	B11A	2.0							
3*	69 120 120 120 208	60	+ + + +	40-58 70-100 70-100 70-100 121-173	12NGV11B18A B15A B11A	12NGV11B18A B15A B11A	0.2 0.2 2.0	80-120 80-120 121-173	12NGV21B5A B1A B9A	0.2 2.0 0.2		S2	12(5.4)	18(8.2)
3*	69 120 208 240	50/60	+ + + +	40-58 70-100 121-173 140-200	12NGV11A20A A11A A12A A13A									

* 2-unit and 3-unit relays have two targets.

① In two-unit and three-unit relays, the normally open contacts are wired out in series, and the normally closed are wired out in parallel.

② In these three-unit relays, the normally closed contacts are wired out in series, and the normally open are wired out in parallel.

STATION BATTERY MONITORING

Number of Units per Relay	Volts Dc	Calibration Range Dropout Volts	Ac Supply Voltage		Model Number	Time Delay (sec)	Case Size	Approx. Wt in lbs (kg)	
			Volts	Hertz				Net	Ship.
1	48 125 125 125 125	40-54 54-86 100-140 100-140 100-140	120 120 120 208 240	60	12NGV19ASA A8A A1A A2A A3A	0.5	S1	10(4.5)	15(6.8)

GEF-4376, TYPE NGV RELAYS

RELAY MODEL NUMBER	Page	Telephone Relay: Right										Telephone Relay: Left										Rheostat: Center										Rheostat: Right										Telephone Relay: Center										Telephone Relay: Left										Terminal Block										Cover										External Resistor										Rectifier Board										Internal Resistor										Zener Diode																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
A+	B+	C	D+	E+	F+	G	H+	J	K	L+	M+	N	P	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544	545	546	547	548	549	550	551	552	553	554	555	556	557	558	559	550	551	552	553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568	569	560	561	562	563	564	565	566	567	568	569	570	571	572	573	574	575	576	577	578	579	580	581	582	583	584	585	586	587	588	589	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	590	591	592	593	594	595	596	597	598	599	600	601	602	603	604	605	606	607	608	609	600	601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	610	611	612	613	614	615	616	617	618	619	620	621	622	623	624	625	626	627	628	629	620	621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	630	631	632	633	634	635	636	637	638	639	640	641	642	643	644	645	646	647	648	649	640	641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	650	651	652	653	654	655	656	657	658	659	660	661	662	663	664	665	666	667	668	669	660	661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	670	671	672	673	674	675	676	677	678	679	680	681	682	683	684	685	686	687	688	689	680	681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	690	691	692	693	694	695	696	697	698	699	700	701	702	703	704	705	706	707	708	709	700	701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	710	711	712	713	714	715	716	717	718	719	720	721	722	723	724	725	726	727	728	729	720	721	722	723	724	725	726	727	728	729	730	731	732	733	734	735	736	737	738	739	730	731	732	733	734	735	736	737	738	739	740	741	742	743	744	745	746	747	748	749	740	741	742	743	744	745	746	747	748	749	750	751	752	753	754	755	756	757	758	759	750	751	752	753	754	755	756	757	758	759	760	761	762	763	764	765	766	767	768	769	760	761	762	763	764	765	766	767	768	769	770	771	772	773	774	775	776	777	778	779	770	771	772	773	774	775	776	777	778	779	780	781	782	783	784	785	786	787	788	789	780	781	782	783	784	785	786	787	788	789	790	791	792	793	794	795	796	797	798	799	790	791	792	793	794	795	796	797	798	799	800	801	802	803	804	805	806	807	808	809	800	801	802	803	804	805	806	807	808	809	810	811	812	813	814	815	816	817	818	819	810	811	812	813	814	815	816	817	818	819	820	821	822	823	824	825	826	827	828	829	820	821	822	823	824	825	826	827	828	829	830	831	832	833	834	835	836	837	838	839	830	831	832	833	834	835	836	837	838	839	840	841	842	843	844	845	846	847	848	849	840	841	842	843	844	845	846	847	848	849	850	851	852	853	854	855	856	857	858	859	850	851	852	853	854	855	856	857	858	859	860	861	862	863	864	865	866	867	868	869	860	861	862	863	864	865	866	867	868	869	870	871	872	873	874	875	876	877	878	879	870	871	872	873	874	875	876	877	878	879	880	881	882	883	884	885	886	887	888	889	880	881	882	883	884	885	886	887	888	889	890	891	892	893	894	895	896	897	898	899	890	891	892	893	894	895	896	897	898	899	900	901	902	903	904	905	906	907	908	909	900	901	902	903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	910	911	912	913	914	915	916	917	918	919	920	921	922	923	924	925	926	927	928	929	920	921	922	923	924	925	926	927	928	929	930	931	932	933	934	935	936	937	938	939	930	931	932	933	934	935	936	937	938	939	940	941	942	943	944	945	946	947	948	949	940	941	942	943	944	945	946	947	948	949	950	951	952	953	954	955	956	957	958	959	950	951	952	953	954	955	956	957	958	959	960	961	962	963	964	965	966	967	968	969	960	961	962	963	

THIS BREAKER MUST OPEN
ON BUS UNDERVOLTAGE,
BKR TO REMAIN OPEN.

6.4 #285

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System 416kV ELECTRICAL

Page 1 OF 9

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AC110,	E-34B SHT. 5,6	DS (ALL)	(W) TYPE W CTRL SW. ON C1 BUS, UNIT 10.	NV
"	"	CS	G.E. TYPE SB9 ON C1 BUS UNIT 10.	NV
"	CS HIS6223		G.E. TYPE SBM ON C5715, RM 505, H=7, EL=623	NV
"	CS/D AC110		G.E. TYPE SB1 ON C3615, RM 318, H=6, EL=585	NV
AC110 - CLOSE CIRCUIT	"	25SD D61	SAME AS CS/D AC110	NV
"	25SD HIS6221		G.E. TYPE SBM CTRL. SW ON C5715. RM=505 A=7, EL=623	NV

- Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by D.K. Gial, Date 4/23-94
Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System 416 kV ELECTRICAL

Page 2 OF 9

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AC110- CLOSE CIRCUIT	E-34B SHT 5, 6	52S1b + 52S1b AC101	(W) MOC SW IN CI BUS UNIT 1	NV
"		52S1b ABDC1	(W) MOC SW IN CI BUS UNIT 2	NV
"		25X CI	G.E TYPE HFA151A2H IN CI BUS UNIT 3	CA4 (i.e. 25SD HS6221 AND CS/D AC110)
"		52X1 AACC2	G.E TYPE HFA151A2H IN CI BUS UNIT 10	CA4 (SAME AS 25X CI)
"		86-3 C2	G.E. TYPE HFA53K91F IN CI BUS UNIT 10	CA4 (SAME AS 25X/C1)

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.L. Smith, Date 9-23-94
 Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System 416 kV ELECTRICALPage 3 OF 9

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AC110 - CLOSE CKT.	E-34B SHT 5, 6	86-2 C1	G.E TYPE HFA53K91F IN C1 BUS, UNIT 3.	CA4 (SAME AS 25kV/C1)
	E-34B SHT 5	CLOSE	SEE BELOW	
MAIN E-5-168 REEL 5978/4877	1149-E-5-44	Y	(W) CONTROL RELAY [®] FOR 5kV DHP BKR. IN C1 BUS UNIT 10	CA4. (i.e. the "CS's")
"	"	b	(W) AUXILIARY CONTACT FOR 5kV DHP BREAKER IN C1 BUS UNIT 10	NV

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.L. Lederer Date 7-23-94
 Reviewed by _____ Date _____

(W) BFD22S

A-46 RELAY SCREENING AND EVALUATION
 FORM G-4 - RELAY TABULATION
 PLANT JAVIS-BESSE UNIT 1

System 416 kV ELECTRICAL

Page 4 OF 9

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AC110 - CLOSE CIRCUIT	E-34B SHT. 5	LC SW	LATCH CHECK SWITCH FOR <u>(W)</u> 5kV DHP BKR. IN CI BUS, UNIT 10	NV
"	LS6, LSa		MOTOR CUTOFF SWITCH FOR <u>(W)</u> 5kV DHP BKR. IN CI BUS, UNIT 10	NV
AC110 - TRIP CKT	E-34B SHT. 5	27Y-1 C1	G.E. TYPE HFAS1A4Z2H IN CI BUS, UNIT 3.	GERS-RLY-ARH.5 (SEE Pg 8)
"	52X AC110		G.E. HGA17C52 IN CI BUS UNIT 10	BA - USING N.C. CONTACTS CR REQUIRED

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by J.W. Kelly Date 5-3-95
 Reviewed by _____ / Date _____

(X) NOTE: CONTACTS SUPPLYING THE 27Y-1/C1 COIL ARE EVALUATED ON G-4 # 283

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System 4.16KV ELECTRICAL

Page 5 OF 9

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AC110 - TRIP CKT	E-34B SHT 5	<u>27X-4</u> C1	(W) TYPE M6-6 MULTI-CONTACT AUX RELAY IN C1 BUS UNIT 1 # 289B360A20 (N.O. CONTACTS)	LEVEL 1 GERS- RLY- ARH.5 (SEE PG 9)
"		<u>27X-5</u> C1	SAME AS 27X-4/C1	"

THE FOLLOWING CONTACTS CONTROL THE 27X-4 AND
 27X-5 RELAYS

E-34B SHT 14C	27A-1/C1, 27A-2/C1, 27A-3/C1 AND 27A-4/C1	ITE IMPERIAL CORP # ITE-27D IN C1 BUS, UNIT 1 CAT # 211B4175	LEVEL 1 GERS- RLY- ARH.4 (SEE PG 9)
------------------	---	--	---

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by D. K. Schaff Date 5-3-75
 Reviewed by _____ / Date _____

6.4 # 285

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System 416 kV ELECTRICALPage 6 OF 9

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AC110 - TRIP CKT	E34 B SHT. 5	<u>B6-3</u> C2	GE TYPE HFA53K91F IN C2 BUS UNIT 3	CAT (MAY CAUSE) TRIP
"		<u>B6-2</u> C1	GE TYPE HFA53K91F IN C1 BUS UNIT 3	CAT (MAY CAUSE) TRIP
"		<u>516S-3</u> C1	ABB TYPE CO-11, STYLE 1456 CO5A30 CLASS 1E	CAT (MAY CAUSE) TRIP
"		51-4 (ϕA , $\phi B + \phi C$)	(W) CO-2, STYLE 1B15223A ON C1 BUS, UNIT 10	CAT (MAY CAUSE) TRIP

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- - No entry necessary.

Prepared by W.K. Hall, Date 9-23 94
 Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System 4.16kV ELECTRICALPage 1 OF 9

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AC110 - TRIP CKT	E-34B SHT 5	51-5 (DA, DB + DC)	(W) CO-5, STYLE 1875234A ON C1 BUS UNIT 10	CAT (MAY CAUSE) TRIP
+ 7749-E5-44		526, a	(W) AUXILIARY CONTACT FOR 5kV DHP & KR IN C1 BUS, UNIT 10	NV
E-34B SH 14C	HS-9828		CUTLER-HAMMER MOD. E300A 01 C5715, RM 505	NV
E-34B SH 14C	DSA		(W) TYPE W CTRL SW ON C1 BUS UNIT 1	NV

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Supt Date 9-23-94
 Reviewed by _____ / Date

C-4 #285

A-46 RELAY SCREENING AND EVALUATION
FORM C-4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System 4.16 kV ELECTRICAL

Page 8 OF 9

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

LEVEL 2 SCREENING FOR C1 AND D1 SWITCHGEAR

Level 2 screening is being applied to the following essential relay types, which are located in the Westinghouse medium voltage switchgears C1 and D1: Agastat model 7022, General Electric models HFA51A, HGA17C (see attached sheet for comparison between General Electric models HGA17A and HGA17C).

Level 2 screening requires that the seismic capacity of the relay exceed it's seismic demand. Both C1 and D1 are located in Plant Area 6, elevation 585', which is less than about 40' above effective grade (Area 6 effective grade = 573'). The median-centered floor response for Peak and ZPA for this area and elevation are .6038g and .242g respectively. Per NED 95-10027 (copy attached) an amplification factor of 5.5 has been assigned to the C1 and D1 switchgears. The natural frequency of the C1 and D1 switchgears is less than 8Hz, therefore, seismic demand (SD) is calculated: SD = medium centered floor response X safety factor X amplification factor. Peak seismic demand:

$$SD = .6038g \times 1.5 \times 5.5$$

$$SD = 4.98g$$

ZPA seismic demand:

$$SD = .242g \times 1.5 \times 5.5$$

$$SD = 1.99g$$

Relay capacities from GERS-RLY-ARH.5 and GERS-RLY-PNT.7

	HGA17A	HFA51A	7022
Peak	6	6	6
ZPA	2.4	2.4	2.4

therefore, seismic capacity exceeds seismic demand.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS ____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

NE - No entry necessary.

Prepared by W.L.Bill Date 5/3/95
Reviewed by _____ / Date _____

See Review: Jon G. Stark 8/18/95

c.e #285

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System 4.16KV ELECTRICALPage 9 of 9

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
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LEVEL 1 SCREENING FOR C1 AND D1 SWITCHGEAR

Level 1 screening is being applied to the following essential relay types which are located in the Westinghouse medium voltage switchgears C1 and D1: Agastat models 7012PB, 7012PE and E7014PA, General Electric model NGV13B¹, Westinghouse model MG-6 and ITE27D.

To apply level 1 screening, the following conditions are considered.

1. Davis-Besse is bounded by the SSRAP bounding spectrum.
2. Switchgears C1 and D1 are located in Area 6, elevation 585' which is less than about 40 feet above effective grade (area 6 effective grade = 573').
3. GERS Levels for affected relays are \geq 5g.
 - a. GERS for Agastat 7012 = 12.5g (ref. GERS-RLY-PNT.7)
 - b. GERS for Westinghouse MG-6 (DC, N.O. contact) = 10g (ref. GERS-RLY-ARH.5)
 - c. GERS for General Electric NGV13A = 15g (ref. GERS-RLY-PMM.4)
 - d. GERS for ITE27 = 15g (ref. GERS-RLY-PPM.4)
 - e. GERS for Agastat E7014 = 10g (ref. GERS-RLY-PNT.7)

¹ See JUSTIFICATION FOR SCREENING NGV13B RELAYS WITH GERS-RLY-PPM.4 which is included with this G.4 form.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Gandy Date 5/3/95
 Reviewed by _____ / Date _____

THIS BREAKER IS
REQUIRED TO REMAIN
CLOSED DURING PERIOD
OF STRONG SHAKING

CI BUS = RM 325, A=6
EL= 585.

6.4 # 286

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System 4.166V ELECTRICAL

Page 1 OF 5

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AC11CE	E-346 SHT 16 & 17	DS	(W) TYPE W CONTROL SW ON CI BUS, UNIT 4	NV
"		CS (LOCAL)	G.E. TYPE SB9 CTRL SW ON CI BUS, UNIT 4	NV
"		CS (REMOTE)	G.E. TYPE SBM CTRL SW ON C57115, RM 505 A=7, EL=623	NV
"	<u>52H1</u> TEST POS		(W) TOC (TRUCK OPERATED CELL SW) ON (W) 5KV DHP BKR. IN CI BUS, UNIT 4.	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Gault Date 9-23-94
Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System 416 KV ELECTRICALPage 2 OF 5

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AC/ICE	E-34B SHT. 16+17	CLOSE	SEE BELOW	
	7749-E-5-45 VMAN E-5-168 REEL 5978/4877	Y	(W) CONTROL RELAY FOR 5kV DHP BKR IN CI BUS, UNIT 4	CA8 (i.e., CS LOCAL & CS REMOTE)
"	"	b	(W) AUXILIARY CONTACT FOR 5kV DHP BKR IN CI BUS, UNIT 4	NV
"	LCSW		LATCH CHECK SWITCH FOR (W) 5kV DHP BKR IN CI BUS, UNIT 4	NV
"	LSb, LSa		MOTOR CUTOFF SW FOR (W) 5kV DHP BKR IN CI BUS, UNIT 4	NV

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Lulu Date 9-23-94
 Reviewed by _____ Date _____

(W) TYPE BFD22S
 STYLE 76HA559GO1

G.4 # 286

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System 4.16KV ELECTRICALPage 3 OF 5

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AC/ICE	E-34B SHT 16	94-1 C1	G.E. TYPE HFA51A4ZH IN C1 BUS, UNIT 3 (NORMALLY OPEN)	GERS-RLY-ARH.5 (SEE Pg. 5)
THE FOLLOWING CONTACT CONTROLS THE 94-1/C1 RELAY				
	E-34B SHT 13A	86-1 C1	G.E. TYPE HFA53K91H IN C1 BUS, UNIT 3	SEE G.4 # 283 FOR SHT EVAL OF THIS ESSENTIAL RELAY
SEE G.4 # 283 FOR EVAL. OF CONTACTS WHICH SUPPLY 86-1/C1 COIL.				
	E-34B SHT 16	50/51 (QA, QB, QC)	(W) CO-11, STYLE # 1875303 A IN C1 BUS, UNIT 4	GERS-MVS-LVS. 7

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- | | |
|------|---|
| CA | - Chatter acceptable. |
| NV | - Not vulnerable (mechanically-actuated contacts and solid state relays). |
| GERS | - Seismically adequate based on GERS ____; include GERS number. |
| NA | - Component not affected by relays. |
| CR | - Corrective action required. |
| OA | - Operator action. |
| | - No entry necessary. |

Prepared by W.K. Libby Date 5/3/95
 Reviewed by _____ / Date _____

G.4 #236

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System 416 RV ELECTRICALPage 4 OF 5

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
ACIICE	E-34B SHT 16	506S	(W) TVAE ITH STYLE # 1955594A IN C1 BUS, UNIT 4.	BA-CR REQUIRED
	E-34B SHT 16	526	(W) AUXILIARY SWITCH ON 5KV DHP BKR IN C1 BUS, UNIT 4	NA
	E-34B SHT. 1C 7749-E-5-45, VANN E-5-168	TRIP a	(W) AUXILIARY SWITCH ON 5KV DHP BKR IN C1 BUS, UNIT 4	NA

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Lohr Date 5/3/95
Reviewed by _____ / Date _____

286

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System 416KV ELECTRICAL

Page 5 OF 5

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
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LEVEL 2 SCREENING FOR C1 AND D1 SWITCHGEAR

Level 2 screening is being applied to the following essential relay types, which are located in the Westinghouse medium voltage switchgears C1 and D1: Agastat model 7022, General Electric models HFA51A, HGA17C (see attached sheet for comparison between General Electric models HGA17A and HGA17C).

Level 2 screening requires that the seismic capacity of the relay exceed its seismic demand. Both C1 and D1 are located in Plant Area 6, elevation 585', which is less than about 40' above effective grade (Area 6 effective grade = 573'). The median-centered floor response for Peak and ZPA for this area and elevation are .6038g and .242g respectively. Per NED 95-10027 (copy attached) an amplification factor of 5.5 has been assigned to the C1 and D1 switchgears. The natural frequency of the C1 and D1 switchgears is less than 8Hz, therefore, seismic demand (SD) is calculated: SD = medium centered floor response X safety factor X amplification factor.

Peak seismic demand:

$$\begin{aligned} SD &= .6038g \times 1.5 \times 5.5 \\ SD &= 4.98g \end{aligned}$$

ZPA seismic demand:

$$\begin{aligned} SD &= .242g \times 1.5 \times 5.5 \\ SD &= 1.99g \end{aligned}$$

Relay capacities from GERS-RLY-ARH.5 and GERS-RLY-PNT.7

	HGA17A	HFA51A	7022
Peak	6	6	6
ZPA	2.4	2.4	2.4

therefore, seismic capacity exceeds seismic demand.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- QA - No entry necessary.

Prepared by W.H. Smith Date 5/3/95
Reviewed by _____ / Date _____

SCE Review

Jewell Stroh 8/18/95

CI BUS: A=6
RM=325
EL=585

6.4 #287

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT Louis-Besse Unit 1

System SERVICE WATER

Page 1 OF 10

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
P3-1, AC107, HIS 1370	E-48B SHT. 6A, 6B	DSA, DSB, DSI (ALL)	(W) TYPE W CONTROL SW ON CI BUS, UNIT 7	NV
"		CS START) CS STOP	G.E. TYPE SB9 CTRL. SW ON CI BUS UNIT 7	NV
"		CS(HIS) START) CS(HIS) STOP (HIS 1370)	G.E. TYPE SBM CTRL SW ON C5716. A='1' RM=505, EL= 623	NV
"	CLOSE, TRIP		REESIE Pb W/O LOCKOUT CAT # 02450-032 IN NP0031. A= INTAKE, RM=52 EL=5%	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Bick, Date 9-26-94
Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System SERVICE WATER

Page 2 OF 10

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
P3-1, AC107, HIS 1370 (CLOSE CKT)	E-48B SHT 6A & 6B	2X - NOTE THIS IS THE CONTACT WHICH CLOSES AC107 ON LOOP	G.E. TYPE HFA51A42H IN CI BUS UNIT 1	GERS-RLY-ARH.5 (SEE Pg 8)
<p>THE FOLLOWING CONTACTS CONTROL OPERATION OF 2X RELAY</p>				
"	E-64B SHT 1A	2	AGASTAT MODEL 7012PET (AUX SW ON AGA.) IN CI BUS, UNIT 1	GERS-RLY-PNT. 7 (SEE Pg 9)
"	5251a, 5252b	(W)MOC SW IN CI BUS, UNIT 1		NV
"	SAX 13 RELAY TO REMAIN DEENERGIZED FOR LOOP.	G.E. TYPE 12HFA51A42H IN C3615, RM 318		GERS-RLY-ARH.5 (SEE Pg 10)

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by J.D. Kunkel Date 5/8/95
 Reviewed by _____ Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System SERVICE WATER

Page 3 OF 10

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
P3-1, AC107, HIS 1370 (CLOSE CKT)	E 64B SHT 1E	DS-1	G.E. TYPE 3B9 CTRL SW ON C3625 IN RM 318	NV
		K04	DEUTSCH 4AP A=7, RM=502, EL=623 C5762D, C5763C	SEE 6.4 # 211
	E-48B SHT 6B	KA, KB	DEUTSCH TYPE 4CP A=7, RM=502 EL=623 (C5762D, C5763D)	SEE 6.4 # 211

NOTE THESE
CONTACTS ARE
NOT REQUIRED
FOR CLOSING
ON LOOP ONLY

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by Geoffrey J. Date 2/23/95
 Reviewed by _____ / Date

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System SERVICE WATER

Page 4 OF 10

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
P3-1, AC107, HIS1370 (CLOSE CKT)	EHB8 SHT6B	BA, BB	AROMAT FORM 141B #ST2EL2DC24V A 7, RM-302 ELEC C5763C, C5762D	CA4 (SEE KA,K8)
		BS A BS B	BYPASS SWITCHES	SEE G.4 #311
"	52H1		(W) TOC SW IN C1 BUS UNIT 7	NV
"	CLOSE		COMPARATOR BELOW	
E-5-45 VMAN E-5-168	Y		CONTROL RELAY FOR Q (W) 5kV DHP BKR IN C1 BUS, UNIT 7	GERS-MVS- LVS. 7

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Roth, Date 5/3/95
 Reviewed by _____ / Date _____

(W) TYPE BFD22S

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System _____

Page 5 OF 10

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
P3-1, AC107, HIS1370 (CLOSE CKT)	"	b	AUXILIARY SW FOR <u>W</u> 5KV DHP BKR. IN CI BUS, UNIT 7	NV
		LCSW	LATCH CHECK SW FOR <u>W</u> 5KV DHP BKR TO CI BUS UNIT 7	NV
		LSa, LSb	MOTOR CUTOFF SW FOR <u>W</u> 5KV DHP BKR. IN CI BUS UNIT 7	NV

TRIP CKT.

KA KB DEUTSCH TYPE 4CP
 A-7, Room=502, EL=6+3

CA4 i.e.
CS(HIS), CS
STOP, STOP)
 TRIP.

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. 6/14/95 Date 5/3/95
 Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

6.4 #287

System SERVICE WATER

Page 6 OF 10

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AC107- TRIP CKT.	E-48B SHT 6B	BB, BA	AROMAT FORM 1A1B #ST2EL 2DC24V A=7, RM=502, EC=623	CA4 (SEE KA, KB)
"		27Y-3 C1 REquired TO TRIP AC107 ON UV (LOOP)	G.E. TYPE HFAS1AH2H IN C1 BUS UNIT 3	GERS- RLY- ARH.5 (SEE Pg 8)
"		94-1 C1 TRIPPING RELAY FOR BUS C1 & C2 FAULTS	G.E. TYPE HFAS1AH2H IN C1 BUS UNIT 3	GERS- RLY- ARH.5 (SEE Pg 8)
"				SEE 6.4 # 286 FOR EVALUATION OF CONTACTS WHICH SUPPLY THE 94-1/C1 COIL

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Lewis Date 5/8/95
 Reviewed by _____ / Date _____

6.4 #287

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System SERVICE WATERPage 7 OF 10

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AC107-TRIP CKT	E-48B SHT 6B	50/51 OA & OC	(W) COM-5 STYLE: 2B9B355A23 ON C1 BUS, UNIT 7	GERS-MVS-LV5.5
"	506S		(W) TYPE ITH STYLE # 1955594A ON C1 BUS, UNIT 7	BA - CR REQUIRED
"	526		(W) AUXILIARY SW FOR 5KV DHP BKR. IN C1 BUS, UNIT 7	NA
1749-E-5-45 VMAN E-5-168	TRIP		SAME AS 526	NA

a

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by JK Date 5/3/95
 Reviewed by _____ / Date _____

c.c #287

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System SERVICE WATER

Page 8 OF 10

Subsystem/Component Ref Dwg(s) Contact/Contact Group

Relay Type and Location SAT

LEVEL 2 SCREENING FOR C1 AND D1 SWITCHGEAR

Level 2 screening is being applied to the following essential relay types, which are located in the Westinghouse medium voltage switchgears C1 and D1. Agastat model 7022, General Electric models HFA51A, HGA17C (see attached sheet for comparison between General Electric models HGA17A and HGA17C).

Level 2 screening requires that the seismic capacity of the relay exceed its seismic demand. Both C1 and D1 are located in Plant Area 6, elevation 585', which is less than about 40' above effective grade (Area 6 effective grade = 573'). The median-centered floor response for Peak and ZPA for this area and elevation are .6038g and .242g respectively. Per NED 95-10027 (~~copy attached~~) an amplification factor of 5.5 has been assigned to the C1 and D1 switchgears. The natural frequency of the C1 and D1 switchgears is less than 8Hz, therefore, seismic demand (SD) is calculated: SD = medium centered floor response X safety factor X amplification factor.

Peak seismic demand:

$$\begin{aligned} SD &= .6038g \times 1.5 \times 5.5 \\ SD &= 4.98g \end{aligned}$$

ZPA seismic demand:

$$\begin{aligned} SD &= .242g \times 1.5 \times 5.5 \\ SD &= 1.99g \end{aligned}$$

Relay capacities from GERS-RLY-ARH.5 and GERS-RLY-PNT.7

	HGA17A	HFA51A	7022
Peak	6	6	6
ZPA	2.4	2.4	2.4

therefore, seismic capacity exceeds seismic demand.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
RV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
NO - No entry necessary.

Prepared by W.K. Smith Date 5/3/95
Reviewed by _____ / Date _____

SCE Review:

Jon G. Hook 8/19/85

c.c # 287

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System SERVICE WATER

Page 9 OF 10

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

LEVEL 1 SCREENING FOR C1 AND D1 SWITCHGEAR

Level 1 screening is being applied to the following essential relay types which are located in the Westinghouse medium voltage switchgears C1 and D1: Agastat models 7012PB, 7012PE and E7014PA, General Electric model NGV13B¹, Westinghouse model MG-6 and ITE27D.

To apply level 1 screening, the following conditions are considered.

1. Davis-Besse is bounded by the SSRAP bounding spectrum.
2. Switchgears C1 and D1 are located in Area 6, elevation 585' which is less than about 40 feet above effective grade (area 6 effective grade = 573').
3. GERS Levels for affected relays are \geq 5g.
 - a. GERS for Agastat 7012 = 12.5g (ref. GERS-RLY-PNT.7)
 - b. GERS for Westinghouse MG-6 (DC, N.O. contact) = 10g (ref. GERS-RLY-ARH.5)
 - c. GERS for General Electric NGV13A = 15g (ref. GERS-RLY-PMM.4)
 - d. GERS for ITE27 = 15g (ref. GERS-RLY-PPM.4)
 - e. GERS for Agastat E7014 = 10g (ref. GERS-RLY-PNT.7)
 - f. GERS FOR AGASTAT 7012 WITH AUX SWITCH = 7g (GERS-RLY-PNT.7)

¹ See JUSTIFICATION FOR SCREENING NGV13B RELAYS WITH GERS-RLY-PPM.4 which is included with this G.4 form.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by W.H. Goss, Date 5/8/95
Reviewed by _____ / Date _____

C-4 #287

A-46 RELAY SCREENING AND EVALUATION
FORM G-4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System SERVICE WATER

Page 10 OF 10

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

LEVEL 2 SCREENING FOR
C3615 AND C3616

1. The natural frequency of these cabinets is less than 8Hz.
2. These cabinets have been assigned an amplification factor (AF) of 4.5.
3. These cabinets are both located in plant area 6, elevation 585'.
4. For this area and elevation the peak Median Centered Floor Response Spectra (FRS) = .6038g and the associated ZPA = .242g.

thus peak Seismic Demand (SD); SD = [ERS] * AF where ERS = FRS * 1.5
SD = [.6038g * 1.5] * 4.5
SD = 4.1g³

and ZPA Seismic Demand (SD); SD = [ERS_{ZPA}] * AF where ERS_{ZPA} = ZPA * 1.5
SD = [.242g * 1.5] * 4.5
SD = 1.6g

5. Level 2 screening in these cabinets is being applied to the following relay types: Agastat 7012 (seismic capacity = 12.5g peak and 5g ZPA per GERS-RLY-PNT.7) and G.E. HFA51A42H with either normally open contacts or an energized coil (seismic capacity = 6g or 7g peak and 2.4g or 2.8g ZPA respectively, per GERS-RLY-ARH.5).

therefore, seismic capacity exceeds seismic demand.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Hall, Date 5/16/95
Reviewed by _____ / Date _____

SCE Review:

John H. Frank 5/18/95

THIS BKR IS NOT REQUIRED
NOR SHOULD IT GO CLOSED
DURING PERIOD OF STRONG
SHAKING.
CHATTER IN THE TRIP CKT IS
ACCEPTABLE.

CI BUS - A=6
RM = 323
EL = 585

288

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT BRAIS-RESE UNIT 1

System DECAY HEAT REMOVAL

Page 1 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
P42-1, AC112 HIS DHGB	E-52B SHT. 6A, 6B	CS	G.E. TYPE SB9 CTRL SW ON CI BUS UNIT 12.	NV
"		CS <u>HIS</u> (HIS DHGB)	G.E. TYPE SBM CTRL. SW ON CI BUS	NV
"	DSA, DSB		(W) TYPE W CTRL. SW ON CI BUS, UNIT 12	NV
"	PB		RESE PB NO LOCKOUT CAT # 02450- 032 IN NP0421, A-E, RM=105, EL=545	NV
AC112 - TRIP CIRCUIT	"	ALL	VARIOUS	CA - BKR IS OPEN AND IS REQUIRED TO REMAIN OPEN DURING STRONG SHAKING. CHATTER IN TRIP CKT IS ACCEPTABLE.

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by J.L.K. baf Date 9-26-94
Reviewed by _____ / Date _____

G.4 # 288

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System DECAY HEATPage 2 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AC112 - CLOSE CKT	E-52B SHT. 68	IV C1 COIL CONTROLLED IN C1 BUS BY NV CONTACTS UNIT 12	HASTAT MODEL E702ZPA	GERS-ALY-PNT. 7 (SEE Pg 4)
"	KA, KB	DEUTSCH 4CP A=7, RM=502, EL=623 C5762C, C5763D		SEE G.4#311
"	BS A BS B	BYPASS SWITCHES.		SEE G.4#311
"	BA, BB	AROMAT FORM 1A1B A STIEL 2DC24V A=7, RM=502, EL=623 C5762C, C5763C		(A4 (SEE KA, KB))

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

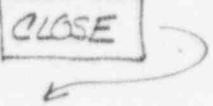
- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Smith Date 5/3/95
 Reviewed by _____ / Date _____

6.4 # 288

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System DECAY HEATPage 3 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AC112 - CLOSE CKT	E-52B SHT 6B		Y CONTROL RELAY FOR <u>W</u> 5kV DHP CKT BKR IN CI BUS, UNIT 12	CA4 (i.e. <u>Y</u> <u>C1</u>)
b			AUXILIARY SW FOR <u>W</u> 5kV DHP BKR IN CI BUS, UNIT 12	NV
LCSW			LATCH CHECK SWITCH FOR <u>W</u> 5kV DHP BKR IN CI BUS, UNIT 12	NV
LSa, LSb			MOTOR CUTOFF SWITCH FOR <u>W</u> 5kV DHP BKR IN CI BUS, UNIT 12	NV
52HI			<u>W</u> TOE SWITCH IN CI BUS, UNIT 12	NV

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Smith Date 9-26-94
Reviewed by _____ / Date _____

(W) TYPE BFD22S

C.C. # 258

A-46 RELAY SCREENING AND EVALUATION
FOR C.4 - RELAY TABULATION
PLANT JAVIER-BESSE UNIT 1

System DECAY HEAT REMOVAL

Page 4 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

LEVEL 2 SCREENING FOR C1 AND D1 SWITCHGEAR

Level 2 screening is being applied to the following essential relay types, which are located in the Westinghouse medium voltage switchgears C1 and D1: Agastat model 7022, General Electric models HFA51A, HGA17C (see attached sheet for comparison between General Electric models HGA17A and HGA17C).

Level 2 screening requires that the seismic capacity of the relay exceed its seismic demand. Both C1 and D1 are located in Plant Area 6, elevation 585', which is less than about 40' above effective grade (Area 6 effective grade = 573'). The median-centered floor response for Peak and ZPA for this area and elevation are .6038g and .242g respectively. Per NED 95-10027 (copy attached) an amplification factor of 5.5 has been assigned to the C1 and D1 switchgears. The natural frequency of the C1 and D1 switchgears is less than 8Hz, therefore, seismic demand (SD) is calculated: SD = medium centered floor response X safety factor X amplification factor.

Peak seismic demand:

$$\begin{aligned} SD &= .6038g \times 1.5 \times 5.5 \\ SD &= 4.98g \end{aligned}$$

ZPA seismic demand:

$$\begin{aligned} SD &= .242g \times 1.5 \times 5.5 \\ SD &= 1.99g \end{aligned}$$

Relay capacities from GERS-RLY-ARH.5 and GERS-RLY-PNT.7

	HGA17A	HFA51A	7022
Peak	6	6	6
ZPA	2.4	2.4	2.4

therefore, seismic capacity exceeds seismic demand.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Smith Date 5/3/95
Reviewed by _____ Date _____

SCE Review Jov G. Hach Date 8/18/95

THIS BKR NEEDS TO REMAIN
CLOSE DURING PERIOD
OF STRONG SHAKING
TO SUPPORT EDG 1-1
OPERATION

C1 BUS: A=6
RM=325
EL=585

6.6 # 289

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT LAVIS-BESE UNIT 1

System COMPONENT COOLING WATER

Page 1 OF 11

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
P43-1, AC113 HIS 1414	E-50B SHT 3C, 3D	DSA, DSB (ALL)	(W) TYPE W CTRL SW ON C1 BUS, UNIT 13	NV
"		CS(HIS) CLOSE CS(HIS) TRIP (HIS1414)	G.E. TYPE SBM CTRL SW ON CS714, A=7 RM=505, EL=623	NV
"		CS START, CS STOP	G.E. TYPE SB9 CTRL SW ON C1 BUS, UNIT 13	NV
"		CLOSE, TRIP	REESE Pb TYPE 02450 032 IN NP3431, A=7, RM=328, EL=585	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Gish, Date 9-27-94
Reviewed by _____ / Date _____

6.4 #289

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System COMPONENT COOLING WATER

Page 2 OF 11

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AC113 PH3-1 HIS1414	E-50B SHT 3C & 3D	2X *	G.E. TYPE HFA51A42H IN C1 BUS, UNIT 1	GERS- RLY- ARH.5 (SEE Pg. 10)
"	5241	(W) TDC SW IN C1 BUS, UNIT 13		NV
"	52526 (BOTH)	(W) MOC SWITCH IN C1 BUS UNIT 1, UNIT 8		NV
"	2 X2	AGASTHT TIME DECAY MODEL 7012PDL RC3607. A=6, RM=325. EL=585 (THESE ARE INST. CONTACTS)	CA - CHATTER ON THE CLOSE CKT CONTACTS IS ACCEPTABLE. WILL NOT LOCKOUT OR TRIP BKR	
"	SAY 13	G.E. TYPE HFA51A42H IN C3615. A=6 RM=318	CA - SEE 2/X2	

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Kelly Date 1-24-95
 Reviewed by _____ Date _____

* THIS CLOSING PATH IS BEING ASSURED, EVEN THOUGH THIS BREAKER WOULD
 ALREADY BE CLOSED. RELAY 2X IS CONTROLLED BY CONTACTS
 EVALUATED IN 6.4 # 287.

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System COMPONENT COOLING WATERPage 3 OF 11

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
P43-1 AC113 HIS1414	E-644B 34T IE	52S1a - CONTROLS SAY/13 COIL	(W) MOC SW IN CI BUS, UNTL.	NV
	E-50BSHT 3c	RA, KB	DEUTSCH 4CP A-7 RM: 502 EL: 623 C5762D, C5763C	CA#1 (SEE BELOW)
"		BA, BB	AROMAT FORM 1A/B LOCATED SAME AS KA, KB	CA#1 (SEE BELOW)
"	BS A BS B		(BIPHASE SWITCH)	SEE 6.4#3N
"	CLOSE		SEE Pg 7 OF THIS 6.4 FOR EVALUATION OF CONTACTS IN THIS BOX.	

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by D.K. bridge Date 1-24-95
 Reviewed by _____ Date _____

CA#1 TRIP: PERMISSIVE CONTACTS BLOCK TRIP SIGNAL.

CLOSE: CHATTER ACCEPTABLE ON CLOSE OUT CONTACTS

6.4 # 289

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System COMPONENT COOLING WATERPage 4 OF 11

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
P43-1	E-50B	52H1	(W)roc SW	NV
AC113	SHT 28		IN C1 BUS UNIT 13	
HIS14/14				
AC113 - TRIP OKT	E-50B SHT 3C	94-2 C1	G.E. TYPE HFA51A42H IN C1 BUS UNIT 3.	GERS - RLY- ARH.5 (SEE Pg 10)
NOTE <u>94-2</u> COIL IS CONTROLLED BY <u>E6-1</u> CONTACTS, SEE <u>C1</u> 6.4 # 283 PAGES 3, 6, 7 & 8 FOR EVALUATION OF THIS RELAY AND CONTROLLING CONTACTS.				
	E-50B SHT 3C	50GS	(W) TYPE ITH STYLE: 1955594A ON C1 BUS, UNIT 13	CR - RELAY IS LOW RUGGEDNESS

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Bell, Date 5/3/95
Reviewed by _____ / Date _____

G-4 # 289

A-46 RELAY SCREENING AND EVALUATION
 FORM G-4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System COMPONENT COOLING WATERPage 5 OF 11

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AC113 - TRIP CKT	E-50B SHT 34	50/51 OA & OC	(W) COM-5 STYLE 289B355A23 ON CI BUS, UNIT 13	GERS-MVS-LVS.5
"		Z X1	AGASTAT MODEL 7012PD TIME DELAY, IN RC3607 H=6 RM=325, EL=	GFRS-PLY-HNT.7 (SEE PG 11)
"	FIS (FIS 1422C)		ITT BARTON MODEL 289A A=7, RM=328 EL=585	GERS PS.5 (SEE PG. 8)
	TS4 (TS4 1483)		BARKSDALE MODEL T2H- M1505-25A A=7, RM=328 EL=585	SAT (SEE PG. 9)

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Bell, Date 5/3/95
 Reviewed by _____ / Date _____

G.4 #289

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System Component Cooling WaterPage 6 OF 11

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AC113 - TRIP CKT	E 508 SHT 3C	526	AUX. SW FOR <u>(N)</u> 5kV DHP CKT BKR IN CI BUS UNIT 13	NV
"	[TRIP]	5232a	SEE G.4 # 287 FOR EVALUATION OF THESE CONTACTS.	NV

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Loeffelholz Date 10-17-94
Reviewed by _____ / Date _____

6.4 #289

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System COMPONENT COOLING WATERPage 7 OF 11

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
P43-1 ACJ13 HIS'1414	E-5-45	Y	(W) TYPE BFD22S CTRL RLY FOR ANTI- PUMP IN (W) 50V DHP BKR IN CI BUS.	CA-BKR IS TO REMAIN CLOSED DURING STRONG SHAKING - CHATTER ON "Y" CONTACTS ACCEPTABLE
L3b, L3a			MOTOR CUT OFF SWITCH IN (W) 50V DHP BKR IN CI BUS	NV
b			(W) 50V DHP BKR AUXILIARY SWITCH IN CI BUS	NV
LCSW			LATCH CHECK SWITCH IN (W) 50V DHP BKR IN CI BUS	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Griff Date 9-27-94
 Reviewed by _____ Date _____

G.4 #289

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System Component Cooling Water

Page 8 OF 11

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT
<u>GERS-PS.5</u>				

AREA/ROOM/ELEV

FIS1432D	AUXL7/328/585
→ FIS1422C	AUXL7/328/585

The effective grade for area 7 is 562'

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

Since $585' - 562' = 23' < 40'$, the ground spectra multiplied by (1.5×1.5) may be used to evaluate these pressure switches.

Natural frequency of the mounting is > 8 Hz (Ref. NED 95-10033)

The amplification factor for the mounting is 1.0. (Ref. NED 95-10033)

GERS-PS.5 = 3.0g/1.0g (EPRI NP-5223-SL)

Demand = $.39g/.15g \times 1.5 \times 1.5 \times 1.0 = 0.88g/0.34g < 3.0g/1.0g$

Therefore these devices may be screened at level 2 as being seismically adequate using GERS-PS.5

Prepared by C. Carl Black Date 4/28/95

Seismic Capability Engineer J.W.G. Frank Date 8-18-95

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS _____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by _____ / Date _____
Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

G.4 #289

~~298~~

System Component Coding Water

Page 9 ~~10~~ of 11

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT
<u>AREA = AUXL7 ELEV = 585'</u>				

EQUIPMENT	MFG.	MODEL NO.	AMP.	>8HZ	Setpoint/Nom.
TSH1435	Barksdale	T2H-M150S-25A	1.0	Y	125F/100F
TSH1483	Barksdale	T2H-M150S-25A	1.0	Y	125F/100F

Nominal Temperature based on temperatures observed from computer points T068, T069.

The effective grade for area 7 is 562'

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

Since 585' - 562' = 23' < 40' , the ground spectra multiplied by (1.5 X 1.5) may be used to evaluate these temperature switches.

Natural frequency of each mounting is > 8 Hz (Ref. NED 95-10034)
 The amplification factor for each mounting is 1.0. (Ref. NED 95-10034)

Device Capacity = 10.61g/ 5.32g (Ref. NED 95-10034)

Demand = .39g/.15g X 1.5 X 1.5 X 1.0 = 0.88g/0.34g < 10.61g/ 5.32g

Therefore these devices may be screened at level 2 as being seismically adequate using relay specific capacity data.

In addition, per memo NED 95-10034, these devices are qualified to current standards and also screen at level 4.

Prepared by John Blod Date 4/28/95

Seismic Capability Engineer John Hark Date 8/18/95

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS ____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by _____ / Date _____

Reviewed by NIA / Date _____

C-4 #289

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System Component Cooling Water

Page 10 of 11

Subsystem/Component Ref Dwg(s) Contact/Contact Group Relay Type and Location SAT

LEVEL 2 SCREENING FOR C1 AND D1 SWITCHGEAR

Level 2 screening is being applied to the following essential relay types, which are located in the Westinghouse medium voltage switchgears C1 and D1: Agastat model 7022, General Electric models HFA51A, HGA17C (see attached sheet for comparison between General Electric models HGA17A and HGA17C).

Level 2 screening requires that the seismic capacity of the relay exceed its seismic demand. Both C1 and D1 are located in Plant Area 6, elevation 585', which is less than about 40' above effective grade (Area 6 effective grade = 573'). The median-centered floor response for Peak and ZPA for this area and elevation are .6038g and .242g respectively. Per NED 95-10027 (copy attached) an amplification factor of 5.5 has been assigned to the C1 and D1 switchgears. The natural frequency of the C1 and D1 switchgears is less than 8Hz, therefore, seismic demand (SD) is calculated: SD = medium centered floor response X safety factor X amplification factor.

Peak seismic demand:

$$\begin{aligned} SD &= .6038g \times 1.5 \times 5.5 \\ SD &= 4.98g \end{aligned}$$

ZPA seismic demand:

$$\begin{aligned} SD &= .242g \times 1.5 \times 5.5 \\ SD &= 1.99g \end{aligned}$$

Relay capacities from GERS-RLY-ARH.5 and GERS-RLY-PNT.7

	HGA17A	HFA51A	7022
Peak	6	6	6
ZPA	2.4	2.4	2.4

therefore, seismic capacity exceeds seismic demand.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- DA - No entry necessary.

Prepared by W.K. Smith Date 5/5/95
Reviewed by _____ / Date _____

SCE Review

Jarv G. Head 8/18/95

C-4 #289

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System Component Cooling Water

Page 11 of 11

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

LEVEL 2 SCREENING FOR RC3607
AGASTAT MODEL 7012PDL
(time delay contacts only)

1. Natural frequency of RC3607 is greater than or equal to 8Hz.
2. RC3607 has been given an amplification factor (AF) of 3.
3. RC3607 is located in plant area 6, elevation 585', which is less than about 40 feet above effective grade (Area 6 effective grade = 573)
4. For this area and elevation Peak GRS = .39g and Ground ZPA = .15g
5. GERS LEVEL for Agastat 7012PDL (time delay contacts only) = 12.5g and ZPA = 5.0g (ref. GERS-RLY-PNT.7).

thus;

$$ERS = \text{Peak GRS} \times 1.5 \times 1.5 \times AF$$

$$ERS = 2.63$$

and

$$ZPA = \text{Ground ZPA} \times 1.5 \times 1.5 \times AF$$

$$ZPA = 1.01$$

therefore, seismic capacity exceeds seismic demand.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- - No entry necessary.

Prepared by W.K. Cook Date 5/3/95
Reviewed by _____ Date _____

SCE Review:

Jew G. Cook 5/18/95-

THIS BREAKER MUST REMAIN
OPEN DURING PERIOD OF
STRONG SHAKING

C1 BUS: A=6
RM=325
EL=585

6.4 #290

A-4E RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT LAVIS-REESE UNIT 1

System HIGH PRESSURE INJECTION

Page 1 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
P58-1, AC111	E-52B SHT. 5A	— SEE FOLLOWING FOR EVAL OF TRIP & CLOSE CKTS.		
AC111-TRIP CKT	E-52B SHT 5B	ALL	VARIOUS	CH-SINCE BKR MUST REMAIN OPEN CHATTER IN TRIP CIRCUITS IS PERMISSIBLE
AC111-CLOSE CKT	E-52B SHT 5B	DSA, DSB	(W) TYPE W CTRL SW ON C1 BUS, UNIT 11	NV

- * Identify reason for Contact/Contact Group Being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by JK 9-27-94
Reviewed by _____
Date _____

G-4 #290

A-46 RELAY SCREENING AND EVALUATION
 FORM G-4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System HIGH PRESSURE INJECTIONPage 2 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AC111 - CLOSE CKT.	E-52B SIT 5B	CS	G.E. TYPE 589 CTRL SW ON C1 BUS, UNIT 11	NV
		CS (HIS)	G.E. TYPE SBM CTRL, SW ON C57114. A=7 RM=505, EL 623	NV
		PB	REESE PB TYPE 02450 032 1N N00581. A=8 RM=105, EL=545	NV
		52H1	(W) TOC SWITCH IN 52V DHP BKR. IN C1 BUS, UNIT 11	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Lipp Date 9-27-94
 Reviewed by _____ Date _____

6.4 #290

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System HIGH PRESSURE INJECTIONPage 3 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AC111	E-52B SHT 1B	CLOSE	SEE PAGE 4 THIS 6.4 FORM FOR EVALUATION OF <u>CLOSE</u> CONTACTS.	
"	KA KB	DEUTSH 4CP (5762D,5762C)		SEE 6.4# 311
"	BA BB	AROMAT FORM 1A1B #ST1E(20)24V (5762D,5763C)	CA <u>CLOSE CRT - CHATTER</u> <u>CONTACT CLOSED -</u> <u>CHATTER OPEN WILL</u> <u>NOT CLOSE BKR.</u>	
	BS BS	A	TRIP CRT-CHATTER ACCEPTABLE - CONTACT BLOCKS TRIP SIGNALS. PERMISSIVE FUNCTION WILL NOT TRIP OR LOCKOUT BKR.	

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by John Brey Date 2/23/84
 Reviewed by / Date

C.R.#290

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System HIGH PRESSURE INJECTIONPage 4 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AC111	E-52B SHT 1B	[CLOSE]	→	
E-5-45	Y	(W) TYPE BF022S CTRL. RELAY FOR ANTI-PUMP IN (W) 5EV DHP BKR IN CI BUS.	CH - ABILITY TO CLOSE THIS BKR IS NOT REQUIRED	
b		AUXILIARY SWITCH FOR (W) 5EV DHP BKR IN CI BUS	NV	
LCSW		LATCH CHECK SWITCH FOR (W) 5EV DHP BKR IN CI BUS.	NV	
LSa, LSb		MOTOR CUTOFF SW FOR (W) 5EV DHP BKR IN DI BUS	NV	

- Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
 NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
 GERS - Seismically adequate based on GERS ____; include GERS number.
 NA - Component not affected by relays.
 CR - Corrective action required.
 OA - Operator action.
 - No entry necessary.

Prepared by W.K. Smith Date 9-27-94
 Reviewed by _____ / Date _____

AD101 - SHALL BE CAPABLE OF CLOSING
 DURING PERIOD OF STRONG SHAKING.
 BREAKER SHALL REMAIN CLOSED
 UNLESS TRIPPED BY AN "OVERPRESSURE" ACTUATING DEVICE

DI BUS: A =
 R =
 E =

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

G.4 #291

System EMER. DIESEL GEN
OUTPUT BKR

Page 1 OF 34

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AD101	E64/B S47 2A	DS (ALL)	(W) TYPE W CONTROL SW IN DI BUS, UNIT 1	NV
"	CS H136-232		GE TYPE SBM CTRL SW ON C57115, H=7, RM= 505, EL=622	NV
"	CS/D AD101		GE. TYPE SBM ON C3616, RM 319	NV
"	CS		GE. TYPE SBI ON DI BUS, UNIT 1	NV
"	25SD H36231		GE TYPE SBM ON C57115, H=7, RM= 505, EL=623	NV
"	25SD D62		GE. TYPE SBI ON C3616 IN RM 318	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Gottschall Date 9-30-94
 Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System EMER DIESEL GEN 1-2
OUTPUT BKR

Page 2 OF 34

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
40101 - CLOSE CKT	E-64B SHT 2A	52516 5251D AACDI / AC110	(W) NOE SWITCH IN DI BUS UNITS 2 AND 10	NV
"	52H1		(W) TOC SWITCH IN DI BUS UNIT 1	NV
"	25 DG		ABB 25V SYNCHRO CHECK RELAY IN C3614 IN RM 319	CA4 (CS12 & HN101 25SD HS6231)
"	27X-6 DI		AGASTH 7 SERIES 7012PB IN DI BUS UNIT 1	GERS-RLY-ANT.7 (SEE Pg. 22)
	(UV START SIGNAL)			

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Schaff Date 5/3/95
 Reviewed by _____ Date _____

G.4 # 291

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System EMER DIESEL GEN 1-2
OUTPUT BKR

Page 3 OF 34

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
THE FOLLOWING CONTACTS CONTROL THE OPERATION OF <u>27X-6 DI</u>				
E-34B SHT 14A	<u>27Y-1</u> <u>DI</u>	GE TYPE HFA51A42H IN DI BUS UNIT 3	GERS-RLY-ARH.5 (SEE Pg 23)	
E-34B SHT 14	<u>27X-1</u> <u>27X-2</u> <u>DI</u> , <u>DI</u>	HEASTAT # 7014 RA IN DI BUS UNIT 3	GERS-RLY-PNT.7 (SEE Pg 22)	
"	<u>27-1</u> , <u>27-2</u> , <u>DI</u> , <u>DI</u> <u>27-3</u> , <u>27-4</u> <u>DI</u> , <u>DI</u>	G.E. TYPE NEV13825A IN DI BUS UNIT 3	GERS-RLY-PMH.4 (SEE Pg 22)	
E-22 SHT 2	TS1-4	METER DEVICES TEST SWITCH ON DI BUS UNIT 3		NV
"	TS-UV	G.E. TYPE SB7 CTRL SW ON DI BUS UNIT 3		NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Giff Date 5/3/95
 Reviewed by _____ Date _____

6.4 # 291

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System EMER DIESEL GEN 1-2
OUTPUT BKR

Page 4 OF 34

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AD101-CLOSE CKT	E-641B SHT 2A	CR3-X	ALLEN BRADLEY MODEL 700- BR4-00A1 IN C3618, RM 319, EL=585	CR- SEISMIC CAP. UNKNOWN, REPLACE WITH. SEISMICALLY ADEQUATE RLY.
THE FOLLOWING CONTACT CONTROL THE OPERATION OF CR3-X				
7749- M-180-31	V/f		AUTOMATIC SWITCH CO. P.N. 207E10 IN C3618, RM 319	CR- SEISMIC CAP L SEISMIC DEMAND. REPLACE.
AD101-CLOSE CKT	E-641B SHT 2A	<u>86-1</u> <u>DG2</u> , <u>86-2</u> <u>DG2</u>	G.E. TYPE HFA53K91H IN C3614, RM 319	CR- TESTING AND POSSIBLE REPLACEMENT.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Griff Date 6-8-95
Reviewed by _____ / Date _____

**A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1**

EMER DIESL GEN 1-2

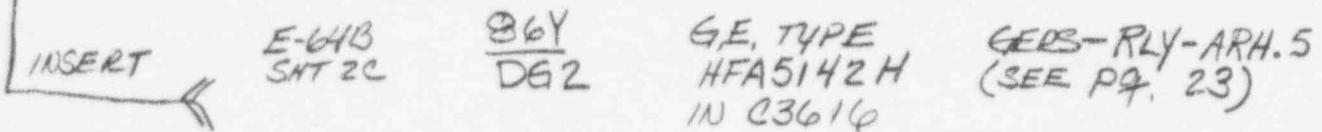
Page 5 of 34

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Type and Location	SAT*
THE FOLLOWING CONTACTS CONTROL THE OPERATION OF <u>86-2</u> <u>DG2</u>				
E-64B SHT ZC	87 DG	G.E. TYPE CFD22B1A IN C3614, RM 319	BA - CR REQUIRED REPLACEMENT.	
"	TD-5 TD-6	METER-DEVICES TEST SWITCH ON C3614, RM 319		NV
"	SDRK (Clint Downy RELAY)	SQUARE D TYPE KPD13 IN C3632, RM 319	SERIALLY ADEQUATE PER SSRAP SECT. 17 & NP 7148-3L (SEE Pg. 25)	
THE FOLLOWING CONTACTS CONTROL OPERATION OF SDRK RELAY				
12501-11- 1800-14	86-2 DG2	SEE PAGE 4 THIS G.4 FOR TYPE + SAT.		

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
 NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
 GERS - Seismically adequate based on GERS ____; include GERS number.
 NA - Component not affected by relays.
 CR - Corrective action required.
 OA - Operator action.
 - No entry necessary.

Prepared by A. K. Saff Date 5-3-95
Reviewed by _____ / Date _____



A-46 RELAY SCREENING AND EVALUATION
 FORM G.E. - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System EMER DIESEL GEN 1-2
OUTPUT BKR

Page 6 OF 34

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
"SDRX CONTACTS"	12501-M- 1809-14	OTR	SQUARE D TYPE KPD13 IN C36 22, RM 319	SEE NOTE 1 THIS PAGE
		R2	SAME AS OTR	SEE NOTE 1
		CPR	SAME AS OTR	NOTE 1
		SDRX1	SAME AS OTR	NOTE 1
		R3X	SAME AS OTR	NOTE 1
		SEE EVAL FOR R3 FOR CONTROLLING RELAYS.		
		TD1 (FAIL TO START TIMER)	AGASTAT E701ZPC IN C3622	NOTE 1

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NY - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by _____
 Reviewed by _____

OK John Smith Date 1/4/95
 / Date

NOTE 1 - PER SECT. 17 IN SSRAP REV.
 4.0 & NP-9148-SL THESE
 CONTACTS ARE SEISMICALLY
 INADEQUATE. (SEE Pg
 25)

G.4 # 291

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS - BESSIE

System EDG 1-2 (OUTPUT BKR)Page 6A OF 34

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
"SDRX CONTACTS"	M-180Q-14	TD5X	SAME AS OTR	SEE NOTE 1 Pg 6
CONTACTS SUPPLYING TD5X	M-180Q-13	TD5	AGASTAT E7012PE IN C3622	SEE NOTE 1 Pg 6
CONTACTS SUPPLYING TD5	M-180Q-13	SDR	SAME AS OTR	SEE NOTE 1 Pg 6 - ALSO SEE "SDR" AND NOTE ON Pg 15.
	M-180Q-13	SS2	SAME AS OTR	SEE NOTE 1 Pg 6
CONTACTS SUPPLYING SS2	M-180Q-13	SS2A	SYNCHRO-START SPEED SWITCH ESSB-HAT IN C3622	SEE NOTE 1 Pg 6

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Smith Date 6-8-95
Reviewed by _____ / Date _____

c.e # 291

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System EMER DIESEL GEN 1-2
OUTPUT BKR

Page 7 OF 34

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
"SORX CONTACTS"	11-1809-14	OTS, CPS, LOPS, HJWTS	ENGINE MOUNTED SWITCHES BY EMD AT FACTORY	NV- PER SSRAP REV. 4.0 Pg 81
"	"	SN-4, RESET P/B	NIEN BRADLEY PUSHBUTTON TYPE BOOT ON C3616, RM 319.	NV

THE FOLLOWING CONTACTS CAN CONTROL THE OPERATION OF 86-1/D62, AND
86-2/D62.

E-641B SHT 2C	SS2X (ENGINE SPEED > 200RPM)	SQUARE D TYP KPD 13 IN C3622, RM 319	NOTE 1 Pg 6
12501-1A- 1809-13	SS2A (CONTACT PICKS UP SS2X)	SYNCHRO START SPEED SWITCH * IN C3622 RM 319	NOTE 2 Pg 6

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory * MODEL ESSB-4AT

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Giff Date 1/4/95
Reviewed by _____ / Date _____

6.4 # 291

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System EMER DIESEL GEN 1-2
OUTPUT BKR

Page 8 OF 34

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
86-1 D62	E-64B	FSS-X	ALLEN-BRADLEY 200-G11021	CR - SEISMIC
86-2 D62	SHT 2C	(FIELD SHORTING SWITCH)	IN C3618, RM 319	CAPACITY UNKNOWN REPLACE RLY.
"		ADD ①		
CONTACTS WHICH CONTROL FSS-X COIL				
7749-11- 180-31		R7	SQUARE D TYPE KRD13 IN C3622	NOTE 1 PAGE 6
ALSO SEE E-64B SHT 13		SDRX	SAME AS R7	SEE SAT EVALUATION Pg 5 THIS 6.4
"		ISRX	SAME AS R7 EXCEPT IN C362R.A	LEVEL 4 (SEE NEO 95-10021) Pg 24
"	<u>86-1</u> <u>D62</u>		SEE Pg 4 OF THIS 6.4 FOR RELAY TYPE AND SHT	

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Land Date 1-4-95
 Reviewed by _____ Date _____

① B6Y
D62 G.E. TYPE
 HFAS1A92H
 IN C3616 IN
 RM 319 6.4

GERS-RLY-ARH.5
 (SEE Pg 24)

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System EMER DIESEL GEN 1-2
OUTPUT BKR

Page 9 OF 34

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
FSS-X COIL	7749-M- 180-31	CS	G.E. TYPE SBI CTRL SW ON C3618 RM 319	NV
"	52526	(W) MOC SW FOR 5kV DHP BKR IN 01 BUS, UNIT 1		NV
<u>CONTACTS WHICH CONTROL ISRX COIL</u>				
12501-M-180Q- 13	R3Y3	SQUARE D TYPE KPD13 IN C3622A	LEVEL 4 (SEE NEQ 95-10021) Pg. 26	
		SEE R3 FOR EVALUATION OF CONTACTS WHICH CAN CONTROL THIS COIL		
"	PB1, PB2	CUTLER-HAMMER P/B ON C3622A RM 319		NV

- Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Giff Date 1-4-94
 Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System EMER DIESEL GEN 1-2
OUTPUT BKR

Page 10 OF 34

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
ISERX COIL CTRL.	10501-11- 1809-13	ISR	SQUARE D TYPE KPD13 IN C3622A Room 319	LEVEL 4 (SEE NED 95-1002) SEE PG 26

CONTACTS WHICH MAY CAUSE 86-1/DG2 TO CHANGE STATE.

NOTE: IF RELAYS SS2X, FSS-X, R3 AND ASSOCIATED STRINGS ARE > SEISMIC DEMAND, THEN INTERPOSING RELAYS TO 86-1/DG2 CAN ALL BE CA

E-64B
SHT 2C

PB
RESET

ALLEN-BRADLEY
CAT# 800T
PB ON C3614
IN RM 319

NV

"

74X
DG2

G.E. TYPE
HGA14AF52
IN C3616, RM
319

CA - SS2X AND R3
ARE BEING SCREENED
BY SSRAP NOTE ON
PAGE 6, SEE PGs
7 AND 12 RESPECTIVELY.

FSS-X IS SCREENED
CR AND WILL BE
REPLACED - SEE
PG 8.

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____ ; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Smith Date 6-8-95
 Reviewed by _____ / Date _____

G.4 # 291

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-1 ESSE UNIT 1

System EMER DIESEL GEN 1-2
OUTPUT BKR

Page 11 OF 34

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
86-1 <i>DG2</i> SUPPLYING, CONTACTS	E-64B SHT 2C	<u>51G</u> DG	G.E. TYPE IAC77A802A IN C3616	CA - SEE SAT EVALUATION FOR 74X/DG2 ON Pg. 10
	"	<u>51V-1</u> DG	(W) TYPE CON-9 #1876246 IN C3616	"
	E-64B SHT 2D	<u>32</u> DG	G.E. TYPE GGP53B1A IN C3616	"
	"	<u>46</u> DG	G.E. TYPE INC77B3A IN C3616	"
	"	<u>40</u> DG	(W) TYPE KLF #2908481A09	"

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Sif Date 6-8-95
 Reviewed by _____ / Date _____

G.4 # 291

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System EMER DIESEL GEN 1-2
OUTPUT BKR

Page 12 OF 34

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
B6-1/DG2-SUPPLY CONTACTS	E64B SHT 2C + ZD	TD-3, TD-4, TD-7, TD-8 TD-9	METER DEVICE TEST SWLS ON C3616	NV

E64B
SHT 2C

R3

SQUARE D
TYPE KP013
IN C3622
RM 319

SEE NOTE 1
PG 6

R3 COIL IS CONTROLLED BY THE FOLLOWING:

M-180Q-13
AND
E-64B
SHT 2F

PB
START

ALLEN BRADLEY
CAT# 800T
ON C3616

NV

PB/START
HS1148B

CUTLER-HAMMER
P6 TYPE E30
ON C5715, A=7, R1=505, E1=623

NV

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Siff Date 1/4/95
 Reviewed by _____ / Date _____

6.4 # 291

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System EMER DIESEL GEN 1-2
OUTPUT BKR

Page 13 OF 34

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
R3 COIL CONTROL	M-180G-13 E-64B CAT 2F	27Z-3, D1	G.E. TYPE HFA51A42H IN C361G	GERS-RLY-ARH.5 (SEE Pg 24)
	E-64B SHT 2E	97 D1	AGASTAT 701ZPC IN C361G	GERS-RLY-PNT.7 (SEE Pg 24)
	"	BLOCKS 4V START FOR 5 SECONDS		
	52S2a AACDI)	52S2a AD110	(W) MOC SW IN 5KV DHP BKR, D1 BUS UNITS 2 AND 10	NV
"		27Y-4 D1	G.E. TYPE HFA51A42H IN C361G	GERS-RLY-ARH.5 (SEE Pg 24)
"		27Z-1 D1 (SEAL-IN)	G.E. TYPE HFA51A42H IN C361G	GERS-RLY-ARH.5 (SEE Pg 24)

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by WK Date 5/15/95
 Reviewed by _____ / Date _____

G.4 # 291

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System EMER DIESEL GEN 1-2
OUTPUT BKR

Page 14 OF 34

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
R3 COIL CONTROL	E-64B SHT 2F	27X-1 & 27X-2 DI DI	AGASTAT 70V4DA 1N DI BUS, UNIT 3	GERS-RLY-PNT.7 (SEE Pg. 22)
	E-34B SHT 14	27-1, 27-2, 27-3 DI DI DI 27-4 DI	G.E TYPE NGV13825A DI BUS, UNIT 3	GERS-RLY-PPM.4 (SEE Pg 22)
	E-64B SHT 2F	KA KB	DEUTCH 4CP C5755D, C5756C	SEE G.4#311
		B4 BB	AROMAT FORM 1A1B STIEL 2 DC 24V	CA4 (SEE KA, KB)

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by D. K. Knobell Date 5/4/95
 Reviewed by _____ / Date _____

6.4 # 291

A-46 RELAY SCREENING AND EVALUATION
FOPH 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System EMER DIESEL GEN 1-2
OUTPUT BKR

Page 15 OF 34

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
TR COIL CONTROL	M1800-14	SDR (SHUTDOWN RECHY)	SQUARE D TYPE KPD13 IN C3622 RM 319	SEE NOTE 1 PAGE 6
NOTE: FOR EVALUATION OF CONTACTS WHICH CONTROL THE SDR COIL SEE SDRX EVAL. STARTING ON Pg 5.				
AD101- CLOSING CKT	E64B SHT 2A	86-1 DI	G.E. TYPE HFA 53 K91F IN DI BUS UNIT 3	CR - OBTAIN SEISMIC DATA, REPLACE IF NECESSARY
86-1 COIL DI CTRL	E-34B SHT 13	RESET PB	(W) TYPE OTL FISHBUTTON ON DI BUS UNIT 3	NV
	11	51-1K DI	GE TYPE HFA 53 K91F IN DI BUS UNIT 3	CR - OBTAIN SEISMIC DATA, REPLACE IF NECESSARY.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Baily Date 5/15/95
Reviewed by _____ / Date _____

6.4 # 291

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System EMER DIESEL GEN 1-2
OUTPUT BKR

Page 16 OF 34

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
86-1 DI CTRL	E-34B SHT 13	51-1 (QA, QB, QC)	(W) TYPE CO-9 H1101N STYLE 264C901A05 IN DI BUS UNIT 2	CR- OBTAIN SEISMIC DATA REPLACE IF NECESSARY
"	516S-1		ABB CO-11 STYLE 1456C05A30 CLASS 1E, IN DI BUS UNIT 2	LEVEL 4 (SEE NED 95-10027) SEE PG 31
"	51-2 (QA, QB, QC)		(W) TYPE CO2 STYLE 1875223A IN DI BUS UNIT 2	CR- SEE 51-1
	51-3 (QA, QB, QC)		(W) TYPE CO-5 STYLE 1875234A IN DI BUS, UNIT 2	CR- SEE 51-1
	516S-2		ABB CO-11 STYLE 1456C05A30 CLASS 1E, IN DI BUS UNIT 2	LEVEL 4 (SEE NED 95-10027) SEE PG 31

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Smith Date 5/15/95
 Reviewed by _____ Date _____

c.c # 291

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System EMERGENCY DIESEL 1-2
OUTPUT BKR

Page 16A OF 34

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
86-1 DI COIL CTRL	E34B SHT 13	5IX ADI110	G.E. TYPE H6A17C61 IN DI BUS, UNIT 10, (NO. CONTACT)	GERS-RLY-ARH.5 (SEE Pg. 23)
	5IX ADI110 (COIL CTRL)	E-34B SHT 11	SIGS-3	ABB TYPE CO-11 # "1456605R30 CLASS 1E" ON DI BUS, UNIT 10
	"	51-4 (ΦA, ΦB, ΦC)	W TYPE CO-2 # 1875223A ON DI BUS, UNIT 10	LEVEL 4 (SEE NED 95-10027) SEE Pg. 31
	"	51-5	W TYPE CO-5 # 1875234A ON DI BUS, UNIT 10	CR - SEE 51-4

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Schaff Date 5/15/95
Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

C.C # 291

System EMERGENCY DIESEL 1-2
OUTPUT BKR

Page 16B OF 34

Relay
Type and
Location

SAT*

Subsystem/Component Ref Dwg(s) Contact/Contact Group

86-1 COIL E34B 52S16 (N) MOC SW NV
DI CTRL SHT 13 IN DI BUS
UNIT 2

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by D.K. Braden Date 5/15/95
Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System EMER DIESEL GEN 1-2
OUTPUT BKR

Page 17 OF 34

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AD101-CLOSE CKT.	E-64B SHT 2A	CLOSE	SEE BELOW FOR CONTACT TYPE AND SHT.	
E-5-49 & VIAN E-5- 148	Y	CONTROL RELAY FOR <u>(W)</u> 5KV DHP CKT BKR IN DI BUS, UNIT 1	GERS-MVS- LVS. 7	
"	b	AUXILIARY SW FOR <u>(W)</u> 5KV DHP CKT. BKR		NV
"	LCSW	LATCH CHECK SW FOR <u>(W)</u> 5KV DHP CKT. BKR		NV
"	LSa, LSb	MOTOR CUTOFF SW FOR <u>(W)</u> 5KV DHP CKT. BKR.		NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by Wm. Sill Date 5/4/95
 Reviewed by _____ / Date _____

(W) TYPE BFD22S

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System EMER DIESEL GEN 1-2
OUTPUT BKR

Page 18 OF 34

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AD101- TRIP CKT	E-64B SHT 24	RT - NORMAL STOP RELAY	SQUARE D TYPE KPD13 IN C3622	SEE NOTE 1 PAGE 6
RT COIL CTRL	E64B SHT 2F	PB STOP	ALLEN BRADLEY CAT # 800T ON C3614	NV
"		PB/STOP HIS1148A	CUTLER-HHAMMER TYPE E30 PB ON 05715. H=7, RM=505, EL=623	NV
12501- M1800- 14	SW.6		ALLEN BRADLEY PB TYPE 800T ON C3622 IN RM 319	NV
"	SS1		SQUARE D TYPE KPD13 IN C3622	SEE NOTE 1 PAGE 6

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Schaff Date 1-4-95
 Reviewed by _____ / Date _____

G.4 # 291

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System EMER DIESEL GEN 1-2
OUTPUT BKR

Page 19 OF 34

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
R7 COIL CTRL	12501- M180Q- 14	TDB	AGASTAT E7012PC IN C362Z	SEE NOTE 1 PAGE 6
	"	R3	SQUARE D TYPE KPD13 IN C362Z	CA - IFF TDB OK + WON'T BE USING THIS CLT DURING STRONG SHAKING.
AD101 - TRIP CKT	E-64B SHT2A	KA, KB, BA, BB,	SEE Pg 14 THIS FORM	CA - DURING S.S. THESE CONTACTS CLOSED - BLOCK MANUAL TRIP FOR LOCA WITH LOOP. R7 MUST SCREEN OUT.*
"	$\frac{B6-2}{D62} + \frac{B6-1}{D62}$		SEE Pg 4 OF THIS 64 FOR RELAY TYPE AND SAT. EVAL.	
"	<u>5IV-2</u> (all) DG	(W) TYPE COV-9 IN DIBUS, UNIT 1	GERS-MVS-LVS.7	

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action
- No entry necessary.

Prepared by W.K. Brill Date 5/15/95
 Reviewed by _____ / Date _____

* R7 IS SCREENED USING
SSRAP REPORT (SEE
Pg. 8)

6.4 # 291

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System EMER DIESEL GEN 1-2
OUTPUT BKR

Page 20 OF 34

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AD101- TRIP CKT	E-64B SHT. 2A	60 DG2	G.E. TYPE CFVB IN C3616 RM 319	CA4 (ie 51V-2/DG - SEE Pg 19 THIS 6.4)
"	<u>860-1</u>	<u>D1</u>	SEE Pg 15 THIS 6.4 FOR RELAY TYPE AND SAT. EVAL.	
"	<u>272-2</u>	<u>D1</u>	G.E. TYPE HFA51A42H IN C3616, RM 319	GERS-RLY-ARH. 5 (SEE Pg 24)
FOR CONTACTS WHICH CONTROL THE <u>272-2</u> COIL SEE R3 COIL EVAL STARTING WITH <u>272-3</u> ON PAGE 13 OF THIS 6.4.				

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Schill Date 5/15/95
 Reviewed by _____ / Date _____

C.C. # 291

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System EMER DIESEL GEN 1-2
OUTPUT BKR.

Page 21 OF 34

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AD101-TRIP CKT	E-64B SHT 2A	SS4	SCOTTIE D TYPE KPD13 IN C3622	SEE NOTE 1 PAGE 6
M-180G - 13	SS4A (CONTROLS SS4)		SYNCHRO-START ELECTRONIC SPEED SWITCH IN C3622 RM 319	SEE NOTE 1 PAGE 6

E-64B
 SHT 2A TRIP EVAL →
 ↙

E-5-49 &
 UMAN E-5-168 a AUX. SWITCH FOR
 (W) 56V DHP BKR.
 IN CI BUS, UNIT 1 NV

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- SA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Gifford Date 1-4-95
Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System EMERGENCY DIESEL GEN.
 AD101

Page 22 of 34

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
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LEVEL 1 SCREENING FOR C1 AND D1 SWITCHGEAR

Level 1 screening is being applied to the following essential relay types which are located in the Westinghouse medium voltage switchgears C1 and D1: Agastat models 7012PB, 7012PE and E7014PA, General Electric model NGV13B¹, Westinghouse model MG-6 and ITE27D.

To apply level 1 screening, the following conditions are considered.

1. Davis-Besse is bounded by the SSRAP bounding spectrum.
2. Switchgears C1 and D1 are located in Area 6, elevation 585' which is less than about 40 feet above effective grade (area 6 effective grade = 573').
3. GERS Levels for affected relays are \geq 5g.
 - a. GERS for Agastat 7012 = 12.5g (ref. GERS-RLY-PNT.7)
 - b. GERS for Westinghouse MG-6 (DC, N.O. contact) = 10g (ref. GERS-RLY-ARH.5)
 - c. GERS for General Electric NGV13A = 15g (ref. GERS-RLY-PMM.4)
 - d. GERS for ITE27 = 15g (ref. GERS-RLY-PPM.4)
 - e. GERS for Agastat E7014 = 10g (ref. GERS-RLY-PNT.7)

¹

See JUSTIFICATION FOR SCREENING NGV13B RELAYS WITH GERS-RLY-PPM.4 which is included with this G.4 form. (SEE PGS 32, 33 & 34)

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Ladd Date 5/3/95
 Reviewed by _____ / Date _____

C.C. # 291

A-46 RELAY SCREENING AND EVALUATION
FORM C.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System EMERGENCY DIESEL GEN.
AD101

Page _____

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Subsystem/Component Ref Dwg(s) Contact/Contact Group Relay Type and Location SAT*

LEVEL 2 SCREENING FOR C1 AND D1 SWITCHGEAR

Level 2 screening is being applied to the following essential relay types, which are located in the Westinghouse medium voltage switchgears C1 and D1: Agastat model 7022, General Electric models HFA51A, HGA17C (see attached sheet for comparison between General Electric models HGA17A and HGA17C).

(Pgs 27, 28, 29 & 30)

Level 2 screening requires that the seismic capacity of the relay exceed its seismic demand. Both C1 and D1 are located in Plant Area 6, elevation 585', which is less than about 40' above effective grade (Area 6 effective grade = 573'). The median-centered floor response for Peak and ZPA for this area and elevation are .6038g and .242g respectively. Per NED 95-10027 (copy attached) an amplification factor of 5.5 has been assigned to the C1 and D1 switchgears. The natural frequency of the C1 and D1 switchgears is less than 8Hz, therefore, seismic demand (SD) is calculated: SD = medium centered floor response X safety factor X amplification factor.

Peak seismic demand:

$$\begin{aligned} SD &= .6038g \times 1.5 \times 5.5 \\ SD &= 4.98g \end{aligned}$$

ZPA seismic demand:

$$\begin{aligned} SD &= .242g \times 1.5 \times 5.5 \\ SD &= 1.99g \end{aligned}$$

Relay capacities from GERS-RLY-ARH.5 and GERS-RLY-PNT.7

	HGA17A	HFA51A	7022
Peak	6	6	6
ZPA	2.4	2.4	2.4

therefore, seismic capacity exceeds seismic demand.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- NO - No entry necessary.

Prepared by W.H. Smith Date 5/3/95
Reviewed by _____ / Date _____

SCE Review: John H. Hook 8/18/95

A-46 RELAY SCREENING AND EVALUATION
 FORM G-4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System EDG 1-2 OUTPUT BKR
AD101

Page 24 OF 34

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
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LEVEL 2 SCREENING FOR
 C3615 AND C3616

1. The natural frequency of these cabinets is less than 8Hz.
2. These cabinets have been assigned an amplification factor (AF) of 4.5.
3. These cabinets are both located in plant area 6, elevation 585'.
4. For this area and elevation the peak Median Centered Floor Response Spectra (FRS) = .6038g and the associated ZPA = .242g.

thus peak Seismic Demand (SD); SD = [ERS] * AF where ERS = FRS * 1.5

$$SD = [.6068g * 1.5] * 4.5$$

$$SD = 4.1g$$

and ZPA Seismic Demand (SD); SD = [ERS_{ZPA}] * AF where ERS_{ZPA} = ZPA * 1.5

$$SD = [.242g * 1.5] * 4.5$$

$$SD = 1.6g$$

5. Level 2 screening in these cabinets is being applied to the following relay types: Agastat 7012 (seismic capacity = 12.5g peak and 5g ZPA per GERS-RLY-PNT.7) and G.E. HFA51A42H with either normally open contacts or an energized coil (seismic capacity = 6g or 7g peak and 2.4g or 2.8g ZPA respectively, per GERS-RLY-ARH.5).

therefore, seismic capacity exceeds seismic demand.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by J.W. Seal Date 5/15/95
 Reviewed by _____ / Date _____

SCG REVIEW Jon H. Hock 8/18/85

G.H # 291
Pg. 25 OF 34

Date: Thursday, October 20, 1994 1:24pm

/RELAY

From: JonHook
To: Betlack

Re: Essential relays mounted on the EDG skid

Msg#: 4752

(1 reply)

If a cabinet which contains Emergency Diesel Generator control relays for which chatter is not acceptable is mounted on the engine skid, can these relays be considered seismically adequate by referencing page B-69 in NP 7148-SL and section 17 in SSRAP rev 4.0?

Also, can pressure switches which are mounted on attachments to the EDG skid be similarly screened?

Date: Tuesday, November 1, 1994 4:00pm

/RELAY

From: Betlack
To: JonHook

Re: Essential relays mounted on the EDG skid

(Reply to #4752)

Msg#: 4791

Yes to both questions. Section 17 of the SSRAP report states that "relays on reciprocating engines that routinely see high vibration due to operation" do not require a relay evaluation. The example on page B-69 of EPRI NP-7148 is based upon the SSRAP position. Accordingly, any contact device which satisfies the SSRAP report criteria is considered seismically adequate.

USE THIS SHEET TO BACKUP SAT EVALUATIONS
FOR RELAYS IN C3621, C3622 AND SWITCHES
MOUNTED BELOW THE OIL TANK ON RACK FOR
EDG 1-1 AND EDG 1-2

COPY TO 6.4 FORMS:

177, 178, 283, 291, 351, 352, 353, 354

G.4 #291

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System EDG 1-2 BKR AD101

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Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
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INTENTIONALLY BLANK

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

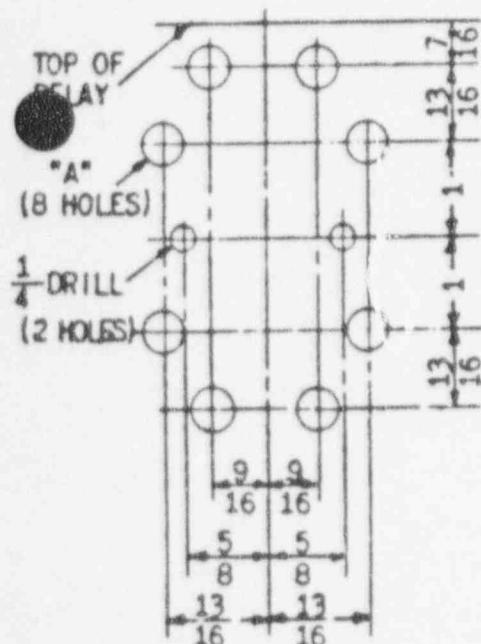
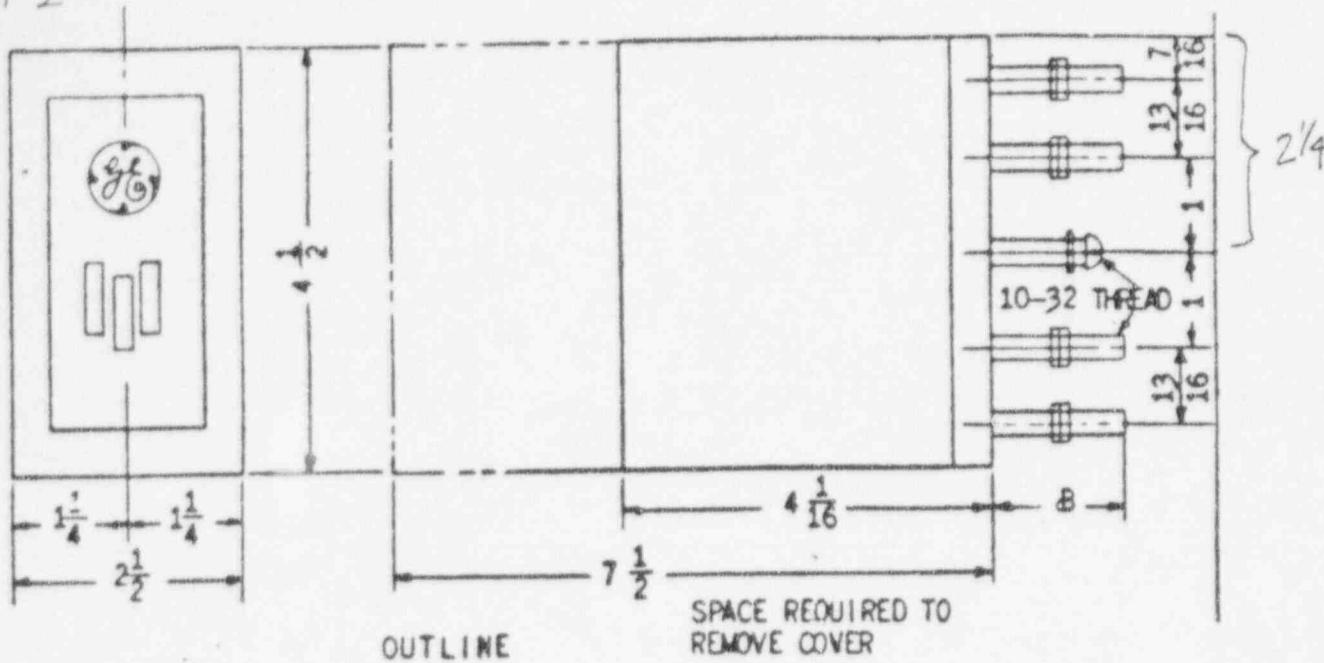
- | | |
|------|---|
| CA | - Chatter acceptable. |
| NV | - Not vulnerable (mechanically-actuated contacts and solid state relays). |
| GERS | - Seismically adequate based on GERS ____; include GERS number. |
| NA | - Component not affected by relays. |
| CR | - Corrective action required. |
| OA | - Operator action.
- No entry necessary. |

Prepared by _____ / Date
Reviewed by _____ / Date

JUSTIFICATION
FOR
SCREENING G.E. HGA17C52 AND HGA17C61 RELAYS
WITH GERS-RLY-ARH.5

Table 2 in GERS-RLY-ARH.5 lists a GERS level of 6g for the normally open contact of a direct current G.E. HGA17A relay in the non-operate condition. Figure 1 in GERS-RLY-ARH.5 gives a ZPA of 3.6g for this same relay. Davis-Besse uses a G.E. HGA17C relay in some of 4.16kV breaker control circuits (C1 and D1 switchgear). Data provided by G.E. will be used to show that the above "g" levels are applicable to normally open contacts on the G.E. HGA17C52 and HGA17C61 DC relays in the non-operate condition.

1. MOUNTING: Both the HGA17A and HGA17C (hereafter referred to as A and C respectively, are surface mounted. Both the A and C use two #10-32 screws for attachment to the mounting surface. The difference is, A is backconnected whereas C is front connected (see GEI-10190 pages 8 & 10 which are attached). Method of connecting conductors to these relays will not affect the g level at which contacts chatter.
2. CONTACTS & SPRINGS: G.E. Renewal Parts list for HGA relays, GEF-2623F (copy attached) shows that the A and C relay use the same contacts and springs. The differences between the A and C relays are the operating coil and the cover, neither of which will affect chatter in the non-operate state.

110187
39-14-2
3434

TYPE OF PANEL	"A"	"B"
INSULATING	$7/16"$	$2-13/16"$
STEEL	$9/16"$	$1-3/8"$

PANEL DRILLING (FRONT VIEW)

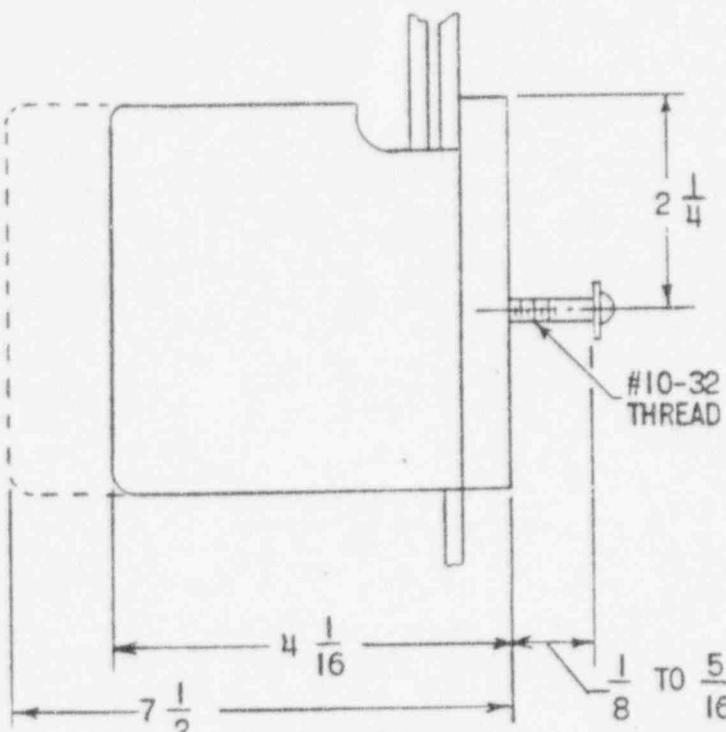
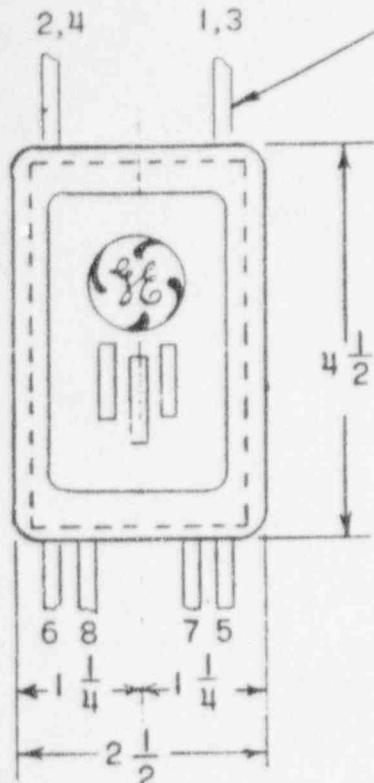
Fig. 4 (06077058-019) Outline and Panel Drilling for Surface Mounting of HGA17A and HGA17H Relays

G.4 # 291
Pg 29 OF 34

00189
E-39-14-2
(3432)

GEI-10190

NOTE: WIRE SIZE MUST NOT EXCEED
0.2" OVER INSULATION

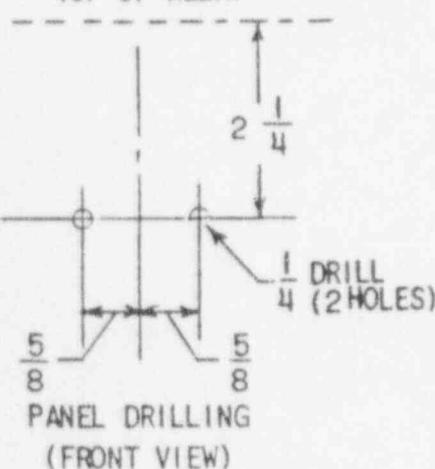


SPACE REQUIRED TO REMOVE COVER

UNLESS PANEL
THICKNESS IS
SPECIFIED

OUTLINE

TOP OF RELAY



PANEL DRILLING
(FRONT VIEW)

Fig. 6 (06375628-005) Outline and Panel Drilling for Surface Mounting of HGA17C, HGA17D and HGA17E Relays

6.4 # 291
RG 30 OF 34

RELAY MODEL
NUMBER

Page	8	8	8	8	8	8	8	10-22	23-24	8	8	8	8	8	9	9	9	9	9	9	9	9	9	9	25	
Ref.	*A	*B	*C	*D	*E	*†F	*†G	*H	*J	*K	*L	*M	*N	P	R	S	T	U	V	W	X	Y	AA	AB	AC	*†AE
12HGA15N1 to 5, 7 to 9, 13, 14, 19, 22 to 25	2	2	3	4	1	-	-	†	-	2	2	1	1	4	4	-	-	1	1	1	*	-	-	-	-	
12HGA15N6, 10 to 12, 15 to 18, 21	2	2	3	4	3	-	-	†	-	2	2	1	1	4	4	-	-	1	1	1	*	-	-	-	-	
12HGA15R1 to 37	1	2	1	1	3	-	-	†	-	2	2	2	2	1	1	-	-	1	1	1	2	1	1	-	-	
12HGA15S1 to 20	2	2	3	4	1	-	-	†	-	3	2	2	2	4	4	-	-	1	1	1	1	1	1	-	-	
12HGA15V2	2	2	3	4	3	-	-	†	-	3	2	2	2	5	5	-	-	1	1	1	1	1	1	-	-	
12HGA15W11 to 17	2	2	3	4	3	-	-	†	-	2	2	2	2	6	6	-	-	1	1	1	2	2	1	-	-	
12HGA16A1 to 15	1	1	7	7	5	-	-	†	-	1	1	1	1	2	2	-	-	1	1	1	1	1	1	-	-	
12HGA16B1 to 4	2	1	1	1	1	-	-	†	-	2	2	2	2	1	1	-	-	1	1	1	1	1	1	-	-	
12HGA17A51 to 78	2	2	3	4	3	-	-	†	-	2	2	1	1	4	4	-	-	1	1	1	4	1	1	-	-	
12HGA17B51 to 78	2	2	3	4	3	-	-	†	-	2	2	1	1	4	4	-	-	1	1	1	4	1	1	-	-	
12HGA17C51 to 78	2	2	3	4	3	-	-	†	-	2	2	1	1	4	4	-	-	1	1	1	4	2	2	-	-	
12HGA17D51 to 78	2	2	1	1	1	-	-	†	-	2	2	1	1	4	4	-	-	1	1	1	4	2	2	-	-	
12HGA17E51 to 78	-	-	1	1	3	-	-	†	-	2	2	1	1	1	1	-	-	1	1	1	4	2	2	-	-	
12HGA17F51 to 78	-	-	1	1	1	-	-	†	-	2	2	1	1	4	4	-	-	1	1	1	4	1	1	-	-	
12HGA17H51 to 78	2	2	1	1	1	-	-	†	-	2	2	1	1	4	4	-	-	1	1	1	4	1	1	-	-	
12HGA17J1A to 10A	2	2	3	4	3	-	-	†	-	2	2	1	1	4	4	-	-	1	1	1	4	1	1	-	-	
12HGA17L1A to 7A	2	2	3	4	3	-	-	†	-	2	2	1	1	4	4	-	-	1	1	1	4	1	1	-	-	
12HGA17M51 to 78	2	2	3	4	3	-	-	†	-	2	2	1	1	4	4	-	-	1	1	1	4	1	1	-	-	
12HGA17N1A to 4A	1	1	4	6	4	-	-	†	-	0	1	1	3	3	7	7	-	5	4	7	4	-	8	-	-	
12HGA17R51 to 78	2	2	1	1	1	-	-	†	-	2	2	1	1	4	4	-	-	1	1	1	4	1	1	-	-	
12HGA17S51 to 78	2	2	3	4	3	-	-	†	-	2	2	1	1	4	4	-	-	1	1	1	4	1	1	-	-	
12HGA17T51 to 78	2	2	1	1	1	-	-	†	-	2	2	1	1	4	4	-	-	1	1	1	4	1	1	-	-	
12HGA18A1A to 13A	2	2	3	4	3	-	-	†	-	2	2	2	2	2	2	-	-	1	1	1	4	1	1	-	-	
12HGA18B1A to 3A, 5A, 10A to 13A, 15A, 21A to 23A, 25A	2	2	3	4	3	-	-	†	-	2	2	1	1	4	4	-	-	1	1	1	4	1	1	-	-	
12HGA18B4A, 6A, 14A, 16A, 24A, 26A	2	2	3	4	3	-	-	†	-	2	2	1	1	4	4	-	-	1	1	1	4	1	1	-	-	
12HGA18E21A to 35A	2	2	3	4	3	-	-	†	-	2	2	1	1	4	4	-	-	1	1	1	4	1	1	-	-	
12HGA18F31A to 60A	2	2	3	4	3	-	-	†	-	2	2	2	2	2	2	-	-	1	1	1	4	1	1	-	-	
12HGA18H1A to 2A	2	2	3	4	3	-	-	†	-	2	2	1	1	4	4	-	-	1	1	1	4	1	1	-	-	

* Recommended for normal maintenance

† Not illustrated

• Select proper coil from table starting on page 10.

• Select proper coil from table starting on page 23

>Select proper target unit assembly and target coil from table on page 25.

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1-162-9

G.4 #291

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System EDC 1-2 AD101

Page 31 OF 34

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
---------------------	------------	-----------------------	-------------------------	------

INTENTIONALLY BLANK

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS ____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by _____ / Date

Reviewed by _____ / Date

6.4 # 291
Pg 32 OF 34

JUSTIFICATION
FOR
SCREENING G.E. NGV13B RELAYS
WITH GERS-RLY-PPM.4

Table 1 in GERS-RLY-PPM.4 lists a peak GERS level of 15g for the G.E. NGV13A relay in all modes of operation. Davis-Besse uses the G.E. NGV13B relay to initiate Emergency Diesel Generator starting in response to a bus undervoltage. Data provided by General Electric will be used to show the the 15g level given for the NGV13A relay is applicable to the NGV13B relay.

The complete part number of the relay in use at Davis-Besse is 12NGV13B25A, this "corresponds" to a 12NGV13A11A (reference G.E. Bulletin 7335 page 12-14, copy attached). The 12NGV13A11A is explicitly covered by GERS-RLY-PPM.4. G.E. Bulletin GEF-4376 page 4 (copy attached) shows that both the 12NGV13A11A and the 12NGV13B25A contain the same telephone relay. Since it's the telephone relay which contains parts subject to contact chatter, both relays will have equivalent GERS levels. Moreover, the difference between the NGV13A and NGV13B relays is that the NGV13B is equipped with a target coil for providing trip indication. The presence of this target coil does not affect the seismic capacity of the relay' essential contacts.



Type NGV

Voltage Relays

G.4 # 291
Pg 33 OF 34

GE Protective Relays

7335

SELECTION GUIDE—AC

No. Units	Rating		Contacts (Per Unit)	Calibrated on Dropout ^①				Calibrated on Pickup ^②				Case Size	Approx Wt in lbs (kg)		
	Volts	Freq. (Hz)		Cal. Range (V)	W/O Target		With Target		Cal. Range (V)	W/O Target			Net	Ship.	
					Model Number	Model Number	Tar. Rat. (Amps)	Model Number		Model Number	Model Number	Tar. Rat. (Amps)			
1	69	60	+ + + +	40-58	12NGV15A30									Molded △	3(1.4) 5(2.3)
	120			70-100	A21										
	208			121-173	A22										
	240			140-200	A23										
	480			280-400	A11										
1	69	60	+ + + +	40-58	12NGV13A14A										
	120			100-140	A15A										
	208			121-173	A12A										
	240			140-200	A13A										
1	69	60	+ + + +	40-58	12NGV13B28A	0.2									
	120			35-50	B39A	0.2									
	120			70-100	B25A	0.2									
	120			70-100	B21A	2.0									
	120			80-120	B30A	0.2									
	120			80-120	B29A	2.0									
	208			121-173	B26A	0.2									
	208			121-173	B22A	2.0									
	240			140-200	B27A	0.2									
	240			140-200	B23A	2.0									
2*	120	60	+ + + +	70-100	12NGV12B15A	0.2									
	208			121-173	A12A										
	240			140-200	A13A										
2*	120	50/60	+ + + +	70-100	A11A	B11A	2.0								
	120													S2	11(5) 16(7.3)
3*	69	60	+ + + +	40-58	12NGV11B18A	0.2									
	120			70-100	B15A	0.2									
	120			70-100	B11A	2.0									
	120			70-100	80-120										
	208			121-173	80-120										
3*	69	50/60	+ + + +	40-58	12NGV11A20A	121-173									
	120			70-100	A11A										
	208			121-173	A12A										
	240			140-200	A13A										

* 2-unit and 3-unit relays have two targets.

① In two-unit and three-unit relays, the normally open contacts are wired out in series, and the normally closed are wired out in parallel.

② In these three-unit relays, the normally closed contacts are wired out in series, and the normally open are wired out in parallel.

STATION BATTERY MONITORING

Number of Units per Relay	Volts Dc	Calibration Range Dropout Volts	Ac Supply Voltage		Model Number	Time Delay (sec)	Case Size	Approx Wt in lbs (kg)	
			Volts	Hertz				Net	Ship.
1	48	40-54	120		12NGV19ASA	0.5	S1	10(4.5)	15(6.8)
	125	54-86	120		ABA				
	125	100-140	120		A1A				
	125	100-140	208		A2A				
	125	100-140	240		A3A				

HIS BKR IS N.O. ON A LOSS OF OFFSITE POWER, BKR
MUST OPEN TO ENSURE EDG
REMAINS WITHIN OPERATING LIMITS

6.4 # 292

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT KANSAS CITY UNIT 1

System 416kV ELECTRICAL

Page 1 OF 15

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AACD1	E-34B SHT. 9, 10	DS (ALL)	(W) TYPE W CTRL. SW ON DI BUS UNIT 2	NV
"	CS HS6230		G.E TYPE SB1 ON C5715, A=7, RM=505, EL= 623	NV
"	CS/D AACD1		G.E. TYPE 3B1 ON C3616, RM 319	NV
"	CS		G.E. TYPE SB9 ON DI BUS, UNIT 2.	NV
AACD1 - CLOSE CKT	"	25SD HS6231	G.E. TYPE SBM ON C5715, A=7 RM=505, EL= 623	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- DA - Operator action.
- No entry necessary.

Prepared by W.K. Smith, Date 9-30-94
Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System 416kV ELECTRICALPage 2 OF 15

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AACD1 - CLOSE CKT	E-34B SAT. 9	255D DG2	GE. TYPE SBI ON C3616 IN RM 319	NV
"		52S16 AD101, AD110	(W) MOC SW IN DI BUS UNITS 1 AND 10	NV
"		52H1 TEST POS.	(W) TOC SW IN DI BUS UNIT 2	NV
"		52X1 ABDD2	G.E. TYPE HFA.151A2H IN DI BUS, UNIT 10	CA4 (by CS's LISTED ON Pg. 1)
"		25X DI	G.E. TYPE HFA.151A2H IN DI BUS, UNIT 3	CA4 (by CS's LISTED ON Pg 1)
"		52b AD110	Auxiliary Switch on (W) 5kV DHP BKR IN DI BUS, UNIT 10.	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Liff Date 9-30-94
 Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS - BESSE UNIT 1

G.4 # 292

System 416KV ELECTRICAL

Page 3 OF 15

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
ACCO1 - CLOSE CKT	E348 SHT. 9	62 TDO	G.E. TYPE HGA17C62 IN DI BUS UNIT 10	GERS-RLY-ARH.5 (SEE Pg. 10)
	E348 SHT. 11	52S1a - (CONTACTS SUPPLY 62 COIL) TDO	(W) MOC SWITCH IN DI BUS UNIT 10	NV
	E-348 SHT. 9	51-2X C2	G.E TYPE HFA53K91F IN DI BUS, UNIT 10.	CA - CHATTER OF THIS N.C. CONTACT IS ACCEPTABLE A THIS WOULD BLOCK A BKR. CLOSE SIGNAL.

NOTE: Attempting to ensure this breaker remains open greatly expands the number of relays requiring an essential classification. This is due to the various contacts which control the operation of the 86-3/D2 and the 86-3/B2 relays. Moreover, making these various contacts essential extends our seismic evaluations to include the stations 13.8 KV and non-1E 4KV buses. Therefore, to limit the number of essential relays and seismic evaluations, this breaker is being allowed to close due to contact chatter. Then, should a loss of offsite power occur, undervoltage relaying will be assured for tripping.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by D.H. Bell Date 5/4/95
 Reviewed by _____ / Date _____

G.4 #292

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS - BESSE UNIT 1

System 416KV ELECTRICALPage 4 OF 15

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AACDI-CLOSE CKT.	E-34B SHT. 9	86-3/D2	G.E. TYPE HFA53K91F IN DI BUS, UNIT 10	CA-SEE NOTE PG. 3
"		86-3/RD	G.E. TYPE HFA53K91F IN DI BUS, UNIT 10	CA-SEE NOTE PG. 3
"	95/ABDD2		G.E. TYPE HFA53K91F IN DI BUS, UNIT 10	CR- OBTAIN SEISMIC DATA, POSSIBLE REPLACEMENT.

THE FOLLOWING CONTACTS ARE EVALUATED
 FOR EFFECT ON 95/ABDD2 COIL:

E-34B SHT. 7	62 TDO	G.E. TYPE HGA17C52 IN D2 BUS UNIT 9	CR- RELOCATE RELAY
"	52S1a	(W) MOC SWITCH IN D2 BUS, UNIT 9	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Bell Date 5/4/95
 Reviewed by _____ / Date _____

G.4 # 292

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System 4.16 KV ElectricalPage 5 OF 15

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
95/A8002 COIL EVAL	E-34B SHT. 7	526	Auxil SW For <u>W</u> 5bV DHP BKR IN DC BUS, UNIT 9	NV
HACDI - CLOSE CKT	E-34B SHT 9	86-4 AC	G.E. TYPE HFA 53K91F IN AD110 DI BUS.	CA - CHATTER OR SEAL IN BLOCKS BKR CLOSING WHICH IS DESIRABLE
"		86-2 DI	G.E. TYPE HFA 53K91F IN DI BUS, UNIT 3	CA - CHATTER COULD BLOCK CLOSING OR CAUSE TRIP
FOR EVAL OF UPSTREAM CONTACTS TO THIS RELAYS COIL, SEE G.4 # 291 (SAME AS 86-1/DI). NOT REQUIRED FOR THIS PIECE OF EQUIP.				

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Bell Date 5/4/95
Reviewed by _____ / Date _____

G.4 #292

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System 416 RV ELECTRICALPage 6 OF 15

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AACDI - TRIP CKT	E-34B SHT. 9	<u>86-2</u> <u>AD103</u>	G.E. TYPE HFA53K9IF IN DI BUS UNIT 3	CA - TRIP SIGNALS TO THIS BKR ARE ACCEPTABLE
"		<u>86-4</u> <u>AC</u>	G.E. TYPE HFA53K9IF IN DI BUS, UNIT 10	CA - TRIP SIGNALS TO THIS BKR. ACCEPTABLE.
"		<u>52X</u> <u>AACDI</u>	G.E. TYPE HGA17C52 IN DI BUS, UNIT 2	BA - USING N.C. CONTACTS
"		<u>27Y-1</u> <u>DI</u>	G.E. TYPE HFAS1A42H IN DI BUS, UNIT 3 (NO CONTACT)	GERS-RLY-ARH.5 (SEE Pg. 10) SEE G.4 291 FOR EVAL OF CONTACTS CONTROLLING THIS ESSENTIAL RELAY.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Smith Date 5/4/95
 Reviewed by _____ / Date _____

C.C. #292

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System 416 RV ELECTRICALPage 7 OF 15

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AACD1 - TRIP CKT	E-34B SHT 9	27X-4 /D1 27X-5 /D1	(W) TYPE 16-6 STYLE 289B360A20 HUK, RELAY IN D1 BUS, UNIT 1. (N.O. CONTACTS)	GERS-RLY-ARH.5 (SEE Pg 11)
			CONTACTS UPSTREAM OF 27X-4/D1 AND 27X-5/D1 COILS	
	E-34B SHT 1HA	27A-1/D1 27A-2/D1 27A-3/D1 27A-4/D1	ITE - 27A "CKT. SHIELD UV RELAY" IN D1 BUS, UNIT 1 (SEE NOTE) CAT# 211B4175	GERS-RLY-PPM.4 (SEE Pg. 11)

11

HS-9829

NV

ON C5715. A=7
RM=605 EL=623

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Wilfert Date 5/4/95
 Reviewed by _____ Date _____

27-1 & 27-2 GOULD INC SWGR DIV.

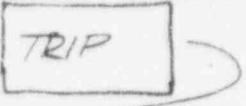
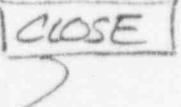
27-3 ITE IMPERIAL CORP.

27-4 GOULD BROWN BOVERI

G-4

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESE UNIT 1

System 4160kV ELECTRICALPage 8 OF 15

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AACDI - TRIP CKT	E-34B SHT 9			
	E-5-49 ^a VMAN E- 5-168	"a"	AUXILIARY SW FOR <u>(W)</u> 56V BER IN DI BUS, UNIT 2	NV
AACDI - CLOSE CKT	E-34B SHT 9			
	E-5-49 ^a VMAN E-5- 168	Y	CONTROL RELAY ^(*) FOR <u>(W)</u> 56V JHP SWGR IN DI BUS, UNIT 2	GERS-MVS- LVS. 7
	11	b	SEE "a" above	NV

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Smith Date 5/4/95
 Reviewed by _____ / Date _____

^(*) (W) BFD 22S

G.4 #292

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System 41612V ELECTRICAL

Page 9 OF 15

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
HACDI - CLOSE CKT	E-5-49 & VMMR E-5-168	LCSW	LATCH CHECK SWITCH IN <u>(W)</u> 5kV DHP BKR IN DI BUS, UNIT 2	NV
"		LSb, LSa	MOTOR CUTOFF SWITCH FOR <u>(W)</u> 5kV DHP BKR IN DI BUS, UNIT 2	NV

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by D.K. Lefler Date 9-30-94
Reviewed by _____ / Date _____

C.C. #292

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System

4.16kV ELECTRICAL

10 OF 15

Page

Relay
Type and
Location

SAT

Subsystem/Component Ref Dwg(s) Contact/Contact Group

LEVEL 2 SCREENING FOR C1 AND D1 SWITCHGEAR

Level 2 screening is being applied to the following essential relay types, which are located in the Westinghouse medium voltage switchgears C1 and D1: Agastat model 7022, General Electric models HFA51A, HGA17C (see attached sheet for comparison between General Electric models HGA17A and HGA17C).

1 PAGES 12 - 15

Level 2 screening requires that the seismic capacity of the relay exceed its seismic demand. Both C1 and D1 are located in Plant Area 6, elevation 585', which is less than about 40' above effective grade (Area 6 effective grade = 573'). The median-centered floor response for Peak and ZPA for this area and elevation are .6038g and .242g respectively. Per NED 95-10027 (copy attached) an amplification factor of 5.5 has been assigned to the C1 and D1 switchgears. The natural frequency of the C1 and D1 switchgears is less than 8Hz, therefore, seismic demand (SD) is calculated: SD = medium centered floor response X safety factor X amplification factor.

Peak seismic demand:

$$SD = .6038g \times 1.5 \times 5.5$$

$$SD = 4.98g$$

ZPA seismic demand:

$$SD = .242g \times 1.5 \times 5.5$$

$$SD = 1.99g$$

Relay capacities from GERS-RLY-ARH.5 and GERS-RLY-PNT.7

	HGA17A	HFA51A	7022
Peak	6	6	6
ZPA	2.4	2.4	2.4

therefore, seismic capacity exceeds seismic demand.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Hall Date 5/4/95
Reviewed by _____ Date _____

SCE REVIEW Jon B. Hood 5/18/95

6.4 #292

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System 4.16 kV ELECTRICAL

Page 11 OF 15

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

LEVEL 1 SCREENING FOR C1 AND D1 SWITCHGEAR

Level 1 screening is being applied to the following essential relay types which are located in the Westinghouse medium voltage switchgears C1 and D1: Agastat models 7012PB, 7012PE and E7014PA, General Electric model NGV13B¹, Westinghouse model MG-6 and ITE27D.

To apply level 1 screening, the following conditions are considered.

1. Davis-Besse is bounded by the SSRAP bounding spectrum.
2. Switchgears C1 and D1 are located in Area 6, elevation 585' which is less than about 40 feet above effective grade (area 6 effective grade = 573').
3. GERS Levels for affected relays are $\geq 5g$.
 - a. GERS for Agastat 7012 = 12.5g (ref. GERS-RLY-PNT.7)
 - b. GERS for Westinghouse MG-6 (DC, N.O. contact) = 10g (ref. GERS-RLY-ARH.5)
 - c. GERS for General Electric NGV13A = 15g (ref. GERS-RLY-PMM.4)
 - d. GERS for ITE27 = 15g (ref. GERS-RLY-PPM.4)
 - e. GERS for Agastat E7014 = 10g (ref. GERS-RLY-PNT.7)

¹ See JUSTIFICATION FOR SCREENING NGV13B RELAYS WITH GERS-RLY-PPM.4 which is included with this G.4 form.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
NO - No entry necessary.

Prepared by W.H. Smith Date 5/4/95
Reviewed by _____ Date _____

G.4 # 292
Pg 12 OF 15

JUSTIFICATION
FOR
SCREENING G.E. HGA17C52 AND HGA17C61 RELAYS
WITH GERS-RLY-ARH.5

Table 2 in GERS-RLY-ARH.5 lists a GERS level of 6g for the normally open contact of a direct current G.E. HGA17A relay in the non-operate condition. Figure 1 in GERS-RLY-ARH.5 gives a ZPA of 3.6g for this same relay. Davis-Besse uses a G.E. HGA17C relay in some of 4.16kV breaker control circuits (C1 and D1 switchgear). Data provided by G.E. will be used to show that the above "g" levels are applicable to normally open contacts on the G.E. HGA17C52 and HGA17C61 DC relays in the non-operate condition.

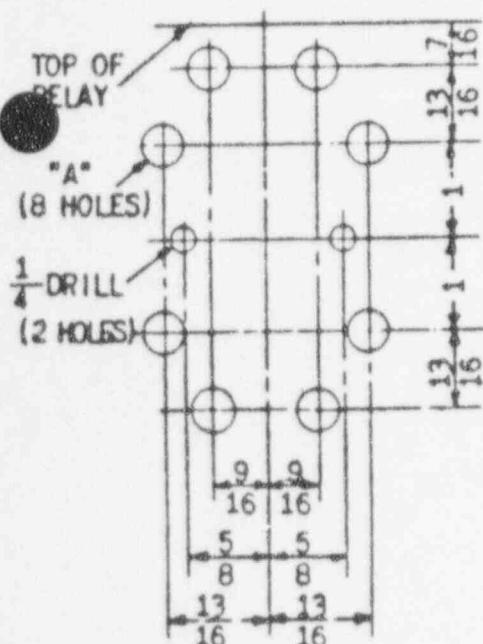
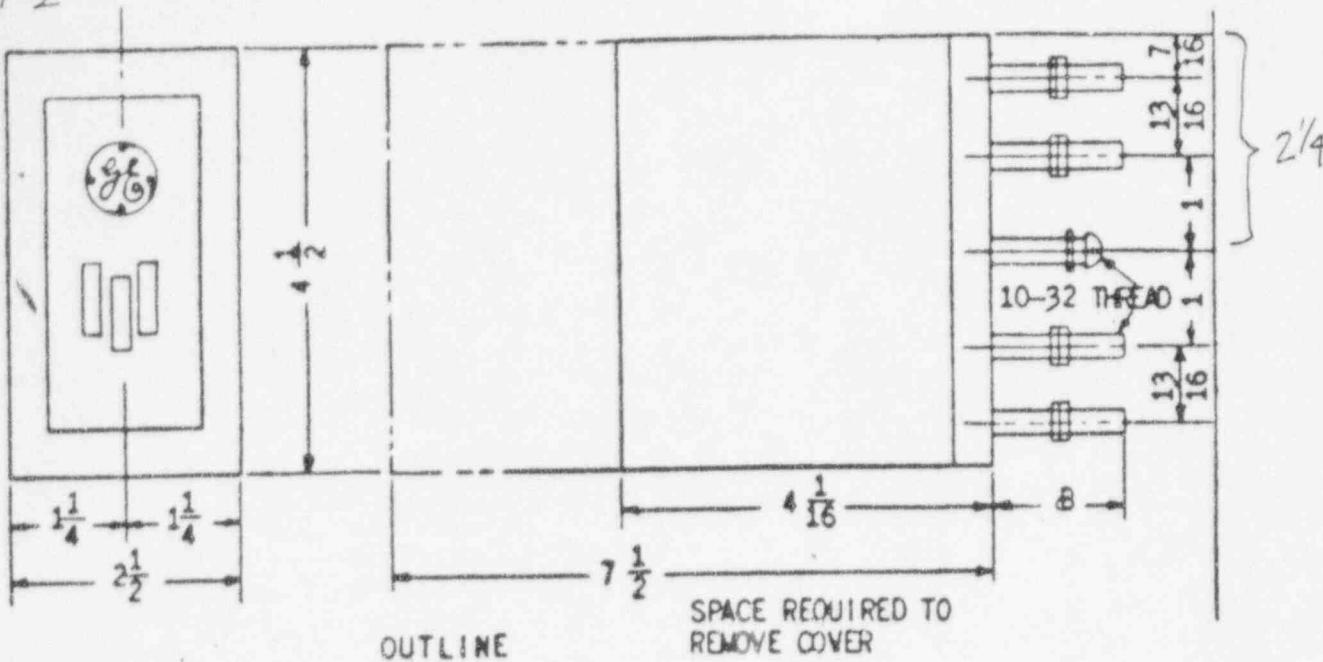
1. MOUNTING: Both the HGA17A and HGA17C (hereafter referred to as A and C respectively, are surface mounted. Both the A and C use two #10-32 screws for attachment to the mounting surface. The difference is, A is backconnected whereas C is front connected (see GEI-10190 pages 8 & 10 which are attached). Method of connecting conductors to these relays will not affect the g level at which contacts chatter.
2. CONTACTS & SPRINGS: G.E. Renewal Parts list for HGA relays, GEF-2623F (copy attached) shows that the A and C relay use the same contacts and springs. The differences between the A and C relays are the operating coil and the cover, neither of which will affect chatter in the non-operate state.

00187

3814-2

3432)

GEI-10190

6.4 #292
Pg 13 OF 15

TYPE OF PANEL	"A"	"B"
INSULATING	$7/16"$	$2-13/16"$
STEEL	$9/16"$	$1-3/8"$

PANEL DRILLING (FRONT VIEW)

Fig. 4 (06077058-019) Outline and Panel Drilling for Surface Mounting of HGA17A and HGA17H Relays

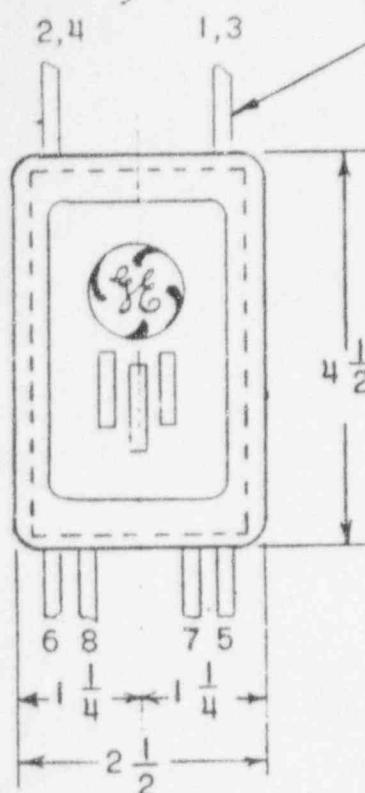
00189

E-39-14-2

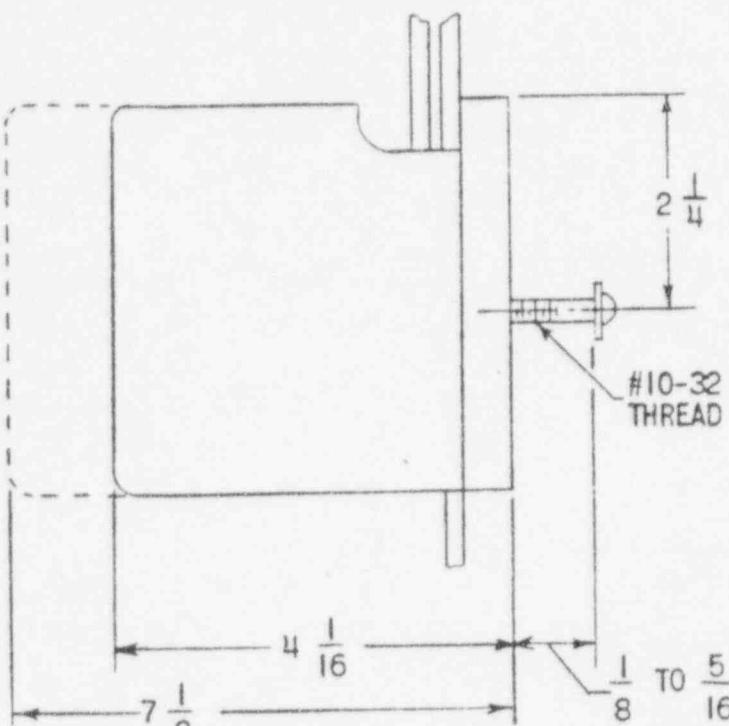
(3432)

GEI-10190

6.4 #292
Pg 14 of 15



NOTE: WIRE SIZE MUST NOT EXCEED
0.2" OVER INSULATION

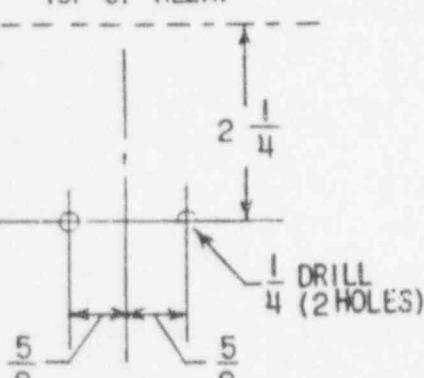


SPACE REQUIRED TO REMOVE COVER

UNLESS PANEL
THICKNESS IS
SPECIFIED

OUTLINE

TOP OF RELAY



PANEL DRILLING
(FRONT VIEW)

Fig. 6 (06375628-005) Outline and Panel Drilling for Surface Mounting of HGA17C, HGA17D and HGA17E Relays

54 # 292
Pg 15 of 15

RELAY MODEL
NUMBER

Page	Ref.	* A	* B	* C	* D	* E	* F	* G	* H	10-22	23-24	* J	* K	* L	* M	* N	* P	* Q	* R	* S	* T	* U	* V	* W	* X	* Y	* Z	* AA	* AB	* AC	* AE
12HGA15N1 to 5, 7 to 9, 13, 14, 19, 22 to 25	t2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
12HGA15N6, 10 to 12, 15 to 18, 21	t2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
12HGA15R1 to 37	t2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
12HGA15S1 to 20	t2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
12HGA15V2	t2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
12HGA15W11 to 17	t2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
12HGA16A1 to 15	t2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
12HGA16B1 to 4	t2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
12HGA17A51 to 78	t2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
12HGA17B51 to 78	t2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
12HGA17C51 to 78	t2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
12HGA17D51 to 78	t2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
12HGA17E51 to 78	t2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
12HGA17F51 to 78	t2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
12HGA17H51 to 78	t2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
12HGA17J1A to 10A	t2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
12HGA17L1A to 7A	t2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
12HGA17M51 to 78	t2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
12HGA17N1A to 4A	t2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
12HGA17R51 to 78	t2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
12HGA17S51 to 78	t2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
12HGA17T51 to 78	t2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
12HGA18A1A to 13A	t2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
12HGA18B1A to 3A, 5A, 10A to 13A, 15A, 21A to 23A, 25A	t2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
12HGA18B4A, 6A, 14A, 16A, 24A, 26A	t2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
12HGA18E21A to 35A	t2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
12HGA18F31A to 60A	t2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
12HGA18H1A to 2A	t2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2

* Recommended for normal maintenance

† Not illustrated

‡ Select proper coil from table starting on page 10

§ Select proper coil from table starting on page 23

¶ Select proper target unit assembly and target coil from table on page 25.

COPIED FROM GEF-2483F

1-26-85 JK

THIS BKR N.C.
MUST BE CAPABLE OF
TRIPPING OPEN AND REMAINING
OPEN DURING PERIOD OF
STRONG SHAKING.

* LOCATION OF
DI BUS : A=6
RM = 325
EL = 585

6.4 # 293

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System 4.16KV ELECTRICAL

Page 1 OF 10

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location *	SAT*
AD110	E-34B SHT. 11	DS (AII)	(W) TYPE W CONTROL SWITCH ON DI BUS, UNIT 10	NV
"		CS	G.E. TYPE SB9 CTRL. SW. ON DI BUS, UNIT 10	NV
"	<u>CS</u> H136233		G.E. TYPE SBM CTRL. SW. ON C5715, A=7 RM= 505, EL=623	NV
"	<u>CS/D</u> AD110		GE. TYPE SBI CTRL SW ON C3614. A = 6, RM = 319, EL = 585	NV
AD110 - CLOSE CKT	<u>25SD</u> DG2		SAME AS <u>CS/D</u> AD110	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Smith Date 9-30-94
Reviewed by _____ / Date _____

6.4 # 293

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System 4.16 KV ELECTRICALPage 2 OF 10

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AD110 - CLOSE CKT.	E-34B SHT. 11	<u>52S1b</u> AD101	(W) MOC SW IN DI BUS, UNIT 1	NV
		<u>52S1b</u> AACDI	(W) MOC SW IN DI BUS, UNIT 2	NV
		<u>25SD</u> HS6231	G.E. TYPE SBM CTRL. SW ON C5715, A=7, RM= 505, EL=623	NV
		<u>52H1</u> TEST POS	(W) DC SWITCH IN DI BUS, UNIT 10.	NV
		<u>25X</u> DI	G.E. TYPE HFA151A2H IN DI BUS, UNIT 3	CA4 (I.e CS, CS/HIS6233, CS/D AD110)

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

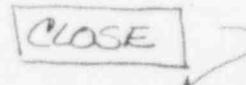
- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Gaskins Date 9-30-94
Reviewed by _____ / Date _____

C.E #293

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System H.16 KV ELECTRICALPage 3 OF 10

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AD110-CLOSE CKT.	E-34B SHT 11	52X1/ABDD2	G.E. TYPE HFA151A2H IN DI BUS, UNIT 10	CA4(SAME AS 25X/D1)
		86-3/D2	G.E. TYPE HFA53K91F ON DI BUS, UNIT 10	CA4 (SAME AS 25X/D1)
		86-2/D1	G.E. TYPE HFA53K91F ON DI BUS, UNIT 3	CA4 (SAME AS 25X/D1)
				
E-5-50	Y	(W) TYPE BFD22S IN DI BUS, UNIT 10	CA - CHATTER WILL NOT BLOCK TRIPPING CA4 - WILL NOT RECLOSE DUE TO "CS" CONTACTS	

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. G. R. Date 9-30-94
Reviewed by _____ / Date _____

6.4 #293

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT JAMES-BESSE UNIT 1

System 4.16kV ELECTRICPage 4 OF 10

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AD110 - CLOSE CHT	E-5-50	LS6, LSa	MOTOR CUT-OFF SWITCH FOR <u>(W)</u> 5KV DHP BKR IN DI BUS, UNIT 10	NV
"	"	b	Auxiliary Switch FOR <u>(W)</u> 5KV DHP BKR IN DI BRS UNIT 10	NV
"	"	LCSW	LATCH CHECK SWITCH FOR <u>(W)</u> 5KV DHP BKR IN DI BRS, UNIT 10.	NV
AD110 - TRIP CKT	E-84B SH. 11	E-5-50	TRIP	Auxiliary Switch FOR <u>(W)</u> 5KV DHP BKR IN DI BUS, UNIT 10

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Ladd 9-30-94
 Reviewed by _____ / Date _____

c.e. #293

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System 4.16 RU ELECTRICALPage 5 OF 10

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
HD110 - TRIP CKT	E-34G SHT 11	<u>86-3</u> D2	G.E. TYPE HFA53K91F ON DI BUS, UNIT 10	CAT (CHATTER MAY CAUSE TRIP WHICH IS ACCEPT- ABLE)
"		<u>86-2</u> D1	G.E. TYPE HFA53K91F ON DI BUS UNIT 3	CAT (CHATTER MAY CAUSE TRIP WHICH IS ACCEPT- ABLE).
"		51GS-3	ABB CO-11 1456C05A30 CLASS 1E ON DI BUS, UNIT 10	CAT (SEE ABOVE)
51-4 (all phases)			⑩ CO-2 STYLE 1875223A ON DI BUS, UNIT 10	CAT (SEE ABOVE)

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.L. Smith Date 9-30-94
 Reviewed by _____ / Date _____

6.4 #293

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System 4.16kV ELECTRICALPage 6 OF 10

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AD110 - TRIP CKT.	E-34B SHT 11	51-5	(W) CO-5 STYLE 1875234A ON DI BUS, UNIT 10	CAT (SEE B6-3/D2)
"	52X TDC		G.E. HGA17C52 IN DI BUS, UNIT 10	BA - USING N.C. CONTACTS
NOTE: THE COIL FOR THIS RELAY IS SUPPLIED BY SEISMICALLY ADEQUATE CONTACTS IN AD110 CLOSE CKT (I.E. CS's)				
"	27Y-1 DI	⊗	G.E. HFA51A42H ON DI BUS, UNIT 3 (N.O. CONTACT)	GERS-RLY-ARH.5 (SEE Pg. 9)
27X-4/DI +			(W) TYPE MG-6 STYLE 289B360A20 ON DI BUS, UNIT 1 (N.O. CONTACTS)	GERS-Rly-HRH.5 (SEE Pg. 10)
27X-5/DI				

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Belf Date _____
Reviewed by _____ / Date _____

⊗ NOTE: CONTACTS SUPPLYING 27Y-1/DI COIL ARE EVALUATED
ON 6.4 # 291.

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

6.4 # 293

System _____

Page 7 OF 10

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
---------------------	------------	-----------------------	-------------------------	------

 THE FOLLOWING CONTACTS SUPPLY THE COILS OF 27X-4/D1 & 27X-5/D1

E34B
SHT 14A

H89829

Relay
Type and
Location

SAT*

NV

CUTLER-
HAMMER
TYPE E30 RB
ON C5715, A=
7, RM=565, EL=
623

"

27A-1, 27A-2
D1, D1

GOULD INC. TYPE
ITE 27D CLK.
SHIELD UV RELAY
ON DI BUS, UNIT
1

GERS-Rly-PMM.4
(SEE Pg 10)

27A-3
D1

ITE IMPERIAL
ITE-27D CLK.
SHIELD UV RELAY
ON DI BUS UNIT

GERS-Rly-PMM.4
(SEE Pg 10)

10

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Scalf Date 5/4/95
 Reviewed by _____ Date _____

c.c # 293

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System 4.16kV ELECTRICAL

Page 8 OF 10

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
27X-4/D1 a	E-34B	27A-4	GOULD BROWN	GERS-RLY-PMM.4
27X-5/D1 COILS	SH 14A	D1	BOVERI ITE 27D CKT. SHIELD ON DI BUS, UNIT 1.	(SEE Pg 10)

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Schaff Date 5/4/95
Reviewed by _____ / Date _____

#293

A-46 RELAY SCREENING AND EVALUATION
 FORM C-4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System

416kV ELECTRICAL

Page

9 OF 10

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT
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LEVEL 2 SCREENING FOR C1 AND D1 SWITCHGEAR

Level 2 screening is being applied to the following essential relay types, which are located in the Westinghouse medium voltage switchgears C1 and D1: Agastat model 7022, General Electric models HFA51A, HGA17C (see attached sheet for comparison between General Electric models HGA17A and HGA17C).

PAGES 12-15 IN 6.4 292

Level 2 screening requires that the seismic capacity of the relay exceed its seismic demand. Both C1 and D1 are located in Plant Area 6, elevation 585', which is less than about 40' above effective grade (Area 6 effective grade = 573'). The median-centered floor response for Peak and ZPA for this area and elevation are .6038g and .242g respectively. Per NED 95-10027 (copy attached) an amplification factor of 5.5 has been assigned to the C1 and D1 switchgears. The natural frequency of the C1 and D1 switchgears is less than 8Hz, therefore, seismic demand (SD) is calculated: SD = medium centered floor response X safety factor X amplification factor.

Peak seismic demand:

$$SD = .6038g \times 1.5 \times 5.5$$

$$SD = 4.98g$$

ZPA seismic demand:

$$SD = .242g \times 1.5 \times 5.5$$

$$SD = 1.99g$$

Relay capacities from GERS-RLY-ARH.5 and GERS-RLY-PNT.7

	HGA17A	HFA51A	7022
Peak	6	6	6
ZPA	2.4	2.4	2.4

therefore, seismic capacity exceeds seismic demand.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS _____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. Hanisch Date 5/4/95
 Reviewed by _____ / Date _____

SCE Review Jon A. York 8/18/95

G.4 #293

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System 4116 kV ELECTRICAL

Page 10 OF 10

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
---------------------	------------	-----------------------	-------------------------	------

LEVEL 1 SCREENING FOR C1 AND D1 SWITCHGEAR

Level 1 screening is being applied to the following essential relay types which are located in the Westinghouse medium voltage switchgears C1 and D1: Agastat models 7012PB, 7012PE and E7014PA, General Electric model NGV13B¹, Westinghouse model MG-6 and ITE27D.

To apply level 1 screening, the following conditions are considered.

1. Davis-Besse is bounded by the SSRAP bounding spectrum.
2. Switchgears C1 and D1 are located in Area 6, elevation 585' which is less than about 40 feet above effective grade (area 6 effective grade = 573').
3. GERS Levels for affected relays are \geq 5g.
 - a. GERS for Agastat 7012 = 12.5g (ref. GERS-RLY-PNT.7)
 - b. GERS for Westinghouse MG-6 (DC, N.O. contact) = 10g (ref. GERS-RLY-ARH.5)
 - c. GERS for General Electric NGV13A = 15g (ref. GERS-RLY-PMM.4)
 - d. GERS for ITE27 = 15g (ref. GERS-RLY-PPM.4)
 - e. GERS for Agastat E7014 = 10g (ref. GERS-RLY-PNT.7)

1

See JUSTIFICATION FOR SCREENING NGV13B RELAYS WITH GERS-RLY-PPM.4 which is included with this G.4 form.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by W. K. Smith Date 5/4/95
Reviewed by _____ / Date _____

INTRA-COMPANY MEMORANDUM
ED 8268

G.4 #293
ATTACHED TO
PAGE 10



TO P. W. Jacobsen DATE April 5, 1995
Supervisor - Design Electrical Engineering

FROM T. S. Swim MAIL STOP DB3210
T S Swim
Supervisor - Design Civil/Structural Engineering

SUBJECT Seismic Evaluation of ABB CO-11 Relays PHONE 2365
NED 95-10027

The Civil/Structural Unit has been requested to evaluate the seismic capacity of the Asea Brown Boveri (ABB) CO-11 0.2 Amp relay to determine if the SQUG Screening Level 4 criteria is applicable.

The ABB CO-11 relay was qualified by Farwell & Hendricks, Inc. Report Number 10540 (EXT 93-01980, QR Z-086). This relay was tested in accordance with IEEE 344-1975 using 5% damping. A review was made to confirm the test response spectra envelopes the required response spectra. In developing the required response spectra, the conservative floor spectra (Auxiliary Building Area 6 at Elevation 585) was multiplied by a factor of 5.5 to account for the C1 and D1 amplification.

The 5.5 amplification factor was calculated by Westinghouse during the seismic qualification of the C1 and D1 switchgears, Reference Westinghouse Report TE-81384-Y1 (7749 E-5Q-34-1, QR E-005Q-001). The 5.5 amplification factor may be used for all calculations associated with the seismic demand for the C1 and D1 switchgears in lieu of using the SQUG conservative upper bound value of 7.0.

Based on the review of the above, the seismic capacity of the ABB CO-11 relay can be established by using the Screening Level 4 criteria as identified in the General Implementation Procedure (GIP).

If you have any questions on this matter, please contact Mr. J. G. Hook at extension 8249.

JGH JGH/lkw

cc: W. J. Kreinbihl 3040
Nuclear Records Management 3020

BR TO REMOVED
KOSZI

6.4 #294

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System 480 VAC ELECTRICAL

Page 1 OF 5

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AD1DF12, F1	E-34B SHT 16	DS	(W) TYPE W CTRL 301TC4 OU DI BUS UNIT 4	NV
"	CS (486236)	CS	G.E. TYPE SBM CTRL SW ON C5715 A=1, RM=505, EL=623	NV
"	CS	CS	GE TYPE S39 CTRL. SW. 011 DI BUS, UNIT 4	NV
AD1DF12 - CLOSE CKT	"	52H1 TEST HOB	(W) TCE SW FOR 52V DNP BKR IN DI BUS UNIT 4	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- DA - Operator action.
- No entry necessary.

Prepared by A. K. Bell, Date 10-17-94
Reviewed by _____ / Date _____

c.e. # 294

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System 180 VAC ELECT

Page 2 OF 5

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AD10F12 - CLOSE CKT	E-34B SHT 14	CLOSE		
E-5-51 E VMAN E-5-168	"	Y	CONTROL RELAY \otimes FOR (W) 5KV DHP BKR IN DI BUS UNIT 4	CA4 (i.e. the CS's)
"	b		AUXILIARY SW FOR (W) 5KV DHP BKR. IN DI BUS UNIT 4	NV
"	LCSW		LATCH CHECK SWITCH FOR (W) 5KV DHP BKR. IN DT BUS UNIT 4	NV
"	LSa, LSb		MOTOR CUTOFF SWITCH FOR (W) 5KV DHP BKR IN DT BUS UNIT 4	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Goss Date 10-17-94
Reviewed by _____ Date _____

$\otimes (W)$ BFD22S

G-4 #294

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System 480 VAC ELECTRICAL

Page 2 of 5

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AD1DF12-AUTO	E34B	<u>94-1</u>	G.E. TYPE HFA51A42H IN DI BUS	GERS-RLY-ARH.5 (SEE Pg. 5)
TRIP CKT	SHT 16	<u>D1</u>	UNIT 3 (NORMALLY OPEN)	
CONTACTS WHICH SUPPLY 94-1/D1 COIL				
	E34B SHT 13	<u>86-1</u> <u>D1</u>	G.E. TYPE HFA53K91F IN DI BUS, UNIT 3	SEE G.4 # 291 FOR SAT EVALUATION OF THIS ESSENTIAL RELAY
SEE G.4 # 291 FOR EVALUATION OF CONTACTS WHICH SUPPLY 86-1/D1 COIL.				
AD1DF12-AUT3	E-34B SHT 16	50/51 (OA, OB, OC)	(W) TYPE CO-11 IN DI BUS, UNIT 4 STYLE # 1875303A	GERS-MVS-LVS.7
	E-34B SHT 16	50GS	(W) TYPE ITH IN DI BUS UNIT 4 STYLE 1955594A	BA-CR

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. Klein Date 5/4/95
Reviewed by _____ Date _____

6.4 #294

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System 480 VAC ELECTRICALPage 4 OF 5

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AD10F12	E-34B SAT 16	[TRIP]		
	E-5-514 VMAN E-5- 168	a	AUXILIARY SWITCH FOR <u>W</u> 5KV DHP BRR IN DI BUS UNIT 4	NV
	E-34B SAT 16	52b	SAME AS "a"	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. King Date 10-11-94
 Reviewed by _____ / Date _____

cc # 294

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT JAVIS-BESSE UNIT 1

System 480 VAC ELECTRICAL

Page 5 OF 5

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT
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LEVEL 2 SCREENING FOR C1 AND D1 SWITCHGEAR

Level 2 screening is being applied to the following essential relay types, which are located in the Westinghouse medium voltage switchgears C1 and D1: Agastat model 7022, General Electric models HFA51A, HGA17C (see attached sheet for comparison between General Electric models HGA17A and HGA17C).

Level 2 screening requires that the seismic capacity of the relay exceed its seismic demand. Both C1 and D1 are located in Plant Area 6, elevation 585', which is less than about 40' above effective grade (Area 6 effective grade = 573'). The median-centered floor response for Peak and ZPA for this area and elevation are .6038g and .242g respectively. Per NED 95-10027 ~~(copy attached)~~ an amplification factor of 5.5 has been assigned to the C1 and D1 switchgears. The natural frequency of the C1 and D1 switchgears is less than 8Hz, therefore, seismic demand (SD) is calculated: SD = medium centered floor response X safety factor X amplification factor.

Peak seismic demand:

$$SD = .6038g \times 1.5 \times 5.5$$

$$SD = 4.98g$$

ZPA seismic demand:

$$SD = .242g \times 1.5 \times 5.5$$

$$SD = 1.99g$$

Relay capacities from GERS-RLY-ARH.5 and GERS-RLY-PNT.7

	HGA17A	HFA51A	7022
Peak	6	6	6
ZPA	2.4	2.4	2.4

therefore, seismic capacity exceeds seismic demand.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Gold Date 5/4/95
Reviewed by _____ / Date _____

SCE Review: J. P. St. Hilaire 8/18/95

NOTE: THIS PUMP BKR IS TRIPPED
ON BUS UV. BKR MUST
RECLOSE TO SUPPORT OPERATION
OF EOG 1-2.

6.4 #295

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System SERVICE WATER

Page 1 OF 10

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
P3-2, AD107 HIS 1371	E-48B SHT 6D+6C	DS (ALL)	(W) TYPE W CTRL SW ON DI BUS UNIT 7	NV
"		<u>CS</u> / <u>CS</u> START / STOP	G.E. TYPE SB-9 CTRL SW ON DI BUS, UNIT 7	NV
"		"CLOSE" & "TRIP"	RESESE PB (NO LOCKOUT) CAT #C2450032 IN NPO032, A=INTK RM=52, EL=5760	NV
"		<u>CS(HIS)</u> & START <u>CS(HIS)</u> STOP (HIS 1371)	G.E. TYPE SBM CTRL SW. ON C5716, A=7, RM= 505, EL=623	NV
AD107-CLOSE CKT	"	<u>52S2</u> b	(W) MOC SN IN 56V DHP BKR IN DI BUS UNIT 7	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by D. K. Kline Date 10-4-94
Reviewed by _____ / Date _____

G.4 # 295

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System SERVICE WATERPage 2 OF 10

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AD107-CLOSE CKT	E-488 SHT 6D	52H1	(W) TAC SW FOR 52V DHP BKR IN D1 BUS, UNIT 7.	NV
"	2X	G.E. TYPE HFA 51A42H IN D1 BUS UNIT 1	GERS-RLY-ARH.5 (SEE Pg. 8)	
THE FOLLOWING CONTACTS SUPPLY 2X RELAY COIL				
E-64B SHT 2A	2	AGASTAT MOD # 7012PET (AUX SW ON AGA.) IN D1 BUS, UNIT 1	GERS-RLY-PNT. 7 (SEE Pg. 9)	
"	52S1a	(W) MOC SW FOR 52V DHP BKR IN D1 BUS, UNIT 1	NV	

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by D. Ken Bain Date 5/4/95
 Reviewed by _____ / Date _____

c.e #295

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System SERVICE WATER

Page 3 OF 10

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
CONTACTS SUPPLYING 2X COIL	E-64B SHT 2A	SAK 24	G.E. TYPE HFAS1A42H IN C3614 RM 319	GERS-RLY-ARH.5 (SEE Pg 10)

E-64B K04 DEUTSF 4CP SEE G.4#311
SHT 2E CS7550,CS756C

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by O.K. Schaff Date 5/15/95
Reviewed by _____ / Date _____

G-4 # 295

A-46 RELAY SCREENING AND EVALUATION
 FORM G-4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System SERVICE WATERPage 4 OF 10

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AD107-CLOSE CKT	E-48B SHT. 6D	KA, KB	DEUTSCH 4CP (57550, 57560)	SEE G-4#311
"	BA, BB	AROMINT FORMIAIR # STIEC2DC21V (57550, 57560)	CA4 (i.e KA & KB)	
"	$\frac{B}{A}$, $\frac{B}{B}$	(BYPASS SWITCH)		SEE G-4#311
E-5-51 & VMAN E-5-168	"	CLOSE	Y CONTROL RELAY IN \textcircled{W} 56V DHP BKR. DI BUS UNIT 7	GERS-MVS-LVS. 7

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by John P. H. Date 2/23/91
 Reviewed by John P. H. Date

\textcircled{W} TYPE BFD22S

c.e #295

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System SERVICE WATERPage 5 OF 10

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AD107-CLOSE CKT	E-5-51	6	AUXILIARY SW. FOR <u>(W)</u> 5KV DHP BKR IN DI BUS UNIT 7	NV
"	LCSW		LATCH CHECK SW. FOR <u>(W)</u> 5KV DHP BKR IN DI BUS UNIT 7	NV
"	LSa, LSb		MOTOR CUTOFF SW FOR <u>(W)</u> 5KV DHP BKR IN DI BUS UNIT 7	NV
AD107-TRIP CKT (MANUAL)	E-48B SHT. 6D	KA, KB BA, BB	CA4 (i.e THE CS's AND THE TRIP Pb).	

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Bell Date 5/4/95
 Reviewed by _____ / Date _____

G.4 # 295

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System SERVICE WATERPage 6 OF 10

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AD107- AUTO TRIP CKT	E-48B SHT 60	94-1 DI	G.E. TYPE HFA51A42H IN DI BUS UNIT 3 (N.O. CONTACTS)	GERS-RLY-ARH.5 (SEE Pg 8)
			94-1 COIL IS SUPPLIED BY 86-1/DI, SEE G.4 # 291 FOR EVALUATION OF 86-1/DI AND UPSTREAM CONTACTS	

E-48B SHT 60	27V-3 DI	G.E. TYPE HFA51A42H IN DI BUS UNIT 3	GERS-RLY-ARH.5 (SEE Pg 8)
-----------------	-------------	---	------------------------------

27V-3/DI COIL IS SUPPLIED BY RELAY/
 27X-2/DI AND 27X-1/DI. SEE G.4
 # 291 FOR EVALUATION OF THESE
 ESSENTIAL RELAYS & UPSTREAM CONTACTS.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by D.K. Smith Date 5/4/95
 Reviewed by _____ / Date _____

6.4 #295

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System SERVICE WATER

Page 7 of 9

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT
AD107-AUTO TRIP CKT	E-48B SHT 60	50GS STYLE # 1955594A	(W) TYPE ITH IN DI BUS UNIT 7	BA - CR
"		5451(0A+0C) STYLE 289B355A23	(W) TYPE COM-5 IN DI BUS, UNIT 7	GERS-MVS - LVS.7
"		526	Auxiliary SW FOR (W) 56V DHP CKT BKR IN DI BUS, UNIT 7	NV
"	E-5-514 VMAN E-5- 168	<u>TRIP</u>	same as 526	NV

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by J. K. Sajih Date 5/4/95
 Reviewed by _____ / Date _____

C.C. #295

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System SERVICE WATERPage 8 OF 10

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT
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LEVEL 2 SCREENING FOR C1 AND D1 SWITCHGEAR

Level 2 screening is being applied to the following essential relay types, which are located in the Westinghouse medium voltage switchgears C1 and D1: Agastat model 7022, General Electric models HFA51A, HGA17C (see attached sheet for comparison between General Electric models HGA17A and HGA17C).

Level 2 screening requires that the seismic capacity of the relay exceed its seismic demand. Both C1 and D1 are located in Plant Area 6, elevation 585', which is less than about 40' above effective grade (Area 6 effective grade = 573'). The median-centered floor response for Peak and ZPA for this area and elevation are .6038g and .242g respectively. Per NED 95-10027 (~~copy attached~~) an amplification factor of 5.5 has been assigned to the C1 and D1 switchgears. The natural frequency of the C1 and D1 switchgears is less than 8Hz, therefore, seismic demand (SD) is calculated: SD = medium centered floor response X safety factor X amplification factor.

Peak seismic demand:

$$SD = .6038g \times 1.5 \times 5.5$$

$$SD = 4.98g$$

ZPA seismic demand:

$$SD = .242g \times 1.5 \times 5.5$$

$$SD = 1.99g$$

Relay capacities from GERS-RLY-ARH.5 and GERS-RLY-PNT.7

	HGA17A	HFA51A	7022
Peak	6	6	6
ZPA	2.4	2.4	2.4

therefore, seismic capacity exceeds seismic demand.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Walsh Date 5/4/95
 Reviewed by _____ Date _____

SCE Review

J.W.G. 5/4/95

G.4 #295

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System SERVICE WATER

Page 9 OF 10

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

LEVEL 1 SCREENING FOR C1 AND D1 SWITCHGEAR

Level 1 screening is being applied to the following essential relay types which are located in the Westinghouse medium voltage switchgears C1 and D1: Agastat models 7012PB, 7012PE and E7014PA, General Electric model NGV13B¹, Westinghouse model MG-6 and ITE27D.

To apply level 1 screening, the following conditions are considered.

1. Davis-Besse is bounded by the SSRAP bounding spectrum.
2. Switchgears C1 and D1 are located in Area 6, elevation 585' which is less than about 40 feet above effective grade (area 6 effective grade = 573').
3. GERS Levels for affected relays are \geq 5g.
 - a. GERS for Agastat 7012 = 12.5g (ref. GERS-RLY-PNT.7)
 - b. GERS for Westinghouse MG-6 (DC, N.O. contact) = 10g (ref. GERS-RLY-ARH.5)
 - c. GERS for General Electric NGV13A = 15g (ref. GERS-RLY-PMM.4)
 - d. GERS for ITE27 = 15g (ref. GERS-RLY-PPM.4)
 - e. GERS for Agastat E7014 = 10g (ref. GERS-RLY-PNT.7)
 - f. GERS for Agastat 7012 with Aux SW = 7g (GERS-RLY-PNT.7)

¹ See JUSTIFICATION FOR SCREENING NGV13B RELAYS WITH GERS-RLY-PPM.4 which is included with this G.4 form.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
NO - No entry necessary.

Prepared by W.H. Smith Date 5/4/92
Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System SERVICE WATERPage 10 OF 10

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
---------------------	------------	-----------------------	-------------------------	------

LEVEL 2 SCREENING FOR
 C3615 AND C3616

1. The natural frequency of these cabinets is less than 8Hz.
2. These cabinets have been assigned an amplification factor (AF) of 4.5.
3. These cabinets are both located in plant area 6, elevation 585'.
4. For this area and elevation the peak Median Centered Floor Response Spectra (FRS) = .6038g and the associated ZPA = .242g.

thus peak Seismic Demand (SD); $SD = [ERS] * AF$ where $ERS = FRS * 1.5$
 $SD = [.6038g * 1.5] * 4.5$
 $SD = 4.1g^3$

and ZPA Seismic Demand (SD); $SD = [ERS_{ZPA}] * AF$ where $ERS_{ZPA} = ZPA * 1.5$
 $SD = [.242g * 1.5] * 4.5$
 $SD = 1.6g$

5. Level 2 screening in these cabinets is being applied to the following relay types: Agastat 7012 (seismic capacity = 12.5g peak and 5g ZPA per GERS-RLY-PNT.7) and G.E. HFA51A42H with either normally open contacts or an energized coil (seismic capacity = 6g or 7g peak and 2.4g or 2.8g ZPA respectively, per GERS-RLY-ARH.5).

therefore, seismic capacity exceeds seismic demand.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by D. W. Schaff Date 5/15/95
 Reviewed by _____ / Date _____

SCE Review

J.W. Stork 8/14/85

THIS BKR IS N.O. AND IS
REQUIRED TO REMAIN
OPEN DURING PERIOD
OF STRONG SHAKING

6.4 #296

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System DECAY HEAT REMOVAL

Page 1 OF 5

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AD112, HISDH6A, PH2-2	E-52B SHTS 604 6C	ALL CONTACTS IN MANUAL & AUTO TRIP CCT.	VARIOUS	CA - THIS BKR IS TO REMAIN OPEN DURING STRONG SHAKING ∴ CHATTER IN TRIP CCT IS ACCEPTABLE.
AD112 - CLOSE CKT	E-52B SHTS 604 6C	DS	(W) TYPE W CTRL SW ON D1 BUS, UNIT 12.	NV
	<u>CS</u> HIS (HISDH6A)		G.E. TYPE SBM CTRL. SW IN C6716. H=7, RM=505, EL= 623	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by E. K. Lohf Date 10-4-94
Reviewed by _____ / Date

c.4 # 296

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT JAVINS-BESSE UNIT 1

System DECAY HEAT

Page 2 OF 5

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
10112 - CLOSE CKT	E-52B SHT. 40	PB	REESE Pb WITHOUT LOCKOUT CAT# 02450 032 IN NP0422, A=7 RM=115, EL=545	NV
"		CS	G.E. TYPE SB9 CTRL. SW ON DI BUS, UNIT 12	NV
"	52H1		(W) TOC SWITCH FOR 5kV DHP BKR. IN DI BUS, UNIT 12	NV
	52b 52		(W) MBC SWITCH FOR 5kV DHP BKR IN DI BUS, UNIT 12	NV

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Lipp Date 10-4-94
Reviewed by _____ / Date _____

6.4 #296

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System DECAY HEATPage 3 OF 5

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AD112 - CLOSE CKT	E-52B SHT 6D	1Y DI	AGASTAT # E7022 PA IN DI BUS, UNIT 12	GERS-RLY-PNT.7 (SEE Pg 5)
"		KA, KB	DEUTSCH 4CP (5755C, 5756D)	SEE 6.4#311
"		BA, BB	ARUMAT FORM 1AIC (5755C, 5756D)	CA4 (i.e. KA + KB)
"		BS A BS B	(BYPASS SWITCHES)	SEE 6.4#311

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Smith Date 5/4/95
Reviewed by _____ / Date _____

6.4 #294

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System DECAY HEATPage 4 OF 5

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AO112 - CLOSE CKT.	E-52B SHT 60	CLOSE	CONTROL RELAY FOR <u>(W)</u> 5KV DHP CKT. BKR. IN DI BUS, UNIT 12	CA4 (i.e. 1/2)
"	E-5-51 + VMAN E-5-108	Y	AUXILIARY SW FOR <u>(W)</u> 5KV DHP BKR IN DI BUS, UNIT 12	NV
"	LCSW	b	LATCH CHECK SW FOR <u>(W)</u> 5KV DHP BKR IN DI BUS, UNIT 12	NV
"	LSa, LSB		MOTOR CUTOFF SW FOR <u>(W)</u> 5KV DHP BKR IN DI BUS, UNIT 12	NV

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Smith Date 10-4-94
Reviewed by _____ / Date _____

C.C #296

A-46 RELAY SCREENING AND EVALUATION
FORM G-4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System DECAY HEAT

Page 5 OF 5

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT
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LEVEL 2 SCREENING FOR C1 AND D1 SWITCHGEAR

Level 2 screening is being applied to the following essential relay types, which are located in the Westinghouse medium voltage switchgears C1 and D1: Agastat model 7022, General Electric models HFA51A, HGA17C (see attached sheet for comparison between General Electric models HGA17A and HGA17C).

Level 2 screening requires that the seismic capacity of the relay exceed its seismic demand. Both C1 and D1 are located in Plant Area 6, elevation 585', which is less than about 40' above effective grade (Area 6 effective grade = 573'). The median-centered floor response for Peak and ZPA for this area and elevation are .6038g and .242g respectively. Per NED 95-10027 (copy attached) an amplification factor of 5.5 has been assigned to the C1 and D1 switchgears. The natural frequency of the C1 and D1 switchgears is less than 8Hz, therefore, seismic demand (SD) is calculated: SD = medium centered floor response X safety factor X amplification factor.

Peak seismic demand:

$$SD = .6038g \times 1.5 \times 5.5$$

$$SD = 4.98g$$

ZPA seismic demand:

$$SD = .242g \times 1.5 \times 5.5$$

$$SD = 1.99g$$

Relay capacities from GERS-RLY-ARH.5 and GERS-RLY-PNT.7

	HGA17A	HFA51A	7022
Peak	6	6	6
ZPA	2.4	2.4	2.4

therefore, seismic capacity exceeds seismic demand.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Gold Date 5/4/95
Reviewed by _____ / Date _____

SCE Review Jon G. Stark 8/18/95

A-4E RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT LEWIS-PICKEE UNIT 1

6.4 #297

System HIGH PRESSURE INJECTION

Page 1 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
P58-2, AD111	E-52B SHT. 5C AND 5D	MANUAL AND AUTO TRIP CIRCUIT - ALL CONTACTS	VARIOUS	CA - THIS BKR IS TO REMAIN OPEN; THEREFORE CHATTER IN THE TRIP CKT IS ACCEPTABLE
AD111-CLOSE CKT.	E-52B SHT 5D	DS	(W) TYPE W CTRL SW ON DI BUS, UNIT 11	NV
"	"	CS	G.E. TYPE SR9 CTRL SW ON DI BUS, UNIT 9	NV
"	PB		REESE R6 CAT #02450 032 IN NP0582, A= 7 RM=115, EL= 545	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- DA - Operator action.
- No entry necessary.

Prepared by W.K. brief Date 10-4-94
 Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System HIGH PRESSURE INJECTIONPage 2 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AD111- CLOSE CKT	E-52B SHT. 50	52H1	(W) TOC SWITCH IN 5KV DHP BKR. IN DI BUS, UNIT 11	NV
"	"	KA, KB	DEUTSCH 4CP (5755C, 5756D)	SEE G.4#311
"	"	BA, BB	AROMAT FORM 1A1B #ST 2EL20024V (5755C, 5756D)	C24 (i.e KA + KB)
"	B< BS A — B	"	BYPASS SWITCH	SEE G.4#311

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Schipper, Date 5/4/95
 Reviewed by _____, Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System HIGH PRESSURE

Page 3 OF 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AD111-CLOSE CKT	E-52B 8475D	CLOSE		
E-5-51 + VMAN E-5- 168	"	Y	CONTROL RELAY FOR <u>(W)</u> 5kV DHP CKT. BKR IN DI BUS, UNIT	CA - ABILITY TO CLOSE THIS BKR. IS NOT REQUIRED
"	b		AUXILIARY SWITCH FOR <u>(W)</u> 5kV DHP BKR. IN DI BUS UNIT 11	NV
"	LCSW		LATCH CHECK SWITCH FOR <u>(W)</u> 5kV DHP CKT. BKR. IN DI BUS, UNIT 11.	NV
"	LSa, LSb		MOTOR CUTOFF SW. FOR <u>(W)</u> 5kV DHP BKR. IN DI BUS UNIT 11	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Seigh Date 5/4/95
 Reviewed by _____ / Date _____

(X) (W) TYPE BFD22S

6.4 # 298

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT BAPS-BESE UNIT 1

System COMPONENT COOLING WATERPage 1 OF 12

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
P43-2, AD113 HIS 1418,	E-50B SHT. 3A, 3B	DS (ALL)	(W) TYPE W CTRL. SWITCH ON DI BUS, UNIT 13	NV
F1S143ZD, TSH1435	"	CS START, CS STOP	G.E. TYPE SB9 CTRL. SW. ON DI BUS, UNIT 13	NV
	"	CS(HIS), CS(HIS) CLOSE, STOP (HIS1418)	G.E. TYPE SBM CTRL SW ON DI BUS, UNIT 13	NV
	"	CLOSE, TRIP	REESE PB CAT# 02450 038 IN NP0432, A=7 RM=328, EL=505	NV
AD113-CLOSE CKT	"	52H1	(W) TOC SW IN 56V BKR IN DI BUS, UNIT 13	NV
	"	52S2b	(W) MOC SW FOR 5KV DHP BKR IN DI BUS, UNITS 1 AND 8	NV

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NY - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. brief Date 10-4-74
Reviewed by _____ / Date _____

6.4 #298

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System COMPONENT COOLING WATERPage 2 OF 12

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AD113 - CLOSE CKT	E-52B SHT. 3B	2X	G.E. TYPE HFAS1A42H IN DI BUS, UNIT 1.	GERS-RLY-ARH.5 (SEE Pg 11)

CONTACTS SUPPLYING 2X COIL ARE EVALUATED
ON 6.4 # 295

CA - CHATTER ON THESE CLOSE CKT. CONTACTS HELPSHOLE. WILL NOT TRIP OR LOCKOUT ; BKR. STARTING THIS STANDBY PUMP IS ACCEPTABLE.

CONTACTS SUPPLYING 2/X2 COIL

E-50B SHT 28	FISA + FISB	ITT BARTON MODEL 289A FLOW SWITCH. IN A=7, RM=328, EL=585
-----------------	----------------	---

CA - THIS PATH IS NOT RELIED UPON FOR START-
ING P43-2 FOR AN UNDERRVOLTAGE CONDITION, SUPPLY
30sec ON DELAY RELAY.

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable. (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Lippert / Date
Reviewed by _____ / Date

G-4 #298

A-46 RELAY SCREENING AND EVALUATION
 FORM G-4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System Component Cooling WaterPage 3 OF 12

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
2X2 COOL	E-50B SHT 28	52H1	(W) TOE SWITCH IN 5kV DHP BKR IN DI BUS, UNIT 13	NV
AD113 - CLOSE CIRCUIT	E-50B SHT 38	SAY 24	G.E. TYPE HFA51A42H IN C3616, RM1 318	CA - CHATTER ON THESE CONTACTS WILL NOT TRIP OR LOCKOUT BREAKER STARTUP OF STANDBY PUMP ACCEPTABLE.

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by J.K. Wild Date 1-24-95
 Reviewed by _____ / Date _____

6.6 # 298

A-46 RELAY SCREENING AND EVALUATION
FORM 6.6 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System COMPONENT COOLING WATERPage 4 OF 12

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AD113-CLOSE CIRCUIT	E-50B SHT 3	KA, KB	DEUTSCH 4CP (5755C, 5756D)	CA- CLOSE - RELAY BKR IS ACCEPTABLE TRIP - PERMISSIVE CONTACTS BLOCK TRIP SIGNALS CHATTER NOT THICK OR PROLONGED RELAY.
		BA, BB	APLUMA FORM 1A/B (5755C, 5756D)	CA - see above
		BS BS A B	(BYPASS SWITCHES)	SEE 6.4#311
			CLOSE	
E-5-514 VIAN E-5-168		Y	CONTROL RELAY FOR W 5KV DHP BKR IN DI BUS, UNIT 13	⊗ GERS-MVS/LVS.9

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- - No entry necessary.

Prepared by OK Date 1-24-95
Reviewed by _____ / Date

⊗ W TYPE BFD22S

G.4 #298

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System Component Cooling Water

Page 5 OF 12

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
E-5-514 VMAN E-5- 168	b		AUXILIARY SWITCH FOR <u>(W)</u> 5kV DHP CIR BKR IN DI BUS, UNIT 13	NV
"	LCSW		LATCH CHECK SWITCH FOR <u>(W)</u> 5kV DHP BKR IN DI BUS, UNIT 13	NV
"	LSa, LSb		MOTOR CUTOFF SWITCH FOR <u>(W)</u> 5kV DHP BKR IN DI BUS, UNIT 13	NV

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Smith Date 1-24-95
 Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System COMPONENT COOLING WATERPage 6 OF 12

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AD113- AUTO TRIP CKT	E-50B SHT 3B	5252a	(W) MOE SWITCH FOR 5KV DHP BKR. IN 01 BUS, UNIT 13	NV
"	F1S (F1S1432D)		ITT BARTON FLOW SWITCH. A=7 RM=328, EL=585	GERS PS.5 (SEE PG. 9) CA - SEE NOTE
"	2 X1		AGASTATE MODEL 7012PD OR E7012PD IN RC3608, A=6 RM=323, EL=585	GERS-RLY-PNT.7 (SEE Pg 12) CA - SEE NOTE
"	TSH (TSH1435)		BARKSDALE TEMP. SW MODEL T2H-5150S-25-A (SEE PG.10) IN ROOM 328, A=7 EL=585	SAT CA - SEE NOTE

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Smith Date 5/4/95
 Reviewed by _____ Date _____

NOTE: UPON FURTHER EVALUATION, CONTACTS IN THE TRIP CIRCUIT ARE CA BECAUSE THIS BREAKER IS NORMALLY OPEN AND WOULD NOT BE REQUIRED TO CLOSE UNTIL 20SECONDS AFTER THE PERIOD OF STRONG SHAKING STOPS IF THERE IS A LOSS OF OFFSITE POWER,

6.4 #298

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System Component Cooling Water

Page 7 OF 12

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AD113 - Auto TRIP CKT	E-50B SHT 3B	94-2 DI	G.E. TYPE HFA51A42H IN DI BUS UNIT 3	GERS-RLY-ARH.5 (SEE PG. 11) CA - SEE NOTE PAGE 4
NOTE TRIPPING RELAY 94-2/DI IS CONTROLLED BY LOCKOUT RELAY 86-1/DI (SEE E-34B SHT 13). 86-1/DI HAS BEEN CLASSIFIED AS AN ESSENTIAL RELAY, AND IS EVALUATED IN 6.4 # 291				
E-50B SHT 3B	506S STYLE # 1955594A	506S ITH IN 01 BUS, UNIT 13	(W) TYPE ITH IN 01 BUS, UNIT 13	CA - THIS BKR N.O., WILL NOT RECEIVE CLOSE SIGNAL DUE TO EDG START UNTIL 20 SECONDS AFTER STRONG SHAKING.
"	50/51 (dc) STYLE # 2898355A23	50/51 (dc) IN DI BUS, UNIT 13	(W) TYPE COM-5 IN DI BUS, UNIT 13	CA - SAME AS 506S

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by J. K. Kerbaugh Date 5/4/95
Reviewed by _____ / Date _____

G-4 #298

A-46 RELAY SCREENING AND EVALUATION
 FORM G-4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System COMPONENT COOLING WATERPage 8 of 12

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AD113-AUTO CLOSE CKT	E-50B SHT 3B	KA, KB	SEE PAGE 4	
		BA, BB	SEE PAGE 4	
	50/51 (DA)		ABB TYPE COM-5 STYLE: 1326D81A05A IN DI BUS, UNIT 13	CA- SAME AS 506S

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.L. Smith Date 5/4/95
 Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

G.4 #298

System Componet Coding Water

Page 9 OF 12

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT
<u>GERS-PS.5</u>				

AREA/ROOM/ELEV

FIS1432D AUXL7/328/585
 FIS1422C AUXL7/328/585

The effective grade for area 7 is 562'
 Peak Ground Response Spectra = 0.39g
 Ground ZPA = 0.15g
 Since $585' - 562' = 23' < 40'$, the ground spectra multiplied by (1.5×1.5) may be used to evaluate these pressure switches.

Natural frequency of the mounting is > 8 Hz (Ref. NED 95-10033)
 The amplification factor for the mounting is 1.0. (Ref. NED 95-10033)

GERS-PS.5 = 3.0g/1.0g (EPRI NP-5223-SL)

Demand = $.39g/.15g \times 1.5 \times 1.5 \times 1.0 = 0.88g/0.34g < 3.0g/1.0g$
 Therefore these devices may be screened at level 2 as being seismically adequate using GERS-PS.5

Prepared by Lew Blank Date 4/28/95

Seismic Capability Engineer Jon G. Stark Date 8/18/95

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
 NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
 GERS - Seismically adequate based on GERS ____; include GERS number.
 NA - Component not affected by relays.
 CR - Corrective action required.
 OA - Operator action.
 - No entry necessary.

Prepared by NH / Date _____
 Reviewed by NH / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

G.4#289

298

System Component Coding Water

Page X, 10 of 12

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT
AREA = AUXL7 ELEV = 585'				

EQUIPMENT	MFG.	MODEL NO.	AMP.	>8HZ	Setpoint/Nom.
TSH1435	Barksdale	T2H-M150S-25A	1.0	Y	125F/100F
TSH1483	Barksdale	T2H-M150S-25A	1.0	Y	125F/100F

Nominal Temperature based on temperatures observed from computer points T068, T069.

The effective grade for area 7 is 562'

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

Since $585' - 562' = 23' < 40'$, the ground spectra multiplied by (1.5 X 1.5) may be used to evaluate these temperature switches.

Natural frequency of each mounting is > 8 Hz (Ref. NED 95-10034)
 The amplification factor for each mounting is 1.0. (Ref. NED 95-10034)

Device Capacity = 10.61g/ 5.32g (Ref. NED 95-10034)

Demand = .39g/.15g X 1.5 X 1.5 X 1.0 = 0.88g/0.34g < 10.61g/ 5.32g

Therefore these devices may be screened at level 2 as being seismically adequate using relay specific capacity data.

In addition, per memo NED 95-10034, these devices are qualified to current standards and also screen at level 4.

Prepared by John H. Hard Date 4/28/95

Seismic Capability Engineer John H. Hard Date 8-18-95

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS ____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by NIA / Date _____
 Reviewed by NIA / Date _____

#298

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

11 OF 12

System

Component Cooling Water

Page

Subsystem/Component

Ref Dwg(s)

Contact/Contact Group

Relay
Type and
Location

SAT

LEVEL 2 SCREENING FOR C1 AND D1 SWITCHGEAR

Level 2 screening is being applied to the following essential relay types, which are located in the Westinghouse medium voltage switchgears C1 and D1: Agastat model 7022, General Electric models HFA51A, HGA17C (see attached sheet for comparison between General Electric models HGA17A and HGA17C).

Level 2 screening requires that the seismic capacity of the relay exceed its seismic demand. Both C1 and D1 are located in Plant Area 6, elevation 585', which is less than about 40' above effective grade (Area 6 effective grade = 573'). The median-centered floor response for Peak and ZPA for this area and elevation are .6038g and .242g respectively. Per NED 95-10027 (copy attached) an amplification factor of 5.5 has been assigned to the C1 and D1 switchgears. The natural frequency of the C1 and D1 switchgears is less than 8Hz, therefore, seismic demand (SD) is calculated: SD = medium centered floor response X safety factor X amplification factor.

Peak seismic demand:

$$SD = .6038g \times 1.5 \times 5.5$$

$$SD = 4.98g$$

ZPA seismic demand:

$$SD = .242g \times 1.5 \times 5.5$$

$$SD = 1.99g$$

Relay capacities from GERS-RLY-ARH.5 and GERS-RLY-PNT.7

	HGA17A	HFA51A	7022
Peak	6	6	6
ZPA	2.4	2.4	2.4

therefore, seismic capacity exceeds seismic demand.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- RV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Ball Date 5/4/95
Reviewed by _____ / Date _____

SCS Review

Jpa/G.Thor 8/18/95

C-4 #898

A-46 RELAY SCREENING AND EVALUATION
FORM G-4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System Component Cooling Water

Page 12 OF 12

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
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LEVEL 2 SCREENING FOR RC3608
AGASTAT MODEL 7012PDL
(time delay contacts only)

1. Natural frequency of RC3608 is greater than or equal to 8Hz.
2. RC3608 has been given an amplification factor (AF) of 3.
3. RC3608 is located in plant area 6, elevation 585', which is less than about 40 feet above effective grade (Area 6 effective grade = 573)
4. For this area and elevation Peak GRS = .39g and Ground ZPA = .15g
5. GERS LEVEL for Agastat 7012PDL (time delay contacts only) = 12.5g and ZPA = 5.0g (ref. GERS-RLY-PNT.7).

thus;

$$\begin{aligned} \text{ERS} &= \text{Peak GRS} \times 1.5 \times 1.5 \times \text{AF} \\ \text{ERS} &= 2.63 \end{aligned}$$

and

$$\begin{aligned} \text{ZPA} &= \text{Ground ZPA} \times 1.5 \times 1.5 \times \text{AF} \\ \text{ZPA} &= 1.01 \end{aligned}$$

therefore, seismic capacity exceeds seismic demand.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- - No entry necessary.

Prepared by W.H. Smith Date 5/4/95
Reviewed by _____ / Date _____

SCE Review J.W. Hank 8/8/95

C& # 299

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System 4,16 KV ELECTRICAL

Page 1 OF 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
C1 BUS	E-22 SHT 1	(SEE NOTE)	SEE NOTE	NA

NOTE: THE C1 BUS IS SUPPLIED BY THREE SOURCE BREAKERS; AC101, ABDC1 AND AC110. ANY ONE OF THESE SOURCE BREAKERS IS CAPABLE OF SUPPLYING ALL THE LOADS CONNECTED TO THE C1 BUS. THESE SOURCE BREAKERS ARE CALLED OUT IN THE SAFE SHUTDOWN EQUIPMENT LIST AND ARE EVALUATED FOR RELAY CHATTER IN G.4 FORMS 283, 284 AND 285.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. big Date 10-6-94
Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS BESSE UNIT 1

System SFAS INDICATIONS

Page 1 of 6

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
PT RC2 A 4	E-30-23 PART 3 VMAN M-324AQ-278 VMAN M-324AQ-3x4	—	—	NA
JY RC02 A 4	VMAN M-324AQ-331 E-30-23 PART 3 VMAN E-30-83	—	—	SEE G.4 #311
PY RC02 A 4 A	E-30-23 PART 3 E-30-354	—	—	NA
PY RC02 A 4 B	E-30-23 PART 3 E-30-354	—	—	NA
PIRC 02 A 4	E-30-23 PART 3 VMAN E-7-142	—	—	NA

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by John S. / Date _____
 Reviewed by John S. / Date 7/6/95

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS BESSE UNIT 1

G.4

300

System SFAS INDICATIONS

Page 2 of 6

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
PTRC2B4	E-30-13 PART 3 VMAN M-324AQ-278 VMAN M-324AQ-374 VMAN M-324AR-331	—	—	NA
JYRC02B4	E-30-813 PART 3 VMAN E-30-83	—	—	SEE G.4 #311
PYRC02B4A	E-30-13 PART 3 E-30-354	—	—	NA
PYRC02B4B	E-30-13 PART 3 E-30-354	—	—	NA
PIRC02B4	E-30-13 PART 3 VMAN E-7-142	—	—	NA

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by G.W.H. / Date 7/16/95
 Reviewed by G.W.H. / Date 7/16/95

G.4 300

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS BESSE UNIT 1

System SFAS INDICATIONSPage 3 of 6

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
PT2000	E-30-13 PART 3 VMAN M-327AQ-0037	—	—	NA
JY2000	E-30-13 PART 3 VMAN E-30-F3	—	—	SEE G.4 #311
PY2000A	E-30-13 PART 3 E-30-354	—	—	NA
PI2000	E-30-13 PART 3 VMAN E-30-45	—	—	NA

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by L. W. Smith / Date _____
 Reviewed by L. W. Smith Date 7/6/95

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS BESSIE UNIT 1

System SFAS INDICATIONS

Page 4 of 6

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
PT 2001	E-30-23 PART 3 VMAN M-327AQ-37	—	—	NA
JY 2001	E-30-23 PART 3 VMAN E-30-83	—	—	SEE G.4#311
PY 2001A	E-30-23 PART 3 E-30-354	—	—	NA
PI 2001	E-30-23 PART 3 VMAN E-7-142	—	—	NA

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by L. G. Miller / Date 7/16/95
 Reviewed by L. G. Miller / Date 7/16/95

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS BESSE UNIT 1

System SFAS INDICATIONS

Page 5 of 6

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
LT1525A	E-30-13 PART3 VMAN M-324-138 VMAN M-324AU-278 VMAN M-324AU-331	—	—	NA
JY1525 A	E-30-13 PART 3 VMAN E-30-83	—	—	SEE G.4 #311
LY1525 A	E-30-13 PART3 E-30-354	—	—	NA
LI1525A	E-30-13 PART3 VMAN M-324-145	—	—	NA

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by / Date
 Reviewed by John J. Smith / Date 7/6/95

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS BESSE UNIT 1

G.4 300

System SFAS INDICATIONS

Page 6 of 6

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
LT1525B	E-30-23 PART 3 VMAN M-324-138 VMAN M-324AQ-278 VMAN M-324AQ-331	—	—	NA
JY1525B	E-30-23 PART 3 VMAN E-30-83	—	—	SEE G.4#311
LY1525B	E-30-23 PART 3 E-30-354	—	—	NA
LI1525B	E-30-23 PART 3 VMAN M-324-145	—	—	NA

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by / Date
 Reviewed by L. G. Miller / Date 7/6/95

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System Chemical AdditionPage 1 of 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
PIMU52A	M-045 M-720I	—	—	NA
PIMU52B	M-045 M-720I	—	—	NA

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by John H. Smith Date 7/6/95
 Reviewed by John H. Smith Date 7/6/95

G.4 #302

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS BESSE UNIT 1

System SIG DISCHARGE RELAY INDICATION CH1/2

Page 1 of 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
PISP12 A	M-530-432	—	—	NA
PTSP 12A2	M-530-432	—	—	NA
PISP12 B	M-530-431	—	—	NA
PTSP12 C1	M-530-431	—	—	NA

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS ____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by LWT Date 7/6/95
Reviewed by LWT Date 7/6/95

303

G.4 #304

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS BESSE UNIT 1

System MSIVPage 1 of 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MS-100, HIS-100				
SV100A, SV100B, SV100F				
PY100A, PY100B, PY100C				
PY100H, PY100J				
	DS-008, SH, 1			
	SF003B, SH, 10.	ALL / 138	(1)	CA 7
"		ALL / K98	(1)	CA 7
"		11,10 / K120	(1)	CA 7
"		11,10 / K60	(1)	CA 7
"		PSL/100B	(2)	CA 1
"		PSL/100A	(2)	CA 1
"	ALL / CS / KTRL	CUTLER HAMMER	NV	
	(HIS-100)	E30JAK200KF102KK11		

(2) STATIC-O-RING 6V2-ECT-TTY4

(1) STRUTHERS-DUNN 219 X DX162

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by Stewart / Date 7/16/95
 Reviewed by Stewart / Date 7/16/95

303
G.4 #304

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS BESSIE UNIT 1

System MSIV

Page 2 of 2

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MS101, HS101				
SV101A, SV101B, SV101F				
PY101A, PY101B, PY101G				
PY101H, PY101J	OS-008, SH.1 SF-003B, SH.9	ALL/K38	(1)	CA7
	II	ALL/K98	(1)	CA7
	II	II,10/K120	(1)	CA7
	II	II,10/K60	(1)	CA7
	II	PSL/101B	(2)	CA1
	II	PSL/101A	(2)	CA1
	II	ALL/ <u>CS</u> <u>CTRL</u>	CUTLER HAMMER, E30 JAKE 200K E 02KKH	NV

(2) STATIC-O-RING 6V2-EES-T TX4

(1) STRUTHERS-DUNN

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by L. W. R. / Date 7/6/45
Reviewed by L. W. R. / Date 7/6/45

G.4# 304

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS BESSE UNIT 1

System CNTNT COOLER FAN 1/2 SUCTION TEMPPage 1 of 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
TI-1356, TT1356	M-324-41	—	—	NA
TE1356, TI1357	SH.5	—	—	—
TT1357, TE1357	—	—	—	—

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- DA - Operator action.
- No entry necessary.

Prepared by L. W. B. / Date
 Reviewed by L. W. B. / Date 7/6/95

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS BESEY UNIT 1

G.4 #305

System TSAT-PSAT METER

Page 1 of 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
TEIMOTE	J-101 SH.7	—	—	NA
TTIMOTE	J-101 SH.7	—	—	NA
HS4628	J-101 SH.10	+1,-9	GE 10AA06C1	NV
TERC3A6	J-107 SH.2	—	—	NA
TRRC3A6	J-107 SH.2	—	—	NA
TI4628	J-101 SH.10	—	—	NA
PTRC2A4	J-101 SH.8	—	—	NA
PY1 RC2A4	II	—	—	NA
PY1 RC2A4A	II	—	—	NA
PY1 RC2A4B	II	—	—	NA

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS ____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by L. W. H. Date 7/6/95
 Reviewed by L. W. H. Date 7/6/95

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS BESSE UNIT 1

G.4 #305

System TSAT-PSAT METER

Page 2 of 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
TE1M07M	J-101, SH 3	—	—	NA
TT1M07M	J-101, SH 3	—	—	NA
HS 4627	J-101, SH 4	+1,-9	GE 10AA064	NV
TERC3B5	J-107, SH 5	—	—	NA
TTRC3B5	J-107, SH 5	—	—	NA
TI 4627	J-101, SH 4	—	—	NA
PTRC2B4	J-107, SH 7	—	—	NA
PY1RC2B4	"	—	—	NA
PY1RC2B4A	"	—	—	NA
PY1RC2B4B	"	—	—	NA

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS ____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by

John W. Hiltner Date 7/6/95
 Reviewed by *John W. Hiltner* Date 7/6/95

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS BESSEY UNIT 1

G.4#305

System TSAT-PSAT METER

Page 3 of 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
TDY-4950	J1075H11 VMAN m-530-405	-	-	NA
TDY-4951	J1075H10 VMAN m-530-405	-	-	NA
TDI-4950 +	M-537-85	SW-1	-	NV
TDI-4951 11	J1075H11 (TDI4950) J1075H10 (TDI4950)	SW-2	-	NV
11	"	SW-3	-	NV
11	"	SW-4	-	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by L.H. Hickey Date 7/6/95
 Reviewed by L.H. Hickey Date 7/6/95

G.47306

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System STEAM GENERATOR TUBE IMPINGEMENTPage 1 of 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
TESP11A1	OS-008 SH5	-	-	NA
TESP11A2	II	-	-	NA
TESP11A3	II	-	-	NA
TESP11A4	II	-	-	NA
TESP11A5	II	-	-	NA
TESP11B1	OS-008 SH 1	-	-	NA
TESP11B2	II	-	-	NA
TESP11B3	II	-	-	NA
TESP11B4	II	-	-	NA
TESP11B5	II	-	-	NA

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by J.W.H. Date 7/6/95
 Reviewed by J.W.H. Date 7/6/95

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS BESSE UNIT 1

G.4#307

System Rx Coolant Temp.

Page 1 of 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
TERC4A2	J-102, SH25A	-	-	NA
TT RC4A2	"	-	-	NA
TIRC4A2	J-102, SH25B	-	-	NA
TERC4B2	J-102, SH27A	-	-	NA
TT RC4B2	"	-	-	NA
TIRC4B2	J-102, SH27B	-	-	NA

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by L. W. H. / Date 7/1/95
 Reviewed by L. W. H. / Date 7/1/95

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

G.4 #308

System AUXILIARY FEEDWATER

Page 1 of 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AF-6451	J-111 SHT 13C, 13D	-	-	NA
	M-324AG-320			
	M-324AG-318			
	VMAN M-324AG-320			
	VMAN M-309AG-22			
	M-309AG-4			
ZC-6451	"	-	-	NA ⁽¹⁾
LC-6451	"	-	-	NV ⁽²⁾
LIC-6451	"	TUNING KEYLOCK	-	NV
	"	KEYPAD SWITCHES	-	NV
HS 6454A	"	-	GE CR2490-VN200B	NV

(2) MICROPROCESSOR CONTROLLER WITH SOLID STATE LOGIC INPUT/OUTPUTS
 (1) PULSEWIDTH MODULATOR - SOLID STATE CIRCUITRY

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by John H. Date
 Reviewed by John H. Date 7/6/95

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS BESSE UNIT 1

G.4 #308

System AUXILIARY FEEDWATER

Page 2 of 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
LY-6451J	(CONTINUED) From Page 1	-	-	NA ⁽¹⁾
LY-6451G	"	-	-	NA ⁽¹⁾
LT SP9A3	"	-	-	NA
LY-6451D	"	-	-	NV ⁽¹⁾
LY-6454	"	-	-	NV ⁽¹⁾
LY-6451F	"	-	-	NV ⁽¹⁾
LY-6451E	"	-	-	NV ⁽¹⁾
LY-6454A	"	-	-	NV ⁽¹⁾
LY-6454A1/A2/A3	"	-	-	NV ⁽¹⁾
LY-6451K	"	-	-	NA ⁽¹⁾

(1) SOLID STATE CIRCUITRY

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by Bethel Date 7/16/95
 Reviewed by Bethel Date 7/16/95

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT BRAIS-BESSE UNIT 1

6.4 #308

System AUXILIARY FEEDWATER

Page 1 of 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT [*]
AF-6451	J-111 SHT 13C, 13D	-	-	NA
	M-324AQ-320			
	M-324AQ-318			
	VMAN M-324AQ-320			
	VMAN M-309AQ-22			
	m-309AQ-4			
ZC-6451	"	-	-	NA ⁽¹⁾
LC-6451	"	-	-	NV ⁽²⁾
LIC-6451	"	TUNING KEYLOCK	-	NV
	"	KEYPAD SWITCHES	-	NV
HS 6454A	"	-	GE (CR2490-VN2000)	NV

(2) MICROPROCESSOR CONTROLLER WITH SOLID STATE LOGIC INPUT/OUTPUTS

(1) PULSEWIDTH MODULATOR - SOLID STATE CIRCUITRY

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Completely acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by John H. Smith Date 7/6/95
 Reviewed by John H. Smith Date 7/6/95

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS BESSE UNIT 1

G.4 #308

System AUXILIARY FEEDWATER

Page 2 of 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
LY-6451J	(CONTINUED) From Page 1	-	-	NA ⁽¹⁾
LY-6451G	"	-	-	NA ⁽¹⁾
LT SP9A3	"	-	-	NA
LY-6451D	"	-	-	NV ⁽¹⁾
LY-6454	"	-	-	NV ⁽¹⁾
LY-6451F	"	-	-	NV ⁽¹⁾
LY-6451E	"	-	-	NV ⁽¹⁾
LY-6454A	"	-	-	NV ⁽¹⁾
LY-6454A1/A2/A3	"	-	-	NV ⁽¹⁾
LY-6451K	"	-	-	NA ⁽¹⁾

(1) SOLID STATE CIRCUITRY

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by John P. H. Date 7/16/95
 Reviewed by John P. H. Date 7/16/95

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS BESSE UNIT 1

G.4 #302

System AUXILIARY FEEDWATER

Page 3 of 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
ZS-5789B	(CONT. FROM PAGE 2)	-	NAMCO E-180.31302	NV
HIS-6454	"	-	CUTLER HAMMER E30JAE200E109KLA	NV
ZS 3871/3872	"	-		NV
HIS-6454A1	"	-	GE CR2940 - UR203F	NV
LI-SP9AA1	J102 SH 7A,7B,7C	-		NA

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by L. W. Shultz Date 7/16/01
 Reviewed by L. W. Shultz Date 7/16/01

6.4 #309

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE VISIT I

System AUXILIARY FEEDWATERPage 1 of 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AF-6452	J-111 SHTS 10C, 10D M-324AQ-317 M-324AQ-319 M-309AQ-4 VMAN M-309AQ-22 VMAN M-324AQ-330	-	-	NA
ZC-6452	"	-	-	NA ⁽¹⁾
LC-6452	"	-	-	NV ⁽²⁾
LIC-6452	"	TUNING KEYLOCK	-	NV
	"	KEYPAD SWITCHES	-	NV
HS-6453A	"	-	GE CR24AU-UN2000	NV

(1) MICROPROCESSOR CONTROLLER WITH SOLID STATE LOGIC FROM ZUCCHI

(1) PULSE WIDTH MODULATOR - SOLID STATE CIRCUITRY

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by L. Wilhite / Date _____
 Reviewed by L. Wilhite / Date 7/6/95

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT Davis Besse Unit 2

G.4 #309

System Auxiliary Feedwater

Page 2 of 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
LY6452J	(CONT. FROM PAGE 1)	-	-	NA ⁽¹⁾
LY6452G	"	-	-	NA ⁽¹⁾
LTSP983	"	-	-	NA
LY6452D	"	-	-	NV ⁽¹⁾
LY6453	"	-	-	NV ⁽¹⁾
LY6452F	"	-	-	NV ⁽¹⁾
LY6452E	"	-	-	NV ⁽¹⁾
LY6453A	"	-	-	NV ⁽¹⁾
LY6452A1/A2/A3	"	-	-	NV ⁽¹⁾
LY6452K	"	-	-	NA ⁽¹⁾

(1) SOLID STATE CIRCUITRY

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS ____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by John J. Date
 Reviewed by John J. Date 7/6/05

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS BESSE UNIT 1

G.4 #309

System Auxiliary Feedwater

Page 3 of 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
ZS-5889A	(CONT. FRM Pg. 2)	-	NAMCO E-180-31202	NV
HIS-6453	"	-	CUTLER HAMMER E30TAE20CE109KHLASL3X	NV
ZS-3869/3870	"	-	-	NV
HS-6453A1	"	-	GE CR2490-VERAC F	NV
LI-SP9B1	T-102 SH 6A, 6B, 6C	-	-	NA

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- ~ - No entry necessary.

Prepared by L. J. Smith / Date 7/6/95
 Reviewed by L. J. Smith / Date 7/6/95

G.4 #310

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS BESSE UNIT 1

System DECAY HEAT REMOVALPage 1 of 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
FTDH2A	J-102 SH 37A	-	-	NA
FYIDH2A	J-102 SH 37A VMAN M 538-61	-	-	NA ⁽¹⁾
FTDH2B	J-102 SH 38A	-	-	NA
FYIDH2B	J-102 SH 38A VMAN M 538-61	-	-	NA ⁽¹⁾

(1) INDICATION FUNCTION NOT AFFECTED BY RELAYS

-
- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by J. J. H. Date 7/16/95
 Reviewed by J. J. H. Date 7/16/95

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System Safety Features Acuation SystemPage 1/6

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
C5762C, C5755C, C5763D, C5756D,	VMAN E-30-45	9N16 -SFAS SYSTEM Subcomponents:	(All CCC#'s see note 1) -	-
	E-30-17	6N81 -Trip and Ch. Fail Bistable K1 K2 S1 S2 DS1	KEL431B KFL431U KKF182A KKF182A KAB375A	CA\$1 CA\$2 NV NV NV
PSH7528A, PSH7531A	E-30-19	6N82 - Block Permissive/Valve Interlock K1 K2 K3 K4 K5 S1 S2 DS1 DS2	- KEL431B KEL431C KEL431B KEL431B KEL431B KKF182A KKF182A KAB375A KAB375A	- CA\$3 CA\$4 NV CA\$1 CA\$1 NV NV NV
	E-30-6	6N83-1/2-Output Module K1 -*note 1,2* K2 K3 K4 K5 S1-S6 DS1-5	- KEL431C (note 9) KFL431A KEL431B KEL431C KEL431A KKF182A KAB375A or KAQ375G	- CR CA\$5 CA\$1 CA\$7 CA\$6 NV NV NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS ____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by

Reviewed by

/ Date

/ Date 5/31/95

**A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1**

System Safety Features Acuation SystemPage 2/6

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
	E-30-4	6N84 - Sequence and Monitoring	-	-
		K1-K15	KEL431A	CA\$1
	E-30-5	6N86 - Analog Amp.	-	NA
	E-30-3	6N87 - Sequencer	-	-
		K1-4	KEL431B	CA\$1
		K5	KEL431B	CA\$1
		K6	KEL431A	CA\$8
		S1	KKF182A	NV
		DS1-2	KAB375A	NV
PT2000, PT2001, PT2002, PT2003	M-720I E-30-13, 23 E-30-34, 27	Analog pressure transmitter - Analog string - no relays	-	NA
HIS 7528, HIS 7529, HIS 7530, HIS 7531	E-65B SH. 5A E-30-4	CS	Bailey RZ1000B	NV
SFAS Instrument Power Supplies (See note 3)	M-720I (note 3, 5)	LAMBDA - S1	FKA-155-020 note 9	CR
		EATON (note 3)	-	NA
SFAS Output Relays	E-30 SERIES (note 7)	KA, KB, K04	DEUTSCH 4CP36AF (CCC # KEN431A) note 9	SAT - note 8

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS ____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by

Reviewed by

/ Date

/ Date 5/31/45

**A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1**

System Safety Features Acuation SystemPage 3/6

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
SFAS HAND SWITCHES	(note 4) E-30-329	BS/A, BS/B SW1, SW2 SW3 K1 K2 (SOLID STATE) PS1, PS2 (note 5)	(note 6) C&KA3141U 2N22ZNQ C&KY208AH 2N203NQ P&B JWD172-8 IR-CRYDOM PVA3354 (note 5)	NV NV NV CA1 NV CA\$9
	E-30-331 E-30-332	SFAS Data Light/ Bypass I/O module S1-S12 K1-K12 KB1-KB12 KF1-KF12 (SOLID STATE) LR1	- C&K TP11- H9-AV-Q-E P&B JWD172-8 P&B T83S1 1D122-24 IR-CRYDOM PVA3354 AROMAT ST 1EL2DC24V FORM 1A1B	- NV CA1 CA4 NV CA4
	E-30-340	U1, U2 (SOLID STATE) LR1	ISOLINK OLH950 P&B T83S1 D122-24	NV
	E-30-341, 342	U1, U2 (SOLID STATE) LR1	ISOLINK OLH950 P&B	CA4
	E-30-343	U1, U2 (SOLID STATE) LR1	AROMAT ST 1EL2DC24V FORM 1A1B	CA4
	E-30-344	U2, U3 (SOLID STATE) U1 (SOLID STATE)	ISOLINK OLH950 ISOLINK OLH950	NV NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS _____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by

Reviewed by

/ Date

5/31/95

**A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1**

System Safety Features Acuation System

Page 4/6

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
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NOTES:

1. Relay Manufacturer Part Numbers

CCC#(Consolidated Controls)	Manufacturer/Part Number
KEL431A	CP Clare / MRB1A12
KEL431B	CP Clare / MRB2A12
KEL431C	CP Clare / MRB1A24
2. This contact is an input to a solid state latching circuit which has a built in 30 ms delay. This contact will cause temporary actuation of the output relays if contact closure is sustained long enough for the coil to drop out.
3. SFAS POWER SUPPLIES

MFG.	MODELS	REF. MANUAL	EQUIPMENT ID's
LAMBDA	LCS-1-04A LCS-2-04 LCS-2-046 LCS-3-02 LXS-C-15	M-324AQ-314 E-30-320 E-30-320 M-324AQ-315 M-324AQ-299	JYRC2A3/B3/B4, JY1525A/B/C/D, JY2000/1/3 JYRC02A4 JY2002 SFASPS-109/209/309 SFASPS-1/2/3/405, -1/2/3/406, -1/2/3/407, -1/2/3/408, -1/2/3/409
EATON	KDE1907-1	DWG. E-30-40	SFASPS-110/1/2, -210/1/2, -310/1/2, -410/1/2
4. For SFAS hand switches identified on the Safe Shutdown Equipment List (SSEL) - See those G.4 forms. For switches operating SFAS equipment listed on the SSEL - See the G.4 form for that equipment.
5. May contain thermal overload switch similar to other Lambda power supplies. Evaluated as if the power supply output would be affected by chatter.
6. These Bypass switches are referenced on G.4 forms for SFAS actuated/blocked equipment which appears on the SSEL. These switches are identified as S1-S12 on drawings E-30-331,332 listed on this G.4 form.
7. These relay contacts are referenced on G.4 forms for SFAS actuated/blocked equipment which appears on the SSEL. These relays are also identified on various E-30 series drawings and are generically essential.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by *P.W.H.* / Date _____
Reviewed by *P.W.H.* / Date 5/31/95

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System Safety Features Acuation System

Page 5/6

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
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NOTES CONTINUED:

8. Seismically qualified to current standards per Memo NED 95-10046.

9. Located in C5762C/D,C5755C/D,C5763C/D,C5756C/D, Area/Room/Elev. = AUXL7/502/623.

\$ Chatter Codes:

Note that chatter codes without the \$ are the global codes.

CA\$1 = Chatter Acceptable (CA), output to computer point and/or annunciator or other indicator, will not cause system actuation or lockout.

CA\$2 = CA, used for automated testing function - no longer in use - contact chatter or relay failure will not cause system actuation or lockout, OEM part number is not applicable/available.

CA\$3 = CA, remote permission to block contact (or valve interlock DH-11), will not cause system actuation or lockout.

CA\$4 = CA, remote blocking contact, will not cause system latching of block signal during operation at normal RCS pressure as signal is also needed from U7 a solid state device. U7 allows latching of the block signal at low RCS pressures, i.e. during shutdown. During this condition blocking is allowed, subsequent RCS pressure increase would automatically remove the block.

CA\$5 = CA, remote block in contact, will not cause system actuation or lockout, temporarily blocks actuation output.

CA\$6 = CA, remote reset contact, will not cause system actuation or lockout, system actuation not assumed during seismic event.

CA\$7 = CA, requires concurrent SFAS trip signal in order for signal to latch. Chatter will not cause system actuation or lockout, system actuation not assumed to occur during seismic event.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS ____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by *John W. Hild* / Date _____
Reviewed by *John W. Hild* / Date 5/31/95

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System Safety Features Acuation SystemPage 6/6

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
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Chatter Codes Continued:

CA\$8 = CA, Sequencer start - requires concurrent SFAS level 2 initiation at AND gate, chatter will not cause system actuation or lockout, system actuation not assumed to occur during seismic event.

CA\$9 = CA, affects only indicating light during power operation.

-
- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by *L. W. Bla* / Date _____
Reviewed by *L. W. Bla* / Date 5/31/95

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System Steam and Feed Rupture Control SystemPage 1 of 7

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
C5792, C5792A, C5761A , C5762A	E-30AQ series SF-003 series VMAN E-30AQ-127	ACTUATION CHANNELS A AND B, Consolidated Controls (CCC) part nos.; 9N124-1/2, 9N125-1/2.	C5792, C5792A, C5761A, C5762A AUX/RM/LVL 7/502/623	-
	KGU431C =		STRUTHERS- DUNN (SD) 219XDX162	GERS-RLY-ARS.4 (SEE PAGE 5)
	KFU431 =		AGASTAT 7012NC	GERS-RLY-PNT.7 (SEE PAGE 4)
	MISC. SWITCHES		KDN7182A KUD182F KKP182 KDR7182E	NV NV NV NV
	E-30AQ-27	6N314 (alarm mod.) K1-K10	Douglas - Randal 378686	CA1
	SF-003B SH. 35, 36	K100	KGU431A	CA\$3
	SF-003B SH. 37, 38	TTA1, TTA2, TTA3, TTA4	SD 219XDXP (C5762Z, C5792Z)	CA\$4
	E-30AQ-30, 33	K1	KHA431 OR KHB431	CA1
HIS100B, HIS100C HIS101B, HIS101C	SF-003A SH. 2, 5, 8, 11,	HIS100B, HIS100C HIS101B, HIS101C	Cutler-Hammer E30JAE500K31	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS ____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by

Reviewed by

Lew Blit Date 5/30/95
Lew Blit Date 5/30/95

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System Steam and Feed Rupture Control SystemPage 2 of 7

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
PS3687A/C/E/G PS3689 B/D/F/H	SF-003A SH. 4, 7, 10, 11 VMAN G-CS-289	PS3687A/C/E/G PS3689 B/D/F/H	SOR 9TA- B5-NX-C1A- JJTTX12 AUX/RM/LVL L8/500/623 L7/501/623	SAT- Level 2 or Level 4 (SEE PAGE 6,7)
PS3689K/L/M/N PS3687K/L/M/N	SF-003A SH. 4, 7, 10, 11	PS3689K/L/M/N PS3687K/L/M/N	SOR 9V2-E5- TTX4	CA\$1
LSLLSP9A6/7/8/9 LSHHSP9A6/7/8/9 LSLLSP9B6/7/8/9 LSHHSP9B6/7/8/9	SF-003A SH. 13-16 VMAN G-CS-436-1	K1-K2	Electronic Specialty 97GB3-4BE- 500	CA\$2
PDS2685A/B/C/D PDS2686A/B/C/D	VMAN M-385-27 DDWG SF-003A SH. 1, 4, 7, 10	PDS2685A/B/C/D PDS2686A/B/C/D	ITT BARTON 288A WALL MOUNT AREA/RM/EL HTRB5/326/585 AUXLB/303/585	CA\$2
ISH5481A/2A/3A/4A ISL5481A/2A/3A/4A	VMAN M-324-148 DDWG E52B SH. 49, 45F, 46F, 47F, 48F	27/11, 21, 31, 41 59/11, 21, 31, 41 (X11-X44) /TDO X1-X4	BAILEY 6109K98P001 or 6109K98P002 AGASTAT 7002 G.E. 12HGA11J All located in: RC3601, RC3602, RC3603, RC3604	CA\$2

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by R. L. H. / Date
Reviewed by R. L. H. / Date 5/30/95

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System Steam and Feed Rupture Control SystemPage 3 of 7

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location
			SAT

CA\$1 = Chatter acceptable as no trip or lockout will occur(block permissive switch).

CA\$2 = Chatter Acceptable, SFRCS components will actuate to SSEL desired position(s) or equipment acutated is not SSEL item i.e. Main Feedwater Isolation which is not taken credit for.

CA\$3 = Chatter acceptable, chatter will result in a reactor trip - not an SSEL item.

CA\$4 = Chatter acceptable, chatter will result in a turbine trip - not an SSEL item.

-
- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS ____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by

Reviewed by

/ Date

/ Date 5/30/95

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System Steam and Feed Rupture Control SystemPage 4 of 7

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT
<u>GERS-RLY-PNT.7</u>				

<u>CABINETS</u>	<u>AREA/ROOM/ELEV</u>
SFRCS - C5792, C5792A, C5761A, C5762A	AUXL7/502/623

<u>Manufacturer</u>	<u>Model#</u>
AGASTAT	7012NC

Set to 5 second delay > 0.3 sec therefore gers are applicable

Mounting verified to be in vertical position during walkdown.

The effective grade for area 7 is 562'

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

Since 585' - 562' = 33' > 40', the ground spectra multiplied by (1.5 X 1.5) may not be used to evaluate these relays.

The peak conservative floor response spectra/ZPA for elevation 623 at 5% damping is 1.863g/.371g (Ref. NED 93-10136)

The amplification factor for the above cabinets is 2.5. (Ref. NED 95-10045)

GERS-RLY-PNT.7= 12.5g/5.0g (EPRI NP-5223-SL)

Since conservative floor spectra is used the "bump-up" factor is 1.0. (Ref. NED 93-10136)

Demand = 1.863g/.371g X 1.0 X 2.5 = 4.66g/0.93g < 12.5g/5.0g

Therefore these devices may be screened at level 2 as being seismically adequate using GERS-RLY-PNT.7

Prepared by _____ Date _____

Seismic Capability Engineer _____ Date _____

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS ____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by _____ / Date _____

Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System Steam and Feed Rupture Control SystemPage 5

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
CABINETS	<u>GERS-RLY-ARS.4</u> SFRCS - C5792, C5792A, C5761A, C5762A		AREA/ROOM/ELEV AUXL7/502/623	
Manufacturer	Model# STRUTHERS-DUNN	219XDX162		

GERS APPLICABILITY - Model is Struthers-Dunn 219, Model number verified.

The effective grade for area 7 is 562'
 Peak Ground Response Spectra = 0.39g
 Ground ZPA = 0.15g
 Since 585' - 562' = 33' > 40' , the ground spectra multiplied by (1.5 X 1.5) may not be used to evaluate these relays.

The peak conservative floor response spectra/ZPA for elevation 623 at 5% damping is 1.863g/.371g (Ref. NED 93-10136)

The amplification factor for the above cabinets is 2.5. (Ref. NED 95-10045)

GERS-RLY-ARS.4= 5.0g/2.0g (EPRINP-5223-SL)

- NOTE: minimum capacity contact selected/ ZPA at 0.4 normalized.

Since conservative floor spectra is used the "bump-up" factor is 1.0. (Ref. NED 93-10136)

Demand = 1.863g/.371g X 1.0 X 2.5 = 4.66g/0.93g < 5.0g/2.0g
 Therefore these devices may be screened at level 2 as being seismically adequate using GERS-RLY-ARS.4

Prepared by _____ Date _____

Seismic Capability Engineer _____ Date _____

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- | | |
|------|---|
| CA | - Chatter acceptable. |
| NV | - Not vulnerable (mechanically-actuated contacts and solid state relays). |
| GERS | - Seismically adequate based on GERS ____; include GERS number. |
| NA | - Component not affected by relays. |
| CR | - Corrective action required. |
| OA | - Operator action. |
| - | - No entry necessary. |

Prepared by _____ / Date _____
 Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System _____

Page 6

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT
AREA = AUXL7 ELEV = 623'				
EQUIPMENT	MFG.	MODEL NO.	AMP.	>8HZ
PS3687A	S-O-R	9TA-B5-NX-C1A-JJTTX12	1.0	Y
PS3687E	S-O-R	9TA-B5-NX-C1A-JJTTX12	1.0	Y
PS3687D	S-O-R	9TA-B5-NX-C1A-JJTTX12	1.0	Y
PS3687H	S-O-R	9TA-B5-NX-C1A-JJTTX12	1.0	Y

Nominal Pressure based on steam line pressure seen at S/G exit.

The effective grade for area 7 is 562'
Peak Ground Response Spectra = 0.39g
Ground ZPA = 0.15g

Since 623' - 562' = 61' > 40', the ground spectra multiplied by (1.5 X 1.5) may be not used to evaluate these pressure switches.

Natural frequency of each mounting is > 8 Hz (Ref. NED 95-10034)
The amplification factor for each mounting is 1.0. (Ref. NED 95-10034)

Device Capacity = 9g/ 6g (Ref. NED 95-10034)

Maximum Conservative Design Basis Floor Response Spectra (Ref NED 93-10136) - Peak/ZPA = 1.863g/.371g

Demand = 1.863g/.371g X 1.0 = 1.863g/.371g < 9g/ 6g

Therefore these devices may be screened at level 2 as being seismically adequate using relay specific capacity data.

In addition, per memo NED 95-10034, these devices are qualified to current standards and also screen at level 4.

Prepared by _____ Date _____

Seismic Capability Engineer _____ Date _____

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS _____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by _____ / Date
Reviewed by _____ / Date

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System _____

Page 7

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT
<u>AREA = AUXL8 ELEV = 623'</u>				
EQUIPMENT	MFG.	MODEL NO.	AMP.	>8HZ
PS3687C	S-O-R	9TA-B5-NX-C1A-JJTTX12	1.0	Y
PS3687G	S-O-R	9TA-B5-NX-C1A-JJTTX12	1.0	Y
PS3687B	S-O-R	9TA-B5-NX-C1A-JJTTX12	1.0	Y
PS3687F	S-O-R	9TA-B5-NX-C1A-JJTTX12	1.0	Y

Nominal Pressure based on steam line pressure seen at S/G exit.

The effective grade for area 8 is 567'

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

Since $623' - 567' = 56' > 40'$, the ground spectra multiplied by (1.5 X 1.5) may be not used to evaluate these pressure switches.

Natural frequency of each mounting is > 8 Hz (Ref. NED 95-10034)
The amplification factor for each mounting is 1.0. (Ref. NED 95-10034)

Device Capacity = 9g/ 6g (Ref. NED 95-10034)

Conservative Horizontal Floor Response Spectra (Ref NED 93-10136) -
Peak/ZPA = 3.191g/.428g

Demand = $3.191g/.428g \times 1.0 = 3.191g/.428g < 9g/ 6g$

Therefore these devices may be screened at level 2 as being seismically adequate using relay specific capacity data.

In addition, per memo NED 95-10034, these devices are qualified to current standards and also screen at level 4.

Prepared by _____ Date _____

Seismic Capability Engineer _____ Date _____

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS _____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by _____ / Date _____

Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS BESSE UNIT 1

G.4 #313

System Control Rod Drive

Page 1 of 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
Φ% ZRL	M-515-304 M-515-305 M-515-307 (ZONE REF. LIGHTS)	ALL 0%	DIAMOND POWER #3520-354(2) CTM7-RX Head PI TUBE	CA(1)
IN LIMIT ZRL (ZONE PER (alarm))	M-515-300 M-515-301 M-515-302 M-515-308 M-515-229(2)			CA(1)

- (1) Switch is magnetically actuated reed switch whose SSEL function is indication only. In Limit ZRL inputs to non-SSEL CRDCS logic.
- (2) NOTE THIS PI ASSEMBLY DRAWING IS RECORD STATUS ONLY

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- | | |
|------|---|
| CA | - Chatter acceptable. |
| NV | - Not vulnerable (mechanically-actuated contacts and solid state relays). |
| GERS | - Seismically adequate based on GERS ____; include GERS number. |
| NA | - Component not affected by relays. |
| CR | - Corrective action required. |
| OA | - Operator action. |
| - | - No entry necessary. |

Prepared by A. H. / Date 7/7/95
 Reviewed by A. H. / Date 7/7/95

#314
G.4

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

3/28/91

Cores

System DR MAKEUP AND PURIFICATIONPage 1 of 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
LTMU16-1	J102 SH 32A J102 SH 32B VMANM-530-353	—	—	NA
LRMU16	"	K1, K2	—	CA ⁽¹⁾
		SI	—	NV
LTMU-16-2	J102 SH 32C J102 SH 32A m-530-353	—	—	NA
			—	NA
LYMU16-2	" VMANM-324AR-331	—	—	NA
LIMU16-2	" VMANM-324-145	—	—	NA

(1) ^{Audibility} Provide Alarm H/H function which is not needed.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by ACB / Date 7/7/95
 Reviewed by ACB / Date 7/7/95

G.4 315

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS BESSE UNIT 2

System Component CoolingPage 1 of 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
LI-1402	M-324-415A1/2 VMAN M-533-167 VMAN M-324-145	-	-	NA
LT-1402		-	-	NA
LI-1403		-	-	NA
LT-1403		-	-	NA

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by Litch / Date 7/7/95
 Reviewed by Litch / Date 7/7/95

G.4 #316

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS BESSE UNIT 2

System EDG DAY TANK LEVELPage 1 of 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
LT 2788	M-324-41 SH.2	—	—	NA
LI 2788B	"	—	—	NA
LT 2787	"	—	—	NA
LI 2787B	"	—	—	NA

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by J. J. Miller / Date 7/10/95
 Reviewed by J. J. Miller / Date 7/10/95

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS BESSE UNIT 1

G.4 #317

System PRESSURIZER LEVEL

Page 1 of 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
LTRC14-1	J102 SH24A SH24B SH24E	—	—	NA
LTRC14-3	"	—	—	4/13/84 CWB NA
LIRC14-3	"	—	—	NA
LIRC14-4	"	—	—	NA

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by Lightfoot Date 7/10/85
 Reviewed by Lightfoot Date 7/10/85

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS BESSE UNIT 1

G.4 #318

System MAKEUP + PURIFICATION

Page 1 of 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MU23	OS-46	—	—	NA
HCMU23	M-530-323 VMAN M-530-353	—	—	NA
Fy MU23	"	—	—	NA

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by L. W. H. / Date 7/10/85
 Reviewed by L. W. H. / Date 7/10/85

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAKEUP & PURIFICATION

Page of 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MU-32	VMAN M-530-353	FTMU19	-	NA
MU-19	M-327AQ-25	LTRC14-1/2/3	-	NA
	M-530-309,313,321,325	FYMU19-1 - S1,S2	4PDT	NV
E92-60			SLIDESWITCH	
E92-77			in C5759E	
E92-62		FICMU19,LICRC14 (HAND STA.)	XFER SW.	NV
E92-78		SW1	PUSHBUTTON	NV
E92-79		SW2,SW3(auto/hand/s-f)	TOGGLE SW	NV
E92-61		SW5	in C5704,C5705	
E92-63		(Σ+K+[]) S1,S3,S4,S5	DPDT	NV
		S2	SLIDESW.	
		(ANALOG MEM.)	ROTARY SW.	NV
			in C5759E,C5759D	
			-	NA
		FYMU19-2,FYMU32	-	NA
		BUFFER MODULES	SLIDE SW. in C5759D	NV
			in C5759E	
		LYRC14 (BUFFER MOD. - SEE ABOVE)		
		(SUMMER)	-	NA
		(FUNCTION GEN.)	SLIDE SW.	
		S1-S4,S6	(2PDT)	NV
		S5	(4PDT)	NV
			in C57659D	
		(MULTIPLIER)	SLIDE SW.	NV
			in C5759D	
		TTRC15-1/2 (MV/V CONVERTER)	-	NA
		(LINEAR BRIDGE)	-	NA
		TERC15-1/2	-	NA

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
 NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
 GERS - Seismically adequate based on GERS _____; include GERS number.
 NA - Component not affected by relays.
 CR - Corrective action required.
 OA - Operator action.
 - No entry necessary.

Prepared by G.W.Baker / Date _____
 Reviewed by G.W.Baker / Date 1/28/95

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAKEUP & PURIFICATION

Page 2 of 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT
	83/S-F, 83/PL		PB R40 TYPE in C5759E	CA\$1
	86/RC14-1,2,3		PB R40 TYPE in C5759D (-1,2) C5760E (-3)	CA\$2
	86/RC15-1/2		PB R40 TYPE in C5759E (-1) in C5760E (-2)	CA\$3
	HSRC14		G.E. CR2940-UB200F in C5705	NV
	HSRC15		G.E. CR2940-UB203A in C5705	NV

CA\$1 = Chatter Acceptable, although auto-manual transfer relay contact chatter will transfer system between auto and manual modes, system output will not be affected. MU19 will remain "as-is" which is the desired SSEL normal position (SSEL NOTE 10). Operator action is required regardless of the control mode to take MU19 to the desired position of OPEN. Transfer of control from one mode to another is indicated at the handstation. The discussion is similar for MU-32, note 10 is for MU19 only.

CA\$2 = Chatter acceptable, analog signal may be interrupted during period of strong shaking. The buffer characteristics are such that the output will slowly (approx. 3 minutes) drift to the low saturation voltage (i.e. -10VDC). This would cause MU32 to go open which corresponds to the desired position on the SSEL. After the period of strong shaking the system will restore MU32 to the proper position or if it shifted to manual it will leave MU32 "as-is", either is acceptable

-
- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
 NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
 GERS - Seismically adequate based on GERS _____; include GERS number.
 NA - Component not affected by relays.
 CR - Corrective action required.
 OA - Operator action.
 - No entry necessary.

Prepared by *[Signature]* / Date _____
 Reviewed by *[Signature]* / Date 7/28/95

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System MAKEUP & PURIFICATION

Page 3 of 3

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT
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CA\$3 = Chatter acceptable, analog voltage signal may be interrupted during period of strong shaking. Signal provides temperature correction and compensation to pressurizer level. After the period of strong shaking the system will restore MU32 to the proper position or if it shifted to manual it will leave MU32 "as-is", either is acceptable

-
- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by L. A. Shultz / Date 4/28/95
Reviewed by L. A. Shultz / Date 4/28/95

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System NUCLEAR INSTRUMENTATIONPage 1 of 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
NI-5874A, NI-5875A	J-102 SH. 56,57 VMAN M-538-61	-	-	NA
NY-5874B, NY-5875B	J-102 SH. 56,57 VMAN M-380Q-21	-	-	NA
NY-5874C, NY-5875C	J-102 SH. 56,57 VMAN M-380Q-21	K1,K2	GAMMA-METRICS 60-001,60-002	CA1
(NE-5874,NE5875)	J-102 SH. 56,57	-	-	NA

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory.

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS ____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by L. W. Blalock / Date 3-14-95
 Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System REACTOR COOLANT _____

Page 1 of 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT
TI-5503, TI5504	E-625B SH. 31 VMAN G-ML-55	-	-	NA

-
- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS ____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by Clayton / Date 3/14/95
Reviewed by _____ / Date _____

G.4 #350

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System 4.16 kV ELECTRICAL

Page 10F1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
D1 BUS	E-122 SHT 2	(SEE NOTE)		NA

NOTE: THE D1 BUS IS SUPPLIED BY THREE SOURCE BREAKERS; AD101, AACDI AND AD110. ANY OF THESE SOURCE BREAKERS IS CAPABLE OF SUPPLYING ALL THE LOADS CONNECTED TO THE D1 BUS. THESE SOURCE BREAKERS ARE CALLED OUT IN THE SAFE SHUTDOWN EQUIPMENT LIST AND ARE EVALUATED FOR RELAY CONTACT CHATTER IN G.4 FORMS 291, 292 AND 293.

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by JK 10-6-94
Reviewed by _____ / Date _____

c.e #351

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System EMERGENCY DIESEL GEN 1-1

Page 1 OF 10

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
---------------------	------------	-----------------------	-------------------------	------

K5-1, C3621,
C3621A

NOTE 1: CIRCUITS IN C3621 AND C3621A ARE SUPPLIED
125VDC POWER FROM DIP CKT 09 VIA C3616. SEE
G.4 # 55 FOR RELAY SCREENING OF DIP.

NOTE 2: CABINETS C3621 AND C3621A CONTAIN MANY
OF THE RELAYS ASSOCIATED WITH THE STARTING,
SHUTDOWN AND STATUS OF EDG 1-1. MANY
OF THESE RELAYS WERE SCREENED WHILE
EVALUATING THE EDG 1-1 CIRCUIT BREAKER
AC101. THIS EVALUATION IS DOCUMENTED
IN G.4 # 283.

NOTE 3: RELAY SSIXI IS EVALUATED IN G.4 # 117

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Siff Date 10-8-94
Reviewed by _____ / Date _____

C.R # 351

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System EDG 1-1

Page 2 OF 10

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
Y5-1, C3621, C3621A	12501-M-180Q- 13 SHT 1	AVIA, AV2A	SQUARE "D" TYPE KPD13 IN C3621	SEE NOTE 1 THIS SHEET
	12501- M-180Q-13 SHT1, 12501-M-180Q-14 7749-M-180-4	BF1, BF2, BF3 BF4, BF5, BF6 BF7	SAME AS AVIA	CA1 - PROVIDES INDICATION OF BLOWN FUSES
	12501- M-180Q-13 SHT 1	FFP1	SQUARE D CLASS 7004 TYPE HCO-1 IN C3621	NOTE 1 THIS SHEET
	12501-M-180Q-13 SHT 1 + 7749- M-180 - 4	FR	SQUARE D TYPE KPD13 IN C3621	CA1 - PROVIDES FAIL TO RUN INDICATION.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by M. K. Saly Date 1-4-95
Reviewed by _____ / Date _____

NOTE 1. CONTACTS ARE INHERENTLY RUGGED
PER SSRAP REV. 4.0, NP1748-SL.
SEE ATTACHED QUESTION 6-1
AND RESPONSE (PAGE 10)

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

C.R. # 351

System EMER. DIESEL GEN 1/1

Page 3 OF 10

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
K5-1, C3621, C3621A	12501-M- 180Q-13 SHT 1	RAM	SQUARE 'D' TYPE KPD13 IN C3621	NOTE 1 Pg 2
" M-180- 4		RS	SAME AS "RAM"	CA1 - READY TO START INDICATION
12501-M- 180Q-13		R1	SAME AS "RAM"	NOTE 1 Pg 2
M-180Q-13 SHT 1 M-180Q-14		R1X1	SAME AS "RAM"	NOTE 1 Pg 2
M-180-4 M-180Q-14		R2X	SAME AS "RAM"	CA1 - PROVIDES FAIL TO START INDICATION

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Sif Date 1-4-95
 Reviewed by _____ / Date _____

c.c #351

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System EMERGENCY DIESEL
GEN 1-1

Page 4 OF 10

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
K5-1, C3621, C3621A	12501- M-180Q- 14	R7X	SQUARE D TYPE KPD13 IN C3621A	LEVEL 4 (SEE NED 95-10021)
	12501- M-180Q- 13	R7X1	SAME AS R7X EXCEPT C3621	SEE NOTE 1 PAGE 2
	12501- M-180Q- 14, 7749- M-180-4	SDRX1	SAME AS R7X EXCEPT C3621	
	12501- M-180Q- 13	SS1A, SS2A, SS3A, SS4A AKA SS	SYNCHRO- START MODEL ESSB-HAT IN C3621	
	12501- M-180Q- 13; 12501- M-180Q-14	SSI	SAME AS R7X EXCEPT C3621	

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- INV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Binkley Date 1-4-95
 Reviewed by _____ / Date _____

C.C. #351

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System EMERGENCY DIESEL
 GEN 1-1

Page 5 OF 10

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
K5-1, C3621, C3621A	12501-M1809- 13, 7749- M180-10	SS1X	SQUARE D TYPE KPD13 IN C3621	NOTE 1 PAGE 2
	12501-M-1809- 13	SS2	SAME AS SS1X	
	7749-M-180-31 12501-M-1809-13	SS3	SAME AS SS1X	
	7749-M-1809- 13	SS5T	AGASTAT MODEL 7012FB IN C3621	CA1 - CONTACTS SUPPLY SS5Y RELAY,
	7749-M-1809-13	SS5Y	SAME AS SS1X	CA1 - PROVIDES INDICATION 105% RATED SPEED.
	7749-M1809- 13	SS5X	SAME AS SS1X	CA1 - PROVIDES INDICATION OF 95% RATED SPEED

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

CA - Chatter acceptable.

NV - Not vulnerable (mechanically-actuated contacts and solid state relays).

GERS - Seismically adequate based on GERS ____; include GERS number.

NA - Component not affected by relays.

CR - Corrective action required.

OA - Operator action.

- No entry necessary.

Prepared by W.H. Gold / Date 5/4/95
 Reviewed by _____ / Date _____

C.C # 351

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System EMERGENCY DIESEL
GEN 1-1

Page 6 OF 10

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
K5-1, C3621, C3621A	12501- M11809-14	TD4	AGASTAT MODEL 7012PH IN C3621A	LEVEL 4 (SEE NED 95-10021)
	12501-M-1809- 13 & M1809- M-180-4	TD5	AGASTAT MODEL E7012PE IN C3621	NOTE 1 Pg 2
	11149-M-180- 4	TD5X	SQUARE D TYPE KPD13 IN C3621	NOTE 1 Pg 2
	12501-M-1809 . 14			
	7749-M-180- 4	TD5X1	SAME AS TD5X	CA - CONTACTS 11-8 ARE ANNUNCIATOR INPUTS.
	12501-M-1809- 13	TD9	AGASTAT MODEL 7012P13 IN C3621	CA - CONTACTS SUPPLY FR RELAY

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Kelly Date 5/4/95
 Reviewed by _____ / Date _____

c.c. 551

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System EMERGENCY DIESEL
GENERATOR 1-1

Page 7 OF 10

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
K5-1, C3621, C3621A	12501- M-180Q- 13	TQ3	AGASTAT MODEL # 7032PBRB IN C3621	NOTE 1 Pg 2
"	DS4A	G.E. TYPE S89 CTRL SW. ON C3621		NV
* 12501 M-180Q-14 * 7749 M-180-10	GMS HYD+ELEC	ELECTROSWITCH ROTARY CTRL SW ON C3621		NV
"	FUEL PRIME P/B SW 2	ALLEN BRADLEY OIL TIGHT PB ON C3621		NV
"	IDLE START (Pb 1)	CUTLER HAMMER PB ON C3621A		NV
"	IDLE RELEASE (Pb 2)	CUTLER HAMMER PB ON C3621A		NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Schaff Date 1-4-95
Reviewed by _____ / Date _____

C.C #351

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System EMERGENCY DIESEL
GENERATOR 1-1

Page 8 OF 10

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
K5-1, C3621, C3621A	12501-11- 180Q-13	PS-7* PS-8 (STARTER MOTOR ENGAGED PRESSURE SWITCH)	BARKSDALE PRESSURE SW # EIH-M90-V ON EDE SKID	NV - PER SSRAP REV. 4.0 Pg 81 AND Pg B-69 IN NP-7148-SL SEE NOTE 1 PAGE 2
		PS-36 (START CIRCUIT BACKUP PRESSURE SWITCH) (PS20143)	SAME AS PS-7* PS-8	
	12501-11- 180Q-14	GCS (GOVERNOR CONTROL C3621. SWITCH)	GE, TYPE SB-9 CTRL. SW ON	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. 6/19 Date 1-4-95
 Reviewed by _____ / Date _____

* PLANT ID FOR THESE
 SWITCHES IS
 PS5154 & PS5155

c.a #351

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System EMERGENCY DIESEL
 GEN 1-1

Page 9 OF 10

Relay
 Type and
 Location

SAT

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT
K5-1, C3621 C3621A	12501-M- 180Q-14 AND VMAN M180-92 P9 946	LS RAISE, LS LOWER ↑ FOR THE MECHANICAL GOVERNOR SECTION SPEED ADJUSTING MOTOR.	LIMIT SWITCHES ON WOODWARD GOVERNOR/ACTUATOR # EG-B10C MOUNTED ON EDS RACK	NV
	12501-M-180Q- 13	555	SYNCRO-START MODEL ESSB-4AT IN C3621	CA - CONTACTS CONTROL SSSX AND SSST - EVALUATED ON Pg 3.
"		LOCAL START P/B SW-3	ALLEN-BRADLEY OIL TIGHT PB ON C3621	NV
CS (VR ON-OFF)	SEE G.4 352 , SMT=NV			
ISR	- SEE G.4 #283, SAT = LEVEL 4			
SSIX -				

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Kelly Date 6/4/95
 Reviewed by _____ / Date _____

G.4 # 351
Pg 10 OF 10

Date: Thursday, October 20, 1994 1:24pm

/LAY
From: JonHook
To: Betlack
Re: Essential relays mounted on the EDG skid

Msg#: 4752
(1 reply)

If a cabinet which contains Emergency Diesel Generator control relays for which chatter is not acceptable is mounted on the engine skid, can these relays be considered seismically adequate by referencing page B-69 in NP 7148-SL and section 17 in SSRAP rev 4.0?

Also, can pressure switches which are mounted on attachments to the EDG skid be similarly screened?

Date: Tuesday, November 1, 1994 4:00pm

/RELAY
From: Betlack
To: JonHook
Re: Essential relays mounted on the EDG skid
(Reply to #4752)

Msg#: 4791

Yes to both questions. Section 17 of the SSRAP report states that "relays on reciprocating engines that routinely see high vibration due to operation" do not require a relay evaluation. The example on page B-69 of EPRI NP-7148 is based upon the SSRAP position. Accordingly, any contact device which satisfies the SSRAP report criteria is considered seismically adequate.

USE THIS SHEET TO BACKUP SAT EVALUATIONS
FOR RELAYS IN C3621, C3622 AND SWITCHES
MOUNTED BELOW THE OIL TANK ON RACK FOR
EDG 1-1 AND EDG 1-2

COPY TO 6.4 FORMS:

177, 178, 283, 291, 351, 352, 353, 354

C.E. #362

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System EMERGENCY DIESEL GEN 1-1

Page 1 OF 11

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
C3617 - VOLTAGE REGULATOR & EXCITER CABINET	7749- M-180-10 + 7749- M-180-31	DS3	G.E. TYPE SB9 CTRL SW ON C3617	NV
" & VMAN	11 M-180-92 PG. 994	GOV EGA BOX	WOODWARD EG-A CONTROL	NA
7749- M-180-10 + E-648 SHT 16		GMS ELECT	ELECTRO-SWITCH ROTARY CTRL SW IN C3621	NV
7749-M-180-10	ISOCHRONOUS- DROOP SW & V.R. DROOP SW		AEROSPACE TOGGLE SW ON C3617	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Loeffler Date 10-18-94
 Reviewed by _____ / Date _____

6.4 #352

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System EMERGENCY DIESEL GEN 1-1Page 2 OF 11

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
C3617- VOLTAGE REGULATOR AND EXTER CABINET	7749-M- 180-10	R3X1	SQUARE D CLASS 8501 TYPE KPD/3 IN C3617	CR- TEST OR REPLACE WITH SEISMICALLY ADEQUATE RELAY
	7749-M- 180-10 AND UMAN M-180-92 Pg 1009	GOV. M.O. POT	WOODWARD MOTOR OPERATED POTENTIOMETER WITH INTERNAL LIMIT SWITCHES	NV
	7749-M-180- 10 & E64B GHT 16	"A" "B" REMOTE <u>65CS</u> <u>HS6222</u>	G.E. TYPE SB1 CTRL SW ON C5715. A=7 RM= 505, EL- 623	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by D. K. Kish Date 5/31/95
Reviewed by _____ / Date _____

E&E #952

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System EMERGENCY DIESEL
GENERATOR 1-1

Page 3 OF 11

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
C3617 VOLTAGE REGULATOR & EXCITER	7749-M-180-10 & E64B-SHT 1G	"A", "B" LOCAL (65CS D61)	G.E. TYPE SB1 CTRL SW ON C3615, RM 318	NV
	7749-M-180-10 & E64B-SHT 1G	DS (DS-1B)	GE VDE SB1 CTRL SW ON C3615, RM 318	NV
	7749-M-180-10	R3X2	SQ "D" CLASS B501, TYPE KPD13 IN C3617, RM 318	CR - TEST OR REPLACE WITH SEISMICALLY ADEQUATE RELAY
	7749-MI-180-10 AND 7749-MI-180-31	SSIX R3X	SQ "D" CLASS B501, TYPE KRD13IN C3621	SSRP - SEE ATTACH- MENT & NOTE 1

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Bish / Date
Reviewed by _____ / Date

NOTE 1 - PER SECTION 17 IN SSRAP REV. 4.0
AND NP 7148-3L THIS CONTACT
IS CONSIDERED ^{G-1}
SEISMICALLY ADEQUATE.
SEE Q+A PAGE 11

C.E. # 352

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System EMERGENCY DIESEL
GENERATOR 1-1

Page 4 OF 11

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
C3617 - VOLTAGE REGULATOR AND EXCITER	7749-M-180-31 AND E-64B SHT 16	VCS, AVCS (90CS/HCG222)	G.E. TYPE SB1 CTRL SW ON C5715, A=7 RM=505, EL=623	NV
"	"	VCS, AVCS (90CS/D61)	G.E. TYPE SB1 CTRL SW ON C5715, A=7, RM=505, EL=623	NV
"	"	DS (DS-1B)	G.E. TYPE S89 CTRL SW ON C3615 IN RM 319	NV
7749-M-180-31 AND VMAN M-180-93 (BOOK 2) P9 524	LSW-3 LSW-4	EMMCO UNIVERSAL MOTOR RHEOSTAT LIMIT SWITCHES IN C3617, RM 318	NV	

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NY - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by D.K. Smith Date 10-19-94
 Reviewed by _____ / Date _____

c. # 352

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System EMERGENCY DIESEL
GENERATOR 1-1

Page 5 OF 11

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
23617- VOLTAGE REGULATOR AND EXCITER	7749- M-180-31	CR-1 CR-2	ALLEN BRADLEY MODEL 700 BR200A1 IN C3617	CA - THESE CONTACTS SUPPLY RELAY TD-10 WHICH IS USED FOR ALARM.
"		12 1 8 METER RELAY	G.E. TYPE 195 SINGLE SET PT. METER RELAY IN C3617	CA - THESE CONTACTS SUPPLY TD-20 WHICH IS USED FOR ANNUNCIATION.
	7749- M-180-4	TD-10 TD-20	ALLEN-BRADLEY CAT. NO. 8490C-2032 ON DELAY RELAY IN C3617	CA 1
7749- M-180-4 12501- M-1 1809- 13		FSS (FIELD SHORTING SWITCH)	ALLEN BRADLEY AC CONTACTOR WITH A DC COIL, CAT # 702 DC-B0VG931, WITH EXTRA PILOT CIRCUIT CONTACTS # 1495G1	GERS-CON. 3 (SEE PG 10)

* Identify reason for Contact/Contact Group being satisfactory or IN C3617 unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Ladd, Date 5/16/95
Reviewed by _____ / Date _____

c.e #352

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System EMERGENCY DIESEL
GENERATOR 1-1

Page 4 OF 11

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
C3618 - VOLTAGE REGULATOR, EXCITER	M-180-10 AND E-64B SH13	SS3	SQD CLASS 8501 TYPE KPD13 IN C3621.	SSRAP - SEE ATTACHMENT MSG A752+A791 NOTE 1 Pg 3
	M-180G-13	SS3A (CONTROLS SS3 COIL)	SYNCHROSTART SPEED SWITCH MOD. ESSB-4AT IN C3621	SSRAP - SEE ATTACHMENT MSG. A752+A791 NOTE 1 Pg 3
M-180-31 AND E-64B SH13		BUR-1 BUR-2	VOLTAGE BUILDUP RELAY. DELTRO CONTROLS, MILWAUKEE WIS. # 105T1465 IN C3617	CR - TESTING OR REPLACE- MENT
M-180-31 E-64B SH13		PB "FIELD FLASH"	ALLEN BRADLEY TYPE 800T PB ON C3617	NV
M-180-31		CR-3	ALLEN BRADLEY 700-BR6-00A1 IN C3617	CA - CONTROLS "DR" AND "MR" WHICH ARE BOTH USED FOR ALARM/ANNUNCIATION.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by D.H. Goff Date 5/10/95
Reviewed by _____ / Date _____

6.4# 352

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System EMERGENCY DIESEL
GENERATOR 1-1

Page 7 of 11

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
C3617 - VOLTAGE REGULATOR, EXCITER	M-180-31 + VMAN M-180-93 BOOK 2 PG. 732	"VOLTAGE REDUCER"	G.E 125VDC TO 48VDC # 50-199001 AAAA1 IN C3617.	NA
	M-180-31	FFC "FIELD FLASH CONTACTOR"	ALLEN BRADLEY AC CONTACTOR WITH DC COIL CAT # 702DCB0V6931, AND EXTRA PILOT CIRCUIT CONTACTS # 1495G1	GERS-CON.3 (SEE Pg. 10)
	M-180-31	DS-3	G.E TYPE SB9 CTRL SW ON C3617	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by D.H. Lash Date 5/16/95
Reviewed by _____ / Date _____

C.E. # 352

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System EMERGENCY DIESEL
GEN 1-1

Page 8 OF 11

Relay
 Type and
 Location

SAT

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT
C3617- VOLTAGE REGULATOR & EXCITER	M-180- 31	"DIODE RELAY"	THE "DIODE RELAY" CONSISTS	CAL

OF 13 RELAYS LABELED ARI THROUGH AR13. RELAYS ARI THROUGH AR12 ARE POTTER & BRUMFIELD JML 116081 AR13 ALSO WHICH IS ALSO LABELED "DR" IS A SQUARE D CLASS 8501 TYPE KPD13. THIS ASSEMBLY IS LOCATED IN C3617. ALSO SEE DRAWINGS 7149-M-180-55 AND VINIT M-180-93 BOOK 2 PGS 514 & 523

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Laff Date 10-21-74
 Reviewed by _____ / Date _____

c.e#352

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System EMERGENCY DIESEL
GENERATOR 1-1

Page 9 OF 11

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
C3617- VOLTAGE REGULATOR - EXCITER	E-64B SHT. 1C	CB-1	100 Amp Non-AUTO MOLDED CASE CIRCUIT BKR.	NA

SOURCE OF 125VDC POWER FOR VOLTAGE
REGULATOR / EXCITER IS DIP CKT 9.
DIP IS EVALUATED IN G.4 #55

11-160-31 TEST SEARCH G.E TYPE SB-7
CTRL. SW. ON
C3618

AT⁴⁴ NV

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by W.L. Griff Date 10-21-94
Reviewed by _____ / Date _____

c.c #352

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System EMERGENCY DIESEL
GEN 1-1.

Page 10 OF 11

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT°
---------------------	------------	-----------------------	-------------------------	------

LEVEL 2 SCREENING FOR FSS AND FFC

1. FSS and FFC are both Allen Bradley type 702 size 1, three pole contactors with 125VDC coils.
2. These contactors are located in EDG Voltage Regulator/Exciter cabinets C3617 and C3618.
3. These cabinets are both located in Plant Area 6, Elevation 585'.
4. This Area has a Median-Centered Floor response spectra (FRS) = .6038g with an associated ZPA = .242g.
5. The natural frequency of these cabinets is less than 8Hz and both have amplification factors (AF) = 4.5.

Thus, the peak seismic demand (SD);

$$SD = FRS * SAFETY FACTOR * AF$$

$$SD = .6038g * 1.5 * 4.5$$

$$SD = 4.075g$$

and, the associated ZPA seismic demand (SD);

$$SD = ZPA * SAFETY FACTOR * AF$$

$$SD = .242g * 1.5 * 4.5$$

$$SD = 1.63g$$

6. Per GERS-CON.3 contactors are given a peak seismic capacity of 4.5g and a ZPA seismic capacity of approximately 2.5g.

Therefore, seismic capacity exceeds seismic demand for the FFC and FSS contactors located in C3617 and C3618.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- - No entry necessary.

Prepared by D.K. Ladd Date 5/6/95
Reviewed by _____ / Date _____

S.C.E. Review J.W. G. Stahl Date 5/8/95

G.4 # 352
PAGE 11 OF 11

Date: Thursday, October 20, 1994 1:24pm
/RELAY
From: JonHook
To: Betlack
Re: Essential relays mounted on the EDG skid

Msg#: 4752

(1 reply)

If a cabinet which contains Emergency Diesel Generator control relays "or which chatter is not acceptable is mounted on the engine skid, can these relays be considered seismically adequate by referencing page B-69 in NP 7148-SL and section 17 in SSRAP rev 4.0?

Also, can pressure switches which are mounted on attachments to the EDG skid be similarly screened?

Date: Tuesday, November 1, 1994 4:00pm
/RELAY
From: Betlack
To: JonHook
Re: Essential relays mounted on the EDG skid
(Reply to #4752)

Msg#: 4791

Yes to both questions. Section 17 of the SSRAP report states that "relays on reciprocating engines that routinely see high vibration due to operation" do not require a relay evaluation. The example on page B-69 of EPRI NP-7148 is based upon the SSRAP position. Accordingly, any contact device which satisfies the SSRAP report criteria is considered seismically adequate.

USE THIS SHEET TO BACKUP SAT EVALUATIONS
FOR RELAYS IN C3621, C3622 AND SWITCHES
MOUNTED BELOW THE OIL TANK ON RACK FOR
EDG 1-1 AND EDG 1-2

COPY TO 6.4 FORMS:

177, 178, 283, 291, 351, 352, 353, 354

6.4 #353

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System EMERGENCY DIESEL
GENERATOR 1-2

Page 1 OF 10

Subsystem/Component Ref Dwg(s) Contact/Contact Group

Relay
Type and
Location
SAT*

K5-2, C3622,
C3622A

NOTE 1 : CIRCUITS IN C3622 AND C3622A ARE SUPPLIED
125 VAC POWER FROM D2R CKT 09 (REF. E64B
SHT 2C. SEE 6.4 # 53 FOR RELAY SCREENING
OF D2P.

NOTE 2: CABINETS C3622 AND C3622A CONTAIN MANY OF
THE RELAYS ASSOCIATED WITH THE STARTING, RUNNING
AND SHUTDOWN OF EDG 1-2. MANY OF THESE
RELAYS WERE SCREENED WHILE EVALUATING THE
EDG 1-2 OUTPUT BREAKER AD101. THIS EVALUATION
IS DOCUMENTED IN 6.4 # 291.

NOTE 3: RELAY SSIXI IS EVALUATED IN 6.4 # 178

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Bill, Date 10-21-94
Reviewed by _____ / Date _____

c.e #353

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System EMERGENCY DIESEL
GENERATOR 1-2

Page 2 OF 10

Relay
 Type and
 Location

SAT*

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
K5-2, C3622, C3622A	12501-M-180Q- 13	AVIA, AV2A	SQ. D, CLASS 8501, TYPE KPD13 IN C3622	SEE NOTE 1 THIS Pg.
	12501-M- 180Q-13 + 7749-M- 180-4	BF1, BF2, BF3, BF4, BF5, BF6, BF7	SAME AS AVIA	CA1 - INDICATION OF BROWN RISE
	12501-M- 180Q-13	FFP1	SQUARE D CLASS 7004 TYPE HCO-1 IN C3622	SEE NOTE 1 THIS Pg.
" a 7749-M- 180-4	FR	SAME AS AVIA	CA1 - FAIL TO RUN INDICATION	

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Lipp Date 10-22-94
 Reviewed by _____ / Date _____

NOTE 1. CONTACTS ARE INHERENTLY
 RUGGED PER SECTION 17 IN SSRAP REV. 4.0
 AN NP1748-SL. G-4
 SEE ATTACHED QUESTION & RESPONSE
 PAGE 10

C.E #353

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System EMERGENCY DIESEL
GENERATOR 1-2

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Relay
 Type and
 Location

SAT*

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
K5-2, C3622, C3622A	12501-M- 180Q-13	RAM	SQ. D, CLASS 8501, TYPE KPD13 IN C3622	NOTE 1 Pg 2
" M-180-4	RS	SAME AS RAM	CAL - READY TO START INDICATION	
12501-M-180Q- 13	R1	SAME AS RAM	NOTE 1 Pg 2	
"	R1X	SAME AS RAM	"	
" M-180Q-14	R1X1	SAME AS RAM	"	
M-180-4 & M-180-14	R2X	SAME AS RAM	CAL - FAIL TO START INDICATION	

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Ladd Date 1-4-95
 Reviewed by _____ / Date _____

c.c # 353

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System EMERGENCY DIESEL
GENERATOR 1-2

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Relay
Type and
Location

SAT*

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
K5-2, C3622, C3622A	12501-M- 180Q-14	R7X	SQ D, CLASS 8501, TYPE K2D13, IN C3622A	LEVEL 4 (SEE NED 95-1002) SEE Pg 11
	12501-M- 180Q-14	R7X1	SAME AS R7X EXCEPT C3622	SEE NOTE 1 Pg 2
	12501-M-180Q- 13 + 7749-M- 180-4	SDRX1	SAME AS R7X EXCEPT C3622	
	12501-M-180Q- 13	SS1, SS2A, SS2A, SS4A (AKA SS)	SYNCHRO START MODEL ESSB- 4AT IN C3622.	
	12501-M-180Q- 13, 12501-M- 180Q-14	SS1	SAME AS R7X EXCEPT C3622	

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Ladd Date 1/4/95
Reviewed by _____ / Date _____

6.4 #353

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System EMERGENCY DIESEL
GENERATOR 1-2

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Relay
 Type and
 Location

SAT*

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
K5-2, C3622, C3622A	M-180-10 & M-180-31	SSIX	SQ. D, CLASS 8501 TYPE KPD13 IN C3622	NOTE 1 PG 2
	M-180Q-13	SS2	SAME AS SSIX	"
"		SS3	SAME AS SSIX	"
"		SS5T	AGASTAT MODEL 7012PB IN C3622A	CA-SUPPLIES SS5Y WHICH PROVIDES INDICATION
"		SS5Y	SAME AS SSIX	CA1 - PROVIDES INDICATION OF 105% RATED SPEED.
"		SS5X	SAME AS SSIX	CA1 - PROVIDES INDICATION OF 95% RATED SPEED

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Ladd Date 1/4/95
 Reviewed by _____ / Date _____

c.4 # 353

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

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Relay
 Type and
 Location

SAT*

K5-2, C3622, C3622A	12501-M-180Q- 14	TD4	AGASTAT MODEL 7012PH IN C3622A	LEVEL 4 (SEE NED 95-10021) Pg. 11
	12501-M-180Q- 13 & M-180- 4	TD5	AGASTAT MODEL 7012PE IN C3622	NOTE 1 Pg 2
	12501-M-180Q- 14 & M-180- 4	TD5X	SQ. D, CLASS 8501, TYPE KPD13 IN C3622	11
	7749-M-180-4	TD5X1	SAME AS TD5X	CA-CONTACTS 11-8 ARE ANNALATOR INPUTS
		TD9	AGASTAT MODEL 7012PB IN C3622	CA-CONTACTS SUPPLY FOR RELAY

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Gish Date 1/4/95
 Reviewed by _____ / Date _____

c.c #353

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System EMERGENCY DIESEL
GENERATOR 1-2

Page 7 OF 10

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
K5-2, C3622, C3622A	12501-M- 180Q-13	TD3	AGASTAT MODEL # 7032PB IN C3622	NOTE 1 pg 2
" 12501-M-180Q- 142 M49-M- 180-10	GMS ELECT 1 GMS HYD	ELECTRO SWITCH ROTARY CTRL SW ON C3622	NV	
12501-M-180Q- 13	" FUEL PRIME "	SW-2	AHEN BRADLEY OIL TIGHT PB ON C3622	NV
"	IDLE STRT	CUTLER HAMMER PB ON C3622A	NV	
"	IDLE RELEASE	CUTLER HAMMER PB ON C3622A	NV	

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by J.H. Schmid / Date 1/4/95
 Reviewed by _____ / Date _____

C-4 #353

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System EMERGENCY DIESEL
GENERATOR 1-2

Page 8 OF 10

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
K5-2, C3622, C3622A	12501-M-1809- 13	PS-7, PS-8 (SEE NOTE 1)	BARKSDALE PRESSURE SW # EIH-M90V ON EOG SKID IN RM 319	NV - SEISMICALLY ADEQUATE PER SSRAP REV. 4.0 Pg 81 AND Pg B-69 IN NP-7148-SL SEE NOTE 1 Pg 2
"	11	PS-34	SAME AS PS-7 EXCEPT MOUNTED ON EOG RACK	
12501-M-1809- 14		GCS	G.E. TYPE SB-9 CTRL SW ON C3622	NV
12501-M-1809-13		LOCAL START P/B SW-3	ALLEN-BRADLEY OIL TIGHT RB ON C3622	NV
"		SS5	SYNCHRO START MODEL ESSB-2B IN C3618	CA - CONTACTS SUPPLY SS5X4 SS52 - SEE Pg 5.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Stroh Date 10-21-94
 Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

C.4 #253

System EMERGENCY DIESEL
GENERATOR 1-2

Page 9 OF 10

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
K5-2, C3622, C3622A	12501-M- 180Q-14 & VIMAN M-180- 92 Pg 946	LS RAISE, LS LOWER	LIMIT SWITCH ON WOODWARD GOVERNOR MODEL #EG-B10C MOUNTED ON EGG RACK	NV

CS (VR. ON-OFF) - SEE G.4 291, SAT= CA
 ISR - SEE G.4 291, SAT = LEVEL 4

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Beck Date 10-21-94
 Reviewed by _____ / Date _____

G.4 # 353
Pg 10 of 10

Date: Thursday, October 20, 1994 1:24pm
/RELAY
From: JonHook
To: Betlack
Re: Essential relays mounted on the EDG skid

Msg#: 4752
(1 reply)

If a cabinet which contains Emergency Diesel Generator control relays for which chatter is not acceptable is mounted on the engine skid, can these relays be considered seismically adequate by referencing page B-69 in NP 7148-SL and section 17 in SSRAP rev 4.0?

Also, can pressure switches which are mounted on attachments to the EDG skid be similarly screened?

Date: Tuesday, November 1, 1994 4:00pm
/RELAY
From: Betlack
To: JonHook
Re: Essential relays mounted on the EDG skid
(Reply to #4752)

Msg#: 4791

Yes to both questions. Section 17 of the SSRAP report states that "relays on reciprocating engines that routinely see high vibration due to operation" do not require a relay evaluation. The example on page B-69 of EPRI NP-7148 is based upon the SSRAP position. Accordingly, any contact device which satisfies the SSRAP report criteria is considered seismically adequate.

USE THIS SHEET TO BACKUP SAT EVALUATIONS
FOR RELAYS IN C3621, C3622 AND SWITCHES
MOUNTED BELOW THE OIL TANK ON RACK FOR
EDG 1-1 AND EDG 1-2

COPY TO G.4 FORMS:

177, 178, 283, 291, 351, 352, 353, 354

C3618 \Rightarrow AREA = 4
 $R_m = 319$
 $E_L = 585$

6.4 # 354

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System EMERGENCY DIESEL
GENERATOR 1-2

Page 1 of 12

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
C3618 - VOLTAGE REGULATOR & EXCITER	7749-M-180-10 & VMAN 1 M-180-92	GOV. EGA BOX	WOODWARD EGA CONTROL	NV
	7749-M-180-10	GMS ELECT	ELECTRO-SWITCH ROTARY CTRL SW ON C3622	NV
	7749-M-180-10	ISOCHRONOUS DROOP SW, VR DROOP SW	AEROSPACE TOGGLE SW ON C3618	NV
	7749-M-180-10	R3X1	SQUARE D CLASS 8501 TYPE KP013 IN C3618	CR - WILL REPLACE WITH RELAY OF KNOWN SEISMIC CAPACITY SUCH THAT SEISMIC CAPACITY > SEISMIC DEMAND.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. Th. Bily Date 5/31/95
 Reviewed by _____ / Date _____

6.4 #354

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System EMERGENCY DIESEL
GENERATOR 1-2

Page 2 of 12

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
C3618 - VOLTAGE REGULATOR AND EXCITER	7749-M- 180-10 E VMAN M-180-92	GOV M.O. POT	WEDDLE MOTOR OPERATED POTENTIOMETER WITH INTERNAL LIMIT SWITCHES	NV
	7749-M- 180-10 E E-64B SHT IH	"A", "B" REMOTE <u>65CS</u> HSG232	G.E. TYPE SBL CTRL SW. ON C5715, A=7, RM=505, EL= 623	NV
	7749-M- 180-10 E E-64B SHT IH	A", B" LOCAL <u>65CS</u> DG2	G.E. TYPE S81 CTRL SW. ON C3616, A=6 RM=319, EL= 585.	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by O.K. Link Date 1/18/94
 Reviewed by _____ / Date _____

6.4 # 354

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System EMERGENCY DIESEL
GENERATOR 1-2

Page 3 OF 12

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
C3618 - VOLTAGE REGULATOR AND EXCITER	M-180-10	R3X2	SQUARE D CLASS 8501 TYPE KRD13 IN C3618	CR - WILL REPLACE WITH RELAY OF KNOWN SEISMIC CAPACITY SUCH THAT SEISMIC CAPACITY > SEISMIC DEMAND
	M-180-10 M-180-31	SEIX RX3	SQUARE D CLASS 8501 TYPE KRD13 IN C3622	SEE NOTE 1 THIS SHT.
M-180-31 E E-64B SHT. 1H	VCS AVCS (90cs HC4232)	G.E. TYPE SBI CTRL 3W ON C5715. A= 7, RM=505, EL=585	NV	

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by L.K. bullock Date 5/31/95
 Reviewed by _____ / Date _____

NOTE 1. PER LISTED IN CRAP REV 4.0
 AND NP-7148-2L, THESE CONTACTS
 ARE CONSIDERED SEISMICALLY
 ALLEGHATE. SEE ⁶⁻⁴
 ATTACHED SUBMITTAL FOR MORE
 SEE Pg 12

C.R. #354

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System EMERGENCY DIESEL
GENERATOR 1-2

Page 4 OF 12

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
C3618 - VOLTAGE REGULATOR & EXCITER	M-180-31 E 64B SHT. 1H	KCS, AVCS 90CS DG 2	G.E. TYPE SBI CTRL SW ON C3618 IN A=6, Rm = 319, El = 585	NV
	M-180-31 § VMAN M- 180-93	LSW-3, LSW-4	EMMCO UNIVERSAL MOTO RHEOSTAT LIMIT SWITCHES IN C3618	NV
	M-180-31	CR-1, CR-2	ALLEN-BRADLEY MODEL 700BR200A1 IN C3618	CA - CONTACT SUPPLY TD-10 WHICH IS USED FOR ALARM.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by D.K. Lipp Date 1/8/34
Reviewed by _____ Date _____

C& # 354

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System EMERGENCY DIESEL
GENERATOR 1-2

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Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
C3618 - VOLTAGE CONTROL & EXCITER REGULATOR	M-180- 31	1218 METER RELAY	G.E TYPE 195 SINGLE SET PT. METER RELAY IN C3618	CA - CONTACTS SUPPLY RELAY TD-20 WHICH IS USED FOR
	M-180- 4	TD-10 TD-20	ALLEN-BRADLEY CAT. No. 849 DC- 2032 ON DELAY RELAY IN C3618	CA1
	M-180-4 M-180G-13	FSS (FIELD, SHORTING SWITCH)	ALLEN-BRADLEY AC CONTACTOR WITH A DC COIL # 702DCB0V6931	GERS-CON. 3 (SEE Pg 11)
	M-180-10 & E64B SH 13	SS3	SQUARE D CLASS 8501 TYPE KPD13 IN C3622	NOTE 1 Pg 3

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- 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.
- No entry necessary.

Prepared by D.L. Smith Date 1/18/94
Reviewed by _____ Date _____

C-4 #354

A-46 RELAY SCREENING AND EVALUATION
 FORM G-4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System EMERGENCY DIESEL
GENERATOR 1-2

Page 6 OF 12

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
C3618 - VOLTAGE REGULATOR & EXCITER	M-180G-13	SS3A- CONTROLS SS3A RELAY WK	SYNCHROSTART SPEED SWITCH MODEL ESSB- HAT IN C3622	NOTE 1 Pg 3
	M-180-31 + E-64R SHT. 13	BUR-1 BUR-2	VOLTAGE BUILD UP RELAY, DELTRON CONTROLS, MILWAUKEE WIS. #10571465 IN C3618	CR-SEISMIC TESTING AND POSSIBLE REPLACEMENT
	"	PB "FIELD FLASH"	ALLEN BRADLEY TYPE 800T PB ON C3618	NV
M-180-31	CR-3		ALLEN BRADLEY 900-BR6-00A1 IN C3618	CA - CONTROLS "DR" AND METER RELAY WHICH ARE BOTH USED FOR ALARM/ANNUNCIATION.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Smith Date 5/31/95
 Reviewed by _____ / Date _____

c.e # 354

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BISSE UNIT 1

System EMERGENCY DIESEL
GENERATOR 1-2

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Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
C3618 - VOLTAGE REGULATOR & EXCITER	M-180-31 2 UMAN M-180-93 BOOK 2 Pg 732	"VOLTAGE REDUCER"	G.E. 125 1048 VDC #50-199001 AAAA1 IN C3618	NA
	M-180-31	FFC (NEW FLASH CONTACTOR)	NIHEN-BRADLEY AC CONTACTOR WITH DC COIL CAT # 702DCBOVG931 NO EXTRA POLE CIRCUIT CONTACTS.	GERS-CON. 3 (SEE PG 11)
	M-180-31 TEST SW	"TEST SW"	G.E. THE SB-9 CTRL SW ON C3618.	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Knoblich Date 5-16-95
Reviewed by _____ / Date _____

G-4 # 354

A-46 RELAY SCREENING AND EVALUATION
 FORM G-4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

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Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
C3618 - VOLTAGE REGULATOR & EXCITER	M-180-31 & M-180-92	"DIODE RELAY"	CA1	
E-64B SHT	SC	CB-1	100 AMP NON-AUTO MOLDED CASE C.R. BKR	NA

→ THE "DIODE RELAY consists of fifteen relays labeled AR1 → AR13. Relays AR1 through AR12 are Foster Brumfield JML 116081. AR13, which is also labeled AR13 is a Square "D" class 8501 type KPD13. The Diode Relay assembly is located in C3618.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Liff Date 1/28/94
 Reviewed by _____ / Date _____

c. #354

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System EMERGENCY DIESEL GENERATOR 1-2

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Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
C3618 - VOLTAGE REGULATOR & EXCITER	7749- M-180-31 + 7749- M-180-10	DS (DS-3 IN CONTACT DEVELOPMENT)	GE TYPE SB-9 ON C3618 IN A=6 RM=319 EL= 585	NV
	"	VS	G.E. TYPE SB-1 VOLTMETER SW ON C3618.	NG

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. Seal Date 5/31/95
Reviewed by _____ / Date _____

C.4 # 354

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System EMERGENCY DIESEL
GENERATOR 1-2

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Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
C3618 - VOLTAGE REGULATOR, EXCITER	E64/B SHT 2C	SOURCE OF POWER FOR THE VOLTAGE REGULATOR / EXCITER IS D2P CKT # 9. D2P 18 EVALUATED IN G.4 # 54.		

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by W.K. Sibley, Date 11/8/94
Reviewed by _____ / Date _____

EE #354

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System EMERGENCY DIESEL GEN, 1-2

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Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

LEVEL 2 SCREENING FOR FSS AND FFC

1. FSS and FFC are both Allen Bradley type 702 size 1, three pole contactors with 125VDC coils.
2. These contactors are located in EDG Voltage Regulator/Exciter cabinets C3617 and C3618.
3. These cabinets are both located in Plant Area 6, Elevation 585'.
4. This Area has a Median-Centered Floor response spectra (FRS) = .6038g with an associated ZPA = .242g.
5. The natural frequency of these cabinets is less than 8Hz and both have amplification factors (AF) = 4.5.

Thus, the peak seismic demand (SD);

$$SD = FRS * SAFETY FACTOR * AF$$

$$SD = .6038g * 1.5 * 4.5$$

$$SD = 4.075g$$

and, the associated ZPA seismic demand (SD);

$$SD = ZPA * SAFETY FACTOR * AF$$

$$SD = .242g * 1.5 * 4.5$$

$$SD = 1.63g$$

6. Per GERS-CON.3 contactors are given a peak seismic capacity of 4.5g and a ZPA seismic capacity of approximately 2.5g.

Therefore, seismic capacity exceeds seismic demand for the FFC and FSS contactors located in C3617 and C3618.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- - No entry necessary.

Prepared by W. K. Sall Date 5/10/95
Reviewed by _____ / Date _____

SCG REVIEW

Jewell Hark 9/8/95

6.4 # 354
Pg 12 OF 12

Date: Thursday, October 20, 1994 1:24pm

/RELAY

From: JonHook

To: Betlack

Re: Essential relays mounted on the EDG skid

Msg#: 4752

(1 reply)

If a cabinet which contains Emergency Diesel Generator control relays for which chatter is not acceptable is mounted on the engine skid, can these relays be considered seismically adequate by referencing page B-69 in NP 7148-SL and section 17 in SSRAP rev 4.0?

Also, can pressure switches which are mounted on attachments to the EDG skid be similarly screened?

Date: Tuesday, November 1, 1994 4:00pm

/RELAY

From: Betlack

To: JonHook

Re: Essential relays mounted on the EDG skid

(Reply to #4752)

Msg#: 4791

Yes to both questions. Section 17 of the SSRAP report states that "relays on reciprocating engines that routinely see high vibration due to operation" do not require a relay evaluation. The example on page B-69 of EPRI NP-7148 is based upon the SSRAP position. Accordingly, any contact device which satisfies the SSRAP report criteria is considered seismically adequate.

USE THIS SHEET TO BACKUP SAT EVALUATIONS
FOR RELAYS IN C3621, C3622 AND SWITCHES
MOUNTED BELOW THE OIL TANK ON RACK FOR
EDG 1-1 AND EDG 1-2

COPY TO 6.4 FORMS:

177, 178, 283, 291, 351, 352, 353, 354

c.4 # 355

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System EMERGENCY DIESEL
GENERATOR 1-2

Page 1 of 1

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
---------------------	------------	-----------------------	-------------------------	------

C3616 — NOTE: CABINET C3616 CONTAINS MANY OF THE PROTECTIVE RELAYS ASSOCIATED WITH E06 1-2. RELAYS CONTAINED WITHIN THIS CABINET WHICH ARE WITHIN THE SCOPE OF THE A-46 RELAY EVALUATION ARE ADDRESSED IN THE G.4 FORMS FOR A PARTICULAR DIESEL ITEM, FOR EXAMPLE G.4 NUMBERS 178, 291, 295 AND 298. 125VDC POWER TO C3616 IS SUPPLIED FROM DQP CKT 09 (REF E64B SHT. 2C). PANEL DQP IS EVALUATED ON G.4 # 54.

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- INV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by D.L.K. 11/21/94
 Reviewed by _____ / Date _____

c.4 #356

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System EMERGENCY DIESEL
GENERATOR 1-1

Page 1 OF 1

Relay
 Type and
 Location

SAT*

Subsystem/Component Ref Dwg(s) Contact/Contact Group

C-3615 — NOTE: CABINET C3615 CONTAINS MANY OF THE PROTECTIVE RELAYS ASSOCIATED WITH EDG 1-1. RELAYS CONTAINED WITHIN THIS CABINET WHICH ARE WITHIN THE SCOPE OF THE A-46 RELAY EVALUATION ARE ADDRESSED IN G.4 FORMS FOR A PARTICULAR SSEL ITEM, FOR EXAMPLE G.4 NUMBERS 177, 283, 287, 289. 125VDC POWER TO C3615 IS SUPPLIED FROM DIP CKT 09 (REF E64B SHT 1C), PANEL DIP IS EVALUATED IN G.4 # 55

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Langford Date 10-21-94
 Reviewed by _____ Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

G.4 # 357

System 120VAC ELECTRICAL

Page 1 OF 4

Relay
 Type and
 Location

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	SAT*
---------------------	------------	-----------------------	------

YVI AND YV4; NOTE: THE STATION'S ORIGINAL TRAIN 1 INVERTERS HAVE BEEN REPLACED BY SOLID STATE CONTROLS INC 104VA INVERTERS. THESE REPLACEMENT INVERTERS WERE SEISMICALLY QUALIFIED BY FARWELL AND HENRICKS INC. THE STATION'S CIVIL/STRUCTURAL GROUP (SEISMIC CAPABILITY ENGINEERS) HAVE REVIEWED THE FARWELL AND HENRICKS REPORT AND HAVE DETERMINED THAT A SQUG LEVEL 4 SCREENING APPLIES TO THE RELAYS ASSOCIATED WITH THESE INVERTERS (REFERENCE ICM NED 95-10026).

YVI
 YV4

E-854Q-64-3 K20, K25 AGASTAT
 SSC1-2-A-D-A
 IN YVI + YV4
 A=6, RM=429
 EL=203

LEVEL 4

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by JK Date 4-4-95
 Reviewed by _____ / Date

G.4 #357

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System 120VAC ELECTRICALPage 2 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
YVI AND YV4	E-854Q-64-3	K21, K22, K23 + K24	POTTER & BRUMFIELD KHU17D11-110 IN YVI + YV4. Loc = *	LEVEL 4
"	"	K1 AND K2	POTTER & BRUMFIELD KHL17A11-120 IN YVI + YV4. Loc = *	LEVEL 4
YVI AND YV4 (OSCILLATOR BOARD)	E-854Q-118-1 Pg 49	RL1	GUARDIAN 1335-2C-120D IN YVI + YV4. Loc = *	LEVEL 4
YVI + YV4 (AC SENSING BRD)	E-854Q-118-1 Pg 55	RL1	OMRON MY4-LLA-DC24 IN YVI + YV4. Loc = *	LEVEL 4

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared W. L. Gandy Date 4-4-95
 Reviewed by _____ Date _____

*; A=6
 RM= 429
 EL= 603

G.4 #357

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System 100 VAC ELECTRICALPage 3 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
YVI AND YV4 (DC SENSING BRD.)	E-854Q-118-1 Pg. 57	RL1	OMRON MY24-UM-DC24 IN YVI & YV4 LOC = *	LEVEL 4
YVI AND YV4 (SYNCL. BRD.)	E-854Q-118-1 Pg. 65	RL1	GUARDIAN # 1330-2C-12	LEVEL 4
		RL2	OMRON # H3YADC12	LEVEL 4
		RL3	GUARDIAN # 1335-2C-120 ALL IN YVI & YV4 LOC = *	LEVEL 4
YVI AND YV4 (STATIC SWITCH V&A SENSE BRD.)	E-854Q-118-1 Pg. 71	RL1	PATHER & BEUMFIELD # KHL 17D11-12 IN YVI & YV4 LOC = *	LEVEL 4

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- | | |
|------|---|
| CA | - Chatter acceptable. |
| NV | - Not vulnerable (mechanically-actuated contacts and solid state relays). |
| GERS | - Seismically adequate based on GERS ____; include GERS number. |
| NA | - Component not affected by relays. |
| CR | - Corrective action required. |
| OA | - Operator action. |
| | - No entry necessary. |

Prepared by JK Date 4-4-95
 Reviewed by _____ / Date

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

G.4 #357

System 120 VAC ELECTRICAL

Page 4 OF 4

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
YV1+YV4 (STATIC SW V&A SENSE BRD)	E-8549-118-1 Pg. 71	RL2	POTTER & BRUMFIELD #KHU17A11-120 IN YV1+YV4 LOC = *	LEVEL 4
"		RL3	GORDOS #F81-1423 IN YV1+YV4. LOC = *	LEVEL 4
YV1+YV4 (CREST FACTOR BRD.)	E-8549-118-1 Pg. 89	K1	OMRON #MY4 UA DC12	LEVEL 4
"		K2,K3,K4, K5 & K6	POTTER & BRUMFIELD #KHU17A11-120 ALL IN YV1+YV4 LOC = *	LEVEL 4

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Lill Date 4-4-95
 Reviewed by _____ / Date _____

VALVE IS OPEN, VALVE
TO REMAIN OPEN

6.4 358

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System Auxiliary Feed Water

Page 1 OF 8

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MS106A, PSL 4930B	E-46B SHTS 46A & 46B	DS	G.E. TYPE SB9 CTRL SWITCH IN COE12 R. A=6, RM=318 EL=585	NV
	$\frac{33}{60}$, $\frac{33}{60}$ % $\frac{33}{60}$, $\frac{33}{60}$ %		LIMIT TORQUE TORQUE SWITCH IN MVO106A. A=7, RM=501, EL=623	NV
	$\frac{33}{60}$, $\frac{33}{60}$ % $\frac{33}{60}$, $\frac{33}{60}$ %		LIMIT TORQUE LIMIT SWITCH IN MVO106A. (SEE ABOVE)	NV

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by W.K. Lish Date 1/17/95
Reviewed by _____ Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System Auxiliary FEEDWATER

Page 2 OF 8

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MS106A, PSL 4930B	E-46B SHTS 46A+ 46B	CS OPEN), CS CLOSE	OUTLER HAMMER TYPE E30 CTRL. SW ON C5706. A=7 RM=505, EL= 623	NV
PSL4930B			STATIC - O-RING MODEL: 12V2-E4- M2-CIALLTTX3. A=7, RM=237 EL=565	CA - CONTACTS MUST REMAIN CLOSED FOR 60 SECONDS TO INITIATE VALUE CLOSE SIGNAL.
R2, R4 (CLOSE Ckt.)			DEUTSCHE TYPE HAP RELAY IN CDE11C. A=8 RM=304, EL= 585.	LEVEL 2 (PER SPECIFIC RELAY QUALIFICATION SEE Pg 8) ALSO SEE NOTE 1 THIS SHEET.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by D.K. Lipp Date 1/17/95
 Reviewed by _____ Date _____

NOTE 1. CONTACTS WHICH CONTROL R2, R4 COILS ARE EVALUATED
 IN G.4 # 250.

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System AUXILIARY FEEDWATER

Page 3 OF 8

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MS106A, PSL 4930B	E-46B SH1 46A+46B	PSL4930X2 (CLOSE CKT)	AGASTAT E7014AO IN COE II C (SEE ABOVE)	GERS- RLY- PNT. 7 (SEE Pg 8)
	SF-003B SH15	K16,X17,K18 K76,K77 X18	STRUTTERS DUNN 219XDX162 in CS762A	SEE G.4 #312
	HIS 10 GEB		CUTLER HAMMER E30DX6B550G3ULAHX	NV
	TSAT/TA/TA/41 TD/43 TC/41 T 4B/TB/B/TB/43		SEE G.4 #312	NV

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. L. 5/15/95
 Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System AUXILIARY FEEDWATER

Page 4 of 8

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MS10GA, PSL <u>4930B</u>	E-46B SHT HGA + 46B	R2, R4 (OPEN CKT)	DEUTSCH MODEL 4AP IN COE II C. A=8, RM=304	CA4 (i.e. 33/60)
	PSL4930X2		AGASTAT E7014AD IN COE II C	CA4 (i.e. 33/60)
	SF-003B SH.15	(SEE PAGE 3 UNDER SAME REFERENCE DWG FOR CONTACT ID + LOCATION)		CA4 (i.e. 33/60)

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Lipp Date 1-17-95
 Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BTSE UNIT 1

System Auxiliary Feederwater

Page 5 OF 8

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
AS106A, PSL/ 4930B	E-49B SHT 46A & 46B	429 O, 426 C	(W) L-5G AUXILIARY CONTACT FOR SERIES A200 STARTER IN MCC E120. A=6, RM=318 FC=585	CA4 (i.e 33%)
		426 O	SAME AS ABOVE	CH - CHATTER WILL NOT PRODUCE A CLOSE SEQUENC TO STARTER 42C
		429 C (SPAL-IN)	SAME AS ABOVE	GERS - MCC. 7 (AREA 6) SEE Pg. 7

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by J.H. Lish Date 1-18-95
 Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

cc 258

System Auxiliary Feedwater

Page 6 OF 8

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
M3106A, PSL/4930B	E-46B SHT 46A& 46B	42 0, 42 C	(W) SERIES A200 REVERSING STARTER IN MCC E12B A=6, RM=318 EL=585	GERS-MCC.9 (AREA 6) SEE PG 7
OL			(W) OVERLOAD RELAY CONTACTS IN MCC E12B (SEE ABOVE)	C118

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by D.H. Bush Date 1-18-95
 Reviewed by _____ / Date _____

6.4 #358

A-46 RELAY SCREENING AND EVALUATION
FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System AUXILIARY FEEDWATER

Page 7 OF 8

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
---------------------	------------	-----------------------	-------------------------	------

GERS-MCC.9 (AREA 6)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 6; 603', and 585'.

The effective grade for Area 6 is 573'.

Since $603' - 573' = 30'$, the ground spectra multiplied by (1.5×1.5) may be used to evaluate contactors/starters in Area 6 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz});

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz});

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} < 1.5g$ and bA_{33Hz} is $< 1.0g$, then contactors/starters in Area 6 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- - No entry necessary.

Prepared by J. Kuehne Date 1-18-95
Reviewed by _____ / Date _____

6.4 #353

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System AUXILIARY FEEDWATER

Page 8 OF 8

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT

LEVEL 2 SCREENING FOR CDE11C

1. Natural frequency of CDE11C is greater than or equal to 8Hz.
2. CDE11C has been given an amplification factor (AF) of 3.
3. CDE11C is located in plant area 8, elevation 585', which is less than about 40 feet above effective grade (Area 8 effective grade = 567')
4. For this area and elevation Peak GRS = .39g and Ground ZPA = .15g
5. Seismic capacity for Deutsch 4AP43AF = 6.7g peak and 5g at the ZPA (ref. NED 95-10022, "Seismic Evaluation of Deutsch Relays" and "Justification for Covering Older Deutsch Relays with the 1990 Farwell & Hendricks Report", ~~copies attached~~ SEE 6.4 # 72).
6. Seismic capacity for an Agastat E7014 = 10g peak and 4g at the ZPA (ref. GERS-RLY-PNT.7).

thus peak Seismic Demand (SD);

$$\begin{aligned} SD &= \text{Peak GRS} \times 1.5 \times 1.5 \times \text{AF} \\ &= .39g \times 1.5 \times 1.5 \times 3 \end{aligned}$$

$$SD = 2.63g$$

and ZPA Seismic Demand (SD)

$$\begin{aligned} SD &= \text{Ground ZPA} \times 1.5 \times 1.5 \times \text{AF} \\ &= .15g \times 1.5 \times 1.5 \times 3 \end{aligned}$$

$$SD = 1.01g$$

therefore, seismic capacity exceeds seismic demand.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
GERS - Seismically adequate based on GERS ____; include GERS number.
NA - Component not affected by relays.
CR - Corrective action required.
OA - Operator action.
- No entry necessary.

Prepared by W.K. Hock Date 5/15/95
Reviewed by _____ / Date _____

SCG Review Jon H. Hock 8/18/95

THIS VALUE IS OPEN AND
IS TO REMAIN OPEN

C.C. #359

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1.

System AUXILIARY FEEDWATER

Page 1 OF 8

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MS107A, PSL/4991B	E46B SHTS 46A 446B	DS $\frac{33}{100}, \frac{33}{100}$, $\frac{33}{100}, \frac{33}{100}$	GE TYPE SB9 CTRL SW. IN CDFIIB. A=8, RM=405 EL=603	NV
			LIMIT TORQUE TORQUE SWITCH IN MVO107A. A=8, RM=500, EL=623	NV
		$\frac{33}{100}, \frac{33}{100},$ $\frac{33}{100}, \frac{33}{100}$	LIMIT TORQUE LIMIT SWITCH IN MVO107A. A=8, RM=500, EL=623	NV
		CS/OPEN, CS CLOSE	CUTTER HAMMER TYPE E30 CTRL SW ON C5709. A=7, RM=505, EL=623	NV

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by OK Lish Date 1-18-95
Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

C.4 #359

System Auxiliary Feedwater

Page 2 OF 8

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MS107A, P344931B	E-46B SHT 46A #46B	PSL 4931B	STATIC-O-RINGS, MODEL 12V2-E4-M2-CIALCTTX3. A=7, RM=238, EL=565	CA - CONTACTS MUST REMAIN CLOSED FOR 60 SECONDS TO INITIATE A VALUE CLOSE SIGNAL.
	R2 & R4 (CLOSE CKT)		DEUTSCH MODEL 4AK IN COFIA-2. A=7 RM=427, EL=403	LEVEL 2 (PER SPECIFIC RLY QUALIFICATION SEE PG 7) ALSO SEE NOTE 1 THIS SHEET.
	PSL4931X2		AGASTAT E7014AD IN COFIA-2. SEE ABOVE.	GERS-RLY-PNT. 7 (SEE PG 7)

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W. K. Bell Date 5/15/95
Reviewed by _____ / Date _____

NOTE 1: THE CONTACTS WHICH CONTROL R2 & R4 ARE
EVALUATED IN G.4 # 153.

C-4 #359

A-46 RELAY SCREENING AND EVALUATION
FORM G.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System: AUXILIARY FEED WATER

Page 3 OF 8

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MSR/TA, PSY/4R21B	E-46B SHT 46B #46A SF-003B SH16	K16, K17, K18, K76 K78, K77	STRUThERS DUNN 219 X 8 X 162 in C5792	SEE G.4#312
	HIS 107EB		CUTLER HAMMER E30DXGB550630LA4X in C5709	NV
	TRB/TSB/TB144 -0144 TC/042 TRA/TSATA/042		SEE G.4#312	NV
	R3, R4		DEUTSCH TYPE 4AX RELAY IN CDFAKA-2. A=	CA4 (i.e. 33%)
			7, RM= 427, EL=	
			603.	

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. 6-14 Date 5/15/95
Reviewed by _____ / Date _____

C.A. #359

A-46 RELAY SCREENING AND EVALUATION
FORM C.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System Auxiliary Feedwater

Page 4 of 8

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MS107A, PSL/4931B	E-468 SHT 46A + 46B	PSL4931X2 (OPEN CKT)	AGASTAT MODEL E7014AC IN QDF11A-2 (See 4600e)	CA4 (i.e $\frac{33}{60}$)

SP-003B SH16 K17,K18,K78,K77 STRUTHERS-PUNN
219 X BX 162
in CS792

CA4 (i.e $\frac{33}{60}$)

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Schell Date 5/15/95
Reviewed by _____ / Date _____

#359

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System AUXILIARY FEEDWATER

Page 5 OF 8

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
M3107A, PSL/4931B	E-46B SHTS 46A, 46B	42a 0, C	(W) L-56 AUX. CONTACTS FOR SERIES A200 STARTER IN MCC FIIB, A=8, Rm=405, EL = 603	CA4 (i.e 33/60)
		42b 0	SAME AS ABOVE	CA - chatter will NOT PRODUCE A CLOSE SIGNAL TO STARTER 42/C
		42a C (EARL-1A)	SAME AS ABOVE	GERS - MCC. 9 (AREA 8) SEE Pg 8

- Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
 NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
 GERS - Seismically adequate based on GERS ____; include GERS number.
 NA - Component not affected by relays.
 CR - Corrective action required.
 OA - Operator action.
 - No entry necessary.

Prepared by H. K. Smith Date 1-18-95
 Reviewed by _____ / Date _____

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

C.4 #359

System Auxiliary Feedwater

Page 6 OF 8

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
MS107A, P3L/4931B	E46B SHT 46A + 46B	H2 , 42/C	(W) REVERSING STARTER SERIES A200 IN MCC F1B A=8; RM=405 EL= 603	GERS-MRC. 9 (AREA 8) SEE PG 8
		OK	(W) OVERLOAD Relay CONTACTS FOR SERIES A200 STARTER IN MCC F1B, (see above)	CA8

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.H. G. R. Date 1-18-95
 Reviewed by _____ / Date _____

c.c #359

A-46 RELAY SCREENING AND EVALUATION
 FORM G.4 - RELAY TABULATION
 PLANT DAVIS-BESSE UNIT 1

System AUXILIARY FEEDWATERPage 7 OF 8

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*
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LEVEL 2 SCREENING FOR CDF11A-2

1. Natural frequency of CDF11A-2 is greater than or equal to 8Hz.
2. CDF11A-2 has been given two amplification factors (AF). AF = 3 for Deutsch relays and AF = 4.5 for Agastat relays.
3. CDF11C is located in plant area 7, elevation 565', which is less than about 40 feet above effective grade (Area 7 effective grade = 562')
4. For this area and elevation Peak GRS = .39g and Ground ZPA = .15g
5. Seismic capacity for Deutsch 4AP43AP = 6.7g peak and 5g at the ZPA (ref. NED 95-10022, "Seismic Evaluation of Deutsch Relays" and "Justification for Covering Older Deutsch Relays with the 1990 Farwell & Hendricks Report", ~~copies attached~~, SEE G.4 #72).
6. Seismic capacity for Agastat E7014AD = 10g peak and 4g ZPA (ref. GERS-RLY-PNT.7)

thus peak Seismic Demand (SD);

SD = Peak GRS X 1.5 X 1.5 X AF
 SD = 2.63g for AF = 3 and
 SD = 3.9g for AF = 4.5

and ZPA Seismic Demand (SD)

SD = Ground ZPA X 1.5 X 1.5 X AF
 SD = 1.01g for AF = 3 and
 SD = 1.5 for AF = 4.5

therefore, seismic capacity exceeds seismic demand.

* Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

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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.
- - No entry necessary.

Prepared by W.K. Lusk Date 5/15/95
 Reviewed by _____ / Date _____

SCE Review Carl G. Stark 8/17/85

6.4 # 359

A-46 RELAY SCREENING AND EVALUATION
 FORM 6.4 - RELAY TABULATION
PLANT DAVIS-BESSE UNIT 1

System Auxiliary Feedwater

Page 8 of 8

Subsystem/Component	Ref Dwg(s)	Contact/Contact Group	Relay Type and Location	SAT*

GERS-MCC.9 (AREA 8)

Davis-Besse has Motor Control Centers (MCCs) on the following elevations in Area 8; 603', 585', 565' and 545'.

The effective grade for Area 8 is 567'.

Since $603' - 567' = 36'$, the ground spectra multiplied by (1.5×1.5) may be used to evaluate contactors/starters in Area 8 MCCs.

Peak Ground Response Spectra = 0.39g

Ground ZPA = 0.15g

MCC base acceleration demand in 4 to 16 Hz region (bA_{4-16Hz}):

$$\begin{aligned} bA_{4-16Hz} &= 0.39g(1.5 \times 1.5) \\ &= 0.88g \end{aligned}$$

MCC base acceleration demand in ≥ 33 Hz region (bA_{33Hz}):

$$\begin{aligned} bA_{33Hz} &= 0.15g(1.5 \times 1.5) \\ &= 0.34g \end{aligned}$$

Since $bA_{4-16Hz} \leq 1.5g$ and $bA_{33Hz} \leq 1.0g$, then contactors/starters in Area 8 MCCs may be screened using GERS-MCC.9 per Step 7 in EPRI NP-7148-SL.

- * Identify reason for Contact/Contact Group being satisfactory or unsatisfactory

- CA - Chatter acceptable.
- NV - Not vulnerable (mechanically-actuated contacts and solid state relays).
- GERS - Seismically adequate based on GERS ____; include GERS number.
- NA - Component not affected by relays.
- CR - Corrective action required.
- OA - Operator action.
- No entry necessary.

Prepared by W.K. Schaff Date 5-15-95
 Reviewed by _____ / Date _____

Seismic Evaluation Report

Attachment 1 Drawings

Safe Shutdown Equipment List

Docket Number 50-346

License Number NPF-3

Serial Number 2316

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